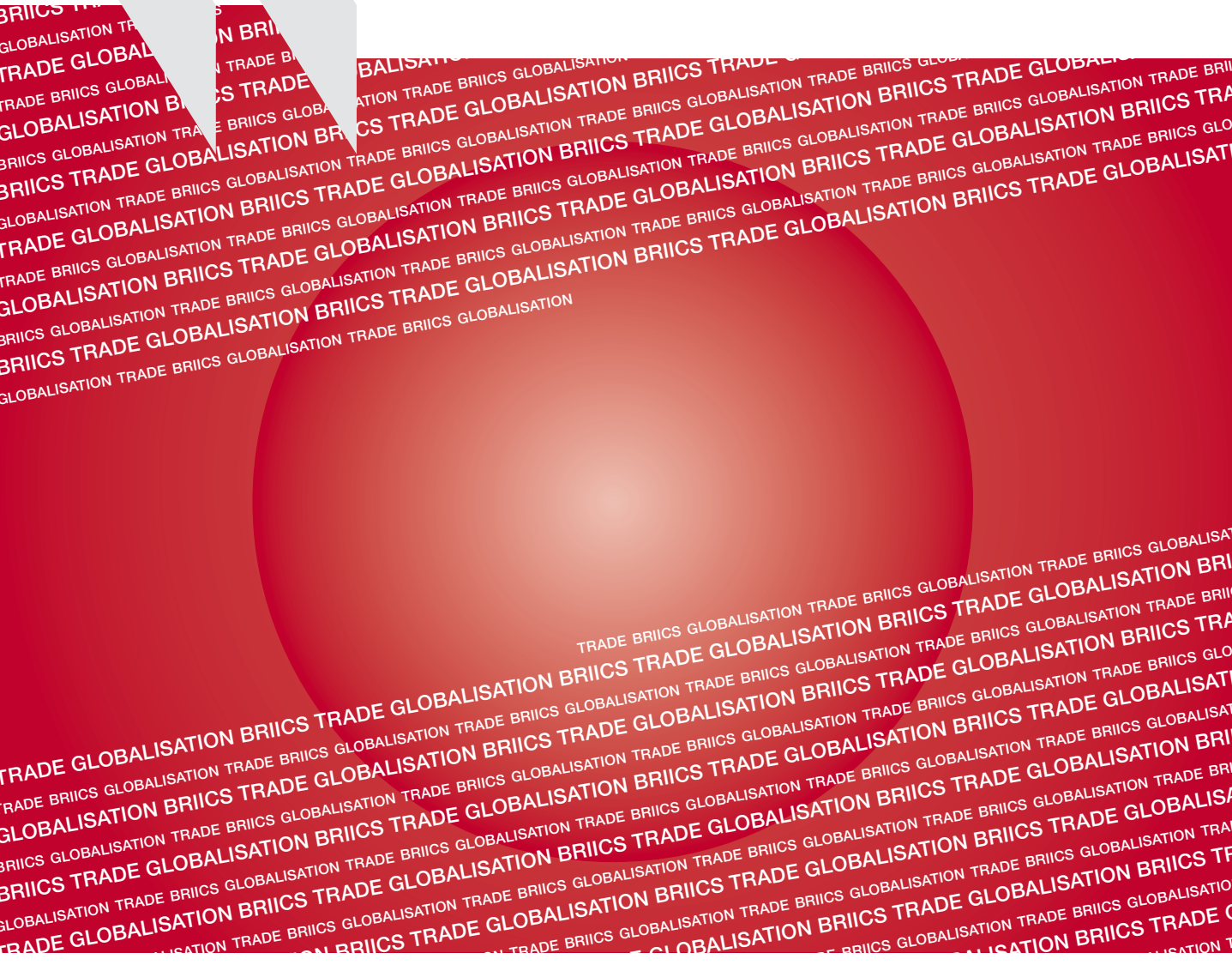
Globalisation and Emerging Economies

BRAZIL, RUSSIA, INDIA, INDONESIA, CHINA AND SOUTH AFRICA


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Foreword

This publication takes stock of the increasing integration of leading developing countries into the global trading system, the potential for further economic gains through market opening reform, and the associated policy implications. It seeks to shed light, in particular, on the situation of the so-called BRIICS countries (Brazil, Russia, India, Indonesia, China and South Africa) through thematic and individual country studies.

The publication was edited by Raed Safadi and Ralph Lattimore. Jacqueline Maher and Clarisse Legendre prepared, respectively, the written materials for the chapters and the data, tables and charts for the book. Laura Munro provided research assistance. Patrick Love and Deborah Pike at OECD/PAC delivered guidance and inputs throughout the book preparation, printing and distribution phases of the project. Author credits for the individual chapters are shown in the table of contents.

This publication represents a team effort and the contribution of each participant is gratefully acknowledged by the OECD Trade and Agriculture Directorate, which had the lead in managing the project under the overall supervision of Ken Ash, Deputy Director and Stefan Tangermann, Director.

Author Affiliations

Novella Bottini	OECD and Universita Cattaneo (LIVC), Castellanza, Italy.
Martina Garcia	OECD.
Malory Greene	OECD.
Kozo Kiyota	Yokohama National University and Gerald R. Ford School of Public Policy, University of Michigan, Ann Arbor.
Przemyslaw Kowalski	OECD.
Ralph Lattimore	OECD.
Molly Lesher	OECD.
Philip McCann	University of Waikato, Hamilton, New Zealand and Department of Economics, University of Reading, United Kingdom.
Margit Molnar	OECD.
Javier Reyes	Sam W. Walton College of Business, University of Arkansas, Fayetteville, Arkansas
Raed Safadi	OECD.
Razeen Sally	European Centre for International Political Economy, Brussels, Belgium.
Robert Stern	Gerald R. Ford School of Public policy, University of Michigan, Ann Arbor.
David Tarr	Consultant, Washington D.C.
Charles Tsai	OECD.

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Acronyms

AD	anti-dumping duties
ASEAN	Association of South-East Asian Nations
BRIC	Brazil, Russia, India and China
BRIICS	Brazil, Russia, India, Indonesia, China and South Africa
FDI	foreign direct investment
GATT	General Agreement on Tariffs and Trade
IFDI	inward foreign direct investment
MFN	most favoured nation
NGO	non-governmental organisation
NTB	non-tariff barrier
PTA	preferential trade agreement
ROO	rules of origin
TRIMs	Agreement on Trade Related Aspects of Investment Measures
TRIPs	Agreement on Trade Related Aspects of Intellectual Property Rights
TFP	total factor productivity
WTO	World Trade Organisation

Introduction

by

Raed Safadi and Ralph Lattimore

"What protection teaches us, is to do to ourselves in time of peace what enemies seek to do to us in time of war." Henry George

The developing world has taken off. The number of people living in high growth economies or in countries with per capita incomes at OECD levels has increased fourfold over the last 30 years – from 1 billion to 4 billion, Growth Commission (2008). It is a remarkable result both in terms of global economic growth and the distribution of income. The dispersion in economic activity means that some of the most important economies in the world are not members of the OECD, a further reason for the OECD to expand its membership and to help ensure that multilateral programmes continue to be embedded in the global economy.

For these reasons the OECD Trade and Agriculture Directorate has focused over the last two years on trade and development policies in Brazil, Russia, India, Indonesia, China and South Africa (BRIICS) – six of the largest non-OECD economies at the forefront of this dispersed global economic activity. This book is a summary of part of that work. The analytical work reported here is selective: it focuses on key elements of the trade performance of the BRIICS economies in relation to the rest of the world and it focuses on trade and behind-the-border policies impacting on that performance. Accordingly this work is intended to complement comprehensive economy and sectoral reviews of the BRIICS countries produced by other directorates of the OECD, the WTO, the World Bank and other organisations.

At the time this volume was being finalised the world economy was entering a period of financial market turmoil and a general economic downturn of a magnitude not experienced in the OECD area since the early 1980s (OECD, 2008). While the consequences of the crisis are not yet fully known, data and projections available at the beginning of 2009 suggest that the BRIICS countries were also affected, notably by more difficult international credit conditions and weaker demand from the OECD countries. Yet, the slowdown in growth among the BRIICS was generally from higher initial rates and, so far, of less severity than in the OECD area, perhaps as a result of the growing resilience of these emerging economies. Lessons about supervision of financial markets will undoubtedly have to be drawn by both the OECD and BRIICS countries in the aftermath of the crisis. Complementary measures across a range of economic policy areas may be required. This book focuses on structural policies, particularly trade and trade–related policies, and delivers insights with respect to one set of complementary policy approaches. That is, the analyses underscore the importance of resisting protectionist pressures (Chapter 4, for instance) and the benefits of promoting market openness. Taking a long-term perspective drawing on the experience of recent decades, the conclusions make clear that the BRIICS countries have the potential to exploit further market opening. Resisting protectionism and timely pursuit of appropriate policy reforms may result in these economies emerging from the present crisis with strengthened trade positions and more robust performance than would have otherwise been the case.

The book is targeted at an informed but non-specialised audience. Technical material is kept to a minimum and usually assigned to referenced sources. Where technical material is included, it is accompanied by more intuitive descriptions.

Section 1 of the book is comprised of a set of thematic chapters that compare and contrast trade performance and policy across the BRIICS and their place in the economic world. The world's traders are increasingly interdependent by virtue of the myriad of supply chains that now criss-cross the globe

building on organisational and other technical advances in recent decades. These developments have important implications for the way we think about global trade issues and the place of particular countries in that network. In important senses the global network must be viewed as a whole rather than as a list of competing countries.

Chapter 1 deals with the changing architecture of world merchandise trade as a way of opening discussion on the need to embed emerging economies in the multilateral family in a wide variety of ways that include but are not limited to WTO membership. Global trade relative to world GDP has grown from 39% in 1992 to 52% in 2005. At the same time, the share of world trade of OECD countries has gone down from 73% in 1992 to 64% in 2005.

Globalisation involves parallel and sometimes opposing flows of goods, FDI, technological spillovers and other factors. Accordingly, it doesn't just matter who one trades with but who one's trading partners trade with – club membership is important not just bilateral partners. For this reason, patterns of world trade are described in chapter 1 in terms of network indices rather than in more traditional trade share terms.

Chapter 2 provides more standard trade performance results for BRIICS and OECD countries obtained from a gravity-type model. In one sense the results are not surprising – the trade performance of the BRIICS has been very good relative to other countries. However, part of this newspaper headline view is because some BRIICS like China and India are extremely large and fast growing economies. When economic size of trading partners and a number of country and country-pair factors are taken into account, Indonesia, Russia and South Africa are much more prominent in terms of trade performance.

Regional income data and the new economic geography literature are timely reminders that there are economic and technological forces at play that tend to cause divergences in incomes within countries, on the one hand, and between countries that host `world cities' and countries that don't, on the other. These agglomeration forces are the focus of the analysis in Chapter 3 on the new economic geography and its implications for the BRIICS.

The next chapter switches attention more strongly towards the policy dimension. Chapter 4 comprises a broad overview of the current state of the political economy of trade and behind-the-border policy in the BRIICS economies within a global context. This discussion is couched in terms of global trade policy developments (and outlook) in the light of the changes in performance discussed in the first three chapters. The analysis focuses on the trade liberalisation challenges facing the world in the years ahead. Market based reforms offer very large continuing gains and for the BRIICS economies this boils down to microeconomic, structural and institutional reforms – as it does for OECD countries. There are very few examples of countries where reform has been institutionalised as a permanent feature of national policy making and with the onset of global economic crisis there is a threat of mounting protectionism.

Chapter 4 also raises serious concerns about the proliferation of preferential trade agreements (PTAs). This sentiment is reiterated by Bhagwati (2008) who voices concern that preferential trade agreements perhaps represent the most serious threat to trade multilateralism. The PTA theme is taken up in Chapter 5 where the gains and losses arising from PTAs involving the BRIICS are estimated. The authors conclude that each of the BRIICS economies would gain a great deal more from multilateral free trade than they would from extensive PTAs – even PTAs with the large trading blocs like the EU, US and Japan. Importantly, these results tend to exaggerate the benefits of PTAs because the empirical analysis does not account for likely losses from the 'Spaghetti Bowl' of non-standard rules and other agreements associated with the fragmented PTA negotiation practices. The relative gains from PTA arrangements are also compared to unilateral free trade gains for the BRIICS. Not surprisingly, unilateral trade policy

liberalisation turns out to be far more valuable for these economies than PTAs and almost as valuable as multilateral free trade.

Section 2 of the book consists of six country chapters – for each of the BRIICS economies. Again, these chapters are summaries of longer discussions that focused on key development and trade issues in each of these countries over the last two years. Naturally, the issues differ between countries and there has been no attempt to standardise the approaches. Brazil is one of only 13 countries (stars) that have produced more than 7% real economic growth for at least 25 years[1], Growth Commission (2008). Unfortunately, it was not possible to sustain this spectacular growth spurt after the 1970s but Brazil has mapped out a policy platform in recent years that it hopes will enable it to regain rapid growth status, and with greater equity. This potential and the key geopolitical role the nation plays in Latin America, puts it in the BRIICS grouping.

Russia is the largest economy in the world that is not a member of the WTO. It has been involved in protracted 'start-stop' negotiations that show little sign of concluding at the time of writing. In addition to discussion of trade policy developments and Russia's WTO accession this country chapter provides a 'theoretical' justification for the application of optimal tariff theory on Russian energy exports which contrasts with political economy arguments against the usefulness of the approach in Chapter 4.

India has finally broken free of the 'licence Raj' shackle and is growing very rapidly in a rather unconventional manner – based largely on services growth and services exports in the least regulated segments of the sector. Despite the impressive trade liberalization record over recent years, India is the least open economy amongst the BRIICS states in trade terms and that likely contributes to the weak performance of the manufacturing sector. India faces daunting poverty issues exacerbated by policies that may inhibit development of employment opportunities, including for low-skilled labour.

Indonesia is the second member of the BRIICS grouping that has been a star growth performer. Like Brazil it achieved this status some years ago and its recent progress was interrupted by changes in its political architecture and the Asian economic crisis in the late 1990s. Indonesia is well placed to benefit from the resumption in Asian growth but it has adjustments to make like many other countries as a result of continuous changes in the dynamics of globalisation. External competitiveness remains a constraint on Indonesian development, as it does for Brazil, India, Russia and South Africa.

China is the most recent country to average continuous 7% growth for a quarter century. It has used open trading as a key ingredient in its successful policy mix. China has been notable for its market oriented approach to enterprise selection. As a result, China achieved 'takeoff' by encouraging the expansion of labour-intensive operations – enterprises that were in accord with its relative factor endowments. In this, China avoided mistakes made in earlier decades by Brazil, India and Indonesia (and many other countries) associated with the promotion of capital intensive enterprises in labour abundant economies. As a result, the Chinese miracle appears to be much more sustainable in simultaneously addressing poverty and economic efficiency issues.

South Africa has reintegrated into the global trade network in the mid 1990s as spectacularly as China and India (Chapter 1). However, it is currently experiencing difficulties in building a fast economic growth base and parts of the trade sector have not been able to keep up with developments in world markets. It has resource allocation and equity issues to deal with and a set of trade and behind-the-border policies that are not serving the economy well, in either respect.

[1] The others being Botswana, China, Chinese Taipei, Hong Kong, China, Indonesia, Japan, Malaysia, Malta, Oman, Singapore, South Korea and Thailand.

So we have here in the BRIICS group, one ongoing star growth performer (China), two earlier star growth performers who would like to rejoin the ranks (Brazil and Indonesia) and three aspirants. Only one of those aspirants is currently on track to join the 'group of thirteen' within the next decade or two. All five non-star performers require significant further reforms before such growth performance can be expected.

The BRIICS and other emerging economies may find it very useful to increasingly exchange ideas on economic strategies with OECD countries in the future. There is certainly now a wealth of data and analysis to use as a starting point – as the chapters of this book attest.

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Chapter 1

The International Economic Order and Trade Architecture

by

Javier Reyes, Martina Garcia and Ralph Lattimore[1]

Global Trade Architecture

There is a growing perception that in the last 15 years, the world has lived through an accelerated globalisation process. From an economic perspective, this can be explained by the rapid increase in the degree of integration through international trade and investment flows. Indeed, global trade relative to world GDP has grown from 39% in 1992 to 52% in 2005. At the same time, the share of world trade of OECD countries has gone down from 73% in 1992 to 64% in 2005. This shift in the pattern of trade has led to much interest in analysing changes in the structure of the world trade network and in particular, how the role and influence of emerging markets on world trade has evolved. At the political level, India and Brazil have assumed prominent negotiating positions in the WTO Doha Development Agenda with other G20 leaders such as China and South Africa playing key roles in the negotiations. At the economic level, the shift has been radical and closely follows key policy developments; with China inserting itself into the trade core following its market opening in 1979, South Africa benefitting from the removal of trade sanctions in the early 1990s and India easing away from `the license raj' and increasingly mirroring China's rhythm of convergence with the most integrated countries in the world. At the same time, some studies have suggested that the current state of integration features a polarised international trade structure characterised by a core-periphery configuration, where countries in the periphery have been marginalised[2]. In contrast to this argument, other studies argue that current trade dynamics are leading to important changes in the structure of global trade and that some specific emerging economies are at the center of these dynamic realignments of the world trade structure.[3]

The BRIICS economies (Brazil, Russia, India, Indonesia, China and South Africa) represent an important set of emerging economies, in part, because they each have significant trade associations with OECD economies. However, world trade patterns involve all other trading economies (non-OECD and non-BRIICS) in important ways. For example, the explosive export growth in final electronic goods from China is not as straight forward as it seems. The final assembly of electronics components (intermediate goods) happens in China; but various manufacturing processes may take place in the US, the EU, Japan, Korea, Brazil, India, Malaysia, Indonesia, Thailand and possibly other countries. In short, the trading patterns are so broad and interconnected that a global view is required to examine trade and business policy.

The objective of this study is to assess the changes in the structure of the world trade network over the last ten years, and in particular, the evolving role of the BRIICS and other emerging economies in world trade. The analysis is focused on the evolution of the degree of integration of the BRIICS countries and includes a comparison of the trade patterns observed for these economies with respect to all others.

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2 See Otaviano *et al.* (2002), Garlaschelli and Loffredo (2004, 2005), Fagiolo, Schiavo, and Reyes (2007a).

3 See Athukorala and Yamashita (2005), De Gregorio and Lee (2004), and Fagiolo, Schiavo, and Reyes (2007a).

The analysis uses complex network measures for the study of disaggregated trade flows. Specifically, the trade flows are disaggregated into consumer goods, intermediate goods, raw materials, and capital goods. The ultimate objective is to provide some insights into the role that these countries, and other economies, have on the current dynamics of international merchandise trade flows.

The Motivation for using Complex Network Analysis with International Trade Data

Despite the growing interest in the evolution of world trade patterns, global analyses have been limited in their ability to encompass a number of phenomena that characterise modern trade patterns. Globalisation processes since the Second World War have increasingly integrated flows in goods, FDI and technology transfers in complex ways, OECD (2008). Global value chains have been sliced and diced in the manner described earlier by Vernon (1966) as product cycles. Two patterns of commercial interchange that have developed involve triangular trade as recently analysed by Athukorala (2007) using detailed statistical analysis and long supply chains tracing processes of product design, production planning, component manufacture and final assembly, OECD (2008).

These processes and interactions that are often administered by multi-national enterprises are difficult to measure as a whole structure, as an entity or as a pattern. At least, such patterns of trade are difficult to quantify simply; as a single or small number of trade indices. Trade performance is traditionally modeled using gravity models, revealed comparative advantage measures and constant market share analysis[4]. Typically, these approaches examine the trade performance of a country (at a time) in relation to one or all other countries. They do not usually examine all the trade interactions between all countries simultaneously. Recent advances in the study of complex networks provide indicators that can account for the presence, the structure, and the magnitude of the trade flows and therefore can be used to provide simply indicators that characterise aspects of the trade system, taken as a whole. For example, a centrality index (that will be explained shortly) provides a simple measure of the importance of trade between country *a* and country *b* taking into account the importance of all countries that country b trades with. This index is, accordingly, beginning to encapsulate information regarding whole supply chains and/or technology sharing clubs that are, a priori, thought to be important drivers of world trade.

Sociologists and political scientists were among the first to undertake studies of trade flows interactions among countries using network analysis. Snyder and Kick (1979) used international trade data and network analysis to classify (118) countries into a core-periphery structure. Other studies that explored the core-periphery structure using aggregated trade data include Nemeth and Smith (1985) and Smith and White (1992). More recently, in the area of econophysics, a number of papers have focused on the descriptive statistics of the structure and the evolution of the world trade network. Studies in this literature include Serrano and Boguña (2003), Garlaschelli and Loffredo (2004, 2005) and Fagiolo, Schiavo and Reyes (2007a). Their findings show that the world trade network is quite symmetric from an imports/exports perspective and, therefore, it can be analyzed using total trade flows, exports plus imports, for the weights of the links between the countries in the network[5]. They have confirmed the presence of a core-periphery structure. They suggest the emergence of a "rich club phenomenon" where countries that have higher trade intensities trade a lot among themselves and, surprisingly, they find that the overall network structure is fairly stationary through time. Finally, Kali and Reyes (2006, 2007) have used network analysis to derive country-specific network indicators that can explain macroeconomic dynamics like economic growth and financial contagion.

4 For a review of gravity model approaches see Harrigan (2002).

5 Fagiolo, Reyes and Schiavo (2007a) provide statistical evidence for the symmetry of the network and justify the use of total trade as the weights for the links between countries.

Fagiolo, Schiavo and Reyes (2007a) report that the core of the trade network, based on aggregated trade flows, has changed over the past 20 years and while it included only developed countries until the mid nineties, countries like China and South Korea have placed themselves within the core of the network over the late nineties and early in the first decade of the new millennium while other more developed like Australia, Belgium and the Netherlands have tended to move out to the periphery, Table 1.1.

Table 1.1. Countries at the core of the world trade network (aggregated trade flows)

1980	1985	1990	1995	2000	2005
United States	United States	United States	United States	United States	United States
Japan	Japan	France	Germany	Germany	China
France	France	Germany	France	France	Germany
United Kingdom	Germany*	Japan	Japan	Japan	France
Germany*	United Kingdom	United Kingdom	United Kingdom	United Kingdom	Japan
Italy	Italy	Italy	Italy	Italy	United Kingdom
Netherlands	Netherlands	Netherlands	Netherlands	China	Italy
Australia	Singapore	Belgium-Luxembourg	Singapore	Netherlands	Korea
Belgium-Luxembourg	Australia	Australia	China	Australia	Singapore

Note: * Up to 1989 data refers to West Germany only.
Source: Fagiolo, Schiavo and Reyes (2007a).

The appeal of network analysis for the study of international economic integration (global trade architecture), then, is that it allows for a whole-structure appreciation of the web of trade interactions as well as the exploration of trade flows as connections, paths, and circuits. This is the objective of the current study.

Data, Methodology and Interpretation

This study uses bilateral trade data for 217 countries[6] to build the international trade network for 1995, 2000 and 2005. This Harmonised System data (HS, Comtrade) is used to build a matrix representation of the trade network where each entry reports the total trade flows between each possible pair of countries. In this network analysis, countries are interpreted as nodes, and total trade flows are the links between them.

The analysis is based on three key network concepts employed for exploring the structure of the world market and patterns of integration: (i) *connectivity* of the world trade network to show the evolution in the patterns of world trade; (ii) *clustering* to gauge the importance of trading hubs, and the relationship between the core and the periphery, and; (iii) *centrality* as an indicator of the overall level of influence of a given country. The Annex has the methodological details for the computation of the different network indicators - here we focus attention on their intuitive interpretation.

Connectivity

Connectivity is measured with the help of two different indicators: (i) node degree, *i.e.* the number of partners of a given country, and (ii) node strength, *i.e.* the trade intensities of these interactions.

6 After excluding countries with zero trade entries for all product classes, unspecified countries and the like.

Table 1.2. Connectivity and number of partners

	Node Degree (Percent Rank Analysis)							
	Raw Materials		Intermediate Goods		Consumer Goods		Capital Goods	
	1995	2005	1995	2005	1995	2005	1995	2005
Brazil	90	95	90	92	88	89	89	89
China - Hong Kong	96	98	96	96	96	94	95	96
India	94	97	96	99	93	98	90	96
Indonesia	84	93	83	95	81	96	83	88
Russian Federation	75	84	70	84	68	79	72	83
South Africa	92	96	91	92	89	92	89	92
Czech Republic	86	83	92	86	89	86	89	87
Mexico	82	82	83	81	86	84	84	84
Philippines	61	86	65	82	59	83	63	82
Thailand	94	96	95	96	96	96	90	92
Bangladesh	76	56	78	52	79	40	64	49
Uzbekistan	43	36	36	34	33	32	42	36

Note: Darkest areas indicate values above 95 corresponding to countries at the core of the network, areas in white indicate countries outside of the periphery scoring less than 85 and the mid-tones represent countries in the inner-periphery or periphery of the world trade network.

Source: Authors' calculations based on UN ComTrade database.

Node degree is a measure of the number of trading partners a country has regardless of the size of the trade flows. If a country trades with 100 other countries, this is its node degree. The node degree index for the BRIICS and comparator countries are given in Table 1.2. The indices have been expressed in percentile form showing a country's relative position. Thus, if a country is ranked above 95, it means that its indicator score is among the top 5% of the sample. It is important, when reading these tables, to keep in mind that the indices are not affected by the growth in world trade, they are affected by growth in relative trade flows among countries.

The second indicator is *node strength*. This indicator measures not only the number of trading partners that a country has but also the value of trade that passes between them (exports and imports). The node strength indicator weights the links (existence of a trade flow) that a country has by the value of this trade flow. That means that if Thailand has a similar number of trade partners as Malaysia but the value of its bilateral trade tends to be much higher, the two countries would have similar node degree indexes, but Thailand would have a higher *node strength* index.

Clustering

The third measure proposed is an index of *clustering coefficients*. Clustering is a common concept in the study of social networks. It is often referred as "cliquishness". For example, friendship networks typically exhibit high levels of clustering; friends of friends tend to also establish friendship links. In this study, the clustering coefficient measures whether a country is more likely to trade with their better connected partners' partners than with other un-related countries.

The clustering coefficient used in this paper is weighted by the value of each bilateral trade flow considered. The index takes into account the strength of the links between nodes i and j but adds the strength of the links between nodes i and h and j and h to the analysis. In other words, it considers the complete triangles within the network and the intensities of trade flows that are involved. Therefore, weighted clustering allows for the assessment of the degree to which a country tends to build more (number and value) trade relationships with countries that themselves trade with each other.

Centrality

The last index included in the analysis is the *centrality* index, a measure of the relevance of a particular country to the overall trade network.

The two most common definitions of centrality in network analyses refer to (i) a local notion: a node is central if it has a large number of connections, or (ii) a global notion: a node is central if it has a position of strategic importance in the overall structure of the network. Local centrality is measured with *node degrees* and global centrality with *node strengths*.

This analysis assesses *global centrality* by estimating a Random Walk Betweenness Centrality index (RWBC). The RWBC measures the likelihood that country *i* is involved in a randomly selected trade chain in the network. Newman (2005) offers a more intuitive explanation of this centrality measure. Let us assume that a node sends a message to a target node. The message is transmitted initially to a neighboring node and then the message follows links from that node, chosen randomly, and continues until it reaches the target node. The probabilities assigned to outgoing links are determined by the intensity of the relationship (value of trade), so that links representing higher trade value will be chosen with higher probability. A high RWBC index for country *i* means that the likelihood of country *i* being a part of any given trade chain present within the network is high and therefore it has access to a higher proportion of shorter links to send a 'message' to any other potential country in the world trade network. Furthermore, a high proportion of messages sent by other countries to countries other than *i* will go through *i*. The RWBC thus reflects the trade connectivity (value and number of bilateral trade relationships) of a country and its partners, and its partners' partners, encompassing the whole trade chain. In other words, RWBC captures the influence of country *i* across the whole lengths of all trade chains.

This RWBC index is used to categorise countries according to their relative importance. Core countries are defined as the 5% most integrated economies (at or above the 95th percentile). Countries in the inner periphery are defined as the 10% most integrated (between the 90th and 95th percentile). Countries in the periphery are the 15% most integrated (between the 85th and 90th percentile) and countries below the 85th percentile are said to be in or on the *outsid*e. Countries on the *outside* are considered to have very little influence on the world trade network in aggregate terms.

Disaggregating the world trade network

The main innovation in this study lies in the breakdown of world trade into four specific product types: (i) raw materials, (ii) intermediate goods, (iii) consumer goods, and (iv) capital goods. These product groupings have been chosen to differentiate the relative importance of each of the BRIICs in world markets taking into account their revealed comparative advantages. Brazil, Russia, Indonesia and South Africa have abundant raw materials while China tends to specialise in assembling and exporting final consumer and capital goods from imported parts and components, Athukorala (2007) and OECD (2008). Moreover, all six BRIICS countries import significant quantities of intermediate goods (components) to produce capital goods and consumer goods for export, OECD (2008).

Previous trade network analysis (Fagiolo, Schiavo and Reyes, 2007a) has focused on aggregated trade flows for all commodities and have reported that the trade network presents a core-periphery structure where the "Rich Club" phenomena is present. In other words, countries with high trade values tend to trade substantially more among themselves. The analysis of the four different product types in this study allows for the comparison of the structure of the trade networks and for the analysis of the position of each country within each of the four networks. Additionally, similarities and or differences between the aggregated trade flows network and the networks of the four product types can be explored.

The following sections present the results for the BRIICS countries and a set of other economies as comparators. The comparators include a small group of medium trading powers, including two OECD countries and other emerging economies, and two much smaller traders, Bangladesh, a least-developed country, and Uzbekistan, a transition economy. The results for all OECD countries and selected other countries are reported in the tables in the technical appendix for reference purposes. The focus of the paper is the description of the specific patterns observed in the world trade network and their evolution for the years 1995, 2000, and 2005.

Network Analysis

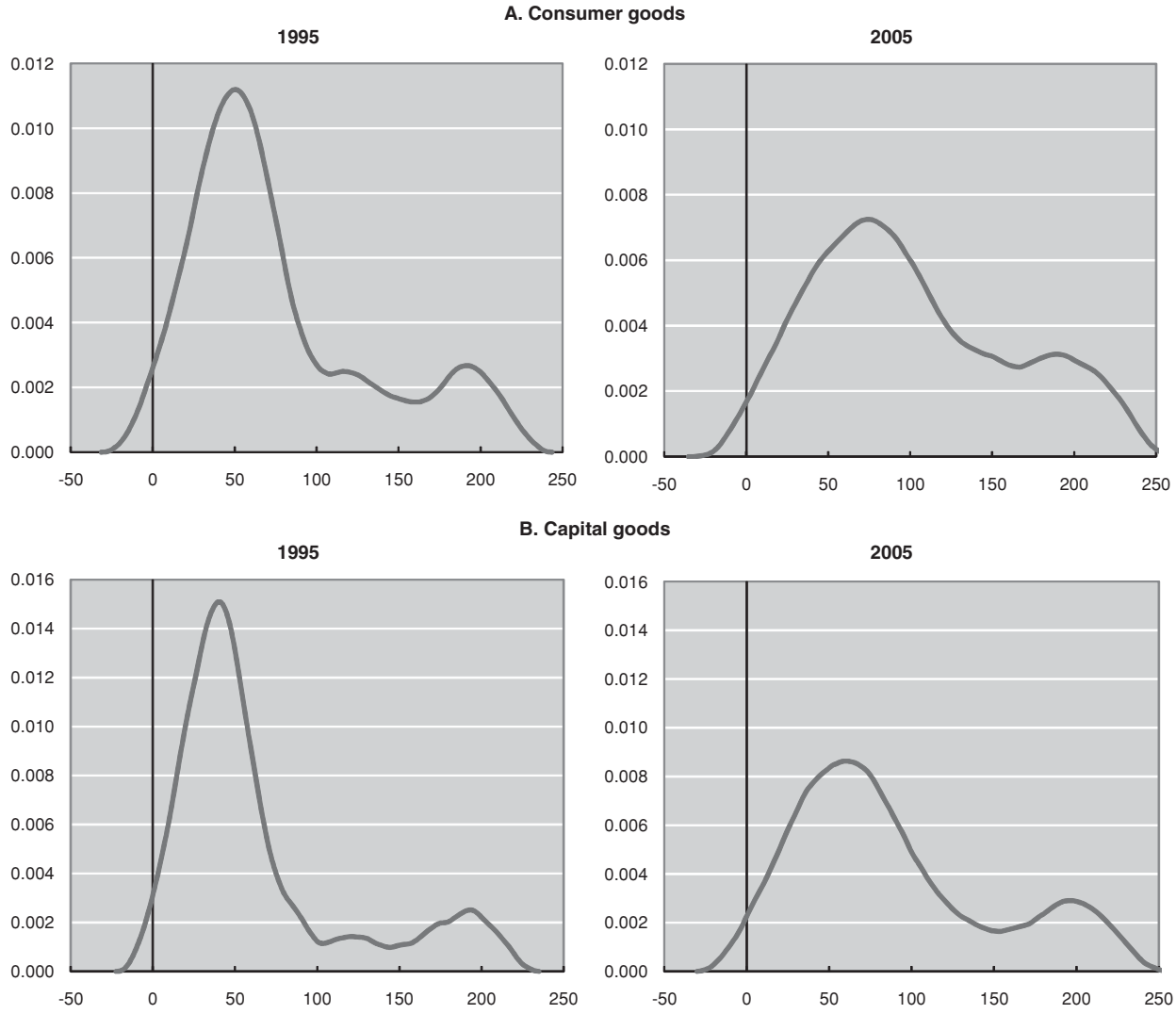
This section explores the degree of connectivity of the BRIICS by analysing their relative performance in terms of the number of trading partners and the value of their bilateral trade links in each of the four main markets given above using *node degree* and *node strength* indicators.

Partners Galore: Node Degree Analysis

Fagiolo, Schiavo and Reyes (2007a) provide a convenient basing point for the analysis conducted here. They reported that the distribution of *node degrees* in the world trade network (based on aggregate merchandise trade flows) reflects a bimodal distribution. The first mode for *node degree* lies between 50 and a 100 trading partners and the second mode is situated around 150 trading partners (out of a sample of 159 countries). The second mode results from the fact that a significant number of countries trade with almost every country in the world. However, even though the bimodal structure has been persistent over the years, there have been realignments of countries within the distribution. As a result the bimodality has been found to be less pronounced in 2000 than it was 20 years earlier. In other words, there has been a substantial increase recently in the number of countries that trade with almost every other country[7]. Moreover, they found that the standard deviation of the distribution of node degrees has remained stable, suggesting that integration has increased rather evenly. That is, less well connected countries have been increasing the number of their trade partners as much as better connected countries. This has caused the distribution curve to flatten because it is impossible for the best connected countries to significantly increase the number of their trading partners (they already were trading with virtually all other countries at the start of the period analysed).

7 Fagiolo, Schiavo and Reyes (2007a) used trade flows for the 1981-2000 period for their analysis.

Figure 1.1. Node Degree Distribution



Source: Authors' calculations based on UN COMTRADE database.

Similar patterns and changes are found in this study when the trade flows are disaggregated in to the four product types. However, the bimodality is most pronounced in the cases of consumer and capital goods, Figure 1.1. For these two cases, the first mode is between 40 and 60 trading partners and the second one is around 190 trading partners (out of 217). Figure 1.1 presents these distributions for consumer and capital goods for 1995 and 2005. For both product groups, the distribution has flattened over the last ten years. That shows that there is a smaller proportion of countries in the first mode and a larger proportion of countries beyond (to the right of) the first mode. This indicates that a higher proportion of countries are now global players. In other words, globalisation is not narrowing the field of trading partners or concentrating final goods exports (both capital goods and consumer goods) in a smaller number of highly competitive product assemblers. Moreover, as with aggregated trade flows, the standard deviations of the *node degree* distributions have remained stable and there are no signs of polarisation. All countries have tended to increase the number of their trading partners, and a rising number of countries are trading with almost everybody else.

Keeping in mind the characteristics of the *node degree* distribution for the trade networks for the four product types considered, it is now possible to discuss the results for specific countries and, more specifically, it is possible to identify whether or not the changes within the distribution can be traced back to the BRIICS group of countries (*i.e.* Brazil, China, India, Indonesia, Russia, and South Africa). Table 1.2 presents the results for the BRIICS countries and those for the comparator group of countries using percent rank analysis.[8] Either the US or Germany (not included in the table) have the maximum value of 100 for all products and years. Details on a larger group of countries are available in Annex Table 1A.1.

These results, regarding the bimodality of the node degree distributions, support the idea of a core-periphery structure for the trade network. The reason for this is that there are a set of countries that resemble a star-like node (*i.e.* a node that is connected to all the other nodes in the network), and these nodes serve as hubs to which other nodes are connected. The core-periphery structure will become more apparent when we discuss the measure of centrality introduced above (*i.e.* RWBC), but a proxy measure of centrality, that only focuses on first degree connectivity, is in fact node degree. Therefore we use the same classification, core (above 95th percentile), inner-periphery (between 90th and 95th percentile), periphery (between 85th and 90th percentile), and outside (below 85th percentile), that is used for the interpretation of the results regarding RWBC.

Within this core-periphery structure analysis it can be seen from the results presented in Table 1.2 that the status of the BRIICS countries within the trade networks have evolved slightly differently for each of the product types. A constant feature over time and across product types is the dominant presence of China. China can be considered a core country in all of the sub- networks given that it has a percent rank above 95 in the majority of cases. India is a closely behind. By 2005, India is ranked within the top 95th percentile in all product types. Its performance in the global capital goods market is particularly remarkable, with its ranking improving by six percentile points in 10 years.

Two BRIICS cases that deserve special attention on the *node degree* measure are Indonesia and South Africa. These two countries have shown an impressive upward trend in all the product types from 1995 to 2005. Indonesia was ranked below the 85th percentile in all cases in 1995, and now is ranked as a *core* country in consumer goods exports and intermediate goods, and ranked in the 92nd percentile *(inner-periphery)* in raw materials. The only case where Indonesia is still below the 90th percentile is in capital goods and even in this case there is substantial increase from the position it had in 1995. South Africa is now ranked around the 92nd percentile across all product types, except in raw materials where it can be considered a core country.

Brazil is the country for which we see the least improvement. Brazil can now be considered a core country for raw materials and this is an improvement from the results reported in 1995, when the country was ranked in the 90th percentile. However, for the other three products, Brazil's position within the network has remained practically constant around the 90th percentile. In other words, it has not increased the number of countries with whom it trades as much as other BRIICS countries during the last decade. This indicates a lack of incentive (or a potential failure) to establish new partner relationships and conquer new markets outside raw materials that may be related to the recent increasing demands for resources like iron ore and agricultural products where Brazil specialises.

Finally, Russia does show an impressive increase within the *node degree* distribution of the four trade networks. The USSR was very close to being a core country prior to 1989 (see Annex Table 1A.4).

8 Percent Rank Analysis uses the distribution of results for the overall network and assigns a rank for each country in the dataset as a proportion of the maximum value (which is always a G8 country and usually the US).

As a separate country, Russia was below the 75th percentile in all product types in 1995, but in 2005 it is ranked around the 85th percentile across all product types. Even though these results place Russia outside the *periphery* – the only BRIICS country in that position – it is quickly moving towards it in all categories except consumer goods.

It is worth remembering that these country-specific values indicate relative performance, and do not reflect the overall increase in the number of partners discussed at the beginning of the section. The performance of the BRIICS means that other countries have lost positions in the ranking. Results for other countries are shown in Annex Table 1A.1. For example, Chile, the Czech Republic, Greece, and Singapore show a consistent downward trend across all the product types. Countries like Korea, Mexico, Malaysia, Portugal, and Thailand have slightly decreased or maintained their rankings; though South Korea and Thailand had high ratings to begin with. Finally, the Philippines and Chinese Taipei show an upward trend that mirrors that of the BRIICS countries.

The value of bilateral trade: Node Strength

Node strength measures the number and value (exports and imports) of trading relationships held by a given country. The results obtained for aggregate trade flows in previous studies hold true for the four different (product type) networks considered here.

- The distribution curve of *node strength* is left-skewed indicating that the overall structure of the networks is characterised by a majority of countries holding weak (low value) trade relationships and, in contrast to the degree distribution, there is no bimodality observed for any of the product types.
- The correlation between *node strength* and *node degree* is positive across product types and increases substantially over time, from levels around 0.6 in 1995 to 0.8 in 2005. The positive correlation between *node degree* and *node strength* suggests that on average, countries with many trading partners tend to have also more intense trade relationships in value terms. This has become more evident in recent years, and it holds for all the product types. It is likely that this evolution is driven by countries which were already trading with almost all partners in 1995 and which have continued to increase their trade and therefore the average value of their bilateral relationships.

Based on results reported in previous studies, it is not surprising that the weighted analysis (node strength) leads to different conclusions from those reported for the unweighted (*node degree*) analysis[9]. The only similarity corresponds to the results observed for China, reported in Table 1.3. The predominant connectivity of China reported for the node degree distribution is mirrored within the node strength distribution. China is among the best connected countries because of the very high number of trading partners and the very high value of its trade relationships (even where it's better ranked than in terms of partners).

9 Fagiolo, Schiavo and Reyes (2007b).

Table 1.3. Connectivity and the value of trade flows

	Node Strength (Percent Rank Analysis)							
	Raw Materials		Intermediate Goods		Consumer Goods		Capital Goods	
	1995	2005	1995	2005	1995	2005	1995	2005
Brazil	92	92	93	92	90	86	90	90
China - Hong Kong	96	99	97	99	98	99	96	99
India	90	92	89	93	86	90	87	86
Indonesia	93	90	90	90	89	87	89	86
Russian Federation	81	99	77	94	89	94	84	88
South Africa	89	86	86	86	82	83	86	85
Czech Republic	79	80	85	87	85	88	87	90
Mexico	94	93	91	93	94	95	94	95
Philippines	77	75	81	80	78	81	88	89
Thailand	92	88	91	90	92	88	92	93
Bangladesh	72	59	76	73	76	54	67	65
Uzbekistan	44	40	37	51	46	40	59	58

Note: Darkest areas indicate values above 95 corresponding to countries at the core of the network, areas in white indicate countries outside of the periphery scoring less than 85 and the mid-tones represent countries in the inner-periphery or periphery of the world trade network.

Source: Authors' calculations based on UN ComTrade database.

When comparing results for *node degree* (Table 1.2) and *node strength* (Table 1.3), it is noticeable that the latter shows a much more homogeneous picture among BRIICS and other emerging markets, with most of them situated in the periphery of the network across the whole 1995-2005 period. Indeed, positions have been rather stable, particularly when compared with the node degree analysis, and only the Russian Federation shows significant improvement in the ranking, particularly in raw materials. The stellar performance of Russia in raw materials might be due to the development of gas and oil pipelines since the collapse of the Soviet Union. This might explain why despite a low node degree ranking (84; indicating a relatively low number of trade partners) the value of the trade relationship is growing so fast that Russia is among the better connected countries in raw materials. Mexico also appears as much better connected when trade values are taken into account, most likely a reflection of the importance of its bilateral relationship with the US. However, contrary to expectations, there are no major differences between raw materials, intermediate and consumer goods. This might be a sign that the categorisation of the goods is insufficient to reflect the assembly platform role of the maquiladoras.

Brazil's scores are remarkably similar on both indicators. India and South-Africa, on the other hand, appear to be less well connected when trade values are taken into account. More remarkably, there has been little improvement in their scores. This shows that the two countries have been more successful in diversifying their trade partners that in intensifying their existing trade relationships. Their behaviour is consistent with previous network analysis showing that node strength has remained quite stable during 1981-2000, suggesting that the wave of globalisation has resulted in an increase in the number of connections but has not yet led to a sizeable effect on their magnitude across the network.

Clustering: the diminishing role of rich clubs

Clustering indexes are used in network analysis to examine the second-degree characteristics of the observed network. The weighted *clustering* index used here is based on the *node strength* of the country considered and the node strengths of the partners that are also trading with each other. In other words, the index reflects the combined node strength of all completed triangles within the network that include a given country. Therefore, weighted *clustering* allows for the assessment of the degree to which a country tends to build more (number and intensity wise) relationships with countries that themselves trade with

each other. The *clustering* coefficient of each country then depends on the number of trade triangles it is involved with and the value of merchandise trade involved.

In order to interpret the economic meaning of these *clustering* indexes, it is crucial to examine their correlation with *node strength* indicators. A positive correlation means that countries that trade most intensively also tend to trade with their partners' partners (revealing the existence of the rich club phenomena) where most of the trade takes place among strongly inter-connected members.

Previous studies that have looked at the correlation between weighted clustering and node strength using aggregated trade flows, have reported positive correlations with the US, Japan and Germany holding the highest rankings for different products and years.

In this study, the correlation coefficients between weighted *clustering* and *node strength* for the four product types considered here are all positive but they show a downward trend through time. All correlation coefficients, across product types, were around 0.90 for the 1995 year, while all of them decreased to levels around 0.40 for the 2005 year.

The homogeneity of results among the four product types is remarkable. For example, it is surprising that the correlation is not noticeably higher for intermediate goods and consumer goods, often characterised by high levels of intra-industry trade, than for raw materials and capital goods. This might be because the categories used are too large to reveal different dynamics, or because trade patterns in the four sub-groups are less diverse than hypothesised earlier in this paper.

However, even more remarkable is the radical reduction in the correlation coefficient which has halved in ten years. It implies that while the rich club phenomenon is still present, it has considerably weakened. This is to be expected in a strong globalising environment, particularly given that most countries have increased the number of trading partners faster than they have increased the value of their trading relationships. Nonetheless, it means that club membership has been diluted and thus there have been changes in the interpretation of country-specific rankings. In 1995, belonging to the club – holding a high ranking – was a sure sign of integration and influence into world markets. In 2005, the pattern of trade is more multilateral, the number of actors has increased. The significance of the *clustering* index has lessened.

Interestingly, as shown in Table 1.4, the rankings of the BRIICS have barely increased at all. Since 1995, China has been at the top of the distribution and is continuously ranked above the 95th percentile, which means that it tends to appear in many trade triangles (complete triples) for all four products. The only country for which there is a substantial increase in the clustering rankings is Russia, although these increases have only taken place for raw materials and intermediate goods. Russia is respectively ranked in the 100th and 92nd percentiles for these products. Slight increases in clustering are indicated for India in the intermediate goods classification, where it is now ranked at the 91st percentile, and in capital goods. South Africa slightly increases its ranking in consumer goods, where it is now ranked just above the 80th percentile, but its ranking in raw materials has gone down and this is where it has a stronger comparative advantage. Interestingly, Indonesia is moving down in the clustering distribution across all product types. It used to be ranked around the 92nd 95th percentiles and now is below the 90th percentile in the intermediate, consumer and capital goods classifications, and just above the 90th percentile for raw materials. Finally, Brazil is characterised by a constant position across product types (close to the 90th percentile) and across time, except for consumer goods where its position has decreased. In 2005 it is ranked 83rd percentile, down from the 87th percentile in 1995.

Table 1.4. Clustering coefficients

	Node Clustering (Percent Rank Analysis)							
	Raw Materials		Intermediate Goods		Consumer Goods		Capital Goods	
	1995	2005	1995	2005	1995	2005	1995	2005
Brazil	91	91	91	92	87	84	88	89
China - Hong Kong	98	98	97	99	99	97	97	100
India	88	90	88	91	82	85	83	85
Indonesia	97	91	94	88	91	88	91	87
Russian Federation	83	100	79	92	92	93	89	88
South Africa	87	81	83	85	77	80	84	84
Czech Republic	73	80	84	88	83	89	80	89
Mexico	95	97	92	94	93	95	95	96
Philippines	84	75	88	82	85	81	94	93
Thailand	90	85	90	90	90	87	93	92
Bangladesh	74	59	74	77	74	56	65	70
Uzbekistan	40	39	39	52	47	40	64	60

Note: Darkest areas indicate values above 95 corresponding to countries at the core of the network, areas in white indicate countries outside of the periphery scoring less than 85 and the mid-tones represent countries in the inner-periphery or periphery of the world trade network.

Source: Authors' calculations based on UN ComTrade database.

Among the comparator countries, the performance of Mexico is particularly noticeable. Mexico which was already integrated into the rich club in 1995 has continued to increase its *clustering* coefficient among the four product types. The Czech Republic, together with Hungary and Poland (see Annex Table 1A.3) has also increased its ranking across the board, most probably due to the accession process to the EU which it joined in 2004. Other countries to have significantly improved their ranking are energy exporters such as Kazakhstan, the Russian Federation and Norway. However, Thailand, the Philippines, and Bangladesh, as well as Chinese Taipei, Sri Lanka, Malaysia and even Japan, have all experienced declines in their *clustering* ranking, showing that trade flows in south and south-east Asia have multilateralised in the last decade.

Centrality within the Network: who matters in world trade?

The final step in this analysis assesses the *centrality* of the BRIICS within the world trade network. As indicated in Section 2, this study uses an adaptation of the concept of Betweenness Centrality to integrate the value of trade relationships. The Random Walk Betweenness Centrality index (RWBC) was first used for the study of trade flows by Fagiolo, Reyes and Schiavo (2007b). A high RWBC index for country *i* means that the likelihood of country *i* being a part of any given trade chain present within the network is high and therefore it has access to a higher proportion of shorter links to send a 'message' to any other potential country in the world trade network. Furthermore, a high proportion of messages sent by other countries to countries other than *i* will go through *i*. The RWBC thus reflects the trade connectivity (value and number of bilateral trade relationships) of a country and its partners, and its partners' partners, encompassing the whole trade chain. Therefore this centrality measure considers the influence of a country on the whole length of each trade chain in the global network.

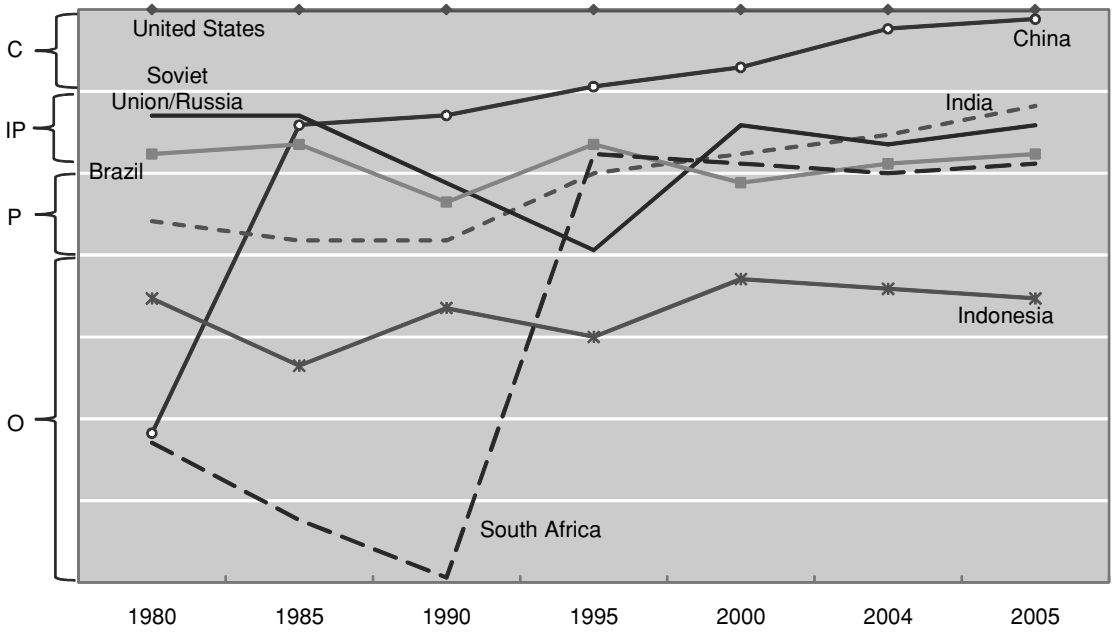
Previous studies (Fagiolo, Schiavo and Reyes, 2007a) report that the distribution of *centrality* indices for the trade network, based on aggregated trade flows across commodities, are left skewed, confirming the core-periphery structure of the network. That is, there are a few countries with high *centrality* indices and many countries with a low *centrality* index. The countries that have been identified as the *core* countries in past studies (based on total merchandise trade) are the ones listed in Table 1.1. It can be seen in the table that the *centrality* core of the world trade network is extremely stable over time.

By the year 2000, China and South Korea were part of this core, while countries like the Netherlands and Australia have fallen out.

The *centrality* indices for the four product type (raw materials, intermediate goods, consumer goods, and capital goods) show similar characteristics to previous studies examining total merchandise trade. (Details are available in Annex Table 1A.5 in the appendix). For all the product types, the distribution of the *centrality* indices is skewed to the left (core-periphery). Furthermore, the correlation of *centrality* with *node degree* and *node strength* is strongly positive but there are interesting changes over time. The correlation between *centrality* and *node strength* in 1995 was around 0.90 for all product types while in 2005 the correlation is closer to 0.50. On the other hand, the correlation between *node centrality* and *node degree* in 1995 was around 0.60 and in 2005 it is still at a similar level. These results suggest that network *centrality* in 1995 was mainly determined by the intensities of the trade relationships and that by 2005 this is no longer the case. Now, the number of trading partners is also important in the determination of a country's *centrality*. This might be interpreted as a sign that globalisation has promoted multilateral integration at the expense of deepening trade relationships. This could be evidence of past successes of the GATT/WTO system. It is particular relevance that this trend is present in the four products considered here, including in raw materials and is taking place at a time of proliferation of regional and bilateral trade agreements.

However, country-specific *centrality* indexes are most relevant when taking all trade into account. Consequently, the rest of this section is based on aggregated trade flows. The *centrality* index can be interpreted as an indicator of a country's level of influence on the world trade network. It takes into account the aggregated value of trade (as indicated by world trade shares), the number of trading partners and the role of these partners in the network. The index quantifies the intuitive insight that the impact on the network of a country with a trade value of 100 and four partners that mostly trade among themselves is much less than the impact of a country with the same total trade value that trades with 20 countries that each in turn trade with another 20.

Figure 1.2. Striding towards the core of the network



Source: Authors' calculations based on UN ComTrade database.

BRIICS *centrality* indices are shown for aggregate trade flows in Figure 1.2 and Table 1.5. It is worth highlighting that, with the exception of Indonesia, all the BRIICS countries were situated in the *inner-periphery* or inside the *core* of the network by 2005. Furthermore, the *centrality* index has been steadily increasing for most BRIICS countries. Countries in Table 1.5 are listed according their 2005 ranking. The last column indicates their ranking (among the same countries) according to their share of world trade in 2005. Some of the differences are striking. Among the countries listed, India has the 7th highest trade share but the 4th highest *centrality* index. All the BRIICS, with the exception of Indonesia, have higher scores of *centrality* than their share of world trade warrants. That might partly explain their increasing role in multilateral negotiations at the expense of countries with higher shares of world trade.

The *centrality* indices are surprisingly sensitive to major policy changes, including trade policy changes. For example, Figure 1.2 shows with startling clarity the impact of the international sanctions against the South African apartheid regime and the quick recovery of the country once negotiations for the end of apartheid started in 1990; with the liberalisation of Nelson Mandela.

Equally remarkable is the performance of China after the 1979 launch of the '*Reforms and Openness'* program by Deng Xiaoping which included the opening of foreign trade. India's trade policy reforms in the early 1990s had a dramatic impact on its rate of convergence towards the core of the world trade network. Following that rise it has paralleled China's progression.

Russia, as expected, recovered much of its *centrality* position in the late 1990s. However, the more recent boom in raw material prices has not increased its convergence rate, probably because Russia continues to trade with a relatively small number of countries compared with other BRIICS and *core* countries. Brazil and Indonesia have experienced more stable paths and have not converged towards the *core* group. Interestingly, the two countries seem to move systematically in opposite directions but there is no obvious reason why this should be the case.

Table 1.5. Centrality Index by product type

Ranked according to 2005 results.	1980	1985	1990	1995	2000	2004	2005	Ranked according to share of world trade amongst countries shown
United States	100	100	100	100	100	100	100	1
China	**74**	**93**	**94**	**95**	**96**	**99**	**99**	**3**
Germany	98	98	99	99	99	99	99	2
India	**87**	**86**	**86**	**90**	**91**	**92**	**94**	**7**
Spain	93	94	94	94	94	95	94	4
Soviet Union/Russia	**94**	**94**	**89**	**85**	**93**	**92**	**93**	**6**
Brazil	**91**	**92**	**88**	**92**	**89**	**91**	**91**	**9**
South Africa	**74**	**69**	**65**	**91**	**91**	**90**	**91**	**11**
Thailand	78	85	89	92	90	89	90	8
Mexico	81	81	84	85	86	84	84	5
Indonesia	82	78	82	80	84	83	82	10

Ranked according to 2005 results.	1980	1985	1990	1995	2000	2004	2005	Ranked according to share of world trade amongst countries shown
United States	C	C	C	C	C	C	C	1
China	**O**	**I-P**	**I-P**	**I-P**	**C**	**C**	**C**	**3**
Germany	C	C	C	C	C	C	C	2
India	**P**	**P**	**P**	**I-P**	**I-P**	**I-P**	**I-P**	**7**
Spain	I-P	I-P	I-P	I-P	I-P	I-P	I-P	4
Soviet Union/Russia	**I-P**	**I-P**	**P**	**P**	**I-P**	**I-P**	**I-P**	**6**
Brazil	**I-P**	**I-P**	**P**	**I-P**	**P**	**I-P**	**I-P**	**9**
South Africa	**O**	**O**	**O**	**I-P**	**I-P**	**I-P**	**I-P**	**11**
Thailand	O	P	P	I-P	I-P	P	I-P	8
Mexico	O	O	O	I-P	P	O	O	5
Indonesia	O	O	O	O	O	O	O	10

For this dataset the former Soviet Union countries and Russia were grouped as one in order to avoid the change in the number of nodes present in the network after the collapse of the Soviet Union.

C = Core and contains countries that are above the 95th percentile of the distribution;

I-P = Inner periphery and contains countries that are above the 90th percentile of the distribution and below the 95th percentile;

P = Secondary Periphery and contains countries that are above the 85th percentile of the distribution and below the 90th percentile, and;

O = Out of the periphery and contains countries that are below the 85th percentile of the distribution.

Source: Authors' calculations based on UN ComTrade database.

The results for the BRIICS countries are particularly interesting when their performance is compared to other countries. Among developing economies, only Korea, Singapore and China can be considered *core* countries in 2005. Outside the BRIICS, Thailand is the only other developing country in the *inner-periphery*.

At the same time the BRIICS performance is very heterogeneous. Russia, China and India are three of the top four performers among countries listed in Annex Table 1A.4. Indonesia has improved its rankings by two percentile points, but both Brazil and South Africa have slightly reduced their *centrality* index and have joined other countries such as Mexico, Singapore, Japan or France, who are struggling to

maintain their positions in relation to China and India. However, other countries have experienced a more severe drop in their *centrality* position within the network. This includes, for example, Denmark, Hong Kong China and Australia. Canada, the only G7 country outside the core group, has dropped outside the *inner-periphery* since 1990. Further details are available in the annex. Annex Table 1A.4 lists *centrality* indices for aggregated trade flows, and Annex Table 1A.5 details *centrality* results for the four product types (raw materials, intermediate goods, consumer goods and capital goods).

The analysis has revealed very few differences across the four product types (raw materials, intermediate goods, consumer goods and capital goods). Nonetheless, the nuances revealed by the disaggregation of merchandise trade are consistent with previous studies. Athukorala (2006) analyses patterns of international production fragmentation and its implications for trade patterns. His findings suggest a realignment of supply-demand (export-import) chains. China's imports of parts and components have grown and this has led to a rapid expansion of manufacturing exports to North America and the European Union. To some extent these findings are consistent with those of Rodrik (2006) and Lall and Albaladejo (2004). The general perception is that some countries, like China and India, have increased their presence in the assembly and trade in final products (consumption and capital goods), while others like Brazil, Indonesia, Mexico, and Russia have become relatively more concentrated in the supply of raw materials and intermediate goods (components). Based on the *centrality* results reported in Annex Table 1A.5, it can be argued that countries like China, India, and Singapore are increasing their degree of influence across all product types but are relatively more central in the networks for consumer goods and capital goods. In contrast, countries like Argentina, Brazil, Mexico, and to some extent Russia, are (relatively) more central countries (*i.e.* more influential) in the trade networks for raw materials and intermediate goods. However, the differences are small and both country-specific performances and network characteristics tend to be relatively homogenous across the four products, indicating that the world trade network is highly unified at least across merchandise trade. In order to pick up specialisation effects, further sectoral disaggregation would be required. Future analysis might also consider repeating this study using only export flows. This would produce results that could be directly related to comparative advantages.

International Economic Order

The results from the network analysis confirm some interesting factors about the evolution of the world trade network and possible implications for the governance of international institutions. In particular, it is worth highlighting that:

- There have been only three new entrants to the *core* of the world trade network over the last 25 years (Singapore, Korea, and China) and only China has become an established member. However, India is knocking at the door. India and maybe Russia are likely to displace some of the lowest ranked countries such as Singapore, Korea or maybe Italy. Australia and Belgium are at risk of leaving the inner-periphery and being replaced by countries such as Malaysia.
- The inner-periphery group is much less stable with a 50% turnover in the last 10 years. This reflects countries such as Singapore which fluctuate between core and inner-periphery, countries such as Thailand which struggled to maintain rankings above 90%.
- Many more countries have become middle powers driven by an increase in the number of their bilateral relationships. That means that the increased trade flows of the last decade are driven more by the creation of new bilateral relationships than by the intensification of existing trade

flows. This is consistent with the higher than average growth rates for south-south trade reported in previous studies[10].

In short, globalisation has not led to the polarisation and marginalisation of less well connected countries. On the contrary, the world trade network has become more multilateral, a result that might deserve further probing given the proliferation of bilateral and regional trade agreements in the last decade. It would be particularly interesting to use network analysis to assess whether globalisation can be expected to lead to a compression of all integration indicators across countries and particularly of centrality indicators, indicating an erosion in the core-periphery structure of world trade.

The *centrality* index (Table 1.5) is the indicator that best summarises the status of a country within the world trade network. These results suggest that the BRIICS countries, with the exception of Indonesia, are either highly integrated into the world trade networks or are currently increasing their degree of integration to such an extent that some of them are now part of the *core*. The analyses of *node degree*, *node strength*, and *clustering* indices suggest that this is probably the result of a number of influences – the establishment of new trading partnerships, involvement in trading clubs, and/or the intensification of existing trading relationships.

The changing patterns of integration shown here provide evidence that some BRIICS economies could play increasingly valuable roles in international trade organisations like the WTO. The *centrality* index indicates that China, India, and Russia are at same the level of importance as the highest income OECD countries. Brazil and South Africa are close behind. Indonesia is an outlier in this group and has yet to break into the periphery.

Unsurprisingly, the analysis confirms the establishment of China as top trading power. If the analysis used aggregated figures for the EU, it is likely that China would be placed third and not second in the overall centrality ranking. However, China has clearly displaced Japan.

The results for India and Russia are particularly interesting. The analysis is based on merchandise trade, and it is likely that if the same analysis could be done including services trade, India would belong to the *core* group. Moreover, India's performance is very much driven by its score in *node degrees*; that is, by the number of new bilateral relationships established since 1991. Russia has followed the opposite path. Its recovery since the post-communism collapse has materialised through increasing its *node strength* and *clustering*; that is, by increasing the value of its bilateral trade with its better connected partners. This probably reflects the fact that most new Russian trade has been created with EU members, the US and probably China, rather than with other emerging countries or the former Soviet Union Republics.

The future of Brazil and South Africa's *centrality* is unclear. The two countries could be inching towards exiting the *inner-periphery*. However, their performance in 2005 shows some improvement. Both countries are probably assisted by the recent boom in commodity prices, but according to this analysis, establishing new trading relationships, particularly with other emerging middle-powers, could be instrumental in maintaining their *inner-periphery* status.

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Annex – Technical Appendix

Let *A* and *W* be the binary adjacency matrix and the weighted adjacency matrices described in the text, where the generic entry in *A*, $a_{ij} = a_{ji}$ is set equal to one if and only the total trade between country *i* and country *j* is greater than zero (*i.e.* exports of *i* to *j* plus imports of *i* from *j* > 0). Regarding the weighted matrix, *W*, we simply use the actual total trade values (*i.e.* $e_{ij} = e_{ji}$ = total trade between country *i* and *j*).[1] In order to avoid biases in the analysis and also to insure that each entry of the weighed matrix, w_{ij}, is inside the interval [0,1] for all (*i, j*) we let the generic entry in *W* be equal to, $w_{ij}^{*} = \frac{1}{2}(e_{ij} + e_{ji})$. Then the node degree, d_i, and node strength, s_i, for node (country) *i* are computed as follows:

$$d_i = \sum_j a_{ij} \tag{A.1}$$

$$s_i = \sum_j w_{ij} \tag{A.2}$$

For the computation of the (weighted) clustering coefficient, Onella *et al.* (2005) suggests that the clustering coefficient, c_i, for node (country) *i* is computed as follows:

$$c_i = \frac{\frac{1}{2}\sum_{j \neq i}\sum_{h \neq (i,j)} w_{ij}^{\frac{1}{3}} w_{ih}^{\frac{1}{3}} w_{jh}^{\frac{1}{3}}}{\frac{1}{2} d_i (d_i - 1)} \tag{A.3}$$

The clustering coefficient ranges between (0,1) and reduces to the clustering coefficient of a binary matrix when the weights become binary. This coefficient takes into consideration all of the edges in a complete triple, while ignoring weighted links not participating in any triangle, and in is invariant to weight permutation for a given triple.

The centrality measure used in this study is actually the Random Walk Betweenness Centrality (RWBC) measure proposed by Fisher and Vega-Redondo (2006), which is an expansion of the binary indicator proposed by Newman (2006). The intuition behind the indicator, and its computation, is as follows. Consider an impulse generated from node h that works its way through the network in order to get to node k. Let f(h,k) be the source vector (N × 1), such that $f_i(h,k) = 1$ if i=h, $f_i(h,k) \neq 1$ if i=k, and 0 otherwise. Newman (2005) shows that the Kirchoff's law of current conservation implies that:

$$v(h,k) = [D - W]^{-1} f(h,k) \tag{A.4}$$

[1] Fagiolo, Reyes, and Schiavo (2007) have shown that the network indicators and the network characteristics of the World Trade Network are very robust to different weighting procedures. For example, one can use the actual trade flow as the weight for each link or a weighted trade measure like total trade to Gross Domestic Product ratios.

Where $v(h,k)$ denotes the N × 1 of nodes voltages, $D=diag(s)$ and $[D-W]^{-1}$ is computed using the Moore-Penrose pseudo-inverse. Then, this implies that the intensity of the interaction flowing through node i originated from node h and getting to target node k is determined by:

$$I_i(h,k) = \frac{1}{2}\sum_j \left| v_i(h,k) - v_j(h,k) \right| \qquad \text{(A.5)}$$

where $I_h(h,k) = I_k(h,k) = 1$, and therefore the RWBC of node I can be computed as follows:

$$RWBC_i = \frac{\sum_h \sum_{k \neq h} I_i(h,k)}{N(N-1)} \qquad \text{(A.6)}$$

The intuitive explanation for betweenness centrality is discussed by Newman (2005) where he assumes that that a source node sends a message to a target node. The message is transmitted initially to a neighbouring node and then the message follows an outgoing link from that node, chosen randomly, and continues in a similar fashion until it reaches the target node. In the original measure presented by Newman (2005) the probabilities assigned to outgoing edges are all equal but in Fisher and Vega-Redondo (2006) these probabilities are determined by the magnitude of the outgoing trading relationships. Hence links that represent greater magnitude for a trading relationship will be chosen with higher probability. In other words, this centrality measure exploits (randomly) the whole length of the trade chains present in the network for country i and, therefore, is the highest degree measure considered in the analysis since it goes beyond the analysis of trading partners that have one or two degrees of separation from country i and considers the intensities of the trade linkages.

Annex Table 1A.1. Node Degree Results

	Node Degree (Percent Rank Analysis)											
	Raw Materials			Intermediate Goods			Consumer Goods			Capital Goods		
	1995	2000	2005	1995	2000	2005	1995	2000	2005	1995	2000	2005
Austria	88	87	81	92	92	90	91	89	91	93	92	91
Belgium-Luxembourg	97	97	94	97	96	97	97	95	92	98	95	93
Denmark	96	96	94	95	94	94	95	93	96	96	97	99
Finland	81	81	74	88	88	87	88	87	86	92	93	90
France	98	98	99	97	96	98	98	93	98	97	96	98
Germany	99	100	100	99	99	100	100	99	100	99	100	100
Greece	91	92	86	86	87	82	90	91	85	88	88	86
Hungary	87	86	74	86	86	78	87	82	81	83	83	85
Iceland	63	60	59	65	58	59	63	55	62	68	61	66
Ireland	91	89	84	91	90	88	91	89	88	93	89	89
Italy	97	96	96	98	98	97	98	96	97	98	96	97
Netherlands	99	98	98	99	97	98	98	98	99	97	98	98
New Zealand	93	91	92	84	85	85	85	83	84	87	86	90
Norway	88	89	86	89	88	88	90	87	85	91	91	90
Portugal	89	88	88	90	89	87	92	92	90	88	89	86
Slovak Republic	72	69	70	85	81	80	82	83	81	84	81	81
Spain	95	95	93	94	93	93	94	94	94	94	92	93
Sweden	89	87	82	94	93	90	95	94	91	96	95	95
Switzerland	93	93	91	95	94	93	94	96	94	95	98	96
Turkey	89	89	89	87	87	89	87	88	88	86	86	87
United Kingdom	100	99	98	100	99	99	100	98	100	100	99	99
Argentina	86	85	91	82	81	84	84	83	84	82	79	80
Australia	97	98	95	89	90	89	89	90	89	92	96	92
Canada	95	94	97	93	91	94	92	89	94	94	91	93
Chile	82	85	79	79	78	71	79	78	75	75	69	69
Czech Republic	86	81	83	92	86	86	89	86	86	89	87	87
Japan	95	93	92	97	95	94	97	96	93	99	99	97
Korea, Rep.	89	89	90	93	95	95	93	96	93	95	97	93
Malaysia	87	88	81	89	89	90	93	91	93	90	88	88
Mexico	82	82	82	83	83	81	86	85	84	84	84	84
Philippines	61	84	86	65	83	82	59	85	83	63	85	82
Poland	83	85	86	84	82	88	81	79	87	85	82	88
Singapore	91	92	85	88	91	80	85	96	77	87	93	82
Taiwan, China	76	89	90	72	93	92	69	90	90	72	94	93
Thailand	94	94	96	95	98	96	96	98	96	90	94	92
United States	100	100	100	100	100	100	99	100	98	100	100	98
Brazil	90	91	95	90	89	92	88	88	89	89	86	89
China - Hong Kong	96	96	98	96	97	96	96	95	94	95	93	96
India	94	95	97	96	95	99	93	93	98	90	90	96
Indonesia	84	95	93	83	99	95	81	100	96	83	89	88
Russian Federation	75	86	84	70	85	84	68	85	79	72	85	83
South Africa	92	93	96	91	92	92	89	92	92	89	90	92
Bangladesh	76	69	56	78	72	52	79	78	40	64	58	49
Haiti	37	36	29	48	37	38	53	32	37	37	42	40
Tajikistan	13	22	20	28	25	28	24	20	24	23	25	21
Uzbekistan	43	31	36	36	34	34	33	32	32	42	50	36
Sri Lanka	56	52	86	58	59	79	47	49	85	53	52	73
Paraguay	66	55	65	62	44	45	62	40	51	53	37	35
Kazakhstan	41	67	61	42	72	64	37	52	53	42	64	61
Senegal	51	67	74	57	67	72	58	61	68	59	70	73

Source: Authors' calculations based on UN ComTrade database.

Annex Table 1A.2. Node Strength Results

	Node Strength (Percent Rank Analysis)											
	Raw Materials			Intermediate Goods			Consumer Goods			Capital Goods		
	1995	2000	2005	1995	2000	2005	1995	2000	2005	1995	2000	2005
Austria	82	80	82	93	91	91	93	92	93	91	91	92
Belgium-Luxembourg	97	94	94	97	96	98	96	96	97	95	93	93
Denmark	91	89	89	89	86	85	92	91	89	89	89	87
Finland	81	81	82	89	89	88	86	85	85	89	90	88
France	98	97	96	99	98	99	99	99	99	99	98	98
Germany	99	98	97	100	100	100	100	100	100	99	99	100
Greece	82	80	78	83	82	80	85	85	84	82	82	80
Hungary	79	77	79	82	83	83	84	85	85	82	89	91
Iceland	71	63	64	60	62	63	59	56	59	56	61	61
Ireland	83	81	81	88	92	91	89	90	91	91	93	91
Italy	96	95	95	98	97	97	97	97	98	97	95	96
Netherlands	98	97	96	96	96	97	97	96	96	95	95	96
New Zealand	86	82	81	83	81	77	80	79	80	80	79	78
Norway	95	96	95	88	85	84	88	87	88	88	85	84
Portugal	83	81	80	85	85	84	91	89	86	86	85	84
Slovak Republic	74	73	75	80	80	81	79	81	82	78	81	84
Spain	95	93	93	95	95	95	95	96	96	94	94	94
Sweden	87	85	87	94	93	92	93	93	92	93	93	92
Switzerland	88	84	86	95	94	94	95	94	95	93	92	92
Turkey	84	82	85	86	87	89	87	89	90	84	87	87
United Kingdom	99	99	97	98	97	96	98	98	98	98	99	98
Argentina	89	88	84	84	87	84	82	81	80	83	84	82
Australia	94	93	94	90	89	88	90	91	91	90	89	88
Canada	97	98	96	96	98	96	96	97	96	97	97	96
Chile	88	86	89	84	84	85	80	79	79	81	80	78
Czech Republic	79	76	80	85	85	87	85	86	88	87	88	90
Japan	100	100	98	99	99	98	99	98	97	100	100	99
Korea, Rep.	93	92	91	95	96	96	95	95	94	96	96	97
Malaysia	90	87	88	92	89	88	91	92	89	95	94	94
Mexico	94	94	93	91	94	93	94	95	95	94	96	95
Philippines	77	78	75	81	83	80	78	84	81	88	92	89
Poland	84	85	88	87	88	89	88	88	92	85	88	89
Singapore	87	83	83	94	92	92	94	93	93	98	97	97
Taiwan, China	89	96	100	92	95	95	87	94	92	92	96	95
Thailand	92	88	88	91	90	90	92	89	88	92	91	93
United States	100	100	100	100	100	100	100	100	100	100	100	100
Brazil	92	91	92	93	93	92	90	88	86	90	90	90
China - Hong Kong	96	96	99	97	99	99	98	99	99	96	98	99
India	90	90	92	89	91	93	86	87	90	87	85	86
Indonesia	93	90	90	90	90	90	89	90	87	89	86	86
Russian Federation	81	95	99	77	93	94	89	93	94	84	86	88
South Africa	89	84	86	86	86	86	82	82	83	86	84	85
Bangladesh	72	65	59	76	76	73	76	77	54	67	67	65
Haiti	29	30	32	43	39	35	44	41	38	37	32	24
Tajikistan	17	26	28	23	37	38	14	20	32	23	23	26
Uzbekistan	44	37	40	37	48	51	46	37	40	59	59	58
Sri Lanka	64	55	62	73	72	71	55	55	72	64	68	62
Paraguay	69	59	63	60	57	54	72	60	49	69	56	57
Kazakhstan	27	83	90	36	75	76	51	67	74	49	70	75
Senegal	42	60	55	50	56	53	47	51	55	47	50	52

Source: Authors' calculations based on UN ComTrade database.

Annex Table 1A.3. Clustering Index

	Node Clustering (Percent Rank Analysis)											
	Raw Materials			Intermediate Goods			Consumer Goods			Capital Goods		
	1995	2000	2005	1995	2000	2005	1995	2000	2005	1995	2000	2005
Austria	82	76	83	93	92	92	93	93	94	90	90	91
Belgium-Luxembourg	94	93	94	99	98	98	97	96	99	93	93	93
Denmark	88	85	87	86	83	83	90	88	88	87	85	85
Finland	80	78	84	91	88	87	82	82	83	86	87	86
France	97	95	95	100	99	98	98	98	100	97	97	96
Germany	98	94	96	100	100	100	100	99	100	99	99	99
Greece	79	73	77	83	80	79	84	83	84	76	79	77
Hungary	75	71	82	82	82	85	81	85	85	79	89	90
Iceland	77	70	68	64	66	66	60	59	60	53	61	59
Ireland	81	82	84	87	93	93	88	91	92	89	92	92
Italy	94	92	94	98	97	97	98	97	98	95	94	94
Netherlands	96	96	96	97	96	97	96	96	97	94	95	96
New Zealand	86	81	79	78	80	76	75	75	76	75	75	72
Norway	95	98	99	86	84	84	85	87	91	79	82	81
Portugal	80	79	76	85	85	83	89	89	88	83	84	84
Slovak Republic	63	70	77	75	76	80	71	80	83	69	78	83
Spain	93	91	92	94	94	95	95	95	96	92	93	94
Sweden	84	84	88	93	92	91	91	92	92	91	91	90
Switzerland	84	79	82	95	95	94	95	94	96	92	92	92
Turkey	85	78	86	85	87	86	86	89	90	85	86	87
United Kingdom	96	97	97	96	96	96	97	98	98	98	98	97
Argentina	86	86	84	84	86	82	78	78	73	82	85	79
Australia	93	92	95	89	89	87	88	91	90	90	89	88
Canada	99	99	98	96	97	96	96	97	95	96	96	95
Chile	89	88	90	87	87	89	79	81	79	84	84	81
Czech Republic	73	72	80	84	86	88	83	86	89	80	85	89
Japan	100	99	99	98	99	99	99	99	96	100	100	99
Korea, Rep.	95	93	93	95	96	96	95	95	94	96	96	98
Malaysia	89	85	88	90	90	88	89	90	86	95	95	95
Mexico	95	97	97	92	94	94	93	96	95	95	96	96
Philippines	84	81	75	88	85	82	85	86	81	94	94	93
Poland	83	85	89	89	90	90	89	92	92	84	88	88
Singapore	81	76	79	92	91	93	94	93	93	99	97	98
Taiwan, China	92	96	92	95	95	95	94	94	91	98	98	97
Thailand	90	87	85	90	88	90	90	90	87	93	93	92
United States	100	100	100	99	100	100	100	100	99	100	100	100
Brazil	91	89	91	91	93	92	87	85	84	88	91	89
China - Hong Kong	98	95	98	97	98	99	99	100	97	97	99	100
India	88	88	90	88	89	91	82	84	85	83	83	85
Indonesia	97	90	91	94	89	88	91	89	88	91	87	87
Russian Federation	83	91	100	79	91	92	92	93	93	89	81	88
South Africa	87	83	81	83	83	85	77	77	80	84	82	84
Bangladesh	74	65	59	74	77	77	74	77	56	65	70	70
Haiti	33	44	43	48	46	43	50	51	42	49	41	29
Tajikistan	14	16	29	26	32	32	17	16	32	21	8	27
Uzbekistan	40	31	39	39	45	52	47	39	40	64	61	60
Sri Lanka	68	56	53	74	75	68	57	53	68	66	71	56
Paraguay	66	58	54	57	57	53	73	62	46	74	62	64
Kazakhstan	19	84	93	30	74	78	53	64	77	53	67	74
Senegal	49	58	48	50	51	44	47	45	48	49	44	44

Source: Authors' calculations based on UN ComTrade database.

Annex Table 1A.4. Centrality Index (aggregated trade flows)

Percent Rank for Random Walk Betweenness Centrality (RWBC)							
	1980	1985	1990	1995	2000	2004	2005
Australia	95	95	95	94	95	94	92
Belgium-Luxembourg	95	95	96	95	94	93	92
Brazil	91	92	88	92	89	91	91
Canada	92	92	91	88	88	88	88
China	74	93	94	95	96	99	99
Denmark	88	88	92	89	86	85	84
France	99	99	99	99	99	98	98
Germany	98	98	99	99	99	99	99
Hong Kong, China	85	86	88	86	85	84	83
India	87	86	86	90	91	92	94
Indonesia	82	78	82	80	84	83	82
Italy	97	97	97	97	97	96	96
Japan	99	99	98	98	98	98	98
Korea, Rep.	84	91	93	93	92	94	96
Malaysia	77	82	84	88	88	89	89
Mexico	81	81	84	85	86	84	84
Netherlands	96	96	96	96	96	96	95
New Zealand	89	91	87	87	83	88	88
Portugal	85	84	86	86	89	87	85
Singapore	94	96	95	96	95	95	95
South Africa	74	69	65	91	91	90	91
Soviet Union	94	94	89	85	93	92	93
Spain	93	94	94	94	94	95	94
Sweden	90	90	90	84	85	86	86
Switzerland	91	88	91	89	87	86	87
Taiwan, China	72	71	92	91	92	91	89
Thailand	78	85	89	92	90	89	90
Trinidad and Tobago	92	89	80	79	82	82	86
Turkey	64	78	79	82	79	85	85
United Kingdom	98	98	98	98	98	97	97
United States	100	100	100	100	100	100	100

Source: Authors' calculations based on UN ComTrade database.

Annex Table 1A.5. Centrality Index by product type

	Node Centrality (Percent Rank Analysis)											
	Raw Materials			Intermediate Goods			Consumer Goods			Capital Goods		
	1995	2000	2005	1995	2000	2005	1995	2000	2005	1995	2000	2005
Austria	81	78	78	86	85	85	86	85	86	93	89	89
Belgium-Luxembourg	97	96	94	97	96	96	95	94	94	95	93	95
Denmark	93	87	88	89	88	87	91	89	88	94	92	91
Finland	79	78	77	87	85	83	84	81	80	90	92	90
France	99	98	98	99	99	99	99	99	99	99	99	99
Germany	98	98	96	100	99	99	100	100	99	100	100	100
Greece	87	84	82	80	82	82	87	87	84	84	87	84
Hungary	84	79	76	78	77	75	81	79	79	81	83	86
Iceland	63	50	52	60	50	51	42	33	43	75	68	71
Ireland	86	76	73	84	86	84	83	82	81	85	90	86
Italy	96	96	96	97	97	98	97	97	97	98	98	97
Netherlands	97	96	97	96	95	96	96	95	96	96	96	96
New Zealand	95	92	93	94	90	92	91	88	92	89	88	93
Norway	91	91	92	84	84	80	82	82	83	89	86	85
Portugal	84	81	82	88	88	86	89	91	87	89	89	88
Slovak Republic	67	63	65	77	70	72	71	67	70	80	78	80
Spain	95	94	95	94	93	93	95	96	96	95	95	95
Sweden	83	83	84	89	90	88	89	89	88	94	94	93
Switzerland	88	88	87	92	92	92	92	90	90	91	89	88
Turkey	86	85	87	90	89	91	90	88	91	88	88	88
United Kingdom	100	99	97	99	98	98	99	98	98	98	98	98
Argentina	89	86	91	88	86	88	83	83	84	83	82	82
Australia	98	97	99	95	93	95	97	96	96	97	96	96
Canada	95	92	95	92	91	93	88	86	89	92	91	89
Chile	82	82	86	81	81	80	79	78	78	78	75	76
Czech Republic	80	73	72	84	78	79	84	80	81	87	83	85
Japan	99	100	98	98	98	97	98	98	98	99	99	98
Korea, Rep.	89	89	90	96	97	96	94	93	94	95	97	97
Malaysia	90	89	88	89	89	89	93	91	90	92	91	90
Mexico	89	85	90	91	87	87	85	89	87	86	85	87
Philippines	66	86	75	73	87	77	66	86	76	79	87	83
Poland	87	83	83	81	83	86	84	85	85	85	85	87
Singapore	88	88	83	95	92	90	96	97	97	96	96	96
Taiwan, China	85	90	92	87	96	94	79	90	91	84	93	92
Thailand	92	93	89	91	93	91	95	94	93	90	93	92
United States	100	100	100	100	100	100	100	100	100	100	100	100
Brazil	94	93	96	93	91	92	93	92	92	91	90	91
China - Hong Kong	96	97	100	98	100	100	98	99	100	97	97	99
India	92	94	94	93	96	97	92	93	95	88	86	92
Indonesia	91	90	89	90	94	89	87	93	89	87	84	83
Russian Federation	83	99	99	79	95	95	88	96	95	86	94	94
South Africa	93	93	92	95	94	94	94	95	93	93	95	94
Bangladesh	76	67	53	68	63	58	74	68	39	55	63	51
Haiti	26	26	34	30	30	29	26	31	26	21	21	20
Tajikistan	25	16	22	38	44	41	17	23	30	27	31	27
Uzbekistan	48	34	39	63	52	36	59	33	28	70	74	54
Sri Lanka	52	48	61	71	68	68	40	36	64	52	54	56
Paraguay	64	72	81	48	39	48	60	45	39	57	36	40
Kazakhstan	44	91	91	63	75	76	56	62	76	60	78	76
Senegal	34	80	51	45	74	76	45	74	80	41	70	75

Source: Authors' calculations based on UN ComTrade database.

Chapter 2

The Bilateral Trade Performance of the BRIICS

By

Przemyslaw Kowalski[1]

Introduction

What have been the main driving forces behind the rising trade of large emerging economies such as China or India? What is driving the phenomenal trade growth rates in China? Why is India's merchandise trade apparently less dynamic? Why has Brazil's trade lingered around 1% of world trade since the beginning of 1970s? Are the fastest growing emerging economies trading above or below their potentials? These are the questions that often underpin discussions about the opportunities and threats associated with the increasing presence of large emerging economies in the world economy.

Many reports dealing with these sorts of questions investigate key macroeconomic and structural trade developments focusing on individual countries, without analysing their trade performance in relation to the performance of their trading partners or to the general developments in the global trading environment. Such an approach runs an obvious risk of missing the impact of global or trading partners influence on a country's trade performance. A country's export performance is determined by its own competitiveness and policies. It is also affected by demand and policy developments amongst its trading partners. Similarly, the country's imports will not only be affected by changes in its own trade barriers but also by various developments in the supplying countries. Factors, such as remoteness from major trading partners or historical and cultural links to certain markets are likely to influence the degree of trade integration. Last but not least, it is worth knowing to what extent country's exports or imports are driven by the expansion of it's (and it's trading partners') income and to what extent they may be driven by trade and other policy influences.

This paper presents an approach to analyzing bilateral trade data based on the gravity model of international trade and the fixed effects approach to analyzing panel data. This approach is applied to the analysis of trade of Brazil, the Russian Federation, India, Indonesia, China and South Africa (BRIICS). First, the gravity model of aggregate bilateral trade, which is a basis for specification of a fixed effects empirical panel data model of bilateral trade estimated here, is introduced and issues associated with its application to inference about countries' trade performance are discussed. Subsequently, an empirical gravity-based fixed effects model is devised and estimated on a panel data set of unidirectional bilateral merchandise trade flows between 46 countries including all the OECD countries, the BRIICS and a number of other countries that are relatively significant players in world trade or are important trading partners of any of the BRIICS.[2] The analysis covers the 1988-2006 period and is conducted for total merchandise trade as well as four broad product categories: raw materials, intermediate goods, consumption goods and capital goods.

The principal econometric methodology employed in this paper is the gravity model of international trade and what was once called a full interaction effects panel data approach to modeling trade flows

1 This paper presents work in progress. Useful comments by colleagues at the OECD Secretariat and participants to the 11th Global Trade Analysis Conference in Helsinki on 12-14 June 2008 are gratefully acknowledged.

2 These countries are: Chile; Hong Kong, China; Singapore; Thailand; Chinese Taipei; Malaysia; Philippines; Venezuela; Israel; Colombia and Argentina.

(Baltagi *et al.,* 2003). The full interaction effects approach was advocated as a way of dealing with potential endogeneity caused by unobserved effects in the gravity model, or other models, of international trade. However, this approach also constitutes a convenient way of decomposing historical trade trends into a number of distinct components, some of which are country specific, some of which are country-pair specific and some of which are general effects. More specifically, the variation in our bilateral trade data is decomposed into:

- Time effects that may be common to all trading country pairs (*e.g.* periods of global slowdown of world trade);
- Country pair-specific time-invariant fixed effects reflecting time-invariant bilateral and geographical factors (*e.g.* distance, common language, colonial relationship etc.);
- The time-variant fixed effects for exporting and importing countries (*e.g.* effects of country-specific policies that affect trade of a given country with all other partners, MFN liberalisation for instance);
- Time-invariant fixed effects for exporting and importing country;
- Residuals that capture the part of variation in bilateral trade flows that is not explained by any of the explicitly specified fixed effects.

Methodology: the gravity model and fixed effects

The popularity of the gravity model in the empirical analysis of trade flows was described by Deardorff (1998) as follows: "I suspect that just about any plausible model of trade would yield something very like the gravity equation…" The idea that international trade can be modeled analogous to the Newtonian gravity force is attributed independently to Tinbergen (1962) and Pöyhönen (1963).[3] In its simplest form, the gravity model posits that bilateral trade is larger, the larger are the trading economic masses (measured either by GDP or population) and the smaller is the distance (or more generally the trade-inhibiting factors) between them.[4]

As Baier and Bergstrand (2005) report, the early applications of the gravity equation (Tinbergen, 1962; Linneman, 1966; Aitken, 1973; and Sapir, 1981) to international trade flows were not grounded in formal theoretical foundations. Yet, for some time now the gravity equation has been well established theoretically as the reduced form of a general equilibrium model of international trade in final goods (Baldwin, 1994). In fact gravity-like equations can be derived from a number of plausible theoretical models.[5] To give the most prominent examples, Helpman and Krugman (1985) have shown that the gravity equation can be derived from the monopolistic competition model embodied within a Hecksher-Ohlin framework.[6] Deardorff (1998) has shown that the gravity equation can be derived from the Hecksher-Ohlin model without the assumption of product differentiation. Eaton and Kortum (2002) have derived the gravity

3 In addition to trade, the gravity equation has been recognised for its empirical success in explaining many different types of flows such as migration, tourism, investment flows or spatial location of economic activity.

4 Linnemann (1966) included population as an additional measure of country size and initiated the so-called "augmented gravity" model. The inclusion of the population variable was later also justified by the need to account for non-homothetic preferences in the importing country and to proxy for the capital/labour ratio in the exporting country (Bergstrand, 1989).

5 The most important contributions to this literature include Anderson (1979), Bergstrand (1985) and (1989), Helpman and Krugman (1985), Helpman, (1987), Evenett and Keller (1997), Deardorff (1998), Baier and Bergstrand (2001), Eaton and Kortum (2002) and Anderson and Wincoop (2003 and 2004).Surveys of gravity model literature are contained in Baldwin (1994), Ogueldo and MacPhee (1994) and Frankel (1997, Ch. 4).

6 The model predicts Hecksher-Ohlin type of trade pattern as far as net trade flow are concerned.

equation from a Ricardian model of trade in homogeneous goods. A review of contributions on theoretical foundations of the gravity equation is provided by Harrigan (2002).

As far as empirical applications are concerned, the gravity model of international trade has been used extensively as a baseline model for estimating the impact of a variety of factors affecting trade such as trade barriers, regional trading agreements, political blocks, institutional arrangements, exchange rate regimes, geographical and even cultural factors. Typically, the impacts of these factors are modeled as deviations from the volume of trade predicted by the baseline gravity model consisting of measures of economic size and trade inhibiting factors (Cheng and Wall, 2005, Bussiere and Schnatz, 2006). Recent studies of trade integration of the BRIICS countries that make a use of the gravity methodology include: Bussiere and Schnatz (2006) on China, Bussiere and Mehl (2008) on China and India, Eichengreen *et al.* (2007) on China and Lederman *et al.* (2007) on China and India as they affect the trade of Latin America and the Caribbean.

The version of the gravity model from which we depart in this analysis is based on the organic derivation by Anderson and Van Wincoop (2003, 2004). It was employed in the context South-South trade by Kowalski and Shepherd (2006). It takes the following form:

$$(1) \qquad \log(X_{ij}) = \log(Y_j) + \log(Y_i) - \log(Y) + (1-\sigma)\log(t_{ij}) - (1-\sigma)\log(P_j) - (1-\sigma)\log(\Pi_i) + \varepsilon_{ij}$$

where time subscripts are excluded for the time being to save on notation and:

Xij = exports from country i to country j

Yi = GDP of country i

Yj = GDP of country j

Y = aggregate (world) GDP

σ = elasticity of substitution

tij = trade costs facing exports from country i to country j

$$P_j^{1-\sigma} = \sum_{i=1}^{N} \Pi_i^{\sigma-1} \omega_i t_{ij}^{1-\sigma}$$

$$\Pi_i^{1-\sigma} = \sum_{j=1}^{N} P_j^{\sigma-1} \omega_j t_{ij}^{1-\sigma}$$

ωi = country i's expenditure share

εij = random error term

The principal innovation of the Anderson and Van Wincoop (2003, 2004) model is the inclusion of the two "resistance" terms (P and Π), which take account of the fact that it is relative prices that matter for trade. In other words, it is not just prices and, say, tariffs in country *j* that determine exports from country *i* to country *j*, but rather those prices and tariffs compared with prices and tariffs imposed by all other importers.

The trade cost function, in line with Anderson and Van Wincoop (2003, 2004) and much current work, is specified as follows:

$$t_{ij} = d_{ij}^{\rho} \tau_{ji}^{\theta} \prod_{m=1}^{M} \left(b_m^{z_{ij}^m} \right)$$

$$\Leftrightarrow \log\left(t_{ij}\right) = \rho \log\left(d_{ij}\right) + \theta \log(\tau_{ji}) + \sum_{m=1}^{M} \log\left(b_m\right) z_{ij}^m \quad (2)$$

where:

ρ = elasticity of exports with respect to distance

θ=elasticity of exports with respect to bilateral tariffs

τji=tariffs imposed by country j on exports from country i

bm = set of m constants

zij = set of observable bilateral determinants of trade costs

Putting (1) and (2) together gives a fully specified model:

$$\log\left(X_{ij}\right) = \log\left(Y_j\right) + \log\left(Y_i\right) - \log\left(Y\right) + \left(1-\sigma\right)\left[\rho \log\left(d_{ij}\right) + \theta \log(\tau_{ji}) + \sum_{m=1}^{M} \log\left(b_m\right) z_{ij}^m \right] - \ldots$$
$$\ldots - \left(1-\sigma\right)\log\left(P_j\right) - \left(1-\sigma\right)\log\left(\Pi_i\right) + \varepsilon_{ij} \quad (3)$$

To facilitate the interpretation of results and, specifically, to ensure comparability of estimated coefficients across various trading country pairs we propose to rearrange (3) into an algebraically equivalent formulation:

$$\log\left(\frac{X_{ij}}{Y_i Y_j}\right) = -\log\left(Y\right) + \left(1-\sigma\right)\left[\rho \log\left(d_{ij}\right) + \theta \log(\tau_{ji}) + \sum_{m=1}^{M} \log\left(b_m\right) z_{ij}^m \right] - \ldots$$
$$\ldots - \left(1-\sigma\right)\log\left(P_j\right) - \left(1-\sigma\right)\log\left(\Pi_i\right) + \varepsilon_{ij_{ij}} \quad (4)$$

Equation (4) can be referred to as a *relative model* as it expresses exports relative to the combined (multiplicative) GDP of the two trading partners. Therefore the dependant variable in (4) can be interpreted as a measure of 'trade intensity' as opposed to the value of trade in (3). This dependent variable is more comparable across country pairs and, accordingly, so are the estimated regression coefficients. Formulation (4) has also been advocated in the literature as a way of dealing with the criticism that GDP is endogenous.

While in principle it is possible to estimate (4) directly using non-linear methods (*e.g.* Anderson and Van Wincoop, 2003), it is far simpler to use exporter and importer fixed effects. Such an approach still produces consistent and unbiased estimates and this is the approach taken here, leading to equation (5) (with the deltas indicating fixed effects):

$$\log\left(\frac{X_{ij}}{Y_i Y_j}\right) = \mu + \beta_1 \log\left(d_{ij}\right) + \theta \log(\tau_{ji}) + \sum_{m=1}^{M} \gamma_m z_{ij}^m + \sum_{i=1}^{N} \delta_i + \sum_{j=N+1}^{2N} \delta_j + \varepsilon_{ij} \quad (5)$$

The sectoral model is a natural analogue to the aggregate model, broken down by sector (k):

(6a) $$\log\left(X_{ij}^{k}\right)=\log\left(Y_{j}^{k}\right)+\log\left(Y_{i}^{k}\right)-\log\left(Y^{k}\right)+\left(1-\sigma\right)\left[\rho_{k}\log\left(d_{ij}\right)+\theta_{k}\log(\tau_{ji})+\sum_{m=1}^{M}\log\left(b_{m}^{k}\right)z_{ij}^{m}\right]-\ldots$$
$$\ldots-\left(1-\sigma\right)\log\left(P_{j}^{k}\right)-\left(1-\sigma\right)\log\left(\Pi_{i}^{k}\right)+\varepsilon_{ij}^{k}$$

(6b) $$\log\left(X_{ij}^{k}\right)=\mu^{k}+\beta_{1}^{k}\log\left(d_{ij}\right)+\chi_{k}\log(\tau_{ji})+\sum_{m=1}^{M}\gamma_{m}^{k}z_{ij}^{m}+\sum_{i=1}^{N}\delta_{i}^{k}+\sum_{j=N+1}^{2N}\delta_{j}^{k}+\varepsilon_{ij}^{k}$$

(6c) $$\log\left(\frac{X_{ij}^{k}}{Y_{i}^{k}Y_{j}^{k}}\right)=\mu^{k}+\beta_{1}^{k}\log\left(d_{ij}\right)+\chi_{k}\log(\tau_{ji})+\sum_{m=1}^{M}\gamma_{m}^{k}z_{ij}^{m}+\sum_{i=1}^{N}\delta_{i}^{k}+\sum_{j=N+1}^{2N}\delta_{j}^{k}+\varepsilon_{ij}^{k}$$

In a panel data setting where we have yearly observations on exports from country *i* to country *j*, country fixed effects need to be allowed to vary over time (Baltagi *et al*., 2003; Baldwin, 2005). Additionally, time-invariant country-specific, country-pair and year fixed effects are often included to prevent econometric endogeneity. In such cases the final estimated gravity models include an extensive list of fixed effects and a limited number of policy variables that vary by exporter, by importer and over time. They are employed to investigate the trade effects of a regional trading agreement or a currency union between the trading partners. In this respect the estimated specifications are often very close to a 'pure fixed effects' specification of bilateral trade function:

(7) $$\log\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)=\mu+\sum_{t=1}^{T}\lambda_{t}+\sum_{i=1}^{N}\delta_{i}+\sum_{j=N+1}^{2N}\delta_{j}+\sum_{p=1}^{(N^{2}-N)/2}\delta_{ij}+\sum_{i=1}^{N}\delta_{it}+\sum_{j=N+1}^{2N}\delta_{jt}+\varepsilon_{ijt}$$

Equation 7 and its equivalent sector version equation 6c are our estimating equations. They allow us to distinguish between various types of factors underlying trade. $\sum_{t=1}^{T}\lambda_{t}$ terms isolate the time effects that are common to all trading partners. One example that can be given here is the dip in trading intensity observed after 11 September 2001 or inventions on a global scale that affect trade such as for example the development of the internet.

The terms $\sum_{i=1}^{N}\delta_{i}$ and $\sum_{j=N+1}^{2N}\delta_{j}$ pick up time-invariant fixed effects for exporting and importing countries, respectively such as for example geographical location that positively or negatively influences propensity to trade. $\sum_{p=1}^{(N^{2}-N)}\delta_{ij}$ are country pair-specific time-invariant fixed effects that account for factors such as the time-invariant bilateral trading costs (*e.g.* those associated with distance between the two destinations) or long-standing cultural or political ties. As mentioned earlier the model is specified as a unidirectional export function and accordingly distinguishes between exports from Brazil to Chile and imports of Chile from Brazil, for example. With this specification two pair-specific time-invariant fixed effects are estimated for the country pair Brazil-Chile: one for Brazil as an importer from Chile and one for Chile as an importer from Brazil.

The terms $\sum_{i=1}^{N}\delta_{it}$ and $\sum_{j=N+1}^{2N}\delta_{jt}$ are the time-variant importer and exporter-specific fixed effects that pick up the country-specific influences over trade that evolve in time but are common to all of the country's trading partners. Examples include price or exchange rate effects along with factors such as opening up to trade on an MFN basis or country-specific reforms and policies. These types of fixed effects are potentially

most interesting from an exploratory point of view as they tell us how the propensity of a country to export or import has been evolving over time. Additionally, their magnitude relative to the magnitude of other time-invariant fixed effects may inform us about the permanent and evolving factors underlying trading relations. Our analysis in this paper focuses on the information we can extract from these types of fixed effects. ε_{ijt} is the error term which represents all trade effects unexplained by the previously mentioned factors, including bilateral and time-varying trade policies and random factors affecting trade. In particular, none of the above specified fixed effects capture bilateral effects that vary over time.

As an introduction to the interpretation of estimation results it is worth mentioning that the fixed effects are coefficients on binary variables and, as Kennedy (1998) bluntly put it, "…(they) reflect ignorance – they are inserted merely for the purpose of measuring shifts in the regression line arising from unknown variables." One might dispute the severity of this assessment - after all the gravity model outlined above provides quite a few suggestions as to what these 'unknown' variables may be - but the fact remains that when binary variables are included we do not know which of the unobserved variables are actually being reflected in the estimated coefficients and their relative weightings.

The inclusion of an extensive fixed effects structure effectively 'disembowels' the underlying structural model. The inclusion of exporter-by-time and importer-by-time fixed effects necessitates the exclusion of GDP and price terms in the same way that the inclusion of exporter-by-importer fixed effects requires dropping distance or any other time-invariant trade cost variable. In that sense the model can no longer be called a gravity model at all because no statistical inference about the key 'gravity forces' (economic mass and distance) is possible. Nevertheless, it can be used to decompose a large number of bilateral trade flows into the components which make it easier to understand what types of factors may have influenced trade performance in countries of interest.

Data

While the dataset covers period 1988-2005 some observations are missing either at the beginning or towards the end of the period for a few countries. Bilateral exports data has been extracted from the UN Comtrade database through the World Integrated Trade Solution (WITS) software.

Results and interpretation

Ordinary least squares with Huber/White heteroskedasticity adjusted standard errors are used to estimate equation 7 for total trade and equation 6c for the four broad sectors. In statistical terms, the estimated fixed effect models are strong performers: they explain over 90% of the observed variation in trade flows (adjusted $R^{2)}$. This is unsurprising given the extensive specification of fixed effects.[7]

In our approach the estimated fixed effects are coefficients on binary variables and their interpretation needs careful explanation. The regressions include a constant which necessitates dropping certain fixed effects to fulfill the requirement of non-collinearity between explanatory variables. To take the example of exporter fixed effects that remain constant in time, one out of forty six such effects needs to be dropped since the set of dummy variables representing them in the model can be expressed as a linear combination of the constant. To take the example of year fixed effects, one of the years also needs to be dropped. With an exclusion of one exporter fixed effect, the fixed effects estimated for other exporters capture differences in interception relative to the country that is dropped. Similarly, the year fixed effects

[7] However, the dataset also allows estimation with a more extensive specification of the "geography" variables- some of the results for the 1986-2002 subset of this dataset are presented in Kowalski and Shepherd (2005). When this is done the variables are significant both from economic and statistical points of view and the estimated parameters have signs and magnitudes that accord with basic theory.

capture differences in the intercept relative to the year that is dropped. For reasons that will become clearer below, we choose to drop a binary variable for the first year in the database (1988) and chose the United States to be our reference exporter and importer for fixed effects that are constant in time, and for exporter and importer fixed effects that vary in time.

To understand what this base selection means for the interpretation of estimated fixed effects let us write the expressions for values predicted from our model for relative exports by China to the US in three consecutive years 1988, 1989, 1990:

(7a) $$\hat{x}_{USA,CHN,88} = \hat{\mu} + \hat{\delta}^{E}_{CHN} + \hat{\delta}^{E}_{CHN,88}$$

(7b) $$\hat{x}_{USA,CHN,89} = \hat{\mu} + \hat{\lambda}_{89} + \hat{\delta}^{E}_{CHN} + \hat{\delta}^{E}_{CHN,89}$$

(7c) $$\hat{x}_{USA,CHN,90} = \hat{\mu} + \hat{\lambda}_{90} + \hat{\delta}^{E}_{CHN} + \hat{\delta}^{E}_{CHN,90}$$

where $\hat{x}_{USA,CHN,88}$ is the log of the relative measure of 1988 exports from China to the US. Subtracting (7c) form (7b) and rearranging we get:

(7d) $$\hat{\delta}^{E}_{CHN,90} - \hat{\delta}^{E}_{CHN,89} = \hat{x}_{USA,CHN,90} - \hat{x}_{USA,CHN,89} - (\hat{\lambda}_{90} - \hat{\lambda}_{89})$$

Equation 7d gives us the interpretation of a change in the exporter time-varying fixed effect for China as the predicted change in the exports of China to the reference country United States, corrected for the average increase in exports to the US between 1989 and 1990, picked up by the $(\lambda_{90} - \lambda_{89})$ term that is common for all trading partners. Additionally we can do the same calculation for a trade flow between two non-reference countries, for example China and Germany.

(7d) $$\hat{x}_{DEU,CHN,89} = \hat{\mu} + \hat{\lambda}_{89} + \hat{\delta}^{I}_{DEU} + \hat{\delta}^{E}_{CHN} + \hat{\delta}^{E}_{CHN,89} + \hat{\delta}^{I}_{DEU,89}$$

(7e) $$\hat{x}_{DEU,CHN,90} = \hat{\mu} + \hat{\lambda}_{90} + \hat{\delta}^{I}_{DEU} + \hat{\delta}^{E}_{CHN} + \hat{\delta}^{E}_{CHN,90} + \hat{\delta}^{I}_{DEU,90}$$

(7f) $$\hat{\delta}^{E}_{CHN,90} - \hat{\delta}^{E}_{CHN,89} = \hat{x}_{DEU,CHN,90} - \hat{x}_{DEU,CHN,89} - \left[(\hat{\delta}^{I}{}_{DEU,90} - \hat{\delta}^{I}{}_{DEU,89}) + (\hat{\lambda}_{90} - \hat{\lambda}_{89})\right]$$

Where (7f) can be rewritten as:

(7g) $$\hat{\delta}^{E}_{CHN,90} - \hat{\delta}^{E}_{CHN,89} = \hat{x}_{DEU,CHN,90} - \hat{x}_{DEU,CHN,89} - (\hat{x}_{DEU,USA,90} - \hat{x}_{DEU,USA,89})$$

In equation 7g a change in the exporter time-varying fixed effect for China can be interpreted as a change in China's exports to Germany less the change in United States' (reference country) exports to Germany. Note that a set of expressions equivalent to (7d-7g) hold for China and any trading partner implying that a change in the exporter time-varying fixed effects estimated for China equals an average predicted change in China's exports across all its trading partners less the average predicted change in United States exports across the same trading partners. Hence, (7g) is an expression that can be used for measuring China's export performance relative to the export performance of the US.

Equations 7a can be subtracted from 7b to get an expression for the year fixed effect of 1989.

(7h) $$\lambda_{89} = \hat{x}_{USA,CHN,89} - \hat{x}_{USA,CHN,88} - (\delta^{E}_{CHN,89} - \delta^{E}_{CHN,88})$$

This expresses the fixed effect for 1989 as the increase in US imports from China corrected for the change that is due to an increase in China's exports across all trading partners. Again (7h) can be rewritten for any partner country of the US as an exporter or importer which implies that λ_{89} captures an average increase in the US's exports and imports in 1989, corrected for all the fixed effects specific to its trading partners, in other words this is a US-specific increase in its trade. In this context the constant can be interpreted as an average of US's exports and imports to all the trading partners corrected for an average exporter and an average importer fixed effect in year 1988.

It is thus clear that the interpretation of the actual values of estimated fixed effects is specific to the omitted reference country. At the same time, because of the common benchmark, the results can be compared across all the non-reference countries in the sample.

The estimated coefficients for terms that isolate the time effects or, alternatively the average US-specific increases in US total trade $\hat{\lambda}_t$ are presented graphically in Annex Figure 2A.1, including the range of the estimated 95% confidence intervals. In all figures that follow the scale of the vertical axis measures the logarithm of the trade intensity variable (equation 7). Missing coefficients should be interpreted as coefficients that could not be estimated due to an insufficient number of observations. The evolution of the estimated year fixed effects in Annex Figure 2A.1 suggests that, despite the gently negative trend in point estimates, on average US's trade with its trading partners was not significantly different from the situation in 1988 until 2001. In 2001 a significant and gradually deepening decrease is estimated - most likely reflecting the slowdown in US commerce following 11 September 2001 events.

The $\hat{\delta}^{E}{}_{i}$ and $\hat{\delta}^{I}{}_{j}$ terms that pick up time-invariant fixed effects for exporting and importing countries that are statistically significant are presented in Annex Figures 2A.2 and 2A.3. They indicate whether $\log\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$ has been on average (over the investigated period) higher or lower for a given country as compared to the US, which may be a sign of some permanent geographical or other factors. There is a group of countries that were estimated to be on average importing more intensively (controlling for the sizes of exporting and importing country) than the US. Interestingly, four of our BRIICS economies, India, South Africa, China and Brazil, belong to this group. Japan, Canada and Australia, on the other hand, have been importing less intensively than the US. On the export side the list of countries with exporter fixed effects significantly different from zero is longer but all these fixed effects are negative indicating that countries like Indonesia, South Africa, Russia and China have all been exporting less intensively than the US.

As noted earlier, $\hat{\delta}^{E}{}_{it}$ and $\hat{\delta}^{I}{}_{jt}$ are the time-varying fixed effects for exporting and importing countries that pick up the relative price effects along with time-varying factors specific to an exporting or importing country - such as the opening up to trade on an MFN basis or trade effects of country-specific reforms and policies (*e.g.* product and factor market reforms). Because changes in these fixed effects are indicators of average (across all trading partners) changes in relative exports or imports of a given country net of the average change for the US they can be compared across countries as a measure of relative export or import performance over time. However, if we want to say something about the state of trade integration (relative to the US) these fixed effects have to be taken into account together with the time-invariant fixed effects $\hat{\delta}^{E}{}_{i}$ and $\hat{\delta}^{I}{}_{j}$ discussed in the previous paragraph.

Annex Figures 2A.4 - 2A.13 present a comparison of point estimates of $\hat{\delta}^{E}{}_{it}$ and $\hat{\delta}^{I}{}_{jt}$ across the BRIICS for total trade and for the four broad product categories. Point estimates and confidence intervals concerning individual BRIICS countries are presented in Annex Figures 2A.14-2A.25. For comparison Annex Figures 2A.26 - 2A.29 present corresponding estimates for Germany and Japan.

Table 2.1 summarises the trend values of fixed effects in the figures in the form of average annual changes. These measures are telling us which countries in the grouping have had the most dynamic trade integration for exports and imports.

As expected, some of the BRIICS have increased their total export intensity more than the G3 countries (US-comparison with the horizontal axis in Annex Figure 2A.1, Germany–comparison with Annex Figure 2A.19 and Japan - comparison with Annex Figure 2A.21) and many other OECD countries. This illustrates that trade performance is indeed one of the distinctive characteristics of this country grouping. Rather surprisingly, while China's estimated strong performance is in line with the news headlines about its increasing domination of world markets, countries like India, South Africa, Indonesia or Russia have actually been performing as well or even better than China (Annex Figures 2A.19, 2A.25, 2A.21 and 2A.17, respectively). This may be seen as somewhat at odds with the conventional analysis of trade which is much more 'alarming' when it comes to merchandise exports of China. Yet, the headline reports are often either based on the observed large increases in the value of Chinese exports (a statistic that does not account for the large and growing size of the economy) or they are based on the ratio of exports to GDP (a measure that does not account for the size of the importing country).

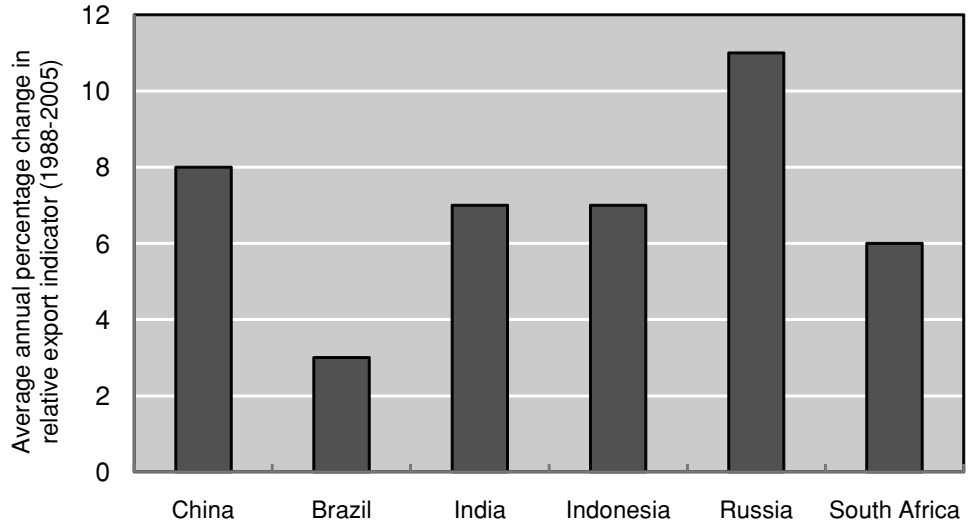
The relative export performance measure $\left(\frac{X_{ijt}}{Y_{it} Y_{jt}} \right)$ investigated in this paper does take into account both of these issues. It turns out that if we take the economic sizes and other relevant influences into account, China is not the only BRIICS country that has dynamically deepened its trade links, nor is it the best performer. This is an insight that cannot be easily made on the basis of descriptive statistics of trade data.

Table 2.1. Summary of average annual change in exporter and importer fixed effects

Panel A

	China	Brazil	India	Indonesia	Russia	South Africa
Exporter						
Total trade	8	3	7	7	11	6
Consumption goods	6	2	9	6	11	12
Raw materials	0	8	7	7	9	8
Capital goods	22	7	13	28	3	11
Intermediate goods	5	1	6	7	12	9
Importer						
Total trade	1	6	3	-7	1	4
Consumption goods	3	12	4	-2	-2	4
Raw materials	6	2	5	0	-4	1
Capital goods	9	9	7	-9	2	5
Intermediate goods	-1	6	5	-6	8	0

Panel B



Note: based on point estimates of fixed effects

Source: authors calculations based on estimation results.

Another interesting result is that Brazil lags behind other members of the BRIICS grouping in the sense that its export performance is noticeably below that of other BRIICS as well as that of the US or G3 countries. In this context Brazil can hardly be called a dynamic exporter at present. This result mirrors the network indicators for Brazil in Chapter 1 where Brazil's place in the global trade architecture has changed very little over the last 25 years.

It is also interesting to compare the relative export performance of BRIICS (Annex Figure 2A.4) with their relative import performance (Annex Figure 2A.5). Lines representing point estimates of importer fixed effects are concentrated more tightly around the horizontal axis and the average annual changes reported in Table 2.1 are much smaller. This means that the relative import performance of BRIICS was closer to the relative import performance of the US (and other members of the G3). Brazil is again an outlier as its imports fixed effects have been growing faster than in any other member of the grouping. The differences

between overall export and imports performance across BRIICS could suggest more of an export-led rather than a broad openness-based scenario of BRIICS emergence. However, this hypothesis can be countered by the generally positive time-invariant importer fixed effects presented in Annex Figure 2A.2 and the generally negative time-invariant exporter fixed effects presented in Annex Figure 2A.3.

The remaining rows in Table 2.1 and Annex Figures 2A.3-2A.10 summarise the estimation results for the four broad product categories. While the classification of trade data into such broad product categories is bound to be based on some subjective judgments, it can help to understand what may be driving the results for total trade.[8] On these sectoral graphs we can see that time-varying fixed effects for BRIICS exporters of consumption goods broadly mimic these for total trade (Annex Figure 2A.3) though the list of strongest performers (South Africa, Russia and India) is different form that for total trade (Russia, China, India and Indonesia). As far as imports are concerned there is more heterogeneity within the group with Indonesia's and Russia's import fixed effects actually declining on average over the period.

The biggest changes over time are observed for capital goods were Indonesia comes out as the strongest relative export performer, followed closely by China, India and South Africa.[9] This is accompanied by strong imports of capital goods of these countries (although Indonesia has been actually decreasing import integration in this category of goods). As far as raw materials are concerned, China is an outlier. It is the only country that has not been increasing its export presence in this category of goods over time. All other BRIICS have been increasing their export presence in raw materials over time in a remarkably uniform fashion. On the import side, China has been the most dynamic destination market for raw materials. This is consistent with its export performance and with the needs of a rapidly industrialising economy.

Country pair-specific time-invariant fixed effects $\hat{\delta}_{ij}$ tell us with which countries BRIICS were trading particularly intensely through the investigated period, having accounted for all country specific and time factors. Point estimates of those fixed effects that concern one of the BRIICS countries (either as an exporter or importer) and that were statistically significant at 10% level and are listed in Annex Table 2.1. The magnitude of many of these effects is much larger than the magnitude of the time-varying exporter effects for total trade (which are not significantly different from zero). This suggests that exports are to a large extent influenced by bilateral factors rather than by country-wide factors that have evolved over the investigated period. Indonesia and the Russian Federation seem to have a particularly large number of significant country-pair effects both as exporters and as importers. Indonesia trades particularly intensely with a number of East, North-East and South Asian economies but also with a number of EU and North American countries. For Russia the list of particularly strong trade links involves the economies of the former Soviet bloc but also a number of countries from other continents. China does not seem to have particularly strong bilateral links. In the case of India, the coefficients for a small number of EU countries are negative, suggesting weaker bilateral trade integration.

Conclusions

This paper presents an approach for analyzing bilateral trade data based on the gravity model of international trade and the fixed effects approach to analyzing panel data. The model is employed in an analysis of bilateral trade performance of Brazil, Russian Federation, India, Indonesia, China and South

8 In this paper we use the classification and concordance available from the World Integrated Trade Solution (WITS) database.

9 Indonesia has suffered significantly from the 1997-98 Asian financial crisis, including 13% fall in GDP in 1998 and a major devaluation of the currency, but this does not seem to be explaining the good trade performance results as exports (in USD terms) of capital goods have been growing rather robustly before, during and after the crisis.

Africa (BRIICS). The analysis covers the 1988-2005 period and is conducted for total trade as well as four broad product categories: raw materials, intermediate goods, consumption goods and capital goods. The econometric approach presented in this paper is a way of decomposing historical trade trends into a number of components; some of which are country and policy specific and some of which are not.

The results indicate that, as expected, a number of the BRIICS have been expanding their total exports much faster than the G3 countries and this is a characteristic that distinguishes them from OECD and many other countries. More surprisingly, while China's estimated strong performance is in line with general public perceptions, countries like India, South Africa, Indonesia and Russia have been performing equally well or even better. This fact does not come through as clearly in standard media reports which tend to be more 'alarming' when describing Chinese merchandise exports. The relative export performance measure and the econometric approach used to decompose bilateral trade flows in this paper takes global trade trends and economic growth influences into account. In so doing this analysis demonstrates that China is not the only BRIICS country that has been dynamically deepening its trade links, nor is it the best performer. Such assessments cannot be easily made on the basis of more conventional analysis of trade data.

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Annex: Tables and Figures

Annex Table 2A.1. Statistically significant* country-pair fixed effects involving one of the BRIICS, sorted by exporter

Exporter	Importer	95% low	Coefficient	95% high
AUT	CHN	-2.4	-1.6	-0.7
AUT	IND	-6.7	-4.5	-2.3
BEL	CHN	-2.2	-1.4	-0.6
BEL	IND	-5.5	-3.3	-1.1
BRA	VEN	3.0	3.7	4.4
BRA	ISL	1.2	1.9	2.5
BRA	FRA	-1.3	-1.0	-0.6
BRA	BEL	-1.7	-1.4	-1.1
CHL	BRA	4.8	5.1	5.5
CHN	ISL	1.3	1.7	2.1
CHN	DEU	0.1	0.4	0.6
CHN	FRA	-1.1	-0.7	-0.4
CHN	BEL	-1.3	-1.0	-0.7
COL	BRA	2.6	3.1	3.6
DEU	RUS	-1.8	-1.2	-0.6
DEU	ZAF	-4.0	-2.0	-0.1
DEU	CHN	-3.4	-2.7	-2.0
DEU	IND	-7.8	-5.7	-3.5
DNK	CHN	-1.7	-0.9	-0.2
DNK	ZAF	-4.1	-2.1	-0.1
DNK	IND	-6.0	-3.8	-1.6
ESP	RUS	0.8	1.1	1.5
ESP	IND	-5.2	-3.0	-0.8
FIN	IDN	-1.9	-0.8	0.2
FIN	CHN	-3.8	-1.9	-0.1
FIN	ZAF	-3.3	-2.4	-1.4
FIN	IND	-6.6	-5.3	-4.0
FRA	IDN	-1.8	-0.9	-0.1
FRA	ZAF	-2.8	-2.1	-1.4
FRA	CHN	-4.1	-2.2	-0.3
FRA	IND	-6.4	-5.2	-4.1
GBR	IDN	-0.2	1.9	3.9
GBR	RUS	0.3	1.1	1.9
GBR	IND	-4.3	-2.0	0.2
GRC	RUS	0.9	2.7	4.5
GRC	IDN	0.3	1.4	2.5
GRC	IND	-4.1	-2.8	-1.4
HKG	CHN	3.0	5.2	7.5
HKG	IDN	3.8	4.6	5.4
HKG	ZAF	1.4	2.7	4.0
HKG	RUS	-0.2	2.0	4.2
HKG	IND	0.2	0.5	0.8
IDN	NZL	6.6	6.9	7.1
IDN	THA	4.7	6.6	8.5
IDN	AUS	4.7	6.6	8.4
IDN	ARG	4.2	6.2	8.1
IDN	CHL	5.2	5.8	6.4
IDN	MYS	5.4	5.8	6.1
IDN	SGP	5.1	5.6	6.1
IDN	PHL	3.5	5.4	7.2
IDN	KOR	4.4	4.7	4.9
IDN	CAN	2.7	4.6	6.5
IDN	MEX	3.6	4.5	5.3
IDN	HKG	2.5	4.4	6.3
IDN	CHN	1.7	3.6	5.5
IDN	ZAF	2.9	3.6	4.4
IDN	POL	0.8	3.4	6.0
IDN	JPN	3.0	3.3	3.6
IDN	RUS	1.3	3.2	5.1
IDN	AUT	0.9	2.6	4.4
IDN	CZE	0.5	2.3	4.1
IDN	FIN	0.4	2.3	4.1
IDN	DNK	0.0	1.7	3.4
IDN	GBR	-0.1	1.6	3.3
IDN	NLD	-0.2	1.5	3.2
IDN	NOR	0.7	1.2	1.6
IDN	TUR	0.7	1.1	1.4
IDN	IND	-0.2	1.0	2.2
IND	BEL	-1.8	-0.9	-0.1
IND	DEU	-2.6	-1.7	-0.9
IND	SWE	-2.9	-2.0	-1.2
IND	VEN	-3.9	-2.7	-1.4
IND	FRA	-3.6	-2.7	-1.9
IND	LUX	-4.1	-3.1	-2.0
ISR	ZAF	0.6	1.9	3.1
ISR	IND	-1.7	-1.2	-0.7
ITA	IDN	-1.9	-1.0	-0.2
ITA	ZAF	-3.1	-2.3	-1.4
ITA	CHN	-4.5	-2.6	-0.7
ITA	IND	-6.2	-5.1	-3.9

Annex Table 2A.1. Statistically significant* country-pair fixed effects involving one of the BRIICS, sorted by exporter (continued)

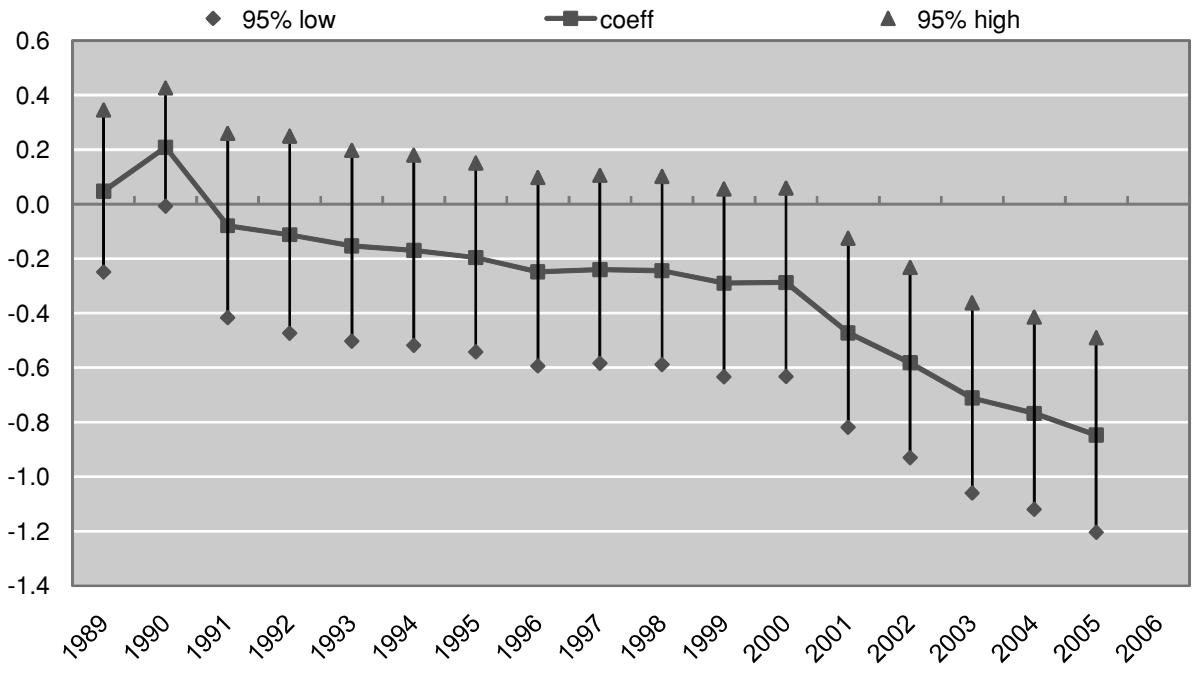
Exporter	Importer	95% low	Coefficient	95% high
LUX	IDN	1.4	2.5	3.6
LUX	IND	-3.9	-2.7	-1.5
MEX	IDN	0.0	2.0	4.1
MEX	IND	-4.8	-2.6	-0.4
MYS	BRA	2.9	3.7	4.5
NLD	RUS	-1.8	-1.4	-1.0
NLD	ZAF	-4.4	-2.4	-0.4
NLD	CHN	-3.6	-2.8	-1.9
NLD	IND	-7.9	-5.7	-3.5
PHL	IDN	2.9	4.8	6.7
PHL	RUS	2.3	3.0	3.8
PHL	CHN	1.0	1.9	2.8
POL	RUS	0.7	2.5	4.2
POL	ZAF	-1.8	-0.9	-0.1
POL	IND	-5.1	-3.8	-2.6
PRT	CHN	-2.4	-1.6	-0.8
PRT	IND	-5.7	-3.6	-1.4
RUS	POL	2.7	5.5	8.4
RUS	ARG	2.9	5.1	7.3
RUS	NZL	3.5	4.7	5.9
RUS	ISR	3.0	4.1	5.3
RUS	CZE	1.9	4.0	6.1
RUS	THA	1.1	3.3	5.6
RUS	FIN	0.9	3.0	5.2
RUS	MEX	1.9	2.8	3.7
RUS	CHL	1.5	2.8	4.1
RUS	AUS	0.4	2.6	4.7
RUS	CAN	0.3	2.5	4.7
RUS	IDN	1.7	2.5	3.3
RUS	MYS	1.3	2.5	3.7
RUS	COL	1.1	2.4	3.7
RUS	AUT	0.3	2.4	4.5
RUS	TUR	1.2	2.3	3.5
RUS	KOR	1.0	2.2	3.3
RUS	DNK	0.1	2.1	4.2
RUS	CHN	-0.3	1.9	4.1
RUS	HUN	0.6	1.8	3.1
RUS	ZAF	0.1	1.4	2.7
RUS	NOR	0.1	1.3	2.5
RUS	IRL	0.3	0.8	1.3
SVK	RUS	2.8	4.6	6.4
SVK	IDN	0.7	1.6	2.6
SVK	IND	-4.0	-2.7	-1.4
SWE	ZAF	-2.6	-1.5	-0.4
SWE	IND	-4.6	-3.8	-2.9
VEN	IDN	-0.2	1.7	3.7
VEN	IND	-4.7	-2.5	-0.4
ZAF	ISL	1.6	1.9	2.3
ZAF	DEU	0.1	0.2	0.3
ZAF	SWE	-0.9	-0.6	-0.3
ZAF	FRA	-1.3	-1.1	-0.9
ZAF	BEL	-1.6	-1.4	-1.2
ZAF	VEN	-3.2	-2.5	-1.8

* at 10% level

Note: only coefficients statistically significant at 10% are reported.

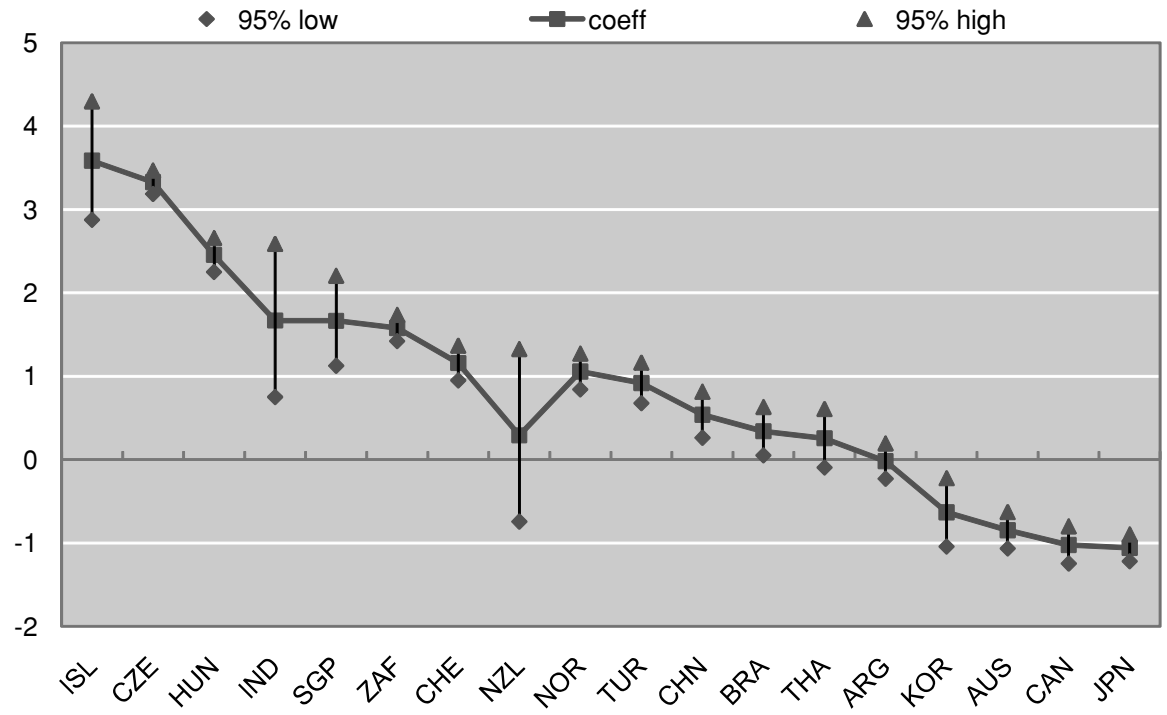
Source: Authors calculations based on estimation results.

Annex Figure 2A.1. Year fixed effects



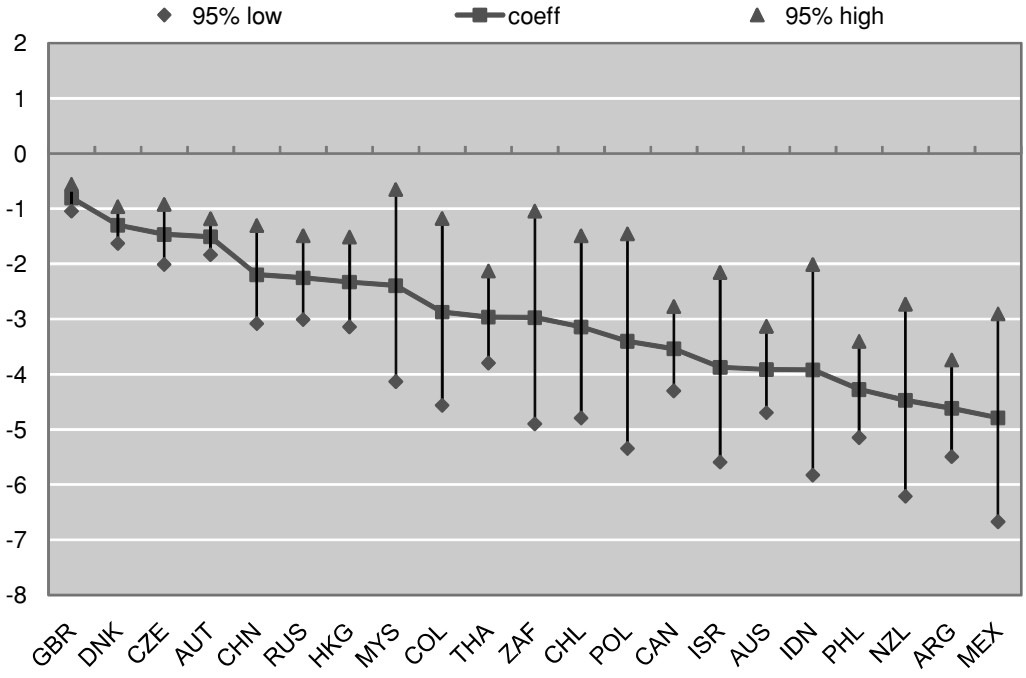
Source: Authors calculations based on estimation results.

Annex Figure 2A.2. Importer fixed effects (total trade)



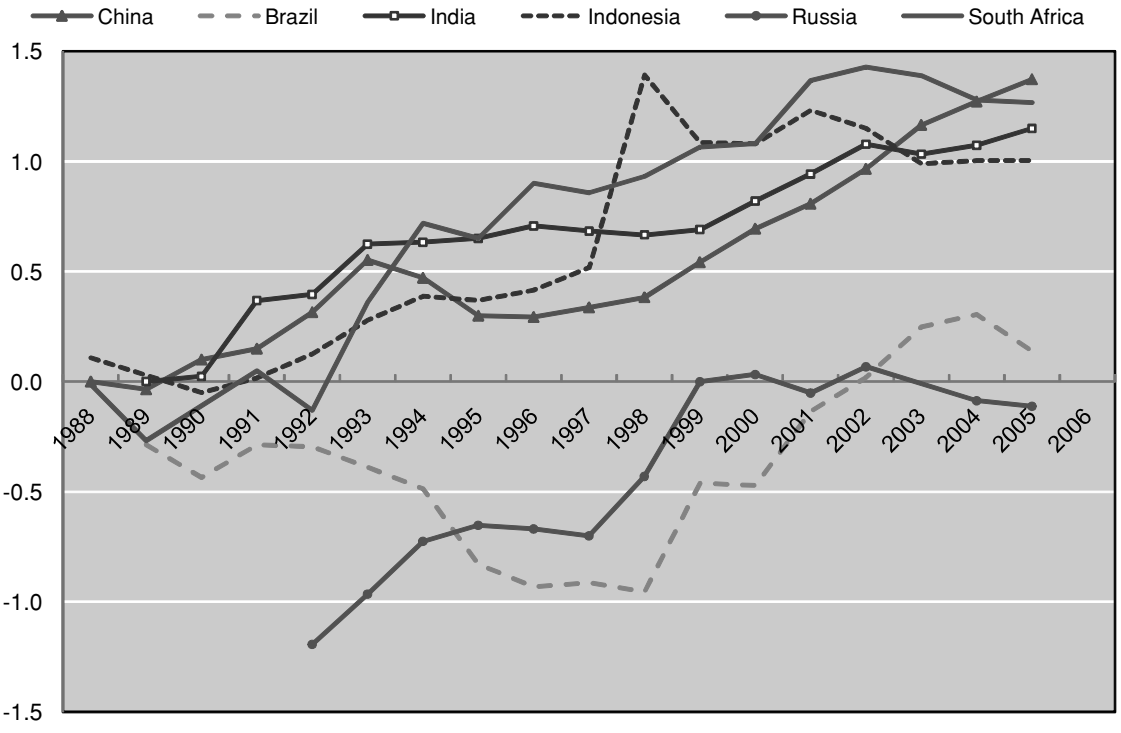
Source: Authors calculations based on estimation results.

Annex Figure A2.3. Exporter fixed effects (total trade)



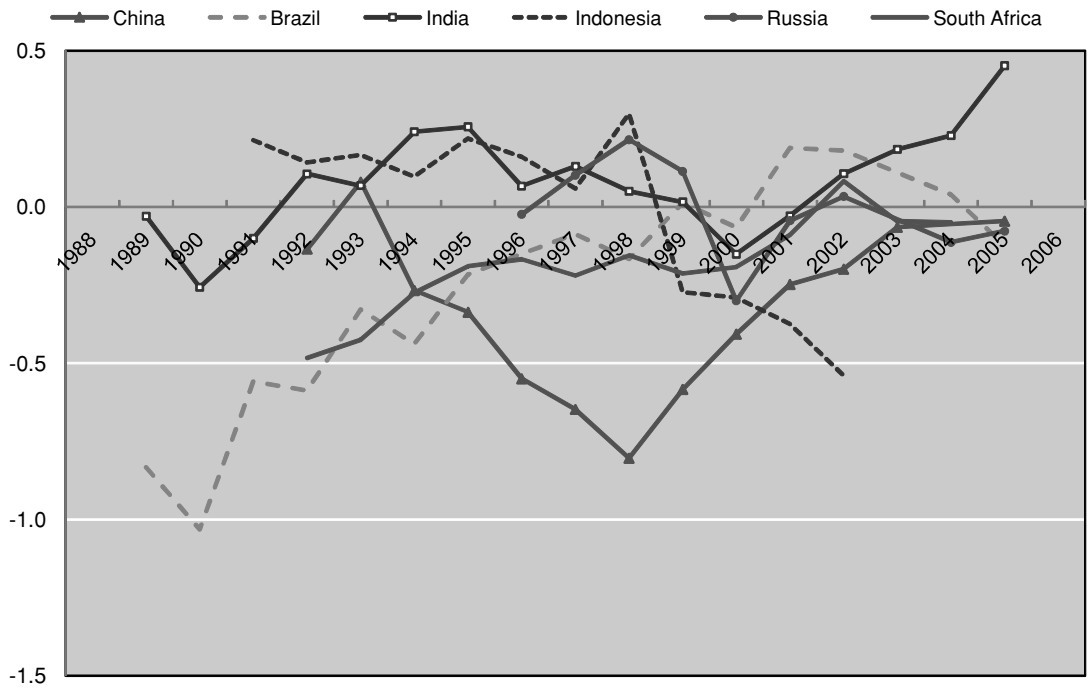
Source: Authors calculations based on estimation results.

Annex Figure 2A.4. Time-varying fixed effects for BRIICS as exporters (total trade)



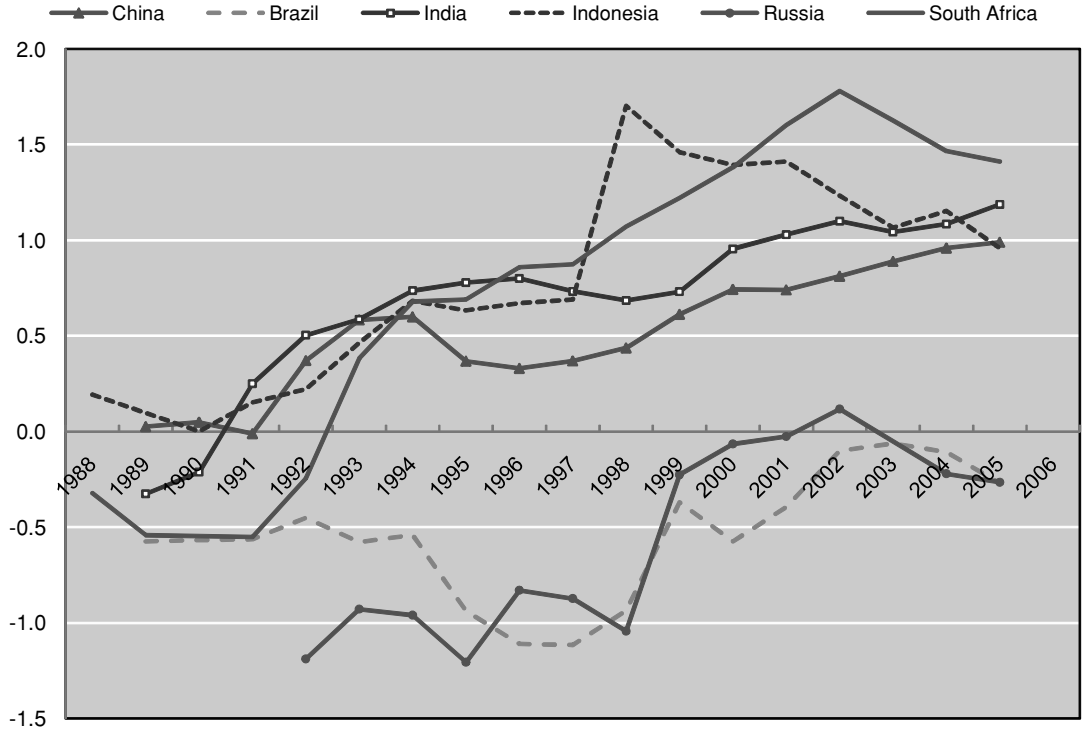
Source: Authors calculations based on estimation results.

Annex Figure 2A.5. Time-varying fixed effects for BRIICS as importers (total trade)



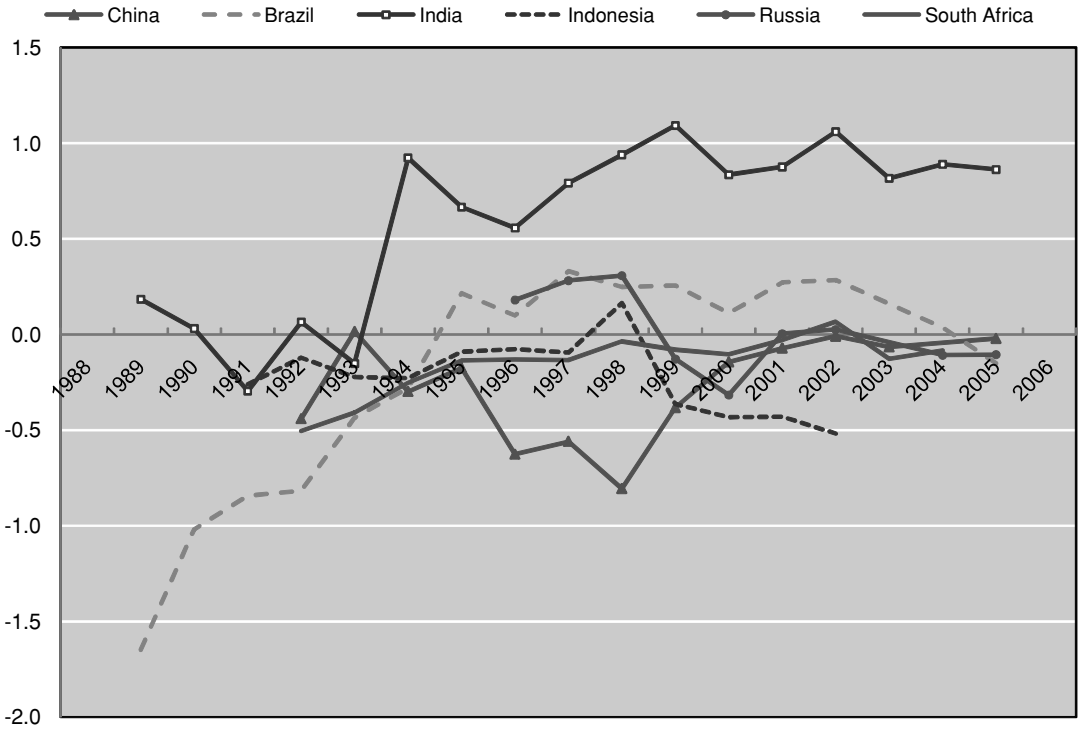
Source: Authors calculations based on estimation results.

Annex Figure 2A.6. Time-varying fixed effects for BRIICS as exporters (consumption goods)



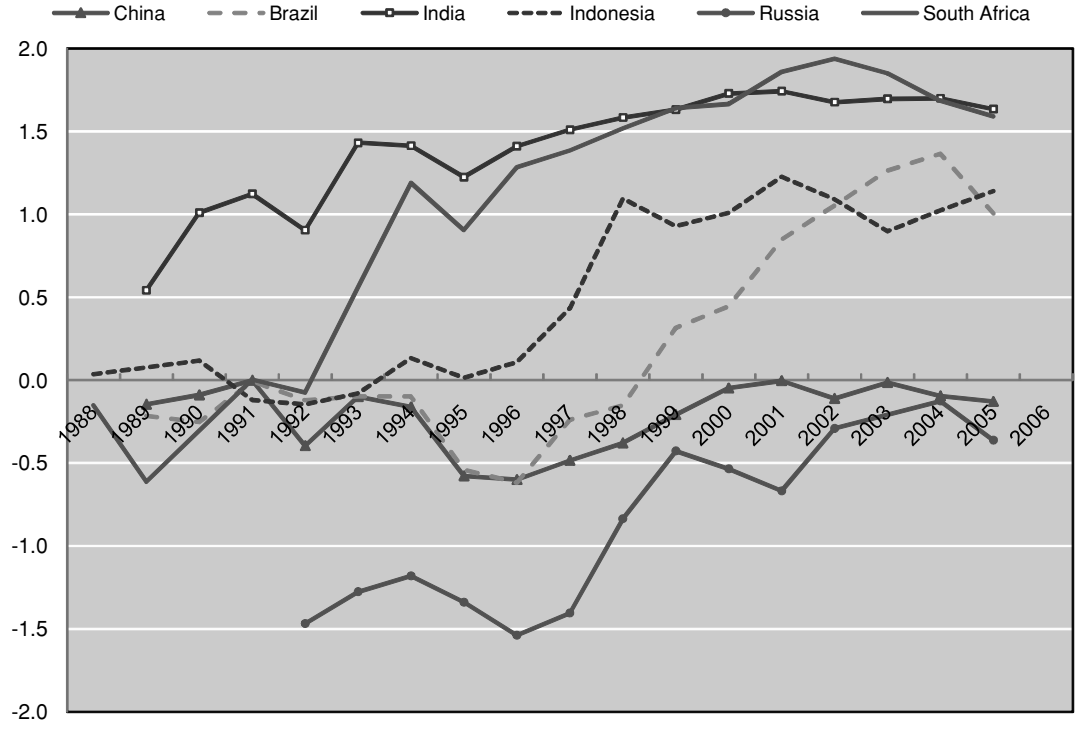
Source: Authors calculations based on estimation results.

Annex Figure 2A.7. Time-varying fixed effects for BRIICS as importers (consumption goods)



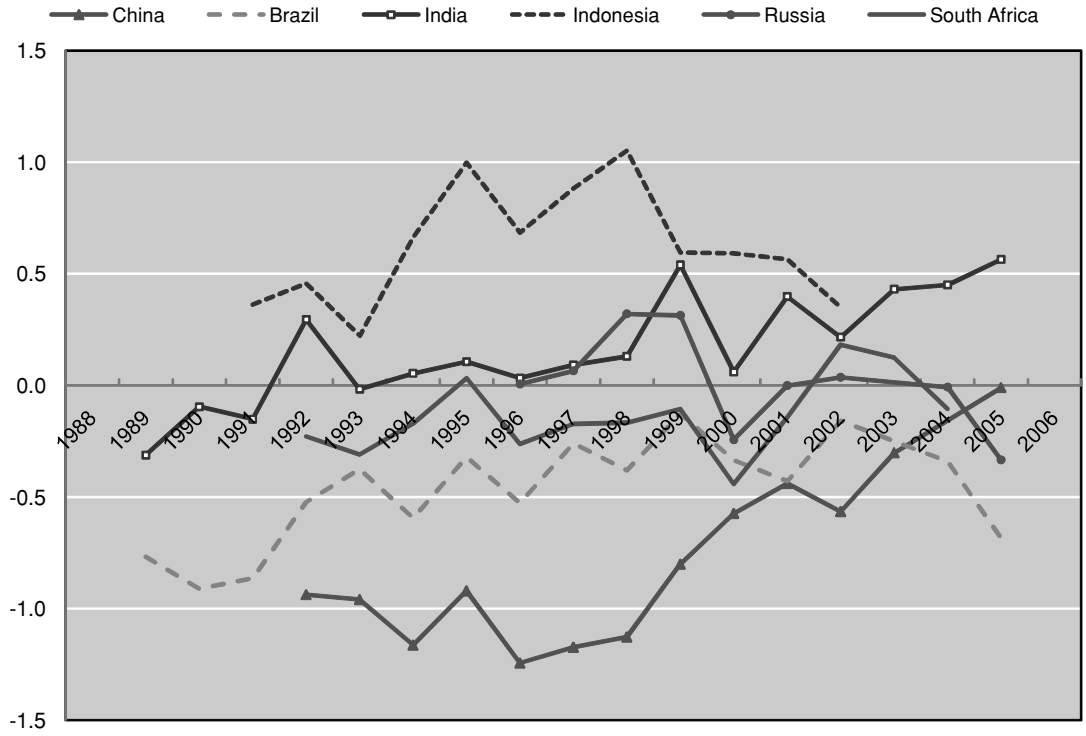
Source: Authors calculations based on estimation results.

Annex Figure 2A.8. Time-varying fixed effects for BRIICS as exporters (raw materials)



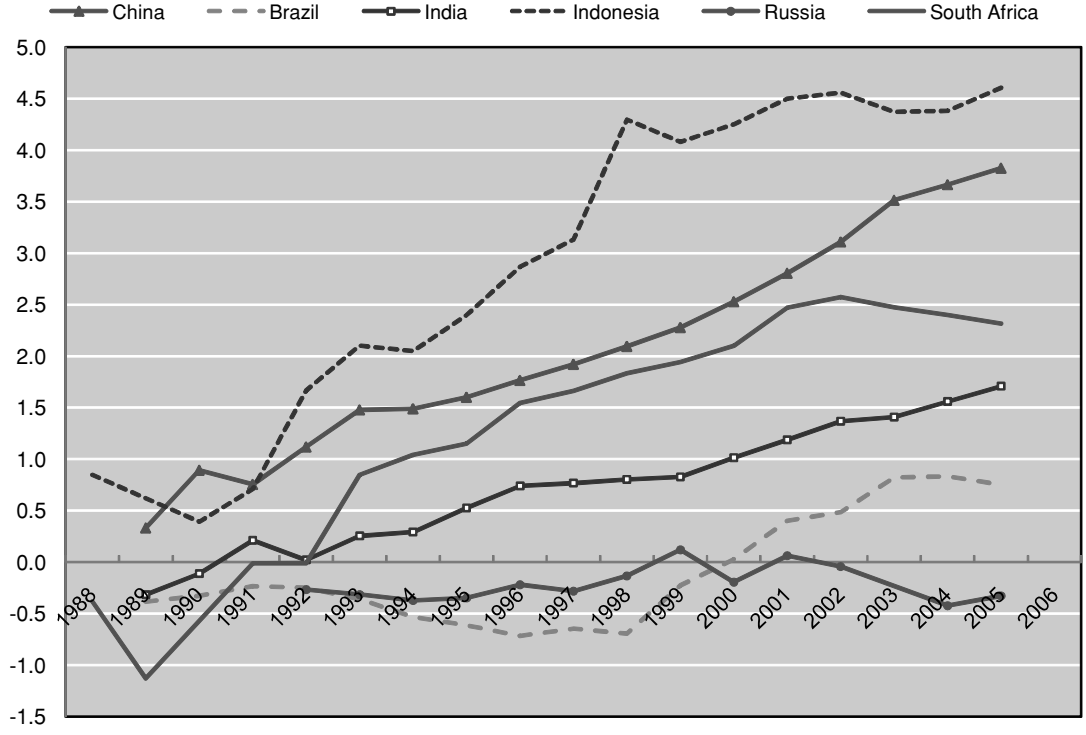
Source: Authors calculations based on estimation results.

Annex Figure 2A.9. Time-varying fixed effects for BRIICS as importers (raw materials)



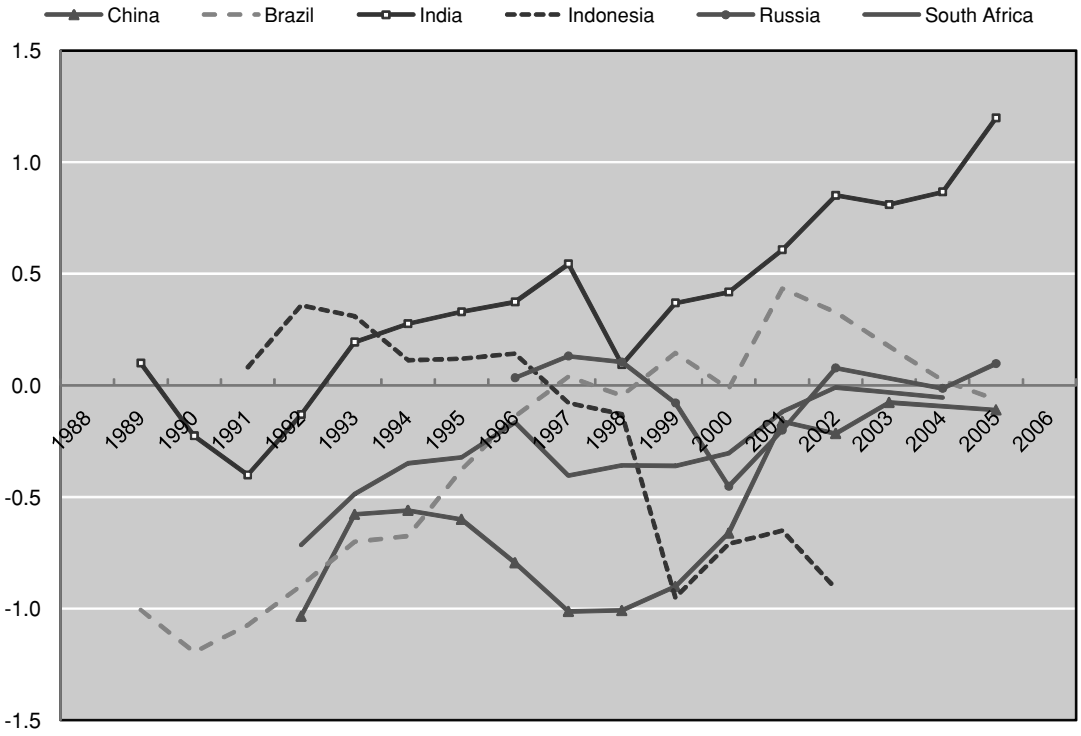
Source: Authors calculations based on estimation results.

Annex Figure 2A.10. Time-varying fixed effects for BRIICS as exporters (capital goods)



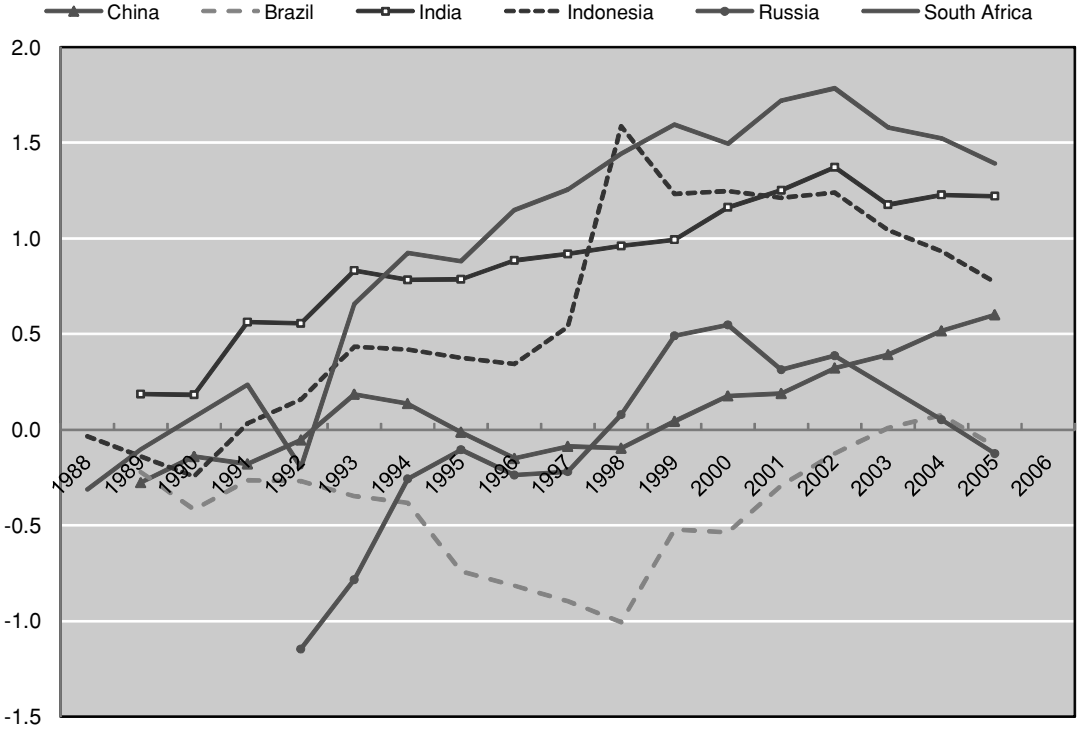
Source: Authors calculations based on estimation results.

Annex Figure 2A.11. Time-varying fixed effects for BRIICS as importers (capital goods)



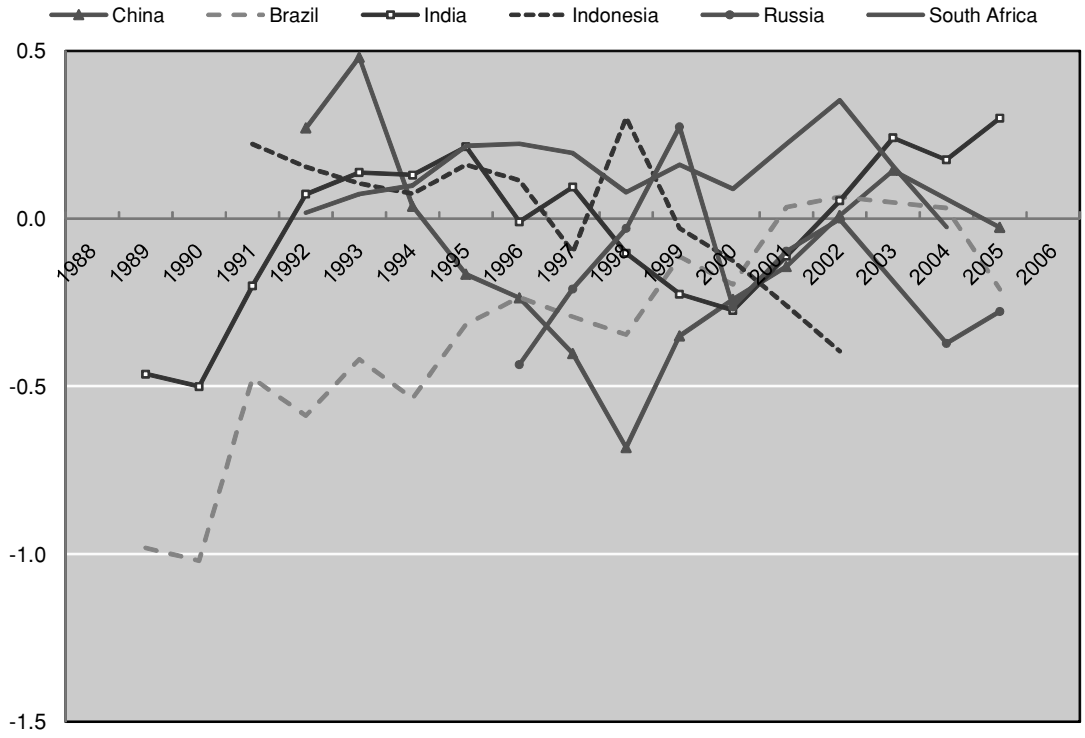
Source: Authors calculations based on estimation results.

Annex Figure 2A.12. Time-varying fixed effects for BRIICS as exporters (intermediate goods)



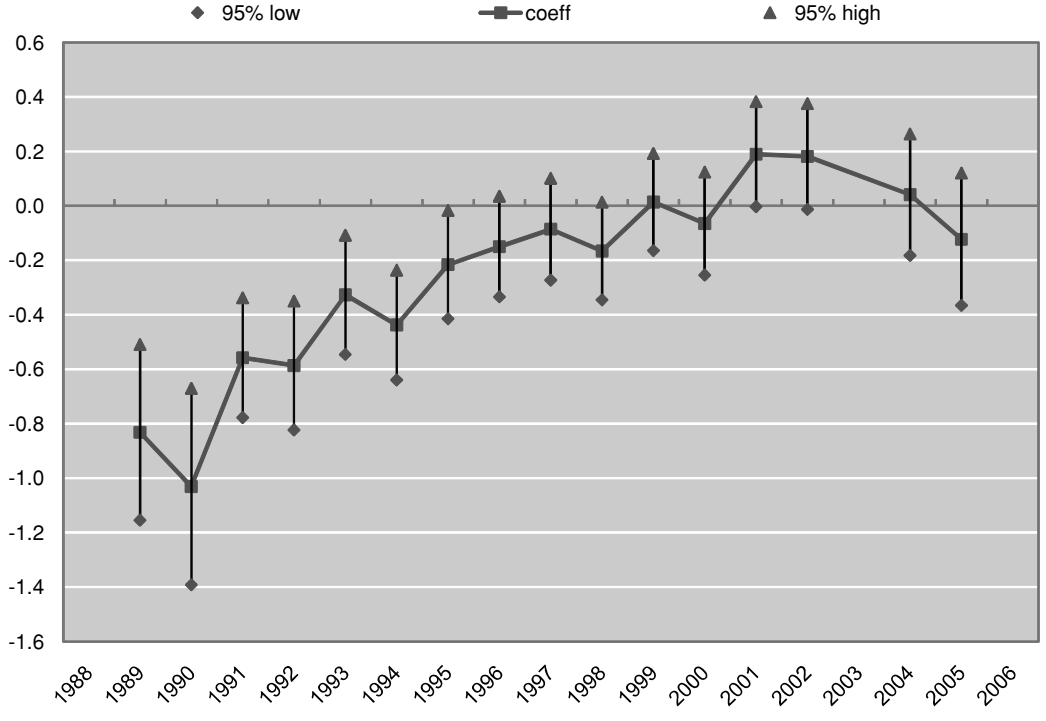
Source: Authors calculations based on estimation results.

Annex Figure 2A.13. Time-varying fixed effects for BRIICS as importers (intermediate goods)



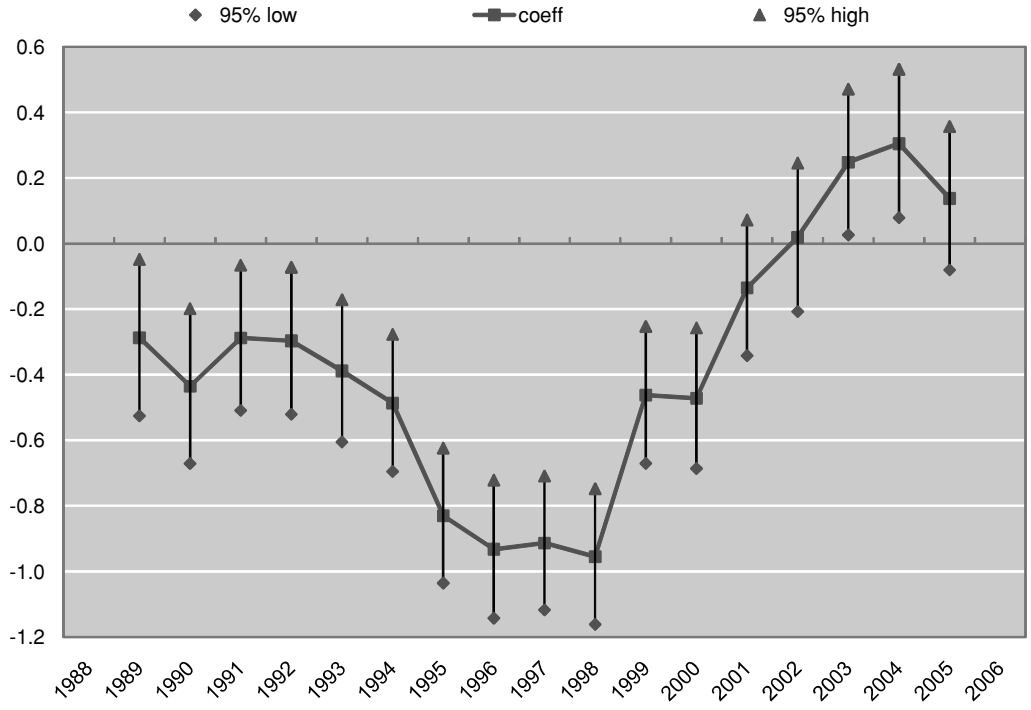
Source: Authors calculations based on estimation results.

Annex Figure 2A.14. Time-varying fixed effects for Brazil as an importer



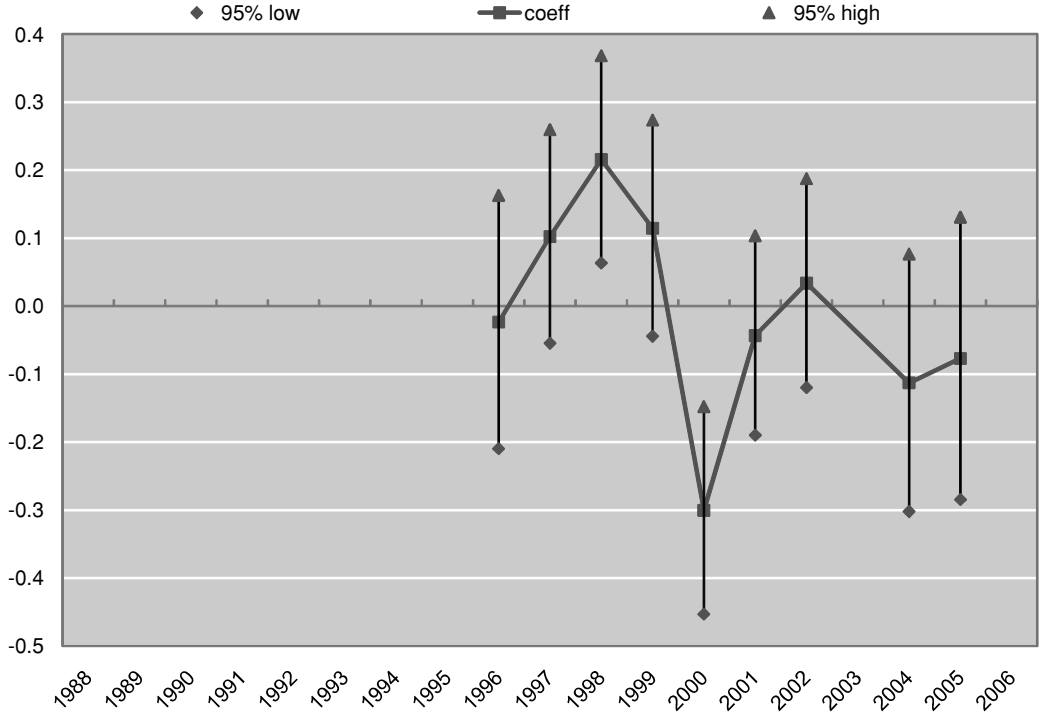
Source: Authors calculations based on estimation results.

Annex Figure 2A.15. Time-varying fixed effects for Brazil as an exporter



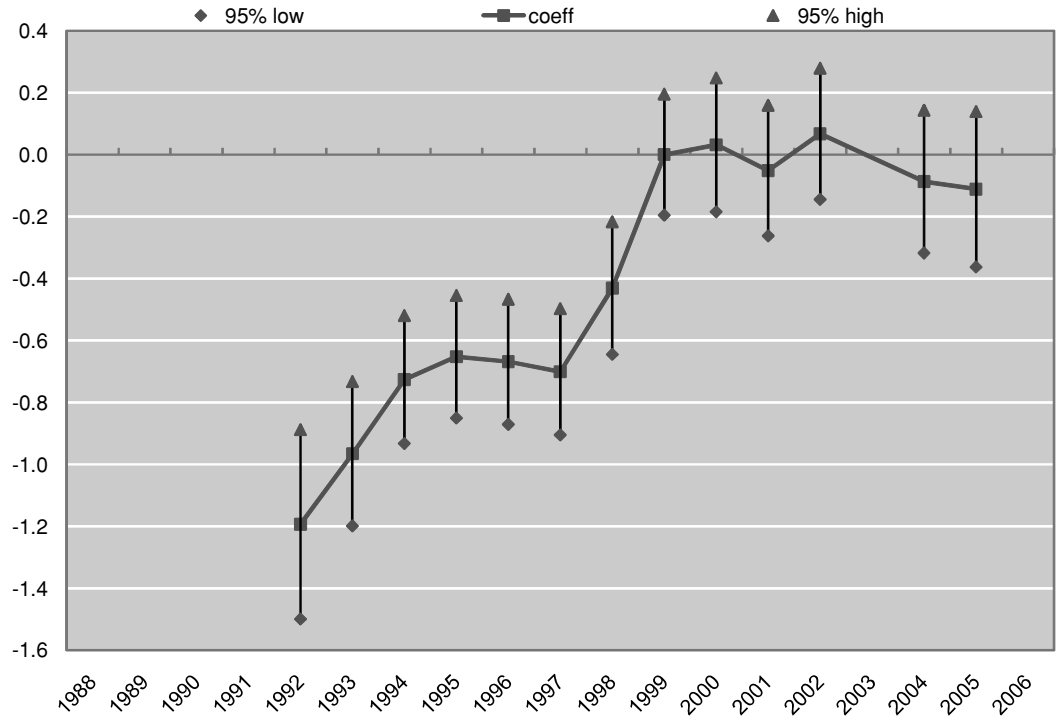
Source: Authors calculations based on estimation results.

Annex Figure 2A.16. Time-varying fixed effects for Russia as an importer



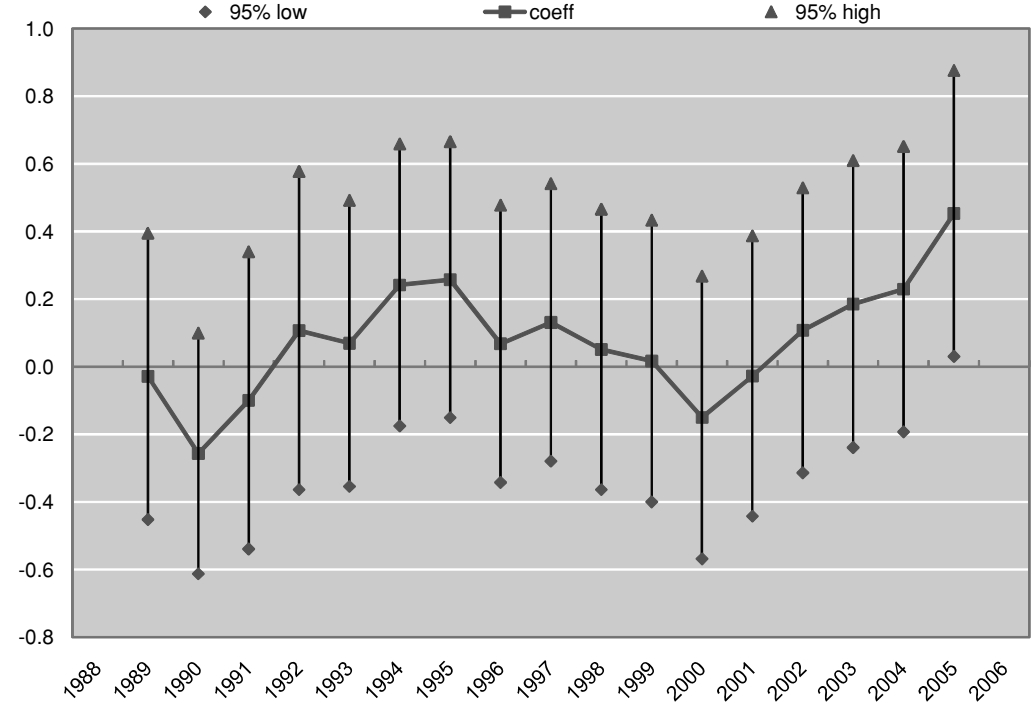
Source: Authors calculations based on estimation results.

Annex Figure 2A.17. Time-varying fixed effects for Russia as an exporter



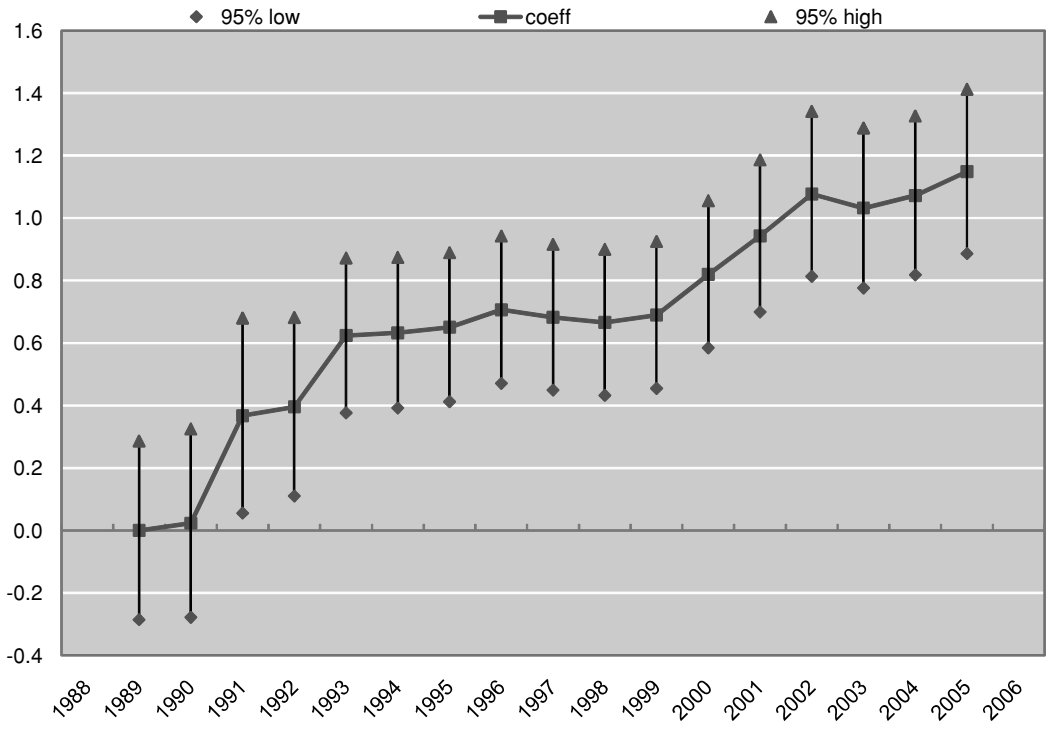
Source: Authors calculations based on estimation results.

Annex Figure 2A.18. Time-varying fixed effects for India as an importer



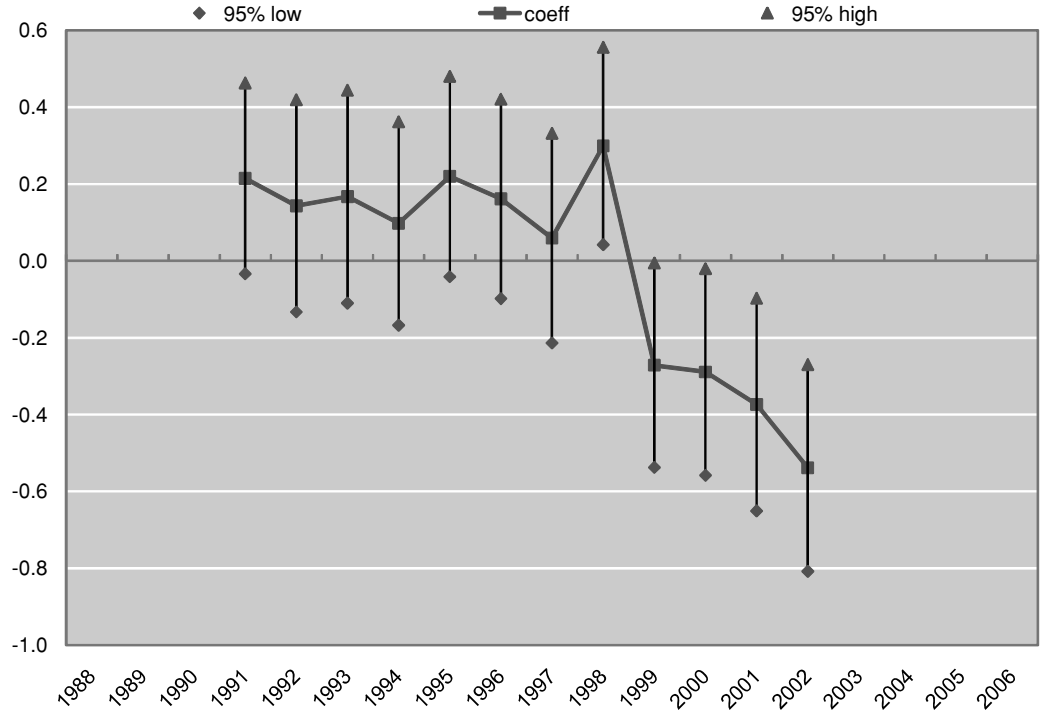
Source: Authors calculations based on estimation results.

Annex Figure 2A.19. Time-varying fixed effects for India as an exporter



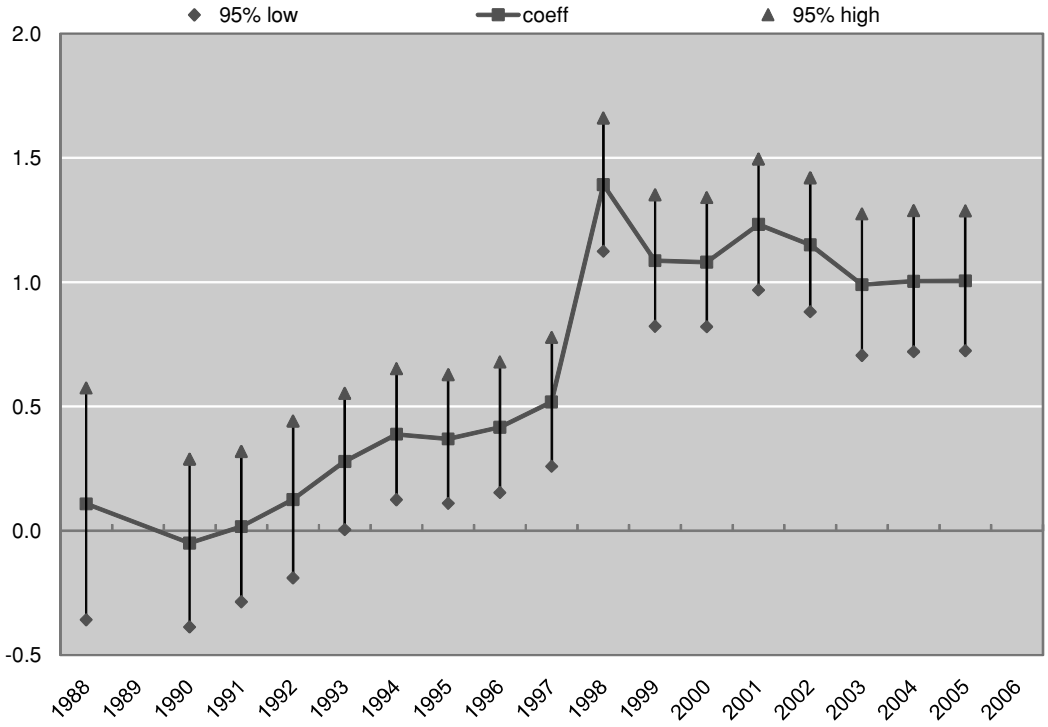
Source: Authors calculations based on estimation results.

Annex Figure 2A.20. Time-varying fixed effects for Indonesia as an importer



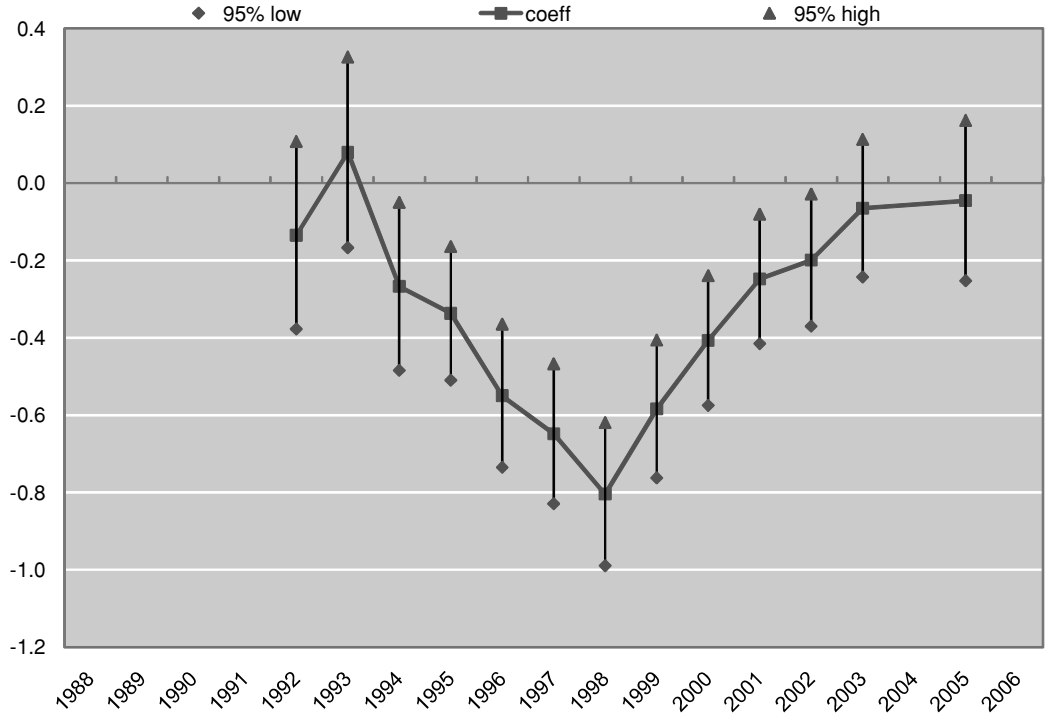
Source: Authors calculations based on estimation results.

Annex Figure 2A.21. Time-varying fixed effects for Indonesia as an exporter



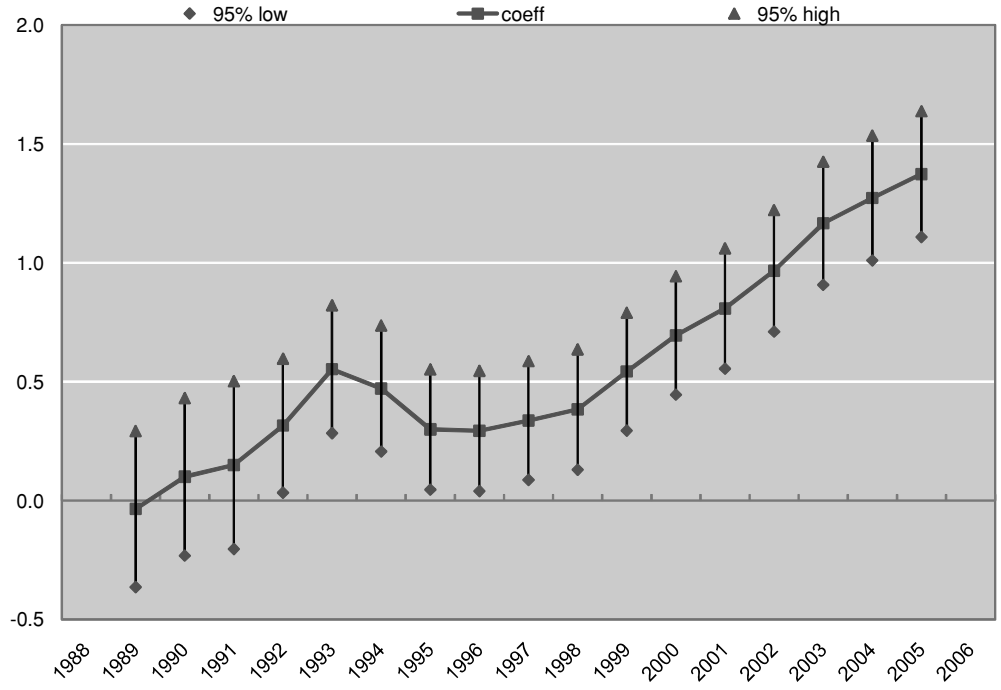
Source: Authors calculations based on estimation results.

Annex Figure 2A.22. Time-varying fixed effects for China as an importer



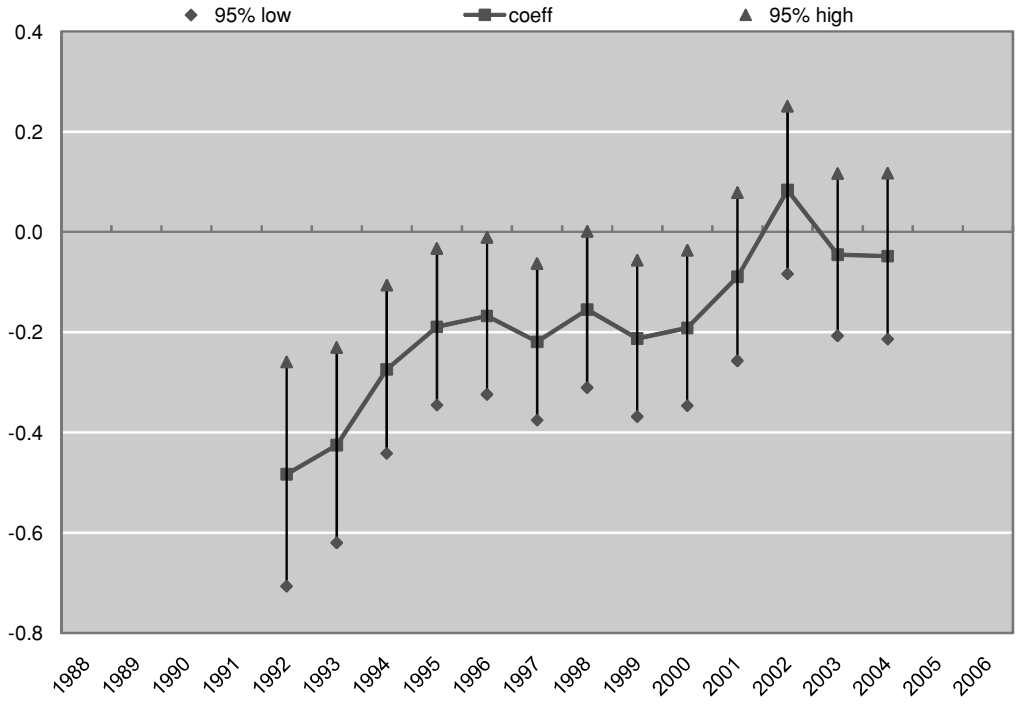
Source: Authors calculations based on estimation results.

Annex Figure 2A.23. Time-varying fixed effects for China as an exporter



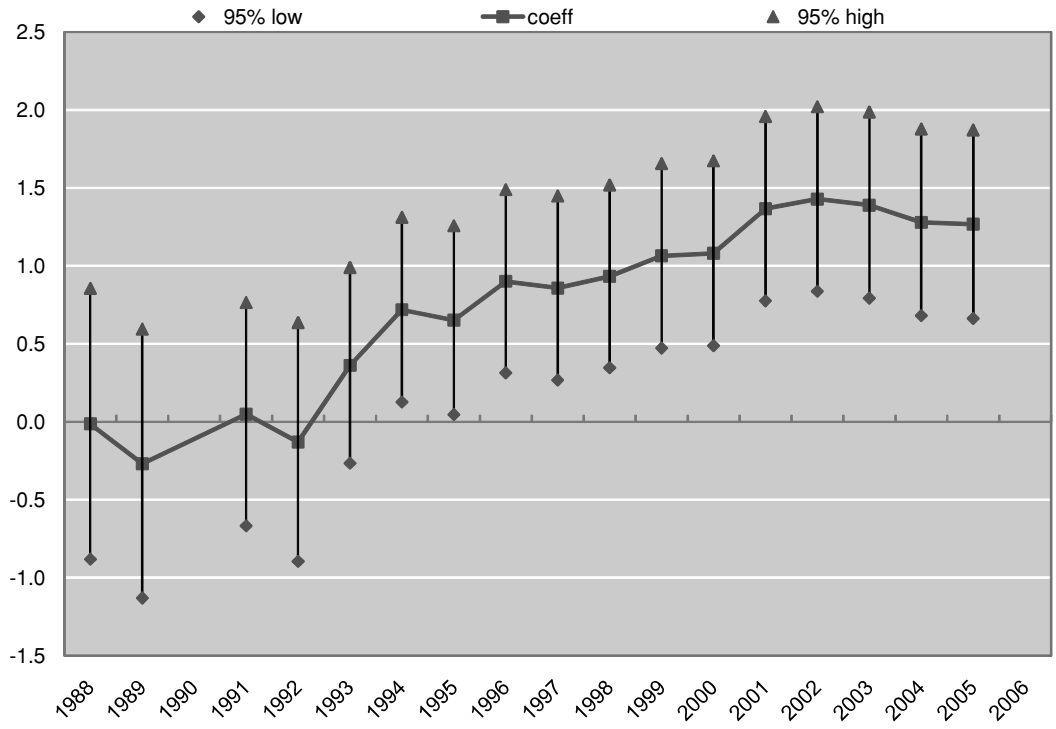
Source: Authors calculations based on estimation results.

Annex Figure 2A.24. Time-varying fixed effects for South Africa as an importer



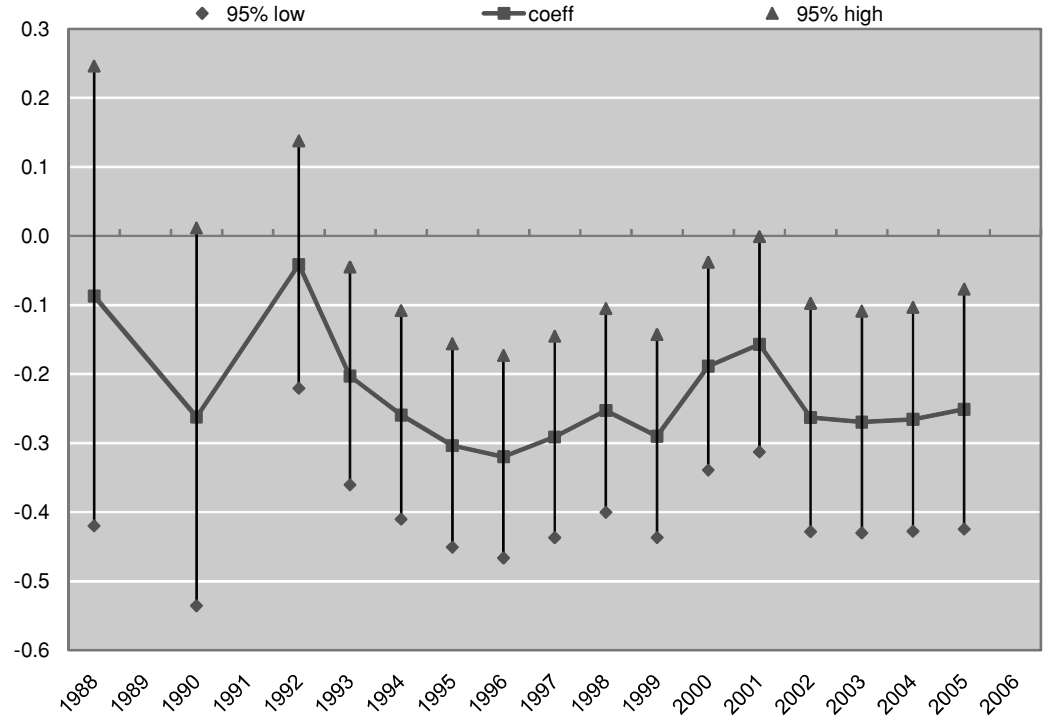
Source: Authors calculations based on estimation results.

Annex Figure 2A.25. Time-varying fixed effects for South Africa as an exporter



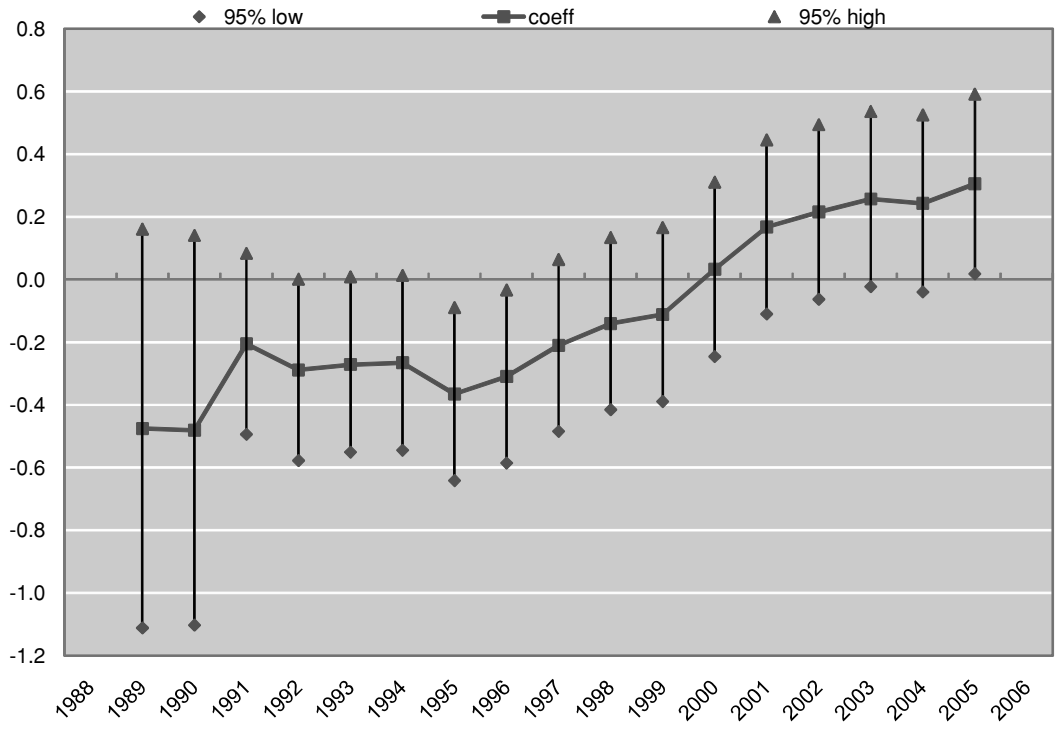
Source: Authors calculations based on estimation results.

Annex Figure 2A.26. Time-varying fixed effects for Germany as an importer



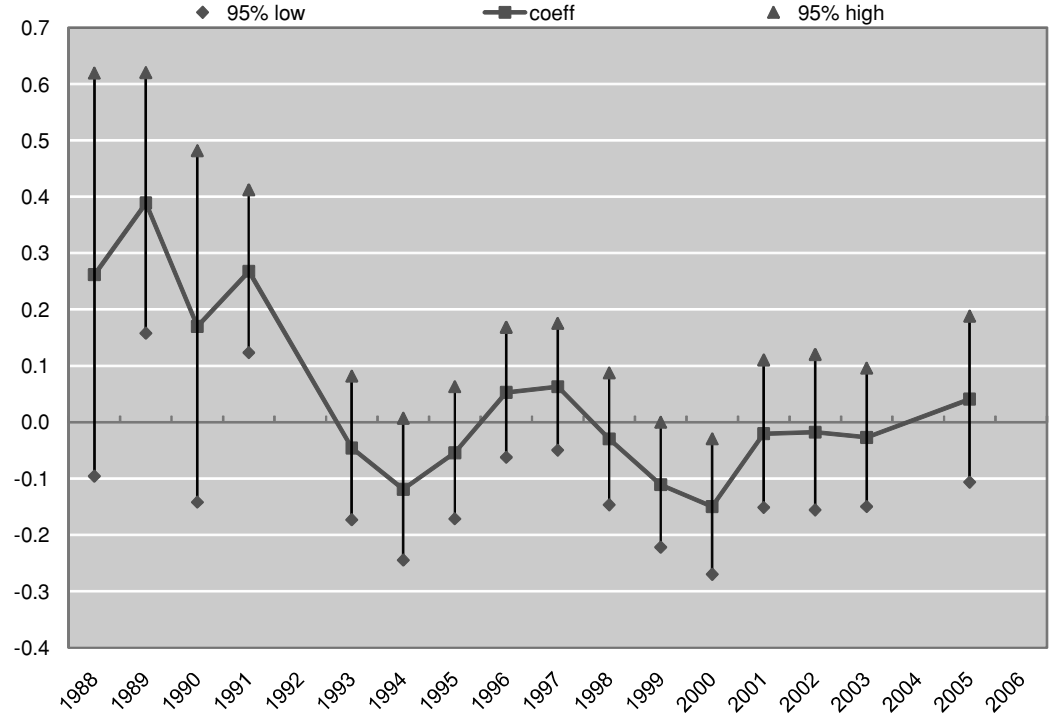
Source: Authors calculations based on estimation results.

Annex Figure 2A.27. Time-varying fixed effects for Germany as an exporter



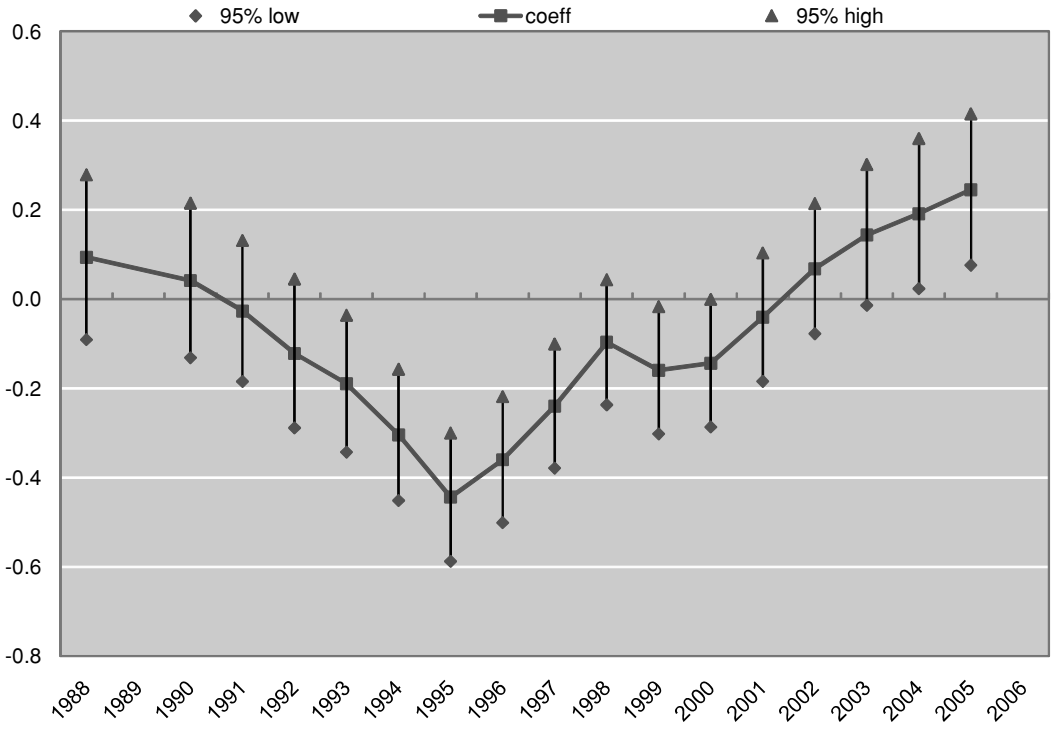
Source: Authors calculations based on estimation results.

Annex Figure 2A.28. Time-varying fixed effects for Japan as an importer



Source: Authors calculations based on estimation results.

Annex Figure 2A.29. Time-varying fixed effects for Japan as an exporter



Source: Authors calculations based on estimation results.

Chapter 3

Globalisation, Multinationals and the BRIICS

by

Philip McCann

1. Introduction

In order to understand the nature of the contemporary phase of globalisation, this chapter adopts the economists' focus on international trade, international investment and international markets from the particular perspective of economic geography. From the standpoint of economic geography, it explores the explicitly spatial and regional characteristics and impacts of contemporary globalisation. Through the lens of international investment, impacts on individual countries, groups of countries, regions and cities are also analysed. The processes of globalisation which are mediated by the foreign direct investment (FDI) behaviour of multinational enterprises (MNEs) or trans-national corporations (TNCs) form a particular focus of this chapter. Impacts of globalisation on the BRIICS countries of Brazil, Russia, India, Indonesia, China and South Africa are also considered from an economic-geographic viewpoint.

Since globalisation is a process that has been taking place over several centuries, it might be argued that the current globalising trend, which has lasted for approximately two and half decades, represents nothing new (Steger, 2003). On the other hand, the current era of globalisation is qualitatively different from previous eras of globalisation in that the magnitude of internationalisation is far greater (Steger, 2003; MacGillivray, 2006). If we consider the twentieth century, then this argument clearly has credence. Much of the twentieth century was characterised by long periods of anti-globalisation, most notably during the first half of the century. The ratio of world trade to global GDP fell during the period 1929-1950, while the ratio of foreign assets to global GDP declined from 1914 onwards, and was not attained again until 1980 (Crafts, 2004). In contrast, the most notable feature of the current era of economic globalisation since the 1980s is the extent to which it exceeds the previous peaks (Crafts, 2004). The world is now more open and inter-connected than at any other stage in its history.

Why, then, is this the subject of so much debate? Economic geography offers us an answer. Over the last three decades, the global economy has undergone three radical types of changes and these have fundamentally altered all of the global economic relations between countries, regions and firms. These changes can be labelled institutional, technological, and organisational. These changes are neither entirely independent of each other nor dependent upon each other, as the mutual causality between these three types of changes is very complex. However, grouping into three broad categories the various forces that have driven and shaped the current era of globalisation allows us to analyse the impacts of globalisation on the world economy as a whole, and then to consider the impacts on individual countries and regions through the behaviour of firms. As such, this approach provides for a bottom-up microeconomic approach to explaining global economic geography phenomena. The chapter thus begins with a brief overview of each of these changes, the nature and logic of which are discussed in detail in the following sections.

The collapse of the centrally-planned economic systems in the late 1980s and the opening up of the formerly planned transition economies to the global economic system has led to major changes in the nature and patterns of global trade and investment; such changes may be called institutional changes. With the emergence of transition economies, some 260 million workers entered the global labour market for the first time. Furthermore, the opening up of China released some 760 million workers, and the liberalisation of India, another 440 million into the market (Venables, 2006). These institutional changes, which are essentially internal domestic changes within individual countries, have had dramatic scale

effects on the global economic system. Equally important have been the institutional changes wrought by the development of trans-national free trading arenas. The creation of the EU internal market in 1992 and the formation of NAFTA in 1994 have been critical moments in the global trading system. These trans-national institutional changes have lowered tariff barriers across a wide range of trading links. These free trade zones have also prompted smaller developments in other parts of the world, such as ASEAN and MERCOSUR, as well as encouraged many of the emerging transition and developing economies to open up. All of these institutional developments promote trade because they allow goods and services to move more freely across geographical space.

Over the last three decades there have been dramatic improvements in information and communications technologies (ICTs) as well as allied improvements in transportation technologies. These technological changes mean that information, goods and services can all move more rapidly across geographical space. These trends have led many commentators to assume that geography is therefore irrelevant as an arbiter of economic logic and performance. This idea can be traced back to the early 1980s (Warf, 1995; Gaspar and Glaeser, 1998). Such arguments were also bolstered by an urban-rural shift that occurred, whereby increasing numbers of people and investments moved away from major cities and into smaller cities and rural areas (Fothergill *et al.* 1985). However, over recent years, communications and transportation technologies have become increasingly sophisticated and have changed rapidly. In 1992, O'Brien (1992) announced the 'end of geography'. Later Cairncross (1997) declared the 'death of distance', and very recently Friedman (2007) argued that 'the world is flat'. Anecdotal evidence of companies 'off-shoring' and relocating to other countries appears on a daily basis. Paradoxically, however, as this chapter demonstrates, there is now also increasing evidence that this modern era of globalisation is in fact associated with the opposite trend, that is, that globalisation leads to a greater spatial concentration of activities across the global economic system. Exactly how these two apparently conflicting observations can be reconciled is crucial to a better understanding of the ever-evolving economic geography of globalisation.

Finally, the combination of the institutional and technological changes has also led to organisational changes. In particular, multinational firms have taken advantage of the changing institutional and technological environment in order to achieve economies of scale. This is possible because many activities can be more efficiently coordinated across and time within multinational organisations rather than via market contracting relationships. The origin countries in which the parent companies of the multinational enterprises (MNEs) are located will in general benefit from the profits associated with the outflows of foreign direct investment (FDI), while the host countries of the inward FDI are likely to benefit from both increased domestic competition and also inward technology transfers. However, in terms of economic geography, these organisational changes are not causal phenomena in the quite same way as institutional and technological changes are. The reason is that the technological and institutional changes are generally beyond the control of any individual firm, whereas the organisational responses of firms are largely within their own control. Instead, the organisational changes can be considered rather more as rational responses to the opportunities afforded by the technological and institutional changes in the global economy. As such, we need to consider these organisational changes in a slightly different manner to the technological and institutional changes.

A very common rather cursory response to these institutional, technological, and organisational changes is to assume that they will 'flatten out' the world' and make it more even (Friedmann, 2007). The reason for this view is that these changes will allow businesses in general and multinational firms in particular to increasingly out-source and off-shore activities to other lower wage countries. The resulting changes in the geographical patterns of foreign direct investment are assumed to therefore favour lower wage economies. The forecasted outcomes of these globalisation processes are that activities will become more geographically dispersed and the gap between developing and developed economies will be quickly

closed. In reality, however, the economic geography impacts of globalisation are far more complex. Such simplistic responses do not consider the complicated inter-relationships that exist between spatial transactions costs, agglomeration economies, and the economic geography of investment and output. As Leamer (2007) points out, the world is not shrinking, but rather economic activity is dispersing. Therefore, what is critical for economic growth and development are the particular spatial patterns of this dispersion process across different types of activities and different countries and regions.

In order to estimate the potential impacts of these institutional, technological, and organisational changes on the global distribution of activities, it is useful to employ the approaches and insights gained from models of new trade theory and new economic geography. Krugman and Venables (1995) analyse the situation where economies produce two sets of outputs, one under conditions of constant returns to scale, and the other under increasing returns to scale. Constant returns to scale implies that as an economy increases in size its level of efficiency stays the same, whereas increasing returns to scale implies that as an economy increases in size it becomes more efficient. Under these assumptions, the model they develop characterises the process of global restructuring under falling distance-transport costs into three distinct phases. In the first phase of global restructuring, Krugman and Venables (1995) demonstrate that with high distance-transport costs all countries have similar production patterns because the high distance-transport costs act in effect as a trade barrier, and this therefore encourages local production. However, in the second phase, as distance-transport costs begin fall, there emerges an increasing centre-periphery divergence and regions in the periphery suffer declines. Finally, in the third phase, as distance-transport costs fall to very low levels, convergence starts to re-occur, such that production takes place in all locations. Where, then, in this Krugman-Venables framework does the global economy currently stand? For those who view the world as increasingly flat (Friedman 2007), we are already in the third stage of the Krugman-Venables framework, where distance-transport costs are extremely low.

Obviously, any model makes assumptions so as facilitate the analysis, and the Krugman-Venables (1995) model is no exception. As such, it is not a complete explanation or description of the processes of globalisation. For example, the model ignores the specialisation possibilities associated with comparative advantage, a crucial issue for many developing countries. Yet, the model neatly captures some of the salient features of globalisation. In particular, the evidence to be presented in this chapter demonstrates that on a global scale, the various institutional, technological and organisational changes outlined above suggest that we are currently in the second phase of the Krugman-Venables framework. In other words, the global economy is currently going through a process of restructuring and adjustment, the characteristics of which often lead towards increasing inequality across regions. More specifically, it is argued that we are currently in a phase of global restructuring characterised by an increasing centre-periphery divergence in which the countries in the geographical periphery tend to suffer.

However, the argument in this chapter is also rather more nuanced than this. In particular, the evidence presented here suggests that the current phase of globalisation is characterised by an increasing divergence between high knowledge-intensive activities and low knowledge-intensive activities. As we will see, high knowledge-intensive activities are developed and controlled in rapidly growing regions which become increasingly efficient in the production of such activities. In particular, these environments are dominated by urban agglomerations. In contrast, low knowledge intensive activities are produced primarily in low wage environments exhibiting constant returns to scale. At the same time, while global distance-transport costs for many activities gave fallen, there is also evidence that they have not fallen by very much. The reason is that the distance-transport costs for many high-value, knowledge-intensive inputs have actually increased, giving further impetus to the role of increasing returns to scale and agglomeration in the generation of high value outputs. As we will see, the combination of these various observations implies that we are currently in the second stage of the Krugman-Venables transition

process; that is, one in which countries and regions in the centre tend to benefit, while countries and regions in the periphery tend to suffer.

Yet, as we will also see, not all central regions benefit and not all peripheral ones suffer. Rather, it depends on the nature of the economic centres within the countries (Fujita *et al.,* 1999). Countries which include large and diverse agglomerations will tend to benefit from falling distance-transport costs, whereas even centrally-located countries without such diverse agglomerations within them will tend to suffer. The reason is that firms will locate in large and densely populated regions in order to take advantage of the large 'home-market' effects (Krugman, 2007) associated with agglomeration because the higher induced productivity will also allow the firm's output to expand for exports. Locating in a major city therefore not only provides for a large domestic market, but also for a large export capability. Countries or regions without such agglomerations will find it difficult to attract investment from firms wishing to export, whereas agglomeration regions will be increasingly attractive for such investments.

These arguments are most applicable to multinational firms, which are focussed on exploiting their knowledge resources so as to access global markets. The means by which knowledge is generated, controlled and transmitted across geographical space are increasingly dominated by the investment behaviour of multinational firms, and the institutional, technological and organisational changes currently taking place which tend to favour these firms. Therefore, understanding the evolving twenty-first century economic geography of growth depends crucially on understanding the location behaviour of multinationals, and the relationship between these firms and agglomeration. As we will see, this is as true for developing or transition economies as it is for developed economies, and the BRIICS countries are no exception.

The chapter is organised as follows. Section 2 considers in detail the evidence of the impacts of each of the institutional, technological and organisational changes on global trade and international investment behaviour, and the resulting effects on countries and regions. One of the issues to emerge from the analysis is that dominant city-regions are playing an ever more important role in the growth performance of a country, and that understanding the long-run growth fortunes of a country requires a consideration of the relationships between knowledge, international investment and economic geography. In section 3, the relationships between knowledge, firms, countries and networks of city-regions is therefore considered. In section 4 the focus is specifically on the relationships between multinational investment and economic geography at a global scale, and in section 5, the relationships between foreign direct investment, knowledge-intensive activities, and the BRIICS Countries are discussed. Section 6 explores the emerging evidence regarding the relationships between globalisation, development, and the changing economic geography of the BRIICS Countries.

2. Changes in Global Trade Architecture

The recent era of globalisation has been dominated by one major feature: the rise of areas of free trade and economic integration. In relation to free trade, the changes in the architecture of trade have taken place at the very large global and continental scales, such as WTO and APEC. However, many of the more detailed institutional developments have taken place at a smaller scale. The number of preferential trade agreements between countries doubled between 2000 and 2006 (UNCTAD, 2007). At the same time, there has also been a rapid increase in institutional changes which deal not only with free trade issues, but also with the liberalisation of cross-border investment issues. Globally, the number of international investment agreements (IIAs) between countries, which includes both double taxation treaties (DDTs) and bilateral investment treaties (BITs), had reached almost 5 500 by 2006 (UNCTAD, 2007). This number has increased dramatically from 900 in 1980 and just over 3 800 in 1999 (UNCTAD, 2000). While the number of such agreements has multiplied, the changing patterns of international

investment agreements also suggests that the individual trading blocs are becoming more important in developing the institutional frameworks for facilitating FDI (UNCTAD, 2003). The reason is that the most far-reaching of these institutional developments tend to be between countries in the same geographical region. The institutional architecture surrounding free trade and FDI is therefore becoming both more sophisticated and more widespread. These institutional developments show no sign of slowing down, and even though global business confidence is currently suffering, the long-term trajectory towards increasing international investment appears to be inevitable. Moreover, these trends are encouraged by both technological and organisational changes.

2.1 Institutional Changes: Areas of Economic Integration

In addition to political considerations, the creation of areas of free trade and economic integration has been largely a response to changes in the economic performance and behaviour of groups of countries and the multinational firms emerging from those countries. As we will see shortly, such firms have continued to drive the processes of global economic integration, and to mould the outcomes of such processes. As well as the behaviour of these multinational firms, various other major institutional issues have also acted as catalysts for the creation of such areas. For example, the rise of the Eurodollar markets (Casson and McCann, 1999), the currency flotations and currency convertibility of the late 1970s, changes in the nature of financial products and the cross-border securitisation of debt in the 1980s, and the 1984 Big Bang in the London financial markets are all pivotal moments in the on-going processes of globalisation. Over the last four decades, these major institutional changes, allied with the many small and incremental institutional changes associated with individual IIAs, DDTs and BITs, have all contributed to the globalising trend. Eventually these multiple minor and major institutional changes have led to the creation of the large free trade and integrated economic areas, the most notable of which were the EU single market in 1992, NAFTA in 1994, and the establishment of smaller organisations such as ASEAN and MERCOSUR. So far, the limit of this cross-border integration process has been the introduction of the Euro as a new global reserve currency in 2002. As such, we can view the rise of these free trade areas and areas of economic integration as being the logical outcomes of the many previous smaller-scale institutional changes outlined above. Notably, there were technological developments which contributed greatly to these institutional changes. Multinational firms took advantage of the new communications and transportations technologies to improve their profitability and, as we will see in the next two sections, such changes in corporate behaviour were a major force for economic integration. However, it is important to note that the relatively recent creation of economic areas of integration and free trade are enormous institutional changes which have built on a multitude of previous smaller-scale institutional changes.

The major outcome of these institutional changes has been the increasing relative importance of these super-regions within the global economic system. In particular, by 2005, the three most economically powerful super-regions of NAFTA (USD 14.72 trillion), the European Union (EU) (USD 13.29 trillion) and South and East Asia (USD 10.06 trillion) had roughly comparably sized economies (World Bank, 2007). As shown in Table 3.1, the gross income of NAFTA represents 32.6% of global income, the EU represents 29.4% of global income, and South and East Asia accounts for 22.3% of global world income. Together these three super-regions account for 84.3% of global income (World Bank 2007). In terms of the scale of output, each of these super-regions is dominated by a core of countries. In the case of NAFTA, the dominant element by far is the US. In the case of the EU, it is the EU-15, and in the case of South and East Asia, it is East Asia (comprising Japan, China and Korea plus the ASEAN 10). If we consider the role of these super-regions and their dominant elements in global trade, we see that by 2000, NAFTA accounted for 35% of world trade, the EU-15, 25% of world trade, and East Asia 23% (Fujita, 2007a). In other words, 83% of global trade in 2000 was accounted for by NAFTA plus the dominant elements within the EU and East Asia, share of global trade which has

increased from some 70% of world trade in 1970. The share of global trade accounted for by these countries has increased in line with their share of total global output. Over the last three decades, therefore, as the three super-regions have increasingly dominated global economic activity, the concentration of global trade in these super-regions has also been increasing consistently.

Table 3.1. The Scale of Global Regions

% of Global Income	2005
NAFTA	32.6
EU	29.4
South and East Asia	22.3
% of World Trade	**2000**
NAFTA	35.0
EU-15	25.0
East Asia	23.0

Source: World Bank 2007; Fujita 2007a.

While the US and the EU-15 had grown at similar rates since 1970, East Asia has grown at just over twice the rate of both of these regions (Fujita, 2007a). Over the last decade, the rapid growth in East Asia has been primarily a result of the economic liberalisation of China in the early 1990s, as well as the increasing mutual openness of the ASEAN countries. Yet, the dynamic growth of East Asia predates both of these developments by more than two decades. Initially, the growth in East Asia was facilitated primarily by the global rise of the Japanese multinationals in the 1970s and 1980s. This was followed by the Korean and Chinese Taipei manufacturing multinationals in and the 1980s and 1990s, and the Hong Kong, China and Singaporean service multinationals in the 1980s and 1990s. All of the various waves of multinational firms which emerged from these Asian economies have changed the nature of trade and investment relations within the East Asia region. They have also changed the relations between East Asia and the rest of the industrialised world. As shown in Table 3.2, between 1980 and 2000 East Asia increased its share of global GDP from 16% to 23%, its share of global exports from 13.4% to 23.4%, and its share of global imports from 13.2% to 18.9% (Fujita, 2007b). In the last decade, the East Asia region has continued on its dynamic growth trajectory. By 2005, economic growth in East Asia was 8.9% and in South Asia, 8.7%, some 2.7 times the equivalent growth rate for USA and 6.7 times the growth rate for the Euro area (World Bank, 2007). By 2004, the share of global exports accounted for by East Asia was 26.4% and the share of global imports in East Asia was 22.1% (Fujita, 2007b). As such, Asia is continuing to play an increasingly important part in the global trading system, while the other dominants regions of the global economy, namely NAFTA and the EU are maintaining their roles.

Table 3.2. The Share of East Asia in Global Trade

	1980	2000	2004
% of Global Exports	13.4	23.4	26.4
% of Global Imports	13.2	18.9	22.1

Source: World Bank 2007; Fujita 2007a,b.

On a global scale, domestic private investment dominates foreign direct investment in approximately a four to one ratio. Moreover, in developing or transition countries these ratios are often significantly higher. These observations therefore suggest that domestic rather than international investment issues are dominant factors in determining a country's or region's economic growth, and

particularly in the case of developing or transition economies (World Bank, 2005). As such, the reasons for a country's or region's growth and trade performance ought to be sought in terms of internal domestic explanations, rather than in terms of external international issues. However, the situation is far more complex than this, and international investment issues play a crucial role in domestic performance. Three examples serve to highlight this complexity.

Firstly, if we consider the case of East Asia, at 20.3% (World Bank, 2007), the share of global income in 2005 is slightly less than the GDP share of East Asia. The reason for this is that there are huge outflows of profits from East Asia to other parts of the world, which are a direct result of the enormous levels of multinational foreign direct investment FDI that have been flowing into the East Asia region from other parts of the global economy over the last two decades. Secondly, currently over half of all Chinese manufactured exports are accounted for by foreign-owned multinational firms (Scheve and Slaughter, 2007) and thirdly, in the Indian ICT sector, multinationals account for two thirds of all sales (Scheve and Slaughter, 2007). Clearly, the growth and trade performance of these rapidly-emerging regions and countries is fundamentally related to multinational investment.

These three examples highlight an important point about globalisation: economic development is intrinsically related to international investment. The spatial patterns of multinational investment therefore play a very important role in the nature of economic development. As such, while it is true that a country's economic growth is to a large extent determined by its domestic competitive conditions, both inward and outward foreign direct investment (FDI) can also play a crucial role in the growth of an economy, which is far out of proportion to its relative scale. The reason is that international investment opens up an economy to the latest technology, knowledge and learning, all of which are crucial competitive assets. This is just as true for developed economies as it is for developing or transition economies. Moreover, in the case of developing or transitioning economies, the role of international investment may be even more critical than for developed economies. The reason is that developed economies have a much greater capacity to generate such knowledge and technology from within their existing domestic resources. On the other hand, it is often the case that in the short to medium term, and even in the long-term in many cases, such technological and knowledge resources cannot be internally generated by a developing economy. Multinational firms can act as critical conduits for technology transfer. Therefore, identifying the pattern and nature of multinational inward investment flows is crucial for determining the long-run growth trajectories of emerging economies in the modern global economy.

2.2. Technological Changes and Spatial Transactions Costs

The costs associated with engaging in and co-ordinating activities across space can be termed "spatial transactions costs". In order to understand the ways in which spatial transactions costs have changed over recent years we need to split up spatial transactions costs into three different types. The first type of spatial transactions costs are the transactions costs associated with moving goods across geographical space. These are transportation costs. The second type of spatial transactions costs are the transactions costs associated with moving knowledge and information across geographical space. For the purposes of this paper we will call these knowledge-information transmission costs. Both the first and second types of spatial transactions costs, namely transportation costs and knowledge-information transmission costs are explicitly geographical in their construction in that the costs incurred always depend on the distance covered. The third type of spatial transactions costs are the transactions costs associated with moving across national borders. These tariff costs are institutional costs and the tariffs associated with a particular border crossing are not defined geographically. By this I mean that the tariffs do not vary systematically with the distance travelled before or after arriving at a particular institutional border. As such, from the perspective of economic geography, we can consider these costs to be fundamentally aspatial in construction, although explicitly geographical in terms of their implementation

(McCann, 2005). The impacts of falls in the third type of spatial transactions costs, namely the institutional costs, are discussed in section 4. This section considers only the first and second types of spatial transactions costs, which are the transactions costs which are explicitly dependent on distance.

2.2.1 Falling Spatial Transmission Costs

A particular subset of spatial transactions costs are those costs which are directly related to the costs of moving goods or information across space. These costs are dependent on communications and transportation technologies, and as a combined group, we can refer to these as spatial transmission costs.

Since the 1980s we have seen dramatic improvements in the ability of decision-makers and planners to co-ordinate activities across space. The primary reason for these improvements has been the enormous technological developments in information and communications technologies. Information technologies employing satellite and fibre-optical technology allow for greater quantities of information to be transmitted at much lower costs than previously possible (McCann, 2007a). These developments have increased market access for individual firms. In addition, they have also allowed for more complex operations across diverse locations to be managed both more efficiently and effectively than was previously possible. For industries trading specifically in information, such as finance, advertising, marketing and tourism, modern information technologies provide new possibilities for the supply of information-based services across a global market space. Market access has therefore increased dramatically for huge numbers of firms trading in knowledge and information-based services (McCann, 2007a, 2008). At the same time, these improved technologies also allow decision-makers to undertake the co-ordination of spatial arrangements of activities which were previously not possible, and this is most noticeable in the case of the increasing off-shoring and out-sourcing of many types of service industry activities. This is evident in examples such as international accounting, where New York banks transfer their book-keeping requirements overnight to firms in Ireland or India, in order to have them updated in time for opening the money markets the next day. Other examples include Silicon Valley firms which subcontract software development activities to firms in Bangalore India, while still maintaining daily contact and control of the Indian software development process from California. These observations all imply that knowledge-information transmission costs must have fallen dramatically over recent decades (McCann, 2007b, 2008).

Similarly, there is also evidence that many of the sectors which have benefited from the geographic dispersal possibilities associated with these technologies are often those which do not specifically trade in information. For example, advanced communications and control technologies have been widely applied to the management of supply chains, to production and inventory scheduling control systems, and to logistics and distribution operations. The types of firms which particularly benefit from these technologies are those requiring the precise co-ordination of complex networks of production and distribution operations across large geographical distances (McCann, 2007a, 2008).

Comprehensive evidence across both countries and time pointing towards falling spatial transactions costs associated with the increased usage of information technology usage comes from Ioannides *et al.* (2007). They find that the increasing use of information and communications technologies over time generally allows for an increased dispersion of activities across space, thereby making city sizes more uniform. It appears therefore that the impacts of falling knowledge-information transmission costs have been widely felt across a broad range of sectors.

Evidence for falling spatial transmission costs is also mirrored in the case of firms involved in the movement of physical goods and commodities across space. Transportation technologies have improved dramatically over recent years. Examples of this include the rapid growth in roll-on roll-off trucking

technology, sophisticated gains in containerisation technology and capacity, rapid-turnaround shipping, and the increased speed and efficiency of air transport technologies (McCann, 2008). Trade in parts and components now accounts for around 30% of world manufacturing trade, and the share of imports to total inputs for US goods producing sectors has doubled to 18% over the last two decades (Venables, 2006). All of these technological developments would imply that the cost of moving goods and commodities across space has fallen significantly over recent decades. Indeed Glaeser and Kohlhase (2004) suggest that the costs of transportation for goods fell by as much as 95% during the twentieth century. Currently, over 80% of US shipments occur in industries where transport costs are less than 4% of the total value (Glaeser and Kohlhase, 2004). However, whether this is primarily due to technology or markets is not entirely clear. Evidence from France (Combes and Lafourcade, 2005) suggests that most of the transport cost reductions of the last three decades appear to be primarily due to deregulation within the transport industries rather than technological changes.

These various observations all point to falls in both the costs of transmitting information across space and falls in the costs of moving goods across space (McCann, 2008). According to Friedman's logic, falling spatial transmission costs lead to convergence across space. The reason is that reductions in the real costs of transmitting information and goods across space implies that geographical peripherality is becoming relatively less of a handicap to accessing global markets. Indeed, there is much evidence to suggest that such convergence is already taking place in many parts of the global economy such as Europe (Fingleton, 2003a) and the US (Higgins *et al.* 2006). However, there is also a great deal of evidence which points in the opposite direction (Brakman and van Marrewijk, 2008). Although there are difficult empirical issues associated with measuring convergence (Higgins *et al.,* 2006), the rate of convergence in many arenas of the global economy appears to be either surprisingly slow, non-existent, or even negative. If we follow the Friedman thesis, these observations would appear to be paradoxical, especially when we consider the rate of development of communications and transportation technologies. Yet, the reason for these apparently paradoxical observations is that Friedman's hypothesis is incorrect. The fact that spatial transmission costs have fallen does not imply that spatial transactions costs have fallen. Indeed, there is much evidence which suggests that while spatial transmission costs have fallen, spatial transactions costs have actually risen.

2.2.2 Rising Spatial Transactions Costs

The argument that spatial transmission costs have fallen while spatial transactions costs have risen is based on one major argument and on three broad sets of empirical evidence.

The theoretical argument that spatial transactions costs have increased while spatial transmission costs have fallen is that improvements in information technologies themselves increase the quantity, variety and complexity of the knowledge handled and information produced. The increased quantity, variety and complexity of the knowledge handled and information produced itself increases the costs associated with acquiring and then transacting this knowledge across space (McCann, 2007a). This is because much of the information will originally have emerged from knowledge of a non-standardised tacit nature, and the acquisition and transmission of this type of information increasingly requires greater levels of face-to-face contact in order to maintain mutual trust and understanding (Gaspar and Glaeser, 1998; Storper and Venables, 2004). For many knowledge-intensive activities, the required frequency of face-to-face interaction has increased over recent years (Storper and Venables, 2004; McCann 2007b), because the time (opportunity) costs associated with not having continuous face-to-face contact have increased with the quantity, variety and complexity of the information produced. The outcome is that in equilibrium, the optimised frequency of interaction across space will have increased (Rietveld and Vickerman, 2004) for many knowledge-intensive sectors, thereby increasing the level of spatial transactions costs for any given distance over which communication takes place (McCann, 2007b). The

increased importance of face-to-face contact is also manifested in terms of the increasing development of customised products or services. Lower transport costs can be shown to imply that firms increasingly switch to the production of higher quality customised goods (Duranton and Storper, 2007), whose sensitivity to distance is greater than for standardised products. This is because the cost of providing a given level of service quality becomes more costly with distance (Duranton and Storper, 2007). Spatial transactions costs as a whole will therefore have increased because of the growing importance of transacting knowledge via face-to-face contact, even though the spatial transmission costs of information have fallen. This argument is also consistent with the point made by Glaeser and Kohlhase (2004): that while the costs of moving goods have fallen dramatically, the costs of moving people have not.

This theoretical argument implies that even though spatial transmission costs have fallen, the relative advantage of proximity and accessibility has increased, and the disadvantages associated with geographical peripherality have also increased (McCann, 2008). This theoretical argument is also consistent with three broad sets of empirical evidence.

The first set of empirical evidence which suggests that spatial transactions costs have increased while spatial transmission costs have fallen comes from the usage patterns of information and communications technologies. Gaspar and Glaeser (1998) find that the closer people are geographically to each other the more they interact via information technologies. Moreover, the extent of this interaction is also associated with the local density of the urban area, such that large dense urban areas exhibit the greatest internal communications per head (Gaspar and Glaeser, 1998). Additional anecdotal evidence in support of this argument comes from the fact that many of the industries which are most dependent on information technologies, such as the advanced semiconductor-electronics industry (Arita and McCann, 2000; 2006) and the international financial services industry, are themselves amongst the most geographically concentrated industries in the world. Even internet transactions exhibit this localisation behaviour (Blum and Goldfarb, 2006). While for many activities information and communications technologies and face-to-face contact are likely to be substitutes, there are also therefore many activities or roles for which these appear to be primarily complements (McCann, 2008). Foreign direct investment in high knowledge-intensive activities (Nachum and Zaheer, 2005) appears to be complementary with face-to-face interaction, whereas low knowledge-intensive activities use information technology as substitutes for face-to-face interaction. Even IT-services markets themselves exhibit this dual nature, with some activities being closely related to the need for face-to-face contact, whereas others are largely independent of the need for face-to-face contact (Arora and Forman, 2007). Moreover, those activities for which face-to-face contact and information and communications technologies are complements appear to be those activities located in urban areas with extensive transportation infrastructure (Haynes *et al.* 2006). Further evidence which is suggestive of this comes from the fact that the frequency of airline business travel between major cities has increased more or less in line with the growth in telecommunications usage between such cities (Gaspar and Glaeser, 1998). The fact that cities are increasingly being dominated by high human capital individuals (Berry and Glaeser, 2005) implies that the importance of engaging in face-to-face activities is positively associated with knowledge levels.

The second broad set of empirical evidence which suggests that spatial transactions costs have increased while spatial transmission costs have fallen comes from trade modelling (McCann 2008). Empirical research on distance costs finds that distance effects are not only persistent (Disdier and Head, 2007), but also that these persistent effects cannot be explained simply by observing the behaviour of shipping costs. Using a meta-analysis, Disdier and Head (2007) find that bilateral trade exhibits an average elasticity of -0.9 with respect to distance, which implies that on average bilateral trade is nearly inversely proportionate to distance. Given that a 1% rise in the share of GDP accounted for by exports is associated with a *per capita* income increase of up to 1% (Frankel and Romer, 1999), this average elasticity of trade with respect to distance suggests that there are very large proximity-productivity

effects. Moreover, Disdier and Head (2007) find that although distance effects declined slightly between 1870 and 1950, analyses employing recent data suggest that after 1950 they began to rise again. All of these empirical observations are fundamentally at odds with the Friedman 'flat world' thesis.

The most likely explanation for these persistent distance effects is associated with the issue of time. Hummels (2001) and Deardorff (2003) suggest that the influence of time on trade is increasing. Time in transit is costly, being up to as much as 0.5% of the value of the goods shipped per day (Hummels, 2001). The high cost of time in transit comes partly from the costs of carrying stock and also from the likelihood that long transit times reduce the reliability and predictability of deliveries (McCann, 1998; Venables, 2006; Harrigan and Venables, 2006). It also makes firms slower to respond to changing demand conditions or costs levels (Venables, 2006). Since the early 1980s, the opportunity costs of time appear to have increased for both household and industrial consumers (Piore and Sabel, 1984; Best, 1990). Consumer demand requirements are becoming ever more sophisticated and exhibit an increasing preference for retail services characterised by reliability, timeliness and quality of service. Modern household and industrial consumers now require a level of service customisation and delivery speed which is only possible by employing more frequent shipments of goods (McCann, 1998). This accounts for the almost universal trend towards Just-In-Time (JIT) type systems of shipments, which allow for Total Quality Management (TQM) principles to be applied on the basis of minimum inventory supply chains (Schonberger, 1996). Over the last three decades these JIT logistics and distribution systems have spread progressively from the Japanese automotive industry into almost all modes of global manufacturing, retailing and distribution. Obviously, the increasing sophistication of both consumer preferences and also the advanced logistics systems responding to them are mediated by the advances in communications and transportation technologies. Airfreight accounts for a third of US imports by value and 25% of African exports (Venables, 2006), and for the US, the value of time saved by airfreight and containerisation has been estimated as some 12-13% of the value of the goods (Hummels, 2001).

Further empirical evidence suggesting the spatial transaction costs involved in shipping of goods have increased over the last two decades, comes from the analysis of logistics costs as a whole, rather than simply observations of transport costs. Logistics costs are the combined costs of all the transportation, storage, and inventory-handling costs which are associated with moving goods across geographical space, and these are not only much greater than transport costs, but also are related to the costs of both time and space (McCann, 1998). Firstly, logistics activities accounted for 16% of global GDP in 2000 and 18% of European GDP (Leinbach and Capineri, 2006). Moreover, during the 1990s, the growth rate for the logistics sector as a whole was in the order of 6% *per annum* (Leinbach and Capineri, 2006). Between 1987 and 1995 there was a 60% increase in outsourced dedicated third-party logistics operations (Chatterji and Tsai, 2006). Secondly, relative to the value of output (Schonberger, 1996), the average inventory levels for almost all manufacturing and distribution sectors in the developed world have fallen dramatically since the 1980s. This implies that the average lead times of goods-shipments have fallen over recent years, with a concomitant increase in goods-shipment frequencies. Thirdly, by carefully disentangling the various components of transport costs Hummels (1999) demonstrates that for many sectors, the proportion of global output which is accounted for by the combination of logistics and transportation activities has not fallen over recent decades. More specifically, while the transportation cost component of bulk materials has indeed generally fallen, in the case of manufactured goods there is evidence that this proportion has actually increased over the recent decades, in spite of the improvement in transportation and logistics technologies (Hummels, 1999). Fourthly, industries which are very dependent on JIT shipments have tended to reorganise their trade patterns in favour of geographically close suppliers and customers (McCann and Fingleton, 1996; McCann, 1998). Moreover, this behaviour is even evident in industries in which the product value-weight ratios are extremely high and for which transport costs typically account for less than 1% of value (McCann and Fingleton, 1996). In other words,

increasing localisation behaviour is present even in the very industries which proponents of the 'flat-world' thesis would have deemed it to be entirely unnecessary (McCann 2007a, 2008).

2.3. Organisational Changes

One of the major features of the emerging twenty-first century international economic order, is that the increasingly important role played by multinational enterprises (MNEs). The best available evidence (UNCTAD, 2000, 2003, 2005, 2007) suggests that at the end of the 1960s there were approximately 7 000 MNEs, which were accounted for almost entirely by just 15 countries. As shown in Table 3.3, by 2006, there were an estimated 78 000 MNEs in the global economy with some 780 000 foreign affiliates. The number of MNEs has obviously increased rapidly over recent years. Over the last few years the number of MNEs in the global economy has been increasing at a rate of 1 000-2 000 *per annum*, while the number of foreign affiliates has been increasing by 10 000-20 000 *per annum*. The current numbers of MNEs now represent a 23% increase in the number of MNEs operating in the global economy within just a six year period, and a 13% increase in the number of foreign affiliates since 2000.

Table 3.3. The Number of MNEs in the Global Economy

(thousands)

	Number of MNEs
1970	7
2000	63
2002	64
2004	70
2005	77

Source: UNCTAD 2000, 2003, 2005, 2007.

Over recent decades, the levels of output, employment and trade which are associated with multinational firms have also increased much more rapidly than the growth of global trade (McCann and Mudambi, 2005). Foreign direct investment has been growing at twice the speed of world trade, which itself has grown at twice the rate of world income. The result is that foreign direct investment grew by almost six-fold between 1970 and 1999 (Bobonis and Shatz, 2007), with 30-40% of US trade currently accounted for by intra-firm trade flows (Lai and Zhu, 2006). Overseas investment by multinational firms is now the largest single component of worldwide stocks of foreign investment (McCann and Mudambi, 2004). As is clear from Table 3.4, the 78 000 multinational firms now operating in the global economy currently account for an estimated USD 4.8 trillion in value-added and USD 4.7 trillion in exports. At present, multinational firms account for over 10% of global GDP, and approximately one third of global exports, as well as 12.6% of global domestic fixed capital formation. The 780 000 foreign affiliates of MNEs also currently employ an estimated 73 million workers. This number has not only tripled since 1990, but increased by some 20 million just since 2002. The total number of workers employed in foreign affiliates now represents some 3% of the global workforce.

Table 3.4. The Contribution of MNEs to the Global Economy

	MNEs (2006)	World 2006
Value Added (USD trillions)	4.8	45
Export (USD trillions)	4.7	14.1

Source: UNCTAD 2007; World Bank 2007.

Of the global total of 78 000 MNEs, the top 500 multinationals account for over 90% of the world's stock of FDI, and nearly 50% of global trade (Rugman, 2005). The largest 100 MNEs alone account for 10% of the foreign assets of MNEs, 17% of their foreign sales, and 13% of the total employment in affiliates of MNEs. Moreover, both the rankings and composition of the top 100 global firms are relatively stable, and concentrated in industries such as automobiles, pharmaceuticals, telecommunications, electronics, power, and petroleum. This level of concentration of the global foreign assets accounted for by the top 100 firms has remained very stable over the last decade. On the other hand, however, between 2005 and 2006, their total sales and employment grew by 10% and 9% faster than their domestic counterparts, respectively. Moreover, the more rapid overall growth of MNEs than domestic-only firms was also associated with increases in the relative importance of overseas sales and employment.

These recent rapid increases in the role played by MNEs in the global economy reflect genuine long-term trends towards the increasing openness and inter-connectivity of countries. More particularly, however, the rapid increase in the number of firms which are internationalising points to one of the major features of globalisation; namely that increasing economic inter-connectedness between countries is being increasingly mediated by multinational enterprises. In terms of sheer numbers and scale, multinational companies are becoming ever more important in the global economy. Evidence for this comes from the fact that during the 1980s and 1990s, both the gross product of international production and also the gross sales of foreign affiliates increased much faster than either global GDP or global exports. The gross product from foreign affiliates in 1980 was approximately 5% of global GDP, whereas by 1999 it was of the order of 10% of global GDP. The value of sales from foreign affiliates was twice that of global exports in 1999, and by 2002 the ratio had increased to two and a quarter to one. Similarly, in 1980 FDI inflows were only 2% of global fixed capital formation, whereas by 1999 they accounted for 14% of global fixed capital formation. Moreover, successful foreign direct investment (FDI) tends to generate further FDI. Much of the recent surge in FDI has been a result of multinational firms reinvesting profits from existing FDI into further foreign investments. As much as 30% of global FDI flows are of this nature. Multinationals are now more important than ever, and there is no sign that this increasing trend is waning.

In the short-term, however, multinational growth trends are highly susceptible to the business confidence conditions in the global economy. Global foreign direct investment peaked in 2000, with global FDI inflows reaching a maximum of USD 1 411 billion. However, in the aftermath of the dot.com bust and 9/11, global FDI growth fell sharply. Global FDI inflows halved and FDI flows remained sluggish until 2003-2004, after which global FDI growth once again resumed. During 2005-2006 the global sales, exports and value-added of the foreign affiliates of MNEs also grew by 18%, 16% and 12% in 2006, respectively, growth rates which were faster than in previous years. The associated annual growth in the foreign assets of MNEs was 20% such that by 2006, total global foreign assets amounted to some USD 51.2 trillion (Table 3.5). In addition, the confidence engendered by high corporate profits led to very high levels of reinvested earnings, which accounted for some 30% of total global FDI inflows, and 50% of FDI inflows into developing economies.

Table 3.5. Global FDI

(USD billion)

	2006
Global FDI Flows	1,306
Global Foreign Assets	51,200
M&As	880

Source: UNCTAD 2007.

Part of the reason why FDI flows are so susceptible to short term business confidence fluctuations, is that FDI is increasingly dominated by service industries and mergers and acquisitions (M&As). In 1970 services accounted for one quarter of total global FDI, by 1990, services accounted for almost one half of total global inward FDI, whereas by 2005, services accounted for almost two thirds of global inward FDI. At the same time, manufacturing's share of global FDI inflows fell from 41% in 1990 to approximately 30%. The share of global inward FDI into primary industries is little more than 6%. This share has been falling consistently over the last sixty years, although there has been a slight increase recent years due to cross-border activity in extraction industries. The rapid rise in the importance of service sector FDI has also been accompanied by significant structural changes within the sector. In 1990, 65% of stocks and 59% of flows of global service sector FDI was in trade and finance, whereas by 2002 these shares had fallen to 47% and 35%, respectively. The reason is that there was a rapid growth in service sector FDI in the infrastructure, power generation and telecommunications industries which has now emerged as both the largest and fastest growing component of service sector FDI.

The numbers of mergers and acquisitions are also very sensitive to global business confidence. Record numbers and record values of M&As were achieved in 2000. After the collapse of global business confidence in 2001, both the numbers and values of M&As fell to 56% of the previous year's levels. On the other hand, the rise in global business confidence and profits between 2004 and 2007 dramatically increased the value of cross-border M&As. Between 2005 and 2006 international M&As increased by 14% in terms of the number of transactions and by 23% in terms of the value of transactions to some USD 880 billion (Table 3.5), of which two thirds by value was accounted for by 172 mega-deals of over USD 1 billion. By 2006, M&As thereby accounted for two-thirds of all FDI inflows, although these levels were still slightly below the record levels of 2000.

As well as absolute growth in the global economy, part of the reason for the increasing importance of M&As in FDI flows is the increasing relative growth of the service sector in the global economy. During both the last decade of the twentieth century and the first decade of the twenty-first century, the service sector has been the fastest growing component of the global economy (World Bank, 2007). The service sector grew from 61% of the global economy in 1990 to 69% in 2005 (World Bank, 2007), and M&As are the major mode of international market entry for all forms of service sector FDI. By the end of the 1990s service industries accounted for over 60% of all international mergers and acquisitions, with the European Union (EU) alone accounting for 60% of all of service sector international M&As. This reflects the recent rapid increase in European cross-border investments in the infrastructure, power and telecommunications industries.

The sensitivity of international M&As to global business confidence may be increased further by the fact that private equity funds are now playing an increasing role in international M&As. Private equity investments currently account for just under 18% of international M&As by value. Traditionally, private equity investments have tended to resemble shorter time-span portfolio investments with a focus on higher risk higher yield opportunities with time-spans typically between five and ten years, with an average of five to six years. Therefore, the long term effects of these structural changes in international FDI are hard to gauge. If the increasing role of private equity leads to shorter foreign investments time spans, then this may increase the sensitivity and volatility of FDI to changes global business confidence. On the other hand, private equity may allow for a more diversified range of foreign investments to be developed, thereby providing new growth opportunities for many markets.

Over the next couple of years, it is likely that the growth of FDI will be somewhat reduced from its 2006-2007 levels. Prior to the appearance of the US sub-prime market problems, expectations for FDI in 2007 were positive, with a 54% increase in the value of M&As in the first half of 2007. However, global business confidence appears to have fallen markedly within a very short time, as uncertainties emerged

regarding the levels of exposure of different components of the international financial economy to the US sub-prime mortgage market. The increasing numbers of investment write-downs and profits warnings are likely to lead to a general downward adjustment in global confidence and international investment. In the previous global FDI recession following the loss of business confidence during 2001, the decline in FDI was geographically and sectorally uneven. Flows into manufacturing and services declined, whereas flows into primary sectors increased. Similarly, the flows of FDI via M&As fell by more than greenfield FDI, and the equity and loan components of FDI fell by more than reinvested earnings. However, intra-regional FDI in South East Asia and North East Asia actually remained very strong while global FDI was contracting. A further impact of the global contraction in FDI was that many countries actually increased the pace of their liberalisation policies in order to compete for shrinking stocks of FDI. The result of these observations is that there may well be short to medium term falls in FDI in many parts of the global economy, reflecting the short to medium concerns about global growth, and such falls are likely to be particularly noticeable in M&As and also in high yield foreign investment opportunities.

However, in spite of such short to medium term fluctuations, there are strong grounds for believing that the long term trends towards increasing FDI and globalisation will continue over coming decades. Firstly, as we have already seen, technological progress means that international communication and transportation technologies are continuing to be improved, and these improvements are particularly rapid in the case of information and communications technologies (ICTs). Secondly, there has been enormous institutional progress in favour of international investment. Both of these changes imply that accessing wider geographical markets will continue to become easier and easier, thereby fostering further globalisation. Yet, the reasons why multinational firms should be favoured by these globalising developments is because of the knowledge capabilities of multinational firms themselves. In the global competition of the twenty-first century, knowledge and technology are critical assets, and the institutional and technological changes which have facilitated globalisation have also increased the potential returns to such assets. Multinational firms compete primarily on the basis of their internalised knowledge assets. Moreover, they also have organisational capabilities and experience for engaging in the globalisation processes. As such, it is multinational firms which are best placed to reap the potential global rewards from globalisation. In terms of economic geography, the arguments regarding the importance of the knowledge and technological capability of multinational firms in shaping globalisation patterns also imply that the geographical distribution of such assets across the global economy will increasingly depend on the location behaviour of multinational firms. The relationship between knowledge, technology, and economic geography is the subject to which we now turn.

3. The Economic Geography of Knowledge: Firms, Countries and City-Region Networks

One of the dominant features of the current wave of globalisation is the emergence of a new set of relationships between the location of knowledge assets, such as technology and skills, the role of particular city-regions as knowledge centres, and the location behaviour of multinational companies. The emergence of these relationships has been taking place gradually over the last three decades, during exactly the same period in which the institutional, technological and organisation changes facilitating globalisation have also been taking place. However, over the last decade, the nature and ordering of these relationships has become more apparent, as the trends manifested by these emerging relationships appear to be accelerating. In particular, if we consider the economic geography of these relationships, the distinction between the 'winners' and 'losers', or between those who are either beneficiaries or marginalised by the emerging order, are becoming more marked. These relationships are the focus of this section and the empirical evidence for these issues comes primarily from UNCTAD (UNCTAD, 2005, 2007).

3.1 Knowledge-Firms, Countries and R&D

Global public plus private sector R&D expenditure grew rapidly during the 1990s to some USD 677 billion in 2002, of which some USD 450 billion is global private R&D expenditure. Multinational firms account for an ever-increasing share of this. As shown in Table 3.6, by 2005 the 700 largest R&D expenditure MNEs were estimated to account for over USD 310 billion in R&D investment, which represents some 46% of all global R&D expenditure and 69% of the USD 450 billion worth of global private sector business R&D expenditure. More than half of these 700 firms are in just three sectors: IT hardware, automotive, and pharmaceuticals or biotechnology. Not surprisingly, the US is the individual largest source of R&D expenditure, and over 80% of these 700 largest R&D expenditure MNEs come from only five countries: US, Japan, Germany, UK and France. The top nine origin countries for outward FDI together accounted for 87% of both total global R&D expenditure and also total global private sector R&D expenditure in 2002. If we also include Chinese Taipei, Korea, Hong Kong, China and Singapore among developed economies, then this share increases to 88%. If we focus only on private sector R&D the top nine origin countries for outward FDI together account for 87.6% of the total global R&D expenditures in 2002. Once again, if we also include Chinese Taipei, Korea, Hong Kong, China and Singapore among developed economies, then this share increases to 91%. As we will see later, in terms of global shares, the geographical origins of global R&D reflect almost exactly the geographically origins of FDI outflows, and if anything are slightly even more skewed in favour of the developed economies.

Table 3.6. Multinational R&D Expenditure

	USD billion
Global R&D Expenditure 2002	677
Global Private R&D Expenditure 2002	450
MNEs' R&D Expenditure 2005	310
Foreign Affiliates' R&D 2002	67

Source: UNCTAD 2005.

The reason for this is that there is a crucial link between the patterns of sales and investments by multinationals and the trade blocs and areas of integration from which these multinationals emerge. As we have already seen, in the current phase of globalisation, the importance of the role played by trade blocs and areas of integration in the global economy has increased. The importance of multinationals has also increased. Yet, multinational firms, rather than being completely global, are actually overwhelmingly regional, in the sense that their sales and investments are dominated by the same trading regions or trade blocs in which their parent companies are located (Rugman, 2000, 2005). In particular, if we take the case of the three major global regions of US, EU and East Asia, we find that the average same-regional sales share of the world's top 500 MNEs, is over 70% (Rugman, 2005). As such, developed economies not only dominate global output, global R&D and global trade, but also are dominated by the trading relationships of the multinationals located in the same region.

Over recent decades there have also been some structural changes in the nature of the multinational R&D. The large scale internationalisation of R&D by multinationals began in the 1980s and accelerated in the 1990s. The result of this was that between 1993 and 2002, the total R&D expenditure of all foreign affiliates increased from USD 30 billion to USD 67 billion, or alternatively, from 10% in 1993 to 15% of the 2002 global business R&D expenditure. This growth was more than twice the total growth in R&D spending by MNEs. The share of R&D undertaken by foreign affiliates in developed host economies has also been growing from 11% in 1996 to 16% in 2002. Various pieces of survey evidence suggest that this increase in the role played by foreign affiliates in R&D is occurring for almost all nationalities of MNE and almost all host economies. As such, MNEs appear to be increasingly

diversifying their R&D base internationally. However, close to 70% of the 2600 foreign affiliates in the global economy whose primary role is R&D, are still located within the triad of US, EU and Japan.

While the overwhelming dominance of developed economies in global R&D is very clear, the role played by developing and transition countries in global R&D is increasing. In 1991, developed countries as a whole accounted for 97% of total global R&D expenditure, whereas as we have seen, by 2002 this share had fallen to 91%. In 1996, the top six developing and transition economies (excluding Korea, Singapore, Chinese Taipei and Hong Kong, China) accounted for just 4.1% of total global R&D expenditure, whereas by 2002 this had risen to over 5%. In terms of private sector business R&D the top six developing and transition economies accounted for 1.2% of global business R&D in 1996 and 3.5% in 2002, respectively.

At the same time, there has also been a rise in innovation outputs on the part of MNEs from developing or transition economies. Between the two periods of 1991-1993 and 2001-2003, the share of foreign patenting in the US from developing and transition economies increased from 7% to 17%. Meanwhile, the role played by developing and transition economies in global R&D has also been increased because of the increasing role of R&D by foreign affiliates of MNEs. Although the relative scale is still very much smaller, the evidence suggests that the role played by developing economies in the increasing importance of foreign affiliates for multinationals' R&D is increasing at a faster rate than the R&D role played by foreign affiliates in developed host economies. In terms of the overseas R&D expenditure by US MNEs, the share accounted for by developed countries (including Korea, Chinese Taipei, Hong Kong, China and Singapore) decreased from 95.1% in 1994 to 88.3% in 2002, while the share accounted for by developing and transition economies more than doubled from 4.9% in 1994 to 11.7% in 2002.

The foreign affiliates of MNEs are also becoming increasingly important for R&D. Between 1996 and 2002 the share of global business R&D accounted for by foreign affiliates of MNEs increased from 10.1% to 14.9%. The share of global business R&D accounted for by the foreign affiliates of MNEs which are located in developed countries rose during this period from 10% in 1996 to 13.9% in 2002. In other words, in 1996, 98.7% of all multinational R&D undertaken by foreign affiliates took place in developed countries, whereas by 2002 this share had fallen to 93.1%. During the same period, the share of global multinational R&D expenditure undertaken by foreign affiliates located in developing countries increased from 0.8% in 1996 to 6.2% in 2002, while the equivalent figures for transition economies are 0.4% and 0.7%.

These figures demonstrate the fact that the global R&D effort of MNEs is becoming more geographically dispersed, and developed economies are still by far the major beneficiaries of this process. However, as developing countries are becoming increasingly attractive locations for FDI, the importance of multinational R&D undertaken in these countries is increasing rapidly.

3.2 Knowledge, Cities and Networks

Over the last three decades, the increasing role played by cities as engines of national, regional and global economic growth has been demonstrated by the fact that the proportion of people living in urban areas has increased in all parts of the global economy (Richardson and Bae, 2005). The number of cities in the world with a population of more than one million went from 115 in 1960 to 416 in 2000; for cities of more than 4 million the increase was from 18 to 53, and for cities of more than 12 million it was from 1 to 11 (Venables, 2006). By 2006, for the first time, more people in the global economy lived in urban areas than in non-urban areas (Mastercard, 2007). This unprecedented urban growth suggests that it is becoming more important for firms and people to be clustered together, and in particular, for high skills

and high knowledge workers and firms to do the same. Recent evidence suggests that cities are generally experiencing an increase in the proportion of their population who hold university degrees (Berry and Glaeser, 2005). Moreover, this rate of increase is higher for cities which already have a high proportion of graduates (Berry and Glaeser, 2005). In addition, both the share of a city's population with university degrees and also its rate of growth are higher in faster-growing cities (Glaeser *et al*., 1995; Glaeser and Shapiro, 2003; Berry and Glaeser, 2005; Shapiro, 2006). In the US there is no evidence of the levels of high school education playing any role whatsoever (Shapiro, 2006), and this supports the argument that it is tertiary educated human capital which is now crucial from a regional development perspective. Cities are becoming dominated by high human capital individuals as mobile workers respond to the augmenting wage premia associated with high value-added knowledge work in cities. After conditioning on individual characteristics it is clear that wages are indeed higher in high human capital cities (Shapiro 2006). Furthermore, US cities are found to have such great differences in their human capital composition (Berry and Glaeser, 2005) that regional divergence appears to have superseded previous decades (Berry and Glaeser, 2005).

Further evidence in support of the argument that access to cities is becoming more important comes from US counties (Partridge *et al*., 2007) and European sub-national regions (Caniels and Verspagen, 2003). In both cases, local growth is found to be directly related to an area's proximity to major urban centres. Meanwhile within Europe, investment capital and information have become more concentrated in capital cities and large urban centres, even though the institutional and technological changes might have allowed for more mobility and more even distributions across space (Rodriguez-Pose 1998). As discussed above, the reasons for this appear to be that urban areas are now seen to be sources of productivity growth (Ciccone and Hall, 1996; Fingleton, 2003b) due to their role in facilitating the production of knowledge, human capital interaction (Berry and Glaeser, 2005) and by inspiring innovation (Acs, 2002; Carlino *et al,*. 2007). A doubling of city size is associated with a productivity increase of some 3-8% (Rosenthal and Strange, 2004), such that moving from a city of fifty thousand to one of five million is predicted to increase productivity by more than 50% (Venables, 2006).

These changes mean that between-country inequality has been falling over the last three or four decades (Crafts, 2004) while within-country inequality has actually been growing since the 1980s (Brakman and van Marrewijk, 2008). Allied with the fact that the rate of convergence between advanced economies has slowed down since the 1980s (Greunz, 2003; Cappelen *et al*., 2003), the result of the increasing importance of urban areas is that economic convergence at a continental scale coexists in many cases with increasing divergence at sub-national local and regional scales.

As well as urban scale, however, there is also increasing evidence that economic growth at the international scale is also being dominated by networks of particular major urban centres, often referred to as 'global' cities (Sassen, 2001; Button *et al.,* 2006). These urban centres are locations which not only exhibit significant agglomeration advantages but which also primarily interact with other similar globally-oriented cities in other countries, rather than with other smaller urban centres within their own countries, which tend to be oriented more towards the provision of local goods for local markets. In many sectors such as financial services (Col, 2007a,b; Mastercard, 2007) there is already much evidence that global markets are becoming dominated by networks of global cities (Sassen, 2002) such as London, Paris, Tokyo, Sydney and New York. The increasing relative dominance of these global cities appears to be associated with the density of knowledge (Simmie, 2004) and information technology assets in the city (Sassen, 2002; Button *et al.,* 2006). Moreover, empirical evidence suggests that the importance of major urban nodes (Limtanakool *et al.,* 2007) within such networks is also reinforced by the existence of hubs within the global air (Col, 2002; Burghouwt, 2005), rail, and marine transportation systems (Leinbach and Capineri, 2006). There is also evidence that the performance of these dominant global cities is also

affecting hinterland national and continental economies (Glaeser, 2005; Col, 2005; 2006; 2007c; HMT-DTI, 2001, 2003, BTRE, 2004).

These various arguments and observations strongly imply that the global economy is currently characterised by two opposing trends, namely the trends towards both globalisation and localisation. These apparently conflicting conclusions may be reconciled. Different types of changes in transactions costs have taken place in different sectors, activities and contexts, and there are regularities to the pattern of these changes. Most of the evidence for falling international and geographical transactions costs relates to trade in relatively standardised types of activities and goods. These are the sectors in which the nature and frequency of the spatial transactions have not altered fundamentally over time. Such features are typical in the case of industries producing semi-finished or finished manufactured products at mature stages within the product cycle, or service industries which are characterised by relatively routine activities in which the nature of the information being transacted itself is standardised. In these cases, geographical peripherality is no longer so much a disadvantage and thus the world appears to be becoming more equal. It is exactly these relatively more routine and labour-intensive activities which currently dominate the present off-shoring trends (Col, 2005b), and these are precisely the economic activities which are becoming globally dispersed. The world is getting flatter for these types of activities. On the other hand, in knowledge-intensive sectors where demand lead-times have fallen dramatically, or in industries in which there has been an increasing variety and complexity of information associated with the customisation of products and services, spatial transactions costs appear to have risen. In these knowledge-intensive sectors, the possibilities for international off-shoring or out-sourcing would appear to be even fewer than in earlier times (Col, 2005b). As such, for these knowledge-intensive activities, the world appears to be increasingly uneven, and therefore less equal (Leamer,2007; McCann, 2008). Rather than the world becoming flatter, for these types of activities the world actually appears to be becoming "spikier" (McCann, 2008).

Many of these high knowledge-intensive sectors are also the high value-added sectors whose locational features are dominated by major urban centres. Such centres operate as hubs within global transportation and communication networks. The reasons why high knowledge and high value-added sectors tend to congregate in particular localities are associated primarily with the combined existence of both localised agglomeration economies, key knowledge assets, and transport economies of scale and distance (McCann, 2005). The evidence in favour of the contemporary role played by agglomeration economies in shaping economic geography is now so overwhelming that it is more or less beyond question (Venables, 2006). In terms of long run growth discussions, the critical issue for the emerging economic geography of the twenty-first century is the location and spatial distribution of knowledge-assets. All of the evidence presented so far points to the conclusion that geographical proximity is becoming more important for knowledge-related activities, even as transportation and communications technologies improve. Therefore, the combination of localised agglomeration advantages in key nodal locations, allied with economies of transportation and communication will therefore maximise a firm's global market potential. More specifically, the firms which are best able to exploit the advantages of these particular combinations of assets will be those particular multinational firms which are also strongly embedded in the global city knowledge networks. Such global firms will increasingly reap the economic rents associated with knowledge assets, through their potential to exploit genuinely global production, communication and financial networks (Coleman, 1996; Cohen, 1998; Zook, 2005). Network analyses of trade and knowledge indicators imply that there is a clear core-periphery hierarchical structure to international trading patterns (Kali and Reyes, 2006). The core location of the firm is therefore critical, and firms already embedded in leading global centres will achieve the major returns from globalisation.

The coincidence of high knowledge activities, high value-added activities and a global transport hub are also the same conditions which will best support the R&D investments of multinational firms.

The reason is that R&D is a knowledge-intensive activity and requires both strong local knowledge inputs to continue the R&D process and strong global accessibility to reap the rewards of the R&D. Evidence from patent citation data suggests that firms typically learn 80% of their knowledge within the local region and 89% within the same country, while the knowledge reach of technologically leading regions is far greater than for other regions, (Peri, 2005). Location in knowledge centres is therefore critical for high value knowledge-intensive activities, as well as for high value manufacturing or service industries dependent on trust relations. If multinational firms do indeed locate their R&D and knowledge-related activities in such knowledge regions, then such multinational location behaviour will serve to promote even further the knowledge capabilities of these knowledge centres and knowledge regions. The location behaviour of MNEs is the issue to which we now turn.

4. Multinationals and the Global Economic Geography of FDI

Until as recently as 2006-2007 the volume of FDI to countries in all parts of the world was increasing rapidly. This is true for developed economies, transition economies, and also developing economies. However, differences in the scale of flows between varying parts of the global economy are still very marked. Also, the patterns of FDI in different parts of the world exhibit contrasting characteristics. Finally, the nature of FDI also exhibits very particular characteristics in particular countries. Understanding the scale, the geographical patterns, and the nature of FDI in different contexts will allow us to identify how the various BRIICS countries will evolve in terms of their long-term relations with the rest of the global economy. The empirical evidence discussed in this section comes from UNCTAD (UNCTAD, 2000, 2003, 2005, 2006, 2007).

Clues to these characteristics come from four observations. Firstly, both the total global output and the global asset value of foreign affiliates have increased by more than their global employment level. Secondly, for each dollar invested, more jobs were created in developing and transition economies than in developed economies. Thirdly, currently 30-40% of US trade is accounted for by intra-firm trade flows (Lai and Zhu, 2006), and fourthly, as we have already seen, over half of all Chinese manufactured exports are accounted for by foreign-owned multinational firms (Scheve and Slaughter, 2007).

These four observations provide several important insights as to the current nature of the relationship between developing countries, trade and multinational investment. Firstly, there is a shift in multinational FDI flows towards increasing capital-intensive or knowledge-intensive activities. At the same time, developing or transition economies are more heavily influencing the trade behaviour of multinational firms, which is altering the nature of national trade patterns. The increasing role of developing and transition economies in the current phase of globalisation is therefore intrinsically related to the investment decision of multinational firms. The geographical patterns of both global trade and global FDI are changing, and the reasons for this have to do with the behaviour of multinational firms. However, the movement towards higher capital-intensive and knowledge-intensive investments, and a more prominent role for developing countries in multinational trade flows don't necessarily go together. As we will see here, the empirical evidence suggests that these relationships are complex.

Economic geography, and in particular geographical proximity, is very important for trade and FDI. Both the bilateral trade levels and also bilateral FDI stocks between the US and Canada and also between the US and EU are much greater than what would be predicted simply on the basis of the scale of the respective economies (Krugman, 2007). This is also true with regard to the trade flows and FDI stocks between Japan and the other East Asian economies. The reason is that trade and FDI are both highly associated with proximity. Moreover, this association appears to be strengthening as spatial transactions costs increase. Geographical proximity is also of growing significance for shaping bilateral trade and bilateral FDI flows as groups of countries located in the same parts of the world develop stronger

relations. The geographical patterns of double taxation treaties and bilateral investment treaties closely resembles the cross-border patterns of FDI. The most striking case of this is that of the EU. In terms of bilateral inward investment stocks, in 1995, 17 of the top 50 pairs of countries were from Europe, whereas by 2005, this number had increased to 22. This reflects the rapid increase in EU cross-border investment over recent years in all sectors, in particular, in service sectors such as infrastructure, energy, and telecommunications. Similar observations come from other parts of the world.

Table 3.7. FDI Inflows 2006

	USD billion
Developed Economies	857
Developing Economies	379
USA	175.4
UK	139.5
China	69.5
Russia	28.7
India	17

Source: UNCTAD 2005, 2007.

As shown in Table 3.7, in 2006 total FDI inflows to developed economies amounted to USD 857 billion, which is almost exactly two thirds of total global FDI, and up from 59% in 2005. In 2006, with FDI inflows of USD 175.4 billion, the US recovered its top position as the largest destination for FDI inflows from the UK whose inflows amounted to USD 139.5 billion. However, in terms of the world's top 50 financial MNEs, the UK still hosts the largest numbers of affiliates. Meanwhile, across all sectors, the EU alone accounts for 40% of global FDI inflows, rising to over 43% if we include the EFTA countries. The US and Canada combined account for just under 19%.

Meanwhile, total inward FDI into developing and transition economies reached USD 379 billion in 2006, thereby accounting for 29% of global FDI inflows, down from 34% in 2005, with 5-6% being accounted for by transition economies. The largest region for FDI inflows is South, East and South East Asia which accounts for 53% of total FDI inflows into developing or transition economies. As shown in Table 3.7, the largest FDI inflows into a developing country went to China, with USD 69.5 billion, and amongst transition economies, to Russia, with USD 28.7 billion. Although the scale of FDI inflows to India in 2006, at USD 17 billion, are much less than China, this was equivalent to the total inward FDI in India during the three previous years combined, suggesting a rapid increase in FDI investment in India.

Inward FDI into developed economies are currently twice the scale of all inward FDI into developing and transition economies combined. Moreover, in 2005 and 2006, the rate of growth of FDI inflows to developed economies, at 34% and 45% respectively, was more than twice that of the rate of growth of FDI inflows (21%) into developing economies. In comparison, Latin America accounts for 6.4% of FDI inflows while the whole of Africa accounts for just 2.7% of global FDI inflows.

A similar picture also emerges when we consider FDI outflows. FDI outflows from Western developed economies plus Japan grew by 45% between 2005 and 2006, and now account for 84% of global outward FDI. If Chinese Taipei, Korea, Singapore and Hong Kong, China are also included the share of global outward FDI increases to 89.6%. Comparing these shares with those reported in section 5, we see that the geographical origins of global FDI outflows very closely reflect the geographical origins of R&D.

In terms of the sources of these FDI outflows, the US, Canada, Japan, Australia and Hong Kong, China plus 10 European nations are the top 15 sources of FDI. Outflows from the EU account for 47% of global outflows, rising to 55% including EFTA countries. Outflows from the US and Canada together account for 21.5% of global FDI outflows. For a single country, the US exhibits by far the largest FDI outflows. Annual outflows of FDI from the US are typically more than twice that of any other country, with the total foreign employment in US multinational firms currently running at approximately 9 million employees.

Global FDI outflows from developing and transition economies grew by 50% in 2006 to 16% of global FDI outflows, although if Hong Kong, China is removed from developing countries and included in developed economies, the growth rate falls to 36.4%. If Hong Kong, China, Korea, Chinese Taipei and Singapore are all included in the group of developed rather than developing economies, total outward FDI flows from developing countries account for just over 10% of global outward FDI flows. Meanwhile, FDI outflows from transition economies grew by 27% in 2006. FDI outflows from developing and transition economies area led by Brazil (28.2 billion)[1], Russia (17.9 billion) and China (USD 16.1 billion). The aggregate share of foreign investment in developed economies which is accounted for by FDI from developing or transition economies has increased slightly from 7% in 2005 to 9% in 2006. Overall though, in both absolute and relative terms, such outflows are relatively still very small in comparison to global outward FDI flows.

That this is the case can be seen from the fact that in 2001, the top 100 non-financial MNEs were all from developed economies, including Hong Kong, China, Singapore and Korea. In 2005, only two out of the world's top 100 non-financial MNEs were from developing economies and only one of the world's top fifty financial MNEs. Similarly, instead of defining MNEs by market capitalisation, if we define them in terms of the geographical spread of their foreign affiliates, still only three of out the world's top one hundred MNEs are from developing or transition economies. The reason is that MNEs from developing countries are still far smaller and far less internationalised in general than those from developed countries.

In 2006, 74% of the international policy measures instituted to facilitate FDI came from developing countries. These policy changes focus on issues such as reducing corporate taxes, structural liberalisation and deregulation. The results of this process are that developing countries are also increasing their shares of FDI in other developing countries. This is particularly noticeable in the case of Asian countries. Yet, even though FDI from developing countries into other developing countries is growing quickly, by far the most popular location for the affiliates of the top one hundred MNEs from developing and transition countries is the UK, followed by the US. These two countries have more than twice the number of affiliates of these developing country MNEs than any other country.

In terms of economic geography, global FDI flows appear to have certain directional characteristics to them. Firstly, global FDI flows are overwhelmingly dominated by the developed economies, both as destinations for inward FDI and as origins of outward FDI. Moreover, this dominance has been maintained over the recent years during the current phase of globalisation. Secondly, global FDI inflows into developing and transition economies are far more important than the global outflows from these economies. Thirdly, the dominant multinational firms are almost entirely from the developed parts of the global economy. Fourthly, although the flows of FDI from developing and transition countries into the developed countries are increasing markedly, in absolute terms, these flows are still very small in comparison with the outflows from developed economies. Fifthly the destinations for the FDI outflows from developing countries are increasingly orientated towards developed countries. Sixth, greenfield FDI

[1] This was due primarily to one mega-deal in which a Brazilian mining company purchased a foreign company (UNCTAD 2007).

plays a relatively much more important role in developing countries than M&As, and in particular in Asian economies, which are relatively more important in developed economies.

It might at first sound rather surprising that FDI outflows from developing and transition economies should seek locations in countries such as the UK and US. However, there is an inherent logic to this behaviour. As we have just seen above, the reason is that many aspects of multinational behaviour are related to the creation and dissemination of knowledge. Location choices which allow multinational firms to either access knowledge inputs or to take advantage of knowledge assets is essential for multinational establishments which operate either as decision-making centres or as centres for research and development. On the basis of the previous arguments and observations, regions with access to global city networks are now the preferred locations for multinational investments, and in particular those investments relating to knowledge activities.

5. Foreign Direct Investment, R&D, and the BRIICS Countries

From the perspective of investment managers and decision-makers, the countries with the highest potential investment returns also tend to be the most risky locations. Therefore, international investment managers and decision-makers have to consider the risk-return profiles of lower labour costs, versus greater communication, co-ordination and transportation costs. UNCTAD (2005, 2007) data provides indicators of the relative attractiveness of different countries as locations for FDI.

If all of the structural stability and institutional issues affecting FDI yields are taken into account, it is possible to provide an overall index of the potential returns to FDI. On these criteria, USA is ranked as the number 1 country in terms of its potential as a location for inward FDI, the UK is ranked number 3, Singapore is number 5, Hong Kong, China is number 15, and all the top 25 locations are developed economies.

In response to globalising trends, and also to the need to take advantage of both the competitive opportunities and technology transfer possibilities associated with FDI, many developing and transition countries have liberalised international investment policy regimes and promoted themselves as host locations for inward FDI. In general, the policies initiated to achieve these goals focus on issues such as reducing corporate taxes, structural liberalisation and deregulation, or the expansion of promotional efforts, as has been extensively undertaken already in India and Brazil. In contrast, there are a relatively small number of cases where governments have moved to restrict foreign ownership, such as in Russia, where the strategic sectors of the defence and extraction industries only permit minority foreign ownership.

Table 3.8. FDI Openness and Performance

	Openness Ranking	FDI Performance Ranking
Brazil	22	62
Russia	31	88
India	36	112
Indonesia	38	136
China	32	45
South Africa	12	126

Source: UNCTAD 2005, 2007.

One of the major outcomes of these general trends towards market liberalisation by developing and transition economies is that these countries are increasingly sought out as locations for FDI from developed economies. Yet, inward FDI exhibits different levels of relative importance in different host economies. As shown in Table 3.8, amongst developing and transition countries, the trans-nationality index of openness, which indicates the scale of inward multinational investment in terms of FDI inflows, stocks, value-added and employment, relative to total GDP, ranks South Africa 12, Brazil 22, Russia 31, China 32, India 36, and Indonesia 38. In general, across all developing or transition economies, the overall relative trans-nationality openness of countries to FDI tends to be higher in small countries and lower in the larger economies. This is also broadly true for the BRIICS countries, although Indonesia is relatively more closed than its scale might suggest, while China is relatively more open than its scale would suggest. On the other hand, in terms of the national FDI performance rankings for developing or transition economies, China is ranked 45, Brazil is 62, Russia is 88, Philippines is 100, Thailand is 106, India is 112, South Africa is 126 and Indonesia is 136. Yet, FDI performance rankings are affected by investment yields, and these tend to favour countries dominated by high risk primary extraction and raw material industries.

Recent UNCTAD survey evidence of multinational executives regarding the most attractive locations for FDI over the coming years, finds that China is ranked as the number 1 country in the world, India is ranked number 2, Russia is ranked number 4, and Brazil is ranked as the number 5 country. These perceptions would suggest that outward FDI will continue to flow in very large quantities from developed countries into these developing and transition countries over the foreseeable future. As such, these countries will become increasingly open and integrated into the global economic system. However, while the flows of FDI into particular developing and transition economies are expected to increase over the next few years, the nature of these flows is still likely to remain significantly different to the FDI inflows into developed economies. There are two aspects to these differences, and these relate to the mode of FDI and the relative importance of R&D-related FDI in these countries. The empirical evidence in the rest of this section comes from UNCTAD (2005, 2007).

Observation of the increasing levels of FDI in developing and transition economies demonstrates that the dominant mode of FDI entry in these countries is quite different to that in developed economies. In particular, if we consider M&As, developed economies are by far the largest destinations for inward FDI. However, the picture which emerges is very different if we consider so-called 'greenfield' projects. Greenfield FDI projects are the foreign affiliate investments whereby a brand new establishment is constructed on a new site, and this mode of FDI obviously represents a very different form of FDI from those undertaken by M&As. The number of such greenfield FDI projects increased globally by 13% to some 11 800 projects in 2005. Manufacturing accounted for 54% of these projects, with the service sector accounting for 42% and primary industries accounting for 4%. In terms of broad regions, South, East and South East Asia accounted for 3 515, or some 30% of these greenfield projects. As shown in Table 3.9, China alone accounted for 1 378 greenfield FDI projects, or 11.6% of the global total. India accounted for 981 greenfield projects, representing 8.3% of the global total. For the other BRIICS countries the numbers of greenfield FDI projects are very much lower; for Russia the number is 386, for Brazil it is 145, for Indonesia it is 93 and for South Africa it is 74 (UNCTAD 2007). In order to give a sense of the relative scale of these numbers, in the same year, the number of greenfield inward FDI projects in the US was 723, UK 669 and France 582. Asian economies, and in particular China and India, are by far the most important locations for greenfield FDI projects.

Table 3.9. Number of Greenfield FDI Projects in 2005

China	1378
India	981
Russia	386
Brazil	145
Indonesia	93
South Africa	74
US	723
UK	669
France	582

Source: UNCTAD 2005, 2007.

China now has by far the largest number of domestically located multinational foreign establishments with 42 753 foreign affiliates in 2004 with some 24 million employees. These affiliate establishments are heavily concentrated in manufacturing. The 24 million employed in China in foreign affiliates represents one-third of the global total workforce currently employed in foreign affiliates. This number has increased fivefold from less than five million in 1991, a number which is equivalent to the current total level of domestic US employment in foreign affiliates.

If we consider sectors other than manufacturing, the importance of greenfield FDI is seen to be rather different for some other developing economies. Brazil, for example, hosts the ninth largest number of the financial foreign affiliates, as well as hosting by far the largest number of such affiliates amongst developing or transition economies, and even more than Hong Kong, China Singapore or China.

These observations all point to the current dominance of greenfield modes of FDI in developing or transition economies. Inward FDI in developing or transition economies is therefore qualitatively quite different in nature to the dominant modes of FDI in developed countries, which are mergers and acquisitions. The reasons for these qualitative differences are that mergers and acquisitions, which are the most popular mode of FDI between developed economies, tend to be successful where there are potentially significant two-way knowledge flows between the acquiring and the acquired organisations. On the other hand, in the case of FDI into developing or transition economies, the potential reverse flows of knowledge and technology from the host country to the origin country are usually relatively low. The flows of knowledge and technology transfer therefore tend to be unidirectional, from the developed economy to the developing or transition economy. As such, MNEs from developed economies prefer to build new greenfield establishments in developing or transition economies, as this best allows these firms to organise, configure and control all aspects of the production process or service delivery process in exactly the desired manner.

Following these arguments, it is clear that the modes of FDI in developing and transition economies ought to evolve over time from greenfield investments to increasing numbers of mergers and acquisitions, as the knowledge base of these countries steadily increases, and the possibilities for upgrading R&D and innovation in many BRIICS countries over the long term are obvious. For example, in 2001, China, India and Russia together accounted for one-third of the total global number of tertiary educated technical people, while the Bangalore high technology industries alone have 35 000 people who are US educated or trained. Yet, of all developing economies, it is China's growth in its R&D capacity has been the most remarkable. Between 1996 and 2003 China increased its domestic R&D expenditure by over 3.8 times, such that by 2002 China became the only developing or transition economy in the world's top ten R&D expenditure countries. In 1996 it was outside of the top ten, but by 2002 it was ranked sixth

in the world in terms of total R&D expenditure and seventh in the world in terms of business R&D expenditure. Amongst developing or transition economies, China is now ranked number one for both total R&D and also business R&D expenditure. In terms of total R&D, Brazil is ranked number two, Russia is number three, and India is number four. In terms of business R&D, Russia is number two and Brazil is number three. After the US and UK, China is now third in the world for the total number R&D-related foreign affiliates located there.

Table 3.10. US Patents and Trademarks 2001-2003

	Residents	Organisations
Brazil	524	254
Russia	956	163
India	1022	558
Indonesia	108	31
China	1543	475
South Africa	428	167
Chinese Taipei	20,414	12,686
South Korea	12,195	11,152

Source: UNCTAD 2005.

However, although the scale of China's growth in both domestic R&D and also its inward FDI-related R&D growth is so notable, we can get a sense of the relative global and regional contribution of China's knowledge sectors by considering other indicators of innovation. For example, the total 2002 R&D expenditure of developing countries in South, East and South East Asia including both China and India is only 14% of the value for Japan and 6.7% of US R&D expenditure. Similarly, if we consider the number of US patents and trademarks granted to the residents of particular countries during 2001-2003, we see that China had 1 543, while India had 1022, Russia 956, Brazil 524, South Africa 428, and Indonesia 108. For comparison, the respective figures for Chinese Taipei and Korea are 20 414 and 12 195. Similarly, as shown in Table 3.10, in terms of US patents and trademarks granted to firms or organisations of particular countries during 2001-2003 we see that India had 558, China 475, Brazil 254, South Africa 167, Russia 163, and Indonesia 31. Once again, for comparison purposes the equivalent figures for Chinese Taipei and Korea are 12 686 and 11 152, respectively. Therefore, although amongst the BRIICS countries China and India appear to be the leading knowledge-generators, their relative contributions are not large in comparison to other advanced Asian economies. Meanwhile, the share of global R&D expenditure accounted for by the BRIICS countries combined is only 4%, of which China accounts for more than half of this level. In contrast, the world's developed economies account for 94.7% of global R&D expenditure.

As such, there is still a very long way to go for these countries to catch up with the knowledge base of developed countries. Yet, it is the outward flows of FDI by the multinational firms from developed economies which will facilitate, encourage, and enable this process. In particular, MNEs will play a catalytic role in the knowledge growth of developing and transition countries if their FDI outflows are increasingly associated with knowledge investments. Indeed, there is already some evidence that this process of knowledge transfer is well underway. The share of total domestic business R&D undertaken in developing countries, which is accounted for by the R&D undertaken by multinational affiliates located there, rose from just 2% in 1996 to 17.7% in 2002.

Amongst developing regions, it is the countries in South and East Asia which are the major locations for multinational R&D investment. During 2002-2004, of the 1 773 inward FDI projects

involving an R&D component, 1 095 (62%) were undertaken in developing or transition economies, of which 861 projects (49%) were undertaken in developing Asia alone. In the case of developing Asia, the share of R&D accounted for by the foreign affiliates of US multinational firms increased from 3% of their total foreign located R&D in 1994 to 10% in 2002. Similar trends are also observable for multinational firms from other developed economies which are locating R&D-related investments in Asia.

Within developing Asia itself, it is China in particular which dominates inflows of multinational R&D investment, and the impact on China of these inflows has also been the most marked. Between 1998 and 2002, the share of total domestic business R&D in China accounted for by foreign affiliates located there increased from 18% to 22%. The R&D expenditure associated with this R&D-related inward FDI now accounts for 13.5% of China's total domestic public sector plus private sector R&D expenditure. To get a sense of how important these multinational R&D investments are to China, we can observe that the 42 000 foreign affiliates located in China are currently employing some 24 million Chinese, and this still only represents 3.1% of the total employed workforce in China. As such, the relative importance of multinational R&D expenditure to China's knowledge-related activities is four times greater than the relative importance of MNEs to China's overall employment.

However, the obvious importance of inward FDI to the growth of China's R&D capacity is not a general observation across either all developing Asian economies or even across just the BRIICS countries. For example, in the case of India, the most recent reliable estimates indicate that in 1999, multinational R&D expenditure accounted for just 3.4% of domestic private sector R&D, whereas in Brazil, multinational R&D expenditure accounts for 49% of total domestic business R&D expenditure. This share is increasing slowly in China and India, but is more or less constant in the case of Brazil.

The types of R&D undertaken in different countries and regions of the world also appear to vary. In India, over three quarters of R&D expenditure is on services, and primarily on software development, whereas in Brazil the R&D of foreign affiliates located there tends to be adaptive R&D, not only for local markets but also increasingly for exports. In China, most multinational R&D focuses on adaptive innovations for the Chinese market, but there is increasing evidence across Asia that innovative R&D is growing. As such, there is significant variation across the BRIICS countries both in terms of the importance of R&D-related FDI within each country, and also the role of R&D-related FDI in each country. Only a small number of developing economies are significant hosts for inward R&D-related FDI, and amongst the BRIICS countries, for this particular type of FDI, China is by far the most important country.

6. Globalisation, Development, and the Changing Economic Geography of the BRIICS Countries

It is well-known in development studies that (in terms of the internal economic geography) as countries develop, their employment shares in agriculture tend to fall. Urbanised countries with the lowest proportion of employment in agriculture have higher GDP *per capita* than transforming countries, which also have higher GDP *per capita* than agriculture-based countries. Historically, the reasons for this obviously relate to structural effects, and many developing economies which have undergone rapid industrialisation from agriculture to manufacturing have also experienced increasing urbanisation. In countries undergoing this rural to urban transformation, the rate of growth of labour productivity in non-agricultural activities has been on average two-thirds higher than for agriculture in addition to the fact that urban employment has been increasing at nearly five times the rate (World Bank, 2008). This would suggest that agglomeration effects also operate, and urban-rural income disparities have consequently increased in almost all countries undergoing transformation.

Yet, the analysis here argues that the global economic transformations currently taking place imply even more radical geographical restructuring than in previous eras. The institutional, technological, and organisational changes currently operating imply that agglomeration economies are becoming more important than ever, and as such, the current phase of globalisation increasingly favours large cities and areas of economic integration. These areas of integration can be considered to be super-regions, and as we have seen, the performance of such super-regions is becoming ever more important to the world economy. As we have also seen, the recent institutional and technological changes allow for freer, more rapid and more efficient access to wider global markets, these changes are driving inter-connections between countries. In terms of sheer scale, the greatest beneficiaries of this enhanced inter-connectedness are the multinational firms, whose contributions to global output and value added are now far more significant than the contributions of international trade.

At the same time, however, major qualitative changes are taking place in the nature of economic inter-connectedness between countries. In particular, the knowledge flows between countries are becoming more important, as knowledge assets become crucial to global competition (Porter, 1990). This means that major organisational changes are also taking place in those organisations that are most associated with the development and use of knowledge assets. Once again, these organisations are the multinational firms. As such, the investment decisions made by multinational firms will increasingly determine the shape of the emerging global economic order of the twenty-first century. In particular, the knowledge-investment decisions made by multinational firms are becoming increasingly important in shaping the patterns of globalisation.

In the emerging economic geography of the twenty-first century, there appears to be an increasing polarity between different types of activities. High knowledge-intensive activities are now being located in high agglomeration city-regions while low-skill, routine, and low value-added activities are becoming spatially dispersed across the global economy. These movements are particularly noticeable as developed economies turn into developing or transition economies. On the other hand, many knowledge activities are also becoming localised and concentrated in particular types of localities. These localities can be characterised as knowledge-regions, as they are characterised by high levels of knowledge assets, such as human capital, skills and R&D. This tends to occur in large and economically diverse regions that are also well-connected in the global transportation networks. As such, the types of regions with the most rapidly increasing stocks of knowledge assets tend to be the global-city regions. Knowledge assets, global network connectedness, and knowledge-related foreign direct investment are increasingly co-determined nowadays. Where they operate, the local technological spill-over effects associated with multinational knowledge-investments are likely to be in the same locations as those also enjoying the local pecuniary spill-overs discussed by new trade theory and new economic geography (Krugman and Venables, 1995; Fujita *et al.,* 1999). As such, any local knowledge or technological spill-overs will accentuate and exacerbate the local efficiency gains associated with increased local competition. The result of these changes is that there will be an increasing divergence between countries and between regions in terms of the geographical distribution and patterns of growth and investment (Leamer, 2007; McCann, 2008).

Until recently, the developed economies, and in particular the multinational firms from the developed economies, were the major beneficiaries of globalisation. However, some of the emerging economies from the developing or transition countries are also now beneficiaries of these globalisation processes. As both their levels of global inter-connectedness improve and while their knowledge-related activities increase, at least partly in response to multinational knowledge-related investments, these emerging economies will play a greater role in the global economy. At a global scale, the long term result of these trends ought to be that emerging countries in general will play a much more important role in the global economy of the twenty-first century than they did in the twentieth century (Lucas, 2000). At the same time, however, these arguments also suggest that not all emerging countries will benefit from these

globalising trends, and that vast differences between the winners and losers amongst the developing and transition countries (Leamer, 2007; McCann, 2008) will occur as a result. The developing and transition countries most likely to benefit from globalisation will be those containing regions which most closely resemble global-city regions. These countries will significantly boost their knowledge assets. On the other hand, developing countries without such features will be left behind to specialise only on low value-added activities.

If we follow the logic of the above economic geography arguments, it is possible to arrive at similar conclusions when considering the internal economic geography of these countries. In particular, economic growth will become associated with divergence and polarisation, with ever-widening gaps between the winners and losers. Moreover, there is already also mounting evidence that such trends are well underway. Here it is possible to investigate some of this evidence by initially observing the behaviour of by far the largest, the fastest growing, and the most open of BRIICS economies, namely China. The analysis is then extended to the other BRIICS economies. The empirical evidence in the rest of this section comes from World Bank (2007).

The six BRIICS countries of Brazil, Russia, India, Indonesia, China and South Africa appear to be a rather diverse group of nations, although to some extent they share several common economic and structural features. Firstly, these are the world's six largest developing country economies. Ignoring the oil-rich state of Saudi Arabia and also the two large and emerging OECD economies of Mexico and Turkey, the BRIICS countries are by far the largest economies in the developing and transition world, and the only developing or transition countries with gross national incomes of over USD 200 billion *per annum*. For comparison purposes, the smallest of the BRIICS countries, namely South Africa, has an economy which is just slightly larger than that of Greece. Secondly, all six countries have undergone fundamental structural upheavals and transformations over the last two decades. Thirdly, the role played by multinational investment in all six countries has increased over recent years. Finally, as we will see now, the role played by agglomeration processes has also increased in all six countries over recent years. The economic geography of restructuring is very apparent in each case.

If we consider the growth performance of the BRIICS countries during the current phase of globalisation it is clear that China and India are currently the two fastest growing large economies in the world, with 2005 growth rates of 10.2% and 9.2% respectively. The third fastest growing large economy is Russia with a growth rate of 6.4% in 2005. Indonesia's growth rate has picked up again to 5.6% in 2005, South Africa's 2005 growth rate was 4.9%, while that of Brazil was 2.3% in 2005. If we consider the scale of the individual BRIICS economies, we also see that the relative rankings are rather similar. China's gross national income in 2005 was USD 2 269.7 billion, which ranked it as the world's fifth largest economy in 2005, almost identical in size to the UK economy; India's economy in 2005 was some USD 804.4 billion, and ranked as the tenth largest economy in the world, just slightly larger than the Korean economy; the economy of Russia at USD 638.1 billion, is ranked 16 in the world, just slightly smaller than the economy of The Netherlands. Brazil, with a 2005 gross national income of USD 662 billion ranks 14 in the world, Indonesia, with an economy of some USD 282.2 billion in 2005 is ranked at 23, and South Africa, with a gross national income of USD 223.5 billion is ranked as the 27. On the other hand, if we consider *per capita* income rather than the gross income, the rankings are very different. South Africa, with a 2005 *per capita* income of USD 4 770 is ranked 85 in the world, Russia, with a 2005 *per capita* income of USD 4 460 is ranked 90, Brazil, with a *per capita* income of USD 3 550 is ranked 96, China, with a *per capita* income of USD 1 740 is ranked 128 in the world, Indonesia with a *per capita* income of USD 1 280 is ranked 139, while India with a *per capita* income of USD 730 is ranked 158 in the world.

From observation of the growth rates of these countries, we see that the growth performance of the three largest BRIICS economies of China, India and Russia has been both higher and also more consistent over a longer period than for the other three BRIICS countries of Indonesia, South Africa and Brazil. These differences in both scale and growth rates suggest that it is the three larger BRIICS countries which are currently benefiting the most from the reordering of global economic relations taking place under the current phase of globalisation, rather than the three smaller BRIICS countries. These growth and scale observations appear to support the Krugman (2007) "home market effect" theory, whereby firms locate in large markets the activities that are subject to increasing returns to scale, and the efficiency gains associated with investing in these localities then allows the firms to export these goods. As we will see now, this argument appears to be particularly appropriate when we consider FDI investments in China. The empirical evidence in the rest of the chapter comes from UNCTAD (2005, 2007), except wherever specified.

6.1 The Changing Economic Geography of China

Of all developing or transition economies, the most remarkable transformation has been that of China. Between 1980 and 2000 China increased its share of global exports from 0.9% to 6%, its share of global imports from 1.1% to 4.1%, and its share of global GDP from 2.9% to 3.4% (Fujita, 2007b). The result of this increasing trade and openness was that between 1980s and 2000, China's GDP *per capita* increased by ten-fold. However, the initial impetus for China's restructuring and growth came from fairly modest reforms. China began with the introduction of a rudimentary system of property rights in order to create incentives and only recently gave constitutional recognition to private property (World Bank, 2005). However, recognising the need to access global capital, technology and knowledge assets via inward multinational investment, China has subsequently also liberalised many rules regarding services and manufacturing industry ownership. These changes now allow for greater levels of overseas ownership in many advanced sectors and have been instituted because China is aiming to attract both a broader range and a higher quality of inward FDI. In particular, the National Economy and Social Development Plan 2005 emphasised the need to improve the quality of FDI by encouraging it in high-technology industries, advanced manufacturing, modern services, agriculture and environmental protection. The plan encourages the establishment of R&D centres, regional headquarters, and bases of advanced manufacturing. It also welcomes the role of FDI in the reform of state-owned enterprises.

The growth in R&D-related FDI investments in China began in 1993 and reached some 700 projects by 2004 amounting to some USD 4 billion in inward FDI. Most projects were implemented after China's accession to WTO in December 2001. These R&D investments are mainly focused on technology-intensive industries such as ICT, automotive and chemicals, and there is clear economic geography logic to these investments which are concentrated in a small number of locations. In 2004, Beijing had 189 foreign-owned R&D centres of which 60% were in ICT, Shanghai had 140 foreign-owned R&D centres of which 91 are in Pudong, and Guangdong and Jiangsu provinces in the south (close to Hong Kong, China) are home to a combined number over 100 R&D centres.

The fact that multinational R&D centres were being located in Shanghai, Beijing, Guangdong and Jiangsu provinces displays a clear logic. These locations are the core knowledge regions which are growing quickly, and form the major locations for all types of international investment. Although they cannot yet be described fully as global cities, both Beijing and Shanghai exhibit world city characteristics. At the same time, in 2003 the south eastern provinces of Guangdong and Jiangsu individually accounted for 28% and 19% of FDI, respectively. The reason that FDI in general, and knowledge-related FDI in particular, was being located in these cities and regions, is because these are the major growth regions of China.

During the 1970s and 1980s, inequality between provinces and also between urban and rural areas in China fell consistently (Golley, 2007). Until the mid-1980s, the growth in *per capita* productivity and expenditure *per capita* was higher in rural than in urban areas, which suggested a slow process of rural-urban convergence (Angang *et al.,* 2005). Between 1978 and 1985, the ratio of *per capita* disposable income between urban and rural residents had fallen from 2.57 to 1.85, and ratio of *per capita* consumption had fallen to just over 2.1 (Angang *et al.,* 2005). However, from the mid-1980s onwards this urban-rural ratio has been reversed. By 1990 the ratio of both *per capita* disposable income and consumption had risen to above 2.0. Since the economic reforms started in earnest, as expected on the basis of the earlier arguments, inequality between provinces in China has risen continuously since 1991 (Golley, 2007). By 1997, the urban-rural ratios of both *per capita* disposable income and consumption had increased to approximately 2.5 (Angang *et al.,* 2005). By 2001 the urban-rural ratio of both *per capita* disposable income and consumption had risen to approximately 3.0:1, while the ratio of *per capita* income had risen to 2.1:1 (Angang *et al.,* 2005).

The result of this urban rural divergence was that by 2004, the largest city-regions in China exhibit the highest *per capita* incomes, with the ratio of *per capita* province GDP to national *per capita* GDP being highest for Shanghai 5.0, then for Beijing 3.5, then Tianjin 2.7. The next highest ratio areas are the regions of Zhejiang 2.1 and Jiangsu 1.8, which are the regions close to Shanghai, followed by the regions close to Hong Kong, China of Gangdong 1.8, and then the coastal regions close to the dominant cities of Fujian 1.6, Liaoning 1.6 and Shandong 1.4 (Golley, 2007). These ratios imply that the dominant cities currently exhibit GDP *per capita* levels which are approximately 13 times that of the lowest regions (Fujita, 2007b).

If the three major city-regions of Shanghai, Beijing and Tianjin are removed then the increase in regional inequality across China is noticeably reduced. On the other hand, however, if we group together all of the Coastal regions including the dominant city-regions, then regional inequality between the coastal and interior regions of China increases even more dramatically (Golley, 2007). This demonstrates the role played by particular city-regions in the dramatic growth of China over the last two decades. In 2000, the Coastal region between Beijing and Hong Kong, China as a whole produced 71% of China's total industrial output. This enormous output accounted for more than 60% of output in all but two sectors and at least 80% of output in close to half of the industry sectors, including 97% of China's cultural, educational and sports outputs (Golley, 2007). The growth of China is a coastal phenomenon. However, even within the Coastal Region of China there is a Core Region, which consists of the South East regions adjacent or close to the major cities, and represents broadly an arc of regions bounded by Shanghai and Hong Kong, China. These Core Region provinces grew by more than the Coastal Region as a whole in almost all of the sectors in which the Coastal Region grew (Golley, 2007).

As expected on the basis of earlier arguments, increasing inter-regional inequality is now a general phenomenon in China. However, in terms of economic geography, the escalating growth and wealth of certain regions is also highly associated with the increasing agglomeration of activities in these regions. Once again, this is predicted by economic geography arguments. The Core Regions of the South East are not only the fastest *per capita* growth regions, but also they are the regions of the most rapidly increasing agglomeration. Golley (2007) calculates that that between 1989 and 2000, 26 out of 28 major manufacturing and industrial sectors have become more spatially concentrated, as reflected by increasing spatial Gini coefficients. As such, the general trend towards increasing intra-national inequality across many countries is clearly very evident in China.

Regional economic restructuring in China has meant that poverty reduction since the mid-1980s has been most dramatic in the eastern regions, followed by the central regions, with poverty increasing in the Western regions (Angang *et al.,* 2005). However, this is not just an urban phenomenon. The ratio of

per capita farming incomes in the east and centre regions relative to the west region have also increased between 1980 and 2000, from 1.27 and 1.05, to 1.92 and 1.30, respectively (Angang *et al.,* 2005). Part of the reason is human capital. The areas of highest growth are broadly the regions with highest rates of literacy (Angang *et al.,* 2005). In addition, disparities in Chinese income *per capita* are also exacerbated by a fiscal tax and transfer system which significantly benefits urban residents (Angang *et al.,* 2005). More generally, however, the competition and wealth effects associated with buoyant regional growth across a range of local sectors tend to spill over to other local sectors, and agriculture in such buoyant regions also benefits from this.

6.2 The Changing Economic Geography of the Other BRIICS Countries

Many of these same economic phenomena evident in China are apparent in countries such as India. Like China, India began its economic restructuring with initially modest reforms by reducing trade barriers and distortions within the economy. In 1991 the average tariff was 83%, and only 13% of goods were importable without a license. By 1998 tariffs had been reduced to 30%, and the range of goods importable without a license was 57%. Since then, its GDP *per capita* has increased four-fold between 1980 and 2002 (World Bank, 2005). As in the case of China, recognising the need to access global capital, technology and knowledge assets via inward multinational investment, India has also moved to increase its attractiveness as a location for FDI. The Indian Investment Commission aims at drawing FDI as well as domestic investment, while the Foreign Investment Board is intended to act a one-stop service centre and facilitator for FDI. In 2004 foreign equity ceilings in Indian aviation services, private banks, non-news print publications, and the petroleum industry were all adjusted upwards in order to attract more international investment. Yet, even though China and India are now often compared, there are actually fundamental differences between the two economies and their responses to globalisation. Firstly, one obvious difference is simply sheer scale. The Chinese economy is almost three times the size of the Indian economy, with *per capita* incomes of well over twice those of India. Secondly, there are major trade performance differences between the two countries. In 1950, China's share of global trade was 1% while that of India's was 2.2%, whereas by 2002, China's share of global trade had increased to 4.8% while India's had actually declined to 0.8% (Lardy, 2005). In part, these trade performance differences are because China's rapid growth began slightly earlier than India's growth, and also because it has been more dramatic than India's, particularly in opening trade. Thirdly, there are also major differences between China and India in terms of their structure of GDP composition.

Table 3.11. Size of Sectors in National Output

	% of National GDP 1980			
	Agriculture	Industry	Manufacturing	Services
China	30.1	48.5	40.5	21.4
India	38.6	24.2	16.3	37.2
	% of National GDP 2002			
	Agriculture	Industry	Manufacturing	Services
China	15.9	50.9	34.5	33.2
India	24.9	26.9	15.8	48.2

Source: Panagariya *et al.,* 2005.

The structure of GDP composition by industry in India is still rather different to China; there is a much greater emphasis in India on services than China, where manufacturing is still relatively more dominant (Panagariya *et al*., 2005). As shown in Table 3.11, in 1980 in China, agriculture accounted for 30.1% of GDP, industry for 48.5% (of which manufacturing alone accounted for 40.5%) and services for

21.4% of GDP. On the other hand, for India, agriculture accounted for 38.6% of GDP, industry for 24.2% (of which manufacturing accounted for only 16.3%) and services for 37.2%. Even though both countries have undergone enormous changes during the last three decades, the legacy of these inherited structures still remains. In 2002 in China agriculture accounted for 15.9% of GDP, industry for 50.9% (of which manufacturing alone accounted for 34.5%) and services accounted for 33.2% of GDP, whereas for India, agriculture accounted for 24.9% of GDP, industry for 26.9% (of which manufacturing accounted for only 15.8%) and services for 48.2% of 2002 GDP (Panagariya *et al,*. 2005).

As a result of its different industrial structure and also its English language advantages, the growth of FDI in India, and particularly the growth of off-shoring FDI, has been dominated by a range of service industries, rather than by manufacturing (Gordon and McCann, 2008), which has been the case for China. Yet, many aspects of the dynamic growth industries of India have similar features to China. Firstly, most of the trade of the Indian and Chinese economies is still in the form of re-exports of finished or semi-finished products or services produced by multinational firms which are based in Europe or the US. Secondly, many of the key growth centres are dominated by external links with multinational companies. In the Indian IT industry, which is dominated by the Bangalore region, two thirds of all sales are accounted for by foreign owned multinational affiliates located there (Scheve and Slaughter, 2007). Thirdly, as India undergoes continuing regional economic restructuring, firms located in the regions with large home markets earn higher profits (Kambhampati and McCann, 2007). This implies that in terms of economic geography, the large home market effects associated with agglomeration are driving the internal economic growth and restructuring within Indian economy.

A similar picture emerges in the case of Indonesia. In terms of internationalisation and globalisation, the current phase of economic restructuring was driven by the Jakarta Declaration, which outlined the Government's vision for infrastructure development, and also its commitment to removing the bureaucracy which was impeding private investment. Bureaucracy is a major problem in Indonesia. Currently, the time taken to start a business in Indonesia is 151 days, which is almost four times as long as in China. The Government has also introduced a one-stop investment service for FDI. Other initiatives proposed at the time included abolishing the requirement for foreign affiliates to sell part of their shares to local investors after a certain number of years and the abolition of the 30 year limit on business licenses for foreign investors. These initiatives are all aimed at opening up the country to further foreign investment, with the aim of promoting internal competition and technology transfer. However, increasing trade and investment openness is likely also to lead to greater disparities among Indonesia's regions, as inward investing firms seek out the pecuniary advantages of associated agglomeration. This is particularly the case in the apparel and textiles industries, which is the sector in Indonesia that has exhibited the greatest revealed comparative advantage since the 1980s (James, 2007). If inward technology spill over effects also operate in these sectors, these are likely to exacerbate the existing advantages of agglomeration in the dominant urban regions of Java (Amiti and Cameron, 2007). Like China, GDP *per capita* in Indonesia is closely related to city size, with the dominant city of Java exhibiting GDP per capital levels which are approximately 13 times that of the lowest regions (Fujita, 2007b). The opening up of the country is likely to accentuate these differences, except for the case where multinationals are engaged in primary sector activities located in other outlying regions.

Brazil is by far the largest recipient of inward FDI in the South American region, receiving approximately USD 19 billion of annual inward FDI, which represents over 40% in FDI in South America. However, although inward FDI in South America grew by 18.5% between 2004 and 2006, annual inward FDI inflows into Brazil remained fairly static. This is in contrast to Brazil's FDI outflows which rose dramatically becoming the largest in the region in 2006, reaching a record level of USD 28 billion. For the first time, Brazil's FDI outflows surpassed its FDI inflows. However, this was mainly due to one mega-deal in which a Brazilian mining company purchased a foreign company. Apart

from this one case, however, over the medium term it is still likely that FDI inflows into Brazil will continue to significantly outweigh the FDI outflows, which previously were typically between USD 3 billion and USD 9 billion *per annum*. Both inward and outward FDI flows from Brazil region tend to be concentrated in extractive industries, resource-based manufacturing industries, and also in the infrastructure and telecommunications sector. However, foreign investments in various key sectors of the Brazilian economy, such as the automotive industry, sugar refining, and the steel industry, have increased over recent years. During the 1990s and early 2000s, foreign MNEs made USD 20-25 billion of investments in the MERCOSUR automotive industries, 80% of which were in Brazil. These investments were primarily of a market-seeking nature, focused on the domestic markets. More recently, however, FDI in the automotive industry of MERCOSUR, which is dominated by Brazil, is increasingly focused on export markets such as Mexico, rather than on domestic consumption, and this has been helped in part by major currency devaluations. These developments are likely to continue many of the current regional inequalities in Brazil. Very significant regional disparities continue to exist in Brazil, a country which exhibits very clear centre-periphery features. Moreover, the increasing relative dominance of primarily Sao Paulo and Rio de Janeiro, along with the cities of the south and east coastal regions (Monteiro Monasterio, 2008), means that the economic fortunes of the peripheral regions are increasingly dependent on the behaviour of the core regions, whose own performance is largely independent of the peripheral regions (Perobelli *et al,.* 2008).

In the case of Russia, regional transformation has been rapid. Apart from the major natural resource extraction regions, economic growth in Russia is now localised in a small number of regions, dominated by the major cities of Moscow and St Petersburg (Hanson and Bradshaw, 2000). FDI inflows to the Russian federation doubled between 2005 and 2006 to USD 28.7 billion, where natural-resource-based activities lead the way. However, the Russian Government has moved to restrict foreign ownership in the strategic sectors of the defence and extraction industries, only permitting minority levels of foreign ownership for firms in these industries. Meanwhile FDI outflows from Russia have continued to increase between 2005 and 2006 by 41% to USD 18 billion. This was particularly in resource-based firms attempting to globalise, as well as in banking FDI outflows into other former CIS countries.

South Africa opened up its economy to the global market in 1994. Trade liberalisation had a very significant impact, with exports and imports rising from 47% in 1996 to approximately 60% of GDP in 2004. In terms of inward investment, South Africa in 2005 accounted for 21% of all FDI inflows into the continent of Africa. South Africa itself actually witnessed a fall in FDI inflows due to the sale of a foreign equity stake in a domestic gold-mining firm to a domestic firm, although South Africa remains Africa's major location for both inward FDI and a major source of outward FDI. As well as the traditional investors in South Africa from UK and USA, there is now also increasing interest from Asia, a trend which reflects the overall growing interest in Africa from Asia in general. As South Africa's trade, and in particular its manufacturing exports, have increased dramatically over the last two decades, the relationship between trade and economic geography has become much clearer. Economic growth in South Africa is being increasingly dominated by the urban centres, and particularly those with major transportation infrastructures (Naude and Krugell, 2003). In 2000, some 84% of South Africa's manufacturing exports are now accounted for by only 6% of the magisterial districts (Naude and Krugell, 2003).

6.3 Final Comments

In order to understand the long-run global evolution of the economic geography of trade and growth, it is necessary to understand the role played by both agglomeration economies, and multinational firms as mediators of the physical and human capital investments on which such growth is built. In explicitly spatial terms, at the global level, the current phase of globalisation intensifies the mutual

interdependencies between countries, strengthens the importance of local trade blocs and areas of economic integration, and also tends to reinforce the dominant urban hierarchies (Geyer, 2006). Economic geography, defined both in terms of a country's physical location and also its access to markets and supply sources, plays a statistically significant role in determining the levels of a country's productivity and income *per capita*. A country's trade performance is closely related to its economic geography (Redding and Venables, 2004). These geography-trade structural issues are exacerbated by the location behaviour of multinational firms. As we have seen, the reason for this is that multinational firms will locate the types of investments which benefit from agglomeration effects in large and diversified city-regions, and in the current phase of globalisation, the types of investments which benefit from agglomeration effects are increasingly the knowledge-intensive activities. While the original new economic geography and new trade theory predictions (Krugman and Venables, 1995) were based solely on the advantages associated with local pecuniary spill-over effects, what is argued here is that knowledge and the technology spill over effects exhibit primarily the same locational logic. As such, multinational firms will not only contribute to, but will also accentuate and exacerbate the tendency towards centre-periphery divergence between countries and between regions within the same countries. All these features are characteristic of the second Krugman-Venables phase of globalisation.

There is also one final issue that we have not yet discussed, but which also points in exactly the same directions as our conclusions. This is the question of the migration of highly skilled human capital. In the current phase of globalisation, highly educated and skilled individuals are now better able than ever to exploit their knowledge assets via mobility. This is because the institutional and technological changes driving the current processes of globalisation also allow highly skilled individuals to move internationally in order to reap the rewards of their human capital. If both pecuniary and technological spill-overs are becoming more localised in global city-regions, such regions will also become the dominant employment destinations for highly skilled labour. There is already plenty of evidence that this process is occurring. It is well documented that the gap between the wealthiest and poorest countries has steadily grown over the last two centuries, and most of this has taken place during the periods in which shipping costs and global trade have expanded at their fastest rates (Venables, 2006). This phenomenon has occurred in particular over the last two decades (Leamer, 2007). These arguments also apply to individual countries. A rapidly widening income gap between high and low skilled individuals has already emerged within advanced economies (Scheve and Slaughter 2007), intra-national regional inequality is increasing all over the world (Brakman and van Marrewijk, 2008), and internal labour migration and enlarging regional inequality is a major feature of the restructuring of the BRIICS countries. The local coexistence of pecuniary spill-overs, technological spill-overs and human capital inflows, will therefore continue the trends towards regional inequality described in this chapter. This is true both for regions and countries within advanced areas of integration, such as those in the EU or NAFTA, and also for developing regions and countries (Venables, 2005), such as China, ASEAN, or Mercosur.

That this is the case can be seen from the fact that all the BRIICS countries exhibit broadly similar economic geography features. As they are more open to trade and investment, their internal economic geography becomes increasingly focused on the particular major city-regions which exhibit marked agglomeration features, as well as the best access to global transportation networks. While it is true that over time these emerging economies will obviously generate more of their own multinational knowledge outputs, in the current phase of globalisation the knowledge centres controlling much of their outputs are still almost entirely located in other arenas, such as the EU, Japan and US. Allied with the fact that in both absolute and *per capita* terms the EU and US economies still dwarf the combined economies of all the BRIICS countries, these observations suggest that the processes of convergence between the developed and emerging BRIICS countries still have many decades to run (Stiglitz, 2006). As such, access to not only the capital, but more importantly, the knowledge resources and technology controlled by

multinational firms from developed economies will continue to be critically important for the development of all the BRIICS countries and regions.

While these arguments may appear to imply a rather stark distinction between regional winners and losers, they still leave open a variety of opportunities for much creative policy-thinking and policy-making. One of these opportunities is intra-regional in nature and one is inter-regional in nature.

In terms of *intra*-regional policy issues, in order for localised growth processes to continue efficiently in the dominant city-regions, it is essential that the infrastructure and land-use resources in these locations are adapted and developed so that they are able to cope with the increasing population pressures. Otherwise, the increasing growth of the city-region will be associated with rising costs and falling efficiency, and such centres will lose out to growth centres in other regions or other countries. Of particular importance here is the quality and efficiency of the urban transportation and commuting infrastructure, and also the availability, flexibility, and strategy of land-use planning regulations. Knowledge-workers require transportation facilities, housing availability and urban services which are consistent with their work-life aspirations. Cities which are best able to maintain increasing efficiency alongside population growth therefore require a level and quality of built environment infrastructure which is sufficient to facilitate and provide for the living and moving patterns of highly educated workers.

In terms of *inter*-regional policy issues, in order for hinterland cities and regions to gain access to, and take advantage of, the localised growth processes currently taking place in the dominant city-regions, it is essential that countries improve their levels of inter-regional connectivity. While this is true for developed economies, it is even more important for developing and transition economies. In particular, inter-regional transportation and communications networks should be made as extensive and comprehensive as possible, so that businesses and entrepreneurs in hinterland regions are able to easily access the dominant city-regions. Of particular importance, here, is the case of air-transport facilities. Air-transport connectivity between regions facilitates the movement of ideas and knowledge embodied in business executives, and as we have seen, these flows of knowledge via face-to-face contact are critical. The reason this is so important in the case of BRIICS countries, and in all developing and transition economies in general, is that the dominant city-regions in these countries are able to act as sources and conduits of knowledge regarding new technologies, new techniques, new markets and new supply opportunities for the hinterland regions. As such, the central and hinterland regions play a rather different role in the growth processes of developing and transition countries. The dominant city-regions tend to compete on the basis of the competitive scale advantages afforded by the agglomeration economies, while the hinterland regions are still better able to compete on the basis of comparative advantage, particularly in the agricultural sector and also in the lower knowledge-intensive and lower value-added manufacturing industries. The same arguments for air-transportation systems also apply in general to inter-regional telecommunications networks.

Policy-making therefore needs to balance intra-regional needs with inter-regional needs. Intra-regional infrastructure investment and planning is required in order to foster localised growth, while inter-regional planning and investment is required in order to promote the dissemination of growth benefits across all regions. These issues pose major challenges for policy-makers.

The globalisation analysis here has been conducted from the standpoint of economic geography, in which the issues of agglomeration, knowledge, and networks are argued to play a pivotal role in the development processes of the twenty-first century. However, the implications of these arguments do not necessarily imply that wholesale liberalisation is the simple answer to all knowledge-transfer, technology-transfer and growth problems (Stiglitz, 2002, 2006). Indeed, rather than being very open, the two fastest growing BRIICS countries, namely China and India, are still highly restrictive in terms of the control of

inward non-FDI international capital flows (Anderson, 2005). These issues obviously need to be seen in a much broader political economy light, in which the management and governance of the processes of globalisation need to be made as transparent as possible (Stiglitz, 2002, 2006). While policy uncertainty, macroeconomic instability, security of property rights, taxes and corruption are all major issues inhibiting the benefits of globalisation accruing to developing and transition countries (World Bank, 2005), protectionism on the part of advanced economies can be at least as damaging (Stiglitz, 2006). The long run growth prospects for some of the BRIICS countries look particularly positive. However, whether all parts of the developing world will benefit from the third stage of the Krugman-Venables transition, as implied by Lucas (2000), in which growth spreads dramatically from developed to developing countries, is still rather unclear (Crafts, 2004). It depends in part on how the local growth processes are managed.

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Chapter 4

Globalisation and the Political Economy of Trade Liberalisation in the BRIICS

by

Razeen Sally

Introduction

This paper tries to make sense of trade-policy developments in the BRIICS (Brazil, Russia, India, Indonesia, China and South Africa), against the backdrop of trade and foreign-direct-investment (FDI) liberalisation in developing countries and countries in transition since the early 1980s. Its accent is on political economy, comparing the countries concerned to show how politics and institutions interacted with economic conditions, and shaped the relative success or otherwise of reforms. National trade-policy reforms must also be seen in the context of modern economic globalisation. The global macroeconomic climate, in addition to global patterns of trade, FDI and technological change, set the external economic context of constraints and opportunities for nation-level policies in the BRIICS. Then there is the global political context: international rules and international economic organisations (such as the WTO, IMF and World Bank), and the role of the major powers, especially the USA.

This exercise is also intended to shed light on the prospects for further trade-policy reforms, at a time when the global financial crisis and a seemingly severe global economic downturn have generated greater protectionist pressures. Can the new upsurge of protectionism be contained? How necessary is further reform of trade and FDI regimes in the BRIICS? What are the links between external liberalisation and domestic regulatory reform? What is the balance between unilateral measures (undertaken independently by national governments) and reciprocity (undertaken through trade negotiations and agreements with donors)? Above all, what are the political and institutional requisites for further trade-policy reforms? What obstacles lie in their path? How are present conditions different from the political economy of trade-policy reforms in the last quarter-century?

The first section sets the scene by looking at the global climate for external liberalisation, including debates revolving around the Washington Consensus. This provides the external frame for trade policy in the BRIICS. Section Two reviews the record of trade and FDI liberalisation in the BRIICS. Section Three probes the political economy of trade-policy reforms in the BRIICS. It sets up a classification of the main factors influencing policy reforms, and makes cross-country comparisons. Section Four looks at "multi-track" trade policy, *i.e.* trade policy conducted, often simultaneously, on unilateral, bilateral, regional and multilateral tracks. Section Five signals lessons for future liberalisation and trade-related regulatory reform in the BRIICS, and more generally for developing countries.

1. The global climate for external liberalisation

> *To expect, indeed, that the freedom of trade should ever be entirely restored … is as absurd as to expect that an Oceana or Utopia should ever be established … Not only the prejudices of the public, but what is much more unconquerable, the private interests of many individuals, irresistibly oppose it.* Adam Smith, Wealth of Nations

There is much less appetite for further liberalisation and associated structural reforms now compared with the heyday of the Washington Consensus in the 1980s and 1990s. On the whole reforms have not been reversed, but their forward momentum has stalled. Governments are more sceptical and

defensive about further liberalisation; and there has been relatively little in the way of "second-generation" reforms (in domestic trade-related regulations and institutions) to underpin external liberalisation and boost competition.

The last two-to-three years have seen creeping protectionism (rather than major liberalisation-reversal), e.g. FDI restrictions to protect "national champions" in "strategic" sectors, and export controls on agriculture and other commodities to combat food and fuel inflation. Creeping protectionism has clearly accelerated since the onset of global economic crisis in late 2008. The intellectual climate has shifted decisively against free markets and in favour of greater government regulation. Regulatory responses, whether under cover of financial reregulation, fiscal-stimulus packages or renewed industrial policy, threaten to spill over to external protectionism. Early signs are selective import-tariff increases in some developing countries (including India, Indonesia and Russia), and a rise in anti-dumping actions in both developed and developing countries. This could escalate into, *inter alia,* more onerous FDI restrictions, (explicit or implicit) export subsidies for domestic manufacturers, further domestic regulatory restrictions on foreign services providers, and even greater use of trade-restricting product standards.

These trends apply to the West, and to most developing-country regions. In the developed world, pervasive agricultural protectionism continues, with an admixture of new protectionism directed against China. The West has no *grand project* for liberalisation in the early twenty-first century to compare with the Reagan and Thatcher reforms in the 1980s, or the EU's Single Market programme in the late 1980s and early 1990s. Eastern-European countries are suffering from "reform fatigue" after their accession to the EU. This is also the state of play in much of Latin America, Africa, south Asia and southeast Asia. In some countries, particularly resource-rich countries enjoying a revenue windfall, liberalisation has been put into reverse gear. Venezuela and Bolivia are conspicuous examples. Overall, protectionist flare-ups and lack of reform momentum in the West have reinforced liberalisation-slowdown outside the West.

The BRIICS fit well into this big picture. Russia is at one extreme. President Putin's second term coincided with soaring energy prices, a revenue windfall and fast economic growth. External liberalisation has stalled. It has gone backwards in energy sectors, which dominate Russia's external trade. The state has taken control of energy assets. Political direction and monopolistic practices crowd out market-based competition. Certain industrial sectors are protected and promoted in order to foster "national champions". Laws and administrative measures related to economic regulation are increasingly politicised and selectively applied.

The other BRIICS have seen liberalisation slowdown rather than liberalisation reversal.

Brazil's turnaround from a closed to a globally-integrating economy started in the late 1980s. Since the mid-1990s, there has been virtually no trade liberalisation and very little structural reform. The present Lula administration has prioritised macroeconomic stability and redistributive social policies, but it has made no advance on trade and FDI liberalisation and microeconomic reform.

South Africa is strikingly similar. Its opening to the world economy proceeded in tandem with its political transition from apartheid to multi-racial democracy. Both occurred in the mid-1990s. Since the late 1990s there has been no significant external liberalisation, and little structural reform either. In the last five years the internal balance of opinion has become more sceptical of liberalisation, and more favourable towards industrial-policy intervention.

India has had stop-go reforms since its decisive opening to the world economy in 1991. Bursts of reform took place in the early 1990s and in the early years of this decade. A "reform pause" took hold in the mid-1990s, and then again since 2004. The present Congress-led government has continued industrial-tariff reductions, but otherwise external liberalisation and structural reforms have stalled.

Indonesia saw fast liberalisation in the second half of the 1980s and early 1990s, and then again in 1998 due to an IMF structural adjustment package. The latter also contained far-reaching structural reforms. Since then there has been reform slowdown – a reaction to the Asian crisis and the perceived foreign imposition of the comprehensive IMF package. Overall protection has not increased, but there has been creeping non-tariff protection in some sectors, particularly in agriculture. New domestic regulations, especially in the labour market, have increased business costs.

China was the partial and conspicuous exception: external liberalisation proceeded apace before and after WTO accession in 2001, in what has been the biggest opening of an economy the world has ever seen. Very strong trade and FDI liberalisation took place in the 1990s, even after the Asian crisis and in the run-up to WTO accession. That was locked in by very strong WTO commitments, which provided the springboard for further liberalisation and regulatory reforms. However, domestic political conditions for further "WTO-plus" reforms are now more difficult. Industrial-policy interventions and restrictions on foreign investment, especially to protect favoured incumbents in the public sector, have increased since about 2006.

These are the broad trade-policy trends in the BRIICS. The second section of this chapter will go into more detail.

Why Washington Consensus scepticism?

A variety of factors accounts for liberalisation-scepticism, even before the global financial crisis took hold. There is much anxiety about globalisation, despite record growth across the world in the last five years. Macroeconomic crises provided windows of opportunity for fast-and-furious liberalisation in the 1980s and 1990s, but that has not happened since the Asian and other financial crises of the late 1990s. Indeed, the latter may have brought about a popular backlash, and certainly induced more caution regarding further liberalisation. Also, further liberalisation entails tackling border and, increasingly, domestic regulatory barriers in politically-sensitive areas such as agriculture and services. Inevitably, this runs up against more powerful interest-group opposition than was the case with previous waves of (mainly industrial-goods) liberalisation. Individuals matter too: the new century has not yet brought forth a Cobden, Gladstone, Erhard, Thatcher or Reagan to champion free markets or free trade.

Not least, the climate of ideas has changed, for prevailing weather conditions have become more inclement since the Washington Consensus reached its zenith only a decade ago. There is, now as before, an extreme anti-globalisation critique, a root-and-branch rejection of capitalism. But this is street theatre on the fringe. Of greater political importance is a more mainstream critique that accepts the reality of the market economy and globalisation, but rejects the comprehensive liberalisation associated (perhaps unfairly) with the Washington Consensus.

Critics point to tenuous links between liberalisation, openness, growth and poverty reduction; wider inequalities within and between countries that result from globalisation; the damaging effects of large and sudden trade liberalisation in developing countries; the renewed emphasis on aid to poorer developing countries, without which trade liberalisation will not work; the need for developed-country liberalisation while retaining developing-country protectionism; and the need for more flexible international rules to allow developing-country governments to pursue selective industrial policies, especially to promote infant industries.[1] Lastly, there is the pervasive fear – in the South as much as in the North – of being run over by an unstoppable Chinese export juggernaut.

[1] See Stiglitz (2002), Chang (2002), Grunberg *et al*. (1999), Oxfam (2002), Rodrik (2001), Rodrik (1998), Sachs (2005).

It is important to confront these arguments head on; to defend liberalisation to date, while accepting that its record is mixed; to make the case for further liberalisation; and to identify the political conditions that might make it succeed. Protectionism and industrial-policy intervention have mostly failed across the developing world: history, not just theory, should be a warning not to go down this route again.

First, in-depth country studies by the OECD, NBER and World Bank, going back to the 1970s and 1980s, suggest strongly that countries with more liberal trade policies have more open economies and grow faster than those with more protectionist policies. These are much more reliable than superficial cross-country regression analyses (Bhagwati and Srinivasan, 1999; Lal and Myint, 1996). That said, even most of the latter point to large gains from trade liberalisation.[2] Calculations done by the World Bank and Angus Maddison point to about 25 "new-globalising" developing countries (the World Bank's term), with a total population of about three billion, that have registered massive increases in their trade-to-GDP ratios and real per-capita incomes, alongside big cuts in tariff protection. The - overwhelmingly Asian - new globalisers have also seen dramatic reductions in poverty and improvements in human-welfare indicators (such as adult literacy, infant mortality, life expectancy and nutritional intake) (World Bank, 2002: 34, especially Table 1.1; Maddison, 2003).

These trends contradict claims that globalisation "excludes" certain developing countries. Rather they support the argument that globalisation provides an enabling environment that some countries have taken advantage of and others have not. Political disorder, macroeconomic instability, insecure property rights, rampant government intervention and high external protection have kept about 50 countries "non-globalised" and thereby retarded their growth and development. Most of these countries are cursed with dysfunctional or failed states. None of this is "caused" by globalisation (Wolf, 2004: ch. 9; Henderson, 2004: 52-58).

Second, NGOs and developing-country governments have been clamouring for one-sided liberalisation in the Doha Round. Their interpretation of "development" in the Doha Development Agenda is that it behoves developed countries to liberalise in areas that are protected against labour-intensive developing-country exports. But developing countries should not reciprocate with their own liberalisation (Oxfam, 2002). What these critics fail to say is that developing countries' own protectionist policies harm them even more than developed-country barriers. The World Bank estimates that 80% of the developing-country gain from worldwide agricultural liberalisation would come from developing countries' liberalisation of their highly protected agricultural markets. It is unskilled rural labour - the poorest of the poor – who would gain most as such liberalisation would reduce the anti-agricultural bias in domestic economies (Ingco and Nash (eds.), 2004).

Third, the historical record is not kind to "hard" industrial policies of the infant-industry variety. Infant-industry success in nineteenth-century USA and Germany is contested. In east Asia, its record is mixed at best in Japan, South Korea and Chinese Taipei; non-existent in free-trade Hong Kong China and Singapore; and failed in southeast Asia (*e.g.* national car policies in Malaysia and Indonesia). In northeast Asia, there is scant evidence to show that protection of infants actually led to higher social rates of return and higher overall productivity growth (World Bank, 1993; Little, 1999). Southeast Asia's conspicuous success is in FDI-led electronics exports – a result of drastically lower tariffs and an open door to inward investment. China, like southeast Asia, has grown fast with the help of FDI-led exports, not infant-industry protection. Arguably, other factors – political and macroeconomic stability, competitive exchange rates, private property rights, openness to the world economy, education and infrastructure – were much more important to east-Asian success than "picking winners". Finally, infant-industry

2 See, for example, Sachs and Warner (1995), Winters (2004a) and Winters (2004b).

protection in Latin America, south Asia and Africa has been a disaster not dissimilar to industrial planning in ex-command economies.

2. Trade and FDI liberalisation in the BRIICS: recent experience and unfinished business

The BRIICS have been part of a policy revolution and a strong liberalisation trend in developing countries and countries in transition since the early 1980s.[3] Cross-border trade and capital flows – though not of people – have become freer. There is less discrimination between domestic and international transactions. Domestic prices of tradable goods and services are closer to world prices (though less the case in services than in goods). In terms of measures undertaken: Import and export quotas, licenses, state trading monopolies and other non-tariff barriers (NTBs) have been drastically reduced. Tariffs have been simplified and reduced. So have foreign-exchange controls, with unified exchange rates and much greater currency convertibility, especially on current-account transactions. FDI has been liberalised, with fewer restrictions on entry, ownership, establishment and operation in the domestic economy. And services sectors have been opened to international competition through FDI liberalisation, privatisation and domestic deregulation. Overall, trade and FDI in manufactured goods has been liberalised most; trade and FDI in services was liberalised later, and to a much lesser extent; and trade liberalisation in agriculture has lagged behind. Lastly, trade and FDI liberalisation has taken place in the context of wide-ranging macro and microeconomic market-based reforms – roughly the "stabilisation and liberalisation" package of the Washington Consensus as described by John Williamson.

This still leaves fairly high levels of protection around the world. There are pockets of developed-country protection – agricultural subsidies, peak tariffs and tariff escalation in agriculture and manufactures, anti-dumping (AD) duties, assorted regulatory barriers such as onerous product standards, and high restrictions on the cross-border movement of workers - that continue to damage developing-country growth prospects. But developing countries' own protection on almost all these counts is much higher. Average applied tariffs in developing countries are more than double those in developed countries, with much higher bound rates in the WTO. Developing countries have become bigger users of anti-dumping actions than developed countries. Developing countries, with the exception of countries in transition and those that have recently acceded to the WTO, have far fewer multilateral commitments than developed countries in services. There has been a general increase in the use of technical, food-safety and other standards that affect trade, as indicated by the number of measures notified under the WTO's TBT and SPS agreements.

Now turn to trade-policy trends in the BRIICS. The summaries for each country draw on the following tables and charts. Table 4.1 presents general trade and economic indicators for the BRIICS. Table 4.2 shows applied and bound tariffs (Table 4.2a has World Bank data and Table 4.2b WTO data). Table 4.3 shows the decline in average tariffs since the mid 1980s. Table 4.4 shows declining effective rates of protection for some BRIICS. Table 4.5 shows corresponding falls in NTBs since the mid 1980s. Figure 4.1 shows AD activity since 1995. Figure 4.2 has scores for regulatory restrictiveness on FDI. Figures 4.3 a-e have scores for trade restrictiveness in selected services sectors.[4] Tables 4.6 a-f list BRIICS's RTAs. Table 4.7 has rankings for doing business. Table 4.8 has rankings for trading across

[3] On the record of trade and FDI liberalisation as part of larger packages of market-based reforms in developing countries and countries in transition, see Williamson ed. (1993), Kuczynski and Williamson eds. (2004), Lal and Myint (1996), Dean (1995), Drabek and Laird (1998), Henderson (1998), Michalopoulos (2001). On trade-policy trends in Asia, see Sally (2007a), Sally (2006a: 181-233), Sally and Sen (2005: 92-115). Special Issue 'Revisiting trade policies in southeast Asia', Sally and Sen (eds.).

[4] These indices are based on initial work conducted by the OECD in 2005. Work is currently underway to refine the methodology and update the empirical estimates.

borders, and Table 4.9 rankings for governance. Figure 4.4 shows the increase in trade as a percentage of GDP for the BRIICS and Figure 4.5 the increase in total trade since 1980. Figure 4.6 shows BRIICS's shares of total world trade, with Figures 4.7 and 4.8 breaking that down into goods trade and services trade respectively. Figure 4.9 shows the increase in inward FDI since 1980. Figure 4.10 shows BRIICS's shares of world inward FDI stock. Finally, Figure 4.11 shows the increase in outward FDI since 2000.

Brazil[5]

High walls of protection as part of import-substituting policies lasted for half a century. These fell from the late 1980s. There were three bouts of tariff reduction (1988-89, 1991-93, 1994). The nominal average tariff came down from over 50% in the mid 1980s to about 13% in 1995. It has hardly budged since, indicating virtually no trade liberalisation in the last fourteen years. Applied agricultural tariffs are lower than manufacturing tariffs. The effective rate of protection (ERP) in manufacturing came down to from 86% in 1987 to 18% in 1997. It is close to zero in agriculture. This still leaves distortions in Brazil's tariff structure, not least relatively high tariffs on imported intermediate products that keep local production costs high. Brazil bound all its tariffs at the end of the Uruguay Round, though at a high average of about 30%. Basic NTBs, especially quantitative import restrictions, came tumbling down alongside tariff liberalisation.

Liberalisation through the 1990s has resulted in a relatively open market for FDI and services. Constitutional restrictions on FDI were amended or removed alongside large-scale privatisation. That still leaves equity limits and other restrictions, notably in banking, oil, mining and air transport. Going by the OECD FDI regulatory restrictiveness index, Brazil is more open to FDI than Russia, India and China in manufacturing, across the range of services, and in overall terms. In key services sectors such as banking, insurance, distribution, and fixed and mobile telecommunications, it has lower levels of trade restrictiveness than Russia, China and India.

A plethora of regional and bilateral trade agreements (RTAs) and initiatives followed unilateral liberalisation. Mercosur, a regional customs union with a common external tariff, was founded in 1994. The same year saw the launch of negotiations for a Free Trade Agreement of the Americas (FTAA). Among other initiatives are negotiations for an EU-Mercosur free trade agreement (FTA); a South American Community of Nations; Mercosur agreements with the Andean countries, India and the South African Customs Union (SACU); and an India-Brazil-South Africa FTA.

Brazil has been even more active in the WTO than it was in the Uruguay Round of the GATT. It has been a lead player in the Doha Round, especially through its leadership of the G20 in agriculture. And it has been active in dispute settlement.

Overall, Brazil relied on unilateral trade-and-FDI liberalisation to open the economy. Since 1994, trade negotiations – bilateral, regional and multilateral – have almost totally substituted for unilateral liberalisation, but they have delivered virtually zero liberalisation.

Domestic regulatory barriers are now a much bigger obstacle to trade and FDI than classic border barriers. Brazil has a high-cost business environment – dubbed the "Brazil cost". It is ranked 113th overall for ease of doing business in the World Bank's 2007 Doing Business indicators – barely ahead of India and Indonesia, on a par with Russia and much worse than South Africa and China. Opening and closing businesses and the tax regime are particularly burdensome. On customs procedures (covered by the Bank's "trading across borders" indicators), Brazil ranks 70th in the world, ahead of India, South Africa

5 This section draws on Marconini (2007), Lattimore and Kowalski (2008).

and Russia but behind China and Indonesia. Exporting and importing costs are particularly high (above USD 1 000 per container). Brazil also suffers from "hard" infrastructural constraints; inadequate ports, roads and airports harm its bulk agricultural exports in particular.

Finally, Brazil has mediocre governance indicators, for example on government effectiveness, regulatory quality, rule of law and corruption. These are similar to India's rankings, better than those for Indonesia and Russia, slightly better than China's and worse than South Africa's.

Persistently bad business-climate and governance indicators show that structural reforms have not accompanied or followed external liberalisation in Brazil. The really serious deficits lie in pensions, taxation, labour markets and public administration.

Headline economic indicators show that Brazil has become much more integrated with the world economy as a result of external liberalisation. Its ratio of trade-to-GDP has gone up to about 26% - though this is low compared with the other BRIICS. Export growth averaged 22% *per annum* between 2002 and 2007, well above the rate of growth for world exports. Productivity growth in tradeable sectors has been impressive. Brazil now has a diversified export basket, ranging from crude oil and processed minerals (such as petroleum products, coke and ethanol) to metals, chemicals, rubber, plastic, agricultural commodities, food-and-beverage products and manufacturing (in which machinery and equipment feature prominently). That said, Brazil still accounts for only 1% of world trade. Inward FDI, having dropped from its peak in 2000, increased again from 2003, reaching USD 19 billion in 2006. Brazil has just under 2% of the world's IFDI stock.

In sum, external liberalisation has made the economy more efficient and allowed it to profit from very favourable global economic conditions in the last five years, and especially a China-driven resources boom. But it has not translated into Chinese and Indian growth rates, and significantly higher living standards for the broad mass of Brazilians. Growth has averaged 2.2% *per annum* since 1989, though it has climbed to 4-5% *per annum* in the last few years. That has much to do with entrenched domestic regulatory barriers and their "Brazil cost".

India[6]

India's retreat from the "licence raj" – its equivalent of Soviet-style central planning – began half-heartedly in the 1980s; but its decisive opening to the world economy dates back to 1991. Most border NTBs have been removed, as have internal licensing restrictions. Nominal applied tariffs came down from an average of 100% in 1985 to about 16% by 2005. The maximum tariff on non-agricultural goods is expected to come down to 10% after the 2008 budget. However, in agriculture, tariffs and NTBs remain much higher. The average applied tariff in agriculture is almost 25% (using World Bank data; 38% according to WTO data). The maximum MFN tariff stands at 268% (WTO data). India has bound 74% of its tariffs in the WTO at an average rate of 50%.

Despite big cuts, India's tariff structure remains more protectionist than those of the other BRIICS. Its trade-weighted tariff, at just under 15% in 2005, is almost thrice as high as it is for China and Indonesia. Intermediate inputs and consumer goods face relatively high tariffs. The effective rate of protection for manufacturing, though it has decreased, remains high compared with east-Asian countries and other BRIICS. In addition, the Government of India operates an extremely complex, bureaucracy-ridden system of duty exemptions, special establishment and investment regulations, and

6 This section draws on OECD (2007b), Narayan (2007), Hoda (2005).

Special Economic Zones (SEZs) to encourage exports. Also, India has become the world's most active user of AD duties, especially directed at Chinese imports.

FDI and services liberalisation have proceeded alongside the liberalisation of trade in goods. Manufacturing is fairly open to FDI. In terms of overall FDI regulatory restrictiveness, India is on a par with China, but it is more restrictive than Russia and Brazil. Professional services face especially high levels of protection. In banking, insurance, distribution, and fixed and mobile telecommunications, India is also more restrictive than Brazil, Russia and China. Restrictions include foreign-equity limits, the form of commercial establishment, and complicated and costly licensing procedures.

Like Brazil, India is very active in the WTO and is a lead player in the Doha Round. Its GATT and GATS commitments are weak. However, WTO rules post-Uruguay Round have induced significant changes in national practice, especially the removal of quantitative restrictions, and compliance with the TRIPS and TRIMS agreements.

India has become very active with FTAs. It has an FTA with Sri Lanka, and there is a timetable for a South Asian FTA (SAFTA). An India-ASEAN FTA is due to be completed by 2011, and India has separate FTAs with Thailand and Singapore. It is part of a BIMSTEC FTA initiative, which brings together several south-Asian and southeast-Asian countries. It has preferential trade agreements with SACU, Mercosur and Chile, and has plans for a separate trilateral agreement with South Africa and Brazil. Negotiations are ongoing with South Korea and Japan. Negotiations for an EU-India FTA started in 2006. Several other FTA initiatives are in the pipeline.

Like Brazil, India's trade and FDI liberalisation has come about almost totally through unilateral measures. WTO and FTA commitments have induced hardly any direct market opening.

India is placed 120th overall for ease of doing business in the World Bank's 2007 Doing Business indicators – the worst of the BRIICS except Indonesia, and well behind China and South Africa. It is ranked 79th overall for "trading across borders", close to Brazil but well behind China and Indonesia. India scores particularly badly in the time taken to obtain licenses, the time spent on and cost of importing and exporting goods, and the enforcement of contracts. India's governance rankings are similar to Brazil's. India's "hard" infrastructure is at least as bad as its "soft" regulatory infrastructure. It has appalling roads, airports and ports, and serious power shortages.

Trade and FDI liberalisation has been critical to India's recent integration into the global economy. The trade-to-GDP ratio has climbed rapidly to over 40% by 2006. Exports have grown by about 20% *per annum* since 2000. Trade in services has grown particularly fast, and is bunched in IT and IT-related sectors. Resource-based manufacturing features prominently in India's merchandise exports, though there is export potential in more skill-intensive products in chemicals, engineering, cars and car parts, and pharmaceuticals. India continues to underperform badly in labour-intensive exports.

Overall, India accounts for 1.5% of world trade (1.3% of trade in goods and 2.5% of trade in services) – well behind China. It is also well behind China in attracting FDI, accounting for 0.4% of global FDI stock by 2006. Inward investment flows have been increasing rapidly, however, reaching USD 17 billion in 2006. Outward FDI has also been increasing rapidly, reaching USD 10 billion in 2006.

In sum, in spite of major external liberalisation, India remains the most protected of the BRIICS. This is compounded by very high and largely unreformed domestic regulatory barriers. These include draconian employment laws, reserved sectors for small-scale industries (though this list has been reduced), high and differing barriers in the states (India being a federal system), extremely interventionist

agricultural policies (subsidies, price controls and other internal trade barriers), and very inefficient, corrupt public administration. Public-sector reform has hardly begun.

For these reasons, growth rates averaging over 6% since 1991, and 8-9% in the last few years, have not delivered the employment, poverty-reduction and human-welfare-improvement effect of comparable (or higher) growth rates in China and other parts of east Asia. Growth has come from capital- and skill-intensive sectors in manufacturing and services. It has primarily benefited the urban well-to-do and middle classes, but not flowed down appreciably to the poor in the rural areas - the bulk of India's population. For that to change, India needs labour-intensive growth in goods and services, and corresponding exploitation of its comparative advantage in labour-intensive exports. That has yet to happen.

China[7]

"Reform" and "Opening" started in 1978, but the whirlwind transformation of China's economy belongs more to the post-1994 period. China undertook enormous trade and FDI liberalisation before and after WTO accession in 2001. China's WTO commitments are very strong. They exceed those of other developing countries by a wide margin. This holds for disciplines on border and non-border restrictions in goods and services. In addition, there are detailed commitments on transparency procedures to make sure trade-related laws and regulations are implemented, backed up by administrative and judicial-review procedures to which individuals and firms are supposed to have recourse.

The momentum of further liberalisation has slowed down in recent years, particularly in services and investment. There has been an increase in FDI restrictions and associated industrial-policy measures to support selected domestic sectors.

The simple average tariff has come down from about 40% in 1985 to about 9% today. All China's tariffs are bound in the WTO at very close to applied rates, with an overall average bound tariff of 10%. The maximum applied MFN tariff is 65% – higher than Brazil's but lower than the other BRIICS. China's weighted average tariff is about 5% – the lowest of all the BRIICS. This is partly due to numerous duty exemptions and other measures to encourage exports. Trade liberalisation also whittled down the protective impact of border NTBs to about 5% of imports on the eve of WTO accession. Overall, China's border barriers on goods trade have come down to southeast-Asian levels, and have been locked in by much stronger WTO commitments.

China's GATS commitments are very strong. On paper, the impact of WTO accession should be to cut services protection by half. In practice, though, China remains more protected in services than it is in goods trade. It is also generally more restrictive towards FDI. In terms of the OECD FDI regulatory restrictiveness index, it is on a par with India and more restrictive than Russia and Brazil. In terms of the OECD trade restrictiveness index in services, it appears more restrictive than Brazil, India and Russia in telecoms, less restrictive than India and Russia in banking, less restrictive than India in insurance, and less restrictive than India and Russia in distribution.

China has become an active member of the WTO, but in different ways to the two other developing-country big-hitters, India and Brazil. China has taken a conspicuous backseat in the Doha Round. Inevitably, it has been preoccupied with the implementation of its huge WTO commitments.

7 This section draws on Greene *et al.* (2006), Lardy (2002), Ianchovichina and Martin (2001), Mattoo (2003), and Bhattasali, Shantong and Martin (2004).

Other WTO members, and notably the USA, have complained that China has not adequately implemented its WTO obligations in key areas such as intellectual property rights, services and subsidies. China has also been active in the WTO's ongoing committee work, and in dispute settlement. It now faces several sensitive cases brought against it by the USA.

China is arguably the most important player in Asian FTAs. By 2006, it had nine FTAs on the books and was considering negotiations with up to 30 other countries. A China-ASEAN FTA is due to be completed by 2010. It has FTAs in place with Hong Kong China, Macau and Chile, and is negotiating with Australia, New Zealand and Singapore.

China's trade-liberalisation trajectory differs from that of the other BRIICS in one important respect. Like the others, it has had a unilateral-liberalisation thrust; but unlike the others (with the partial exception of South Africa), it has locked this in and extended it with very strong WTO commitments. China's FTAs have induced very little market opening to date.

China ranks 83rd overall for ease of doing business in 2007 - a low score, but a significant improvement over the past few years and clearly ahead of Russia, India, Brazil and Indonesia. For "trading across borders" it is way ahead of South Africa, Russia and India. It scores much better than the other BRIICS on the cost of importing and exporting. China's governance indicators are worse. It scores very badly on "voice and accountability". On other indicators, it is close to or a little behind Brazil and India.

China has climbed up the world rankings for trade and FDI with lightning speed. It has displaced Japan as the world's third largest trading nation, with 7% of world trade by 2006 (7.7% of goods trade and 3.5% of services trade). This is streets ahead of the other BRIICS; and even ahead of India in world services trade. China's trade-to-GDP ratio is 70% – much higher than Brazil and India, and extraordinarily high for such a hugely populous country.

China has a 2.4% share of global inward FDI stock, again ahead of the other BRIICS. It has been the second largest FDI recipient in the world since 2000. Inward FDI was USD 69 billion in 2006. China's outward FDI has also been increasing rapidly. It reached USD 16 billion in 2006.

China, unlike India, has successfully exploited comparative advantage in labour-intensive manufactures; and it has done so with a tight interlock between trade and FDI. China now accounts for close to 40% of manufacturing exports from developing countries. Multinational enterprises account for almost 60% of merchandise imports and exports. The fastest rates of export growth have been in finished consumer goods such as garments and toys, and in ICT products. In the latter category, as well as in assorted transport-and-machinery products, China has become the final-assembly point in east-Asian trade and FDI networks in parts and components, linked in turn to final export markets in the West. In contrast, services accounts for conspicuously low shares of China's total trade and FDI.

China has succeeded more than the other BRIICS: first in generating very high growth rates; and second in translating the latter into employment, poverty reduction and human-welfare improvement for a broad section of its population. High rates of saving and investment have driven this process, but trade and FDI have also been very important, especially in ramping up labour-intensive manufactured exports. China still has high regulatory barriers that waste resources, restrict internal trade and generally stifle domestic sources of growth. This is particularly pronounced in services. And it translates into over-reliance on exports and generates extra protectionism abroad. Tackling these barriers is the next big challenge.

Indonesia[8]

Indonesia had a liberalisation episode in 1966-68, but its decisive opening to the world economy took place from the mid 1980s to the early 1990s. Major trade and FDI reforms resulted in specialisation in labour-intensive manufactured exports, with corresponding inward investment. In 1998, in the midst of the Asian crisis, an IMF rescue package imposed further liberalisation. Tariffs and NTBs were lowered further; FDI was opened up, including in services sectors; and internal trade restrictions, such as domestic monopolies, were also removed. These measures have not been reversed, but there has been creeping protectionism in agriculture, textiles and steel, mainly through NTBs. Overall, enthusiasm for further liberalisation has waned.

Indonesia's simple average tariff came down from 27% in 1985 to 6.5% in 2005 – the lowest of the BRIICS. Nearly all tariffs are bound in the WTO, though at a high average of 37%. The maximum MFN tariff is 170%. The effective rate of protection declined strongly from the mid 1980s. This has been matched by an even steeper fall in border NTBs. Indonesia is the lowest user of AD measures among the BRIICS.

Indonesia is part of the regional scramble for FTAs, but it is less active than the more advanced ASEAN countries, Singapore, Malaysia and Thailand. It belongs to the ASEAN Free Trade Area (AFTA) and is involved in plans for an ASEAN Economic Community (AEC). It is also part of collective ASEAN FTA negotiations with China, Japan, South Korea, Australia-New Zealand, India and the EU. And it has a bilateral FTA with Japan.

Indonesia is more integrated into the WTO than most other developing countries, but it is less active compared with fellow ASEAN members Singapore, Malaysia and Thailand, and much less active than Brazil, India and China. It has been generally defensive in the Doha Round, and particularly so in agriculture. Its top priority has been to exempt "special products" such as rice and sugar from agricultural liberalisation.

Like the other BRIICS, Indonesia has relied primarily on unilateral trade and FDI liberalisation, with relatively little contribution coming from the WTO, AFTA and other FTAs. It stands out from the other BRIICS through the strength of IMF-induced liberalisation in 1998. This was clearly an episode of externally-dictated, not internally-generated, reform.

Indonesia also stands out as a high-cost economy. It has the worst overall score of the BRIICS for doing business in the World Bank's 2007 rankings. It scores particularly badly in the "starting a business", "employing workers", "registering property" and "paying taxes" categories. On the other hand, it has the best score among the BRIICS for trading across borders, with relatively good scores on export and import costs, time taken to clear goods through customs, and documentation. Indonesia's governance indicators are generally worse than the other BRIICS, except Russia. It scores particularly badly on political stability, the rule of law and corruption.

Indonesia's trade-to-GDP ratio is 60% – relatively high, but down from a pre-Asian crisis peak of 100%. Trade has recovered since the Asian crisis, but has not grown as fast as it has in the other BRIICS, except South Africa. Indonesia's share of world trade is under 1%. Inward investment dried up after the Asian crisis, but has recovered somewhat since 2004. However, inflows (under USD 6 billion in 2006) are much lower than in the other BRIICS, again except South Africa. Indonesia's share of global IFDI stock is only 0.2%. It also has the lowest outward FDI of the BRIICS.

8 This section draws on Basri and Soesastro (2005), Basri and Hill (2004), Manning (2007).

Like India, Brazil and South Africa, Indonesia has a "jobless growth" phenomenon. Its overall growth rates have not got back to pre-Asian crisis levels, and unemployment is at a record high. Trade and FDI have suffered less from border barriers and much more from political and economic instability, policy volatility and a worsening domestic business climate. In particular, more restrictive employment laws have increased labour costs, and slowed down investment and employment generation. This has contributed to labour-shedding and stagnant productivity in textiles, clothing and footwear – the core export-oriented sectors of the economy.

South Africa[9]

South Africa is by far the smallest of the BRIICS by population, with the lowest levels of trade and FDI. It was a highly protected economy under apartheid. Protection began to decline in the early 1990s - the transition years leading up to multi-racial democracy in 1994. The transitional government's strong Uruguay Round commitments signalled the decisive opening of the economy, with the removal of many remaining NTBs, a simplification of the tariff structure and much lower tariffs. A quick burst of unilateral liberalisation, and then an FTA with the EU, followed. The door to FDI was also opened in the 1990s.

However, external liberalisation has stalled since the late 1990s. Liberalisation-scepticism has set in; and trade and related structural reforms have fallen way down the list of government priorities. Hard mercantilism prevails: unilateral liberalisation is off the agenda; and tariffs are held on to as bargaining chips in trade negotiations. Meanwhile, government attention has shifted to sector-based industrial-policy intervention.

The simple average tariff fell from almost 30% in 1985 to 8.5% in 2005 (5.4% when trade-weighted). The average bound rate in the WTO is 19.4%, with nearly all tariffs bound. The maximum MFN tariff is about 40%. The average effective rate of protection in manufacturing came down from almost 50% in 1993 to under 13% in 2004. Border NTBs have declined to low levels.

That said, South Africa still has a rather complicated tariff structure, with 38 MFN bands and 154 different tariff rates. Big pockets of manufacturing protection remain, notably in garments, automobiles and steel. South Africa is also the biggest developing-country user of AD measures after India.

The OECD's Index on FDI regulatory restrictiveness shows that South Africa is generally more open than China, India and Russia. Its highest levels of protection are in electricity and telecoms. State ownership and restricted competition prevail in transport, telecoms and the utilities.

South Africa is active in the WTO, though not in the same league as China, India and Brazil. It was initially quite pragmatic and flexible in the Doha Round, but it became more defensive after the Cancun Ministerial Conference in 2003. It is especially defensive on industrial-goods liberalisation.

South Africa is active in bilateral and regional trade negotiations. It is the mainstay of the South African Customs Union (SACU), which dates back to 1911. It is a member of the Southern African Development Community (SADC), which has plans for a customs union by 2010. It has FTAs with the EU and Mercosur. FTA negotiations with the USA stalled in 2006. Negotiations are in train for FTAs with India and Brazil.

9 This section draws on Draper (2007), Edwards and Lawrence (2006), Alves, Draper and Edwards (2008), Flatters and Stern (2007).

South Africa is unusual among the BRIICS in that multilateral, not unilateral, liberalisation was the lever to open the economy in the mid 1990s. Subsequent opening came through unilateral liberalisation and the FTA with the EU. Other FTAs have hardly contributed.

Overall, South Africa scores considerably better than the other BRIICS for ease of doing business, though with a much worse score for "employing workers". But it scores very badly for trading across borders – the worst among the BRIICS after Russia. It scores much worse than China, Indonesia and even India on export and import costs and customs-clearance times. On the other hand, South Africa's governance indicators are the best among the BRIICS.

South Africa's trade-to-GDP ratio is about 60%. Imports and exports have risen consistently from the early 1990s in tandem with trade liberalisation. Trade growth has accelerated since 2003, driven by the commodities boom. Trade opening has also triggered productivity gains. As a consequence, South Africa better exploits its comparative advantage in capital-intensive primary and manufactured commodities. On the other hand, South Africa's export growth compares badly with the other BRIICS, other middle-income resource-based economies, and developing countries generally. Its share of world trade is 0.6% – the lowest of the BRIICS.

South Africa also has pitifully low inward investment - indeed virtually zero in several years, including 2006. It has a 0.6% share of global inward FDI stock. Outward FDI has increased in recent years, reaching USD 7 billion in 2006.

South Africa's core economic problems are very high unemployment, anaemic employment growth, low productivity, low standards of education and skills, and lack of diversification, especially into employment-generating services sectors. Trade liberalisation is often – and mistakenly – blamed for exacerbating some of these problems. On the contrary, remaining protection keeps business costs high and firms uncompetitive, in addition to taxing – especially poor – consumers. However, more damage is done by domestic (though still trade-related) regulatory barriers, for example in transport, telecoms, the utilities and customs procedures. Employment policies are the most damaging set of regulatory barriers; and these have become more restrictive. They act as a powerful deterrent to domestic as well as foreign investment. They are also intimately bound up with affirmative-action policies in the name of the black majority (termed BEE – Black Economic Empowerment).

Russia[10]

Russia had stop-go market reforms in the 1990s. Then there was a burst of reform in President Putin's first term. The macroeconomy was successfully stabilised alongside liberalisation and structural reform. Since 2003/4, however – corresponding with President Putin's second term – policy has gone in the reverse direction. Politics has become increasingly authoritarian; and it has been used by the state to nationalise energy assets. State-controlled enterprises have taken over what were privately-owned enterprises on very favourable terms. The three largest, Gazprom, Rosneft and Transneft, are near monopolies in the domestic market.

Russia's simple average tariff is 11.4% (9.6% when trade-weighted). This is middling by BRIICS standards. The maximum MFN tariff is 227% – the highest in the BRIICS. These headline figures mask a complex tariff regime and indeed slightly higher protection in recent years. There are high specific tariffs, especially on food products. Tariffs are also highly dispersed. There are, for example, 27 tariff lines with MFN tariffs of over 100% and 113 tariff lines with MFN tariffs of over 50%. The most highly protected

10 This section draws on Åslund (2006a), Tarr (2007), Tarr and Navaretti (2005), EBRD (2007).

sectors are bunched in food and light industry. They include sugar, footwear, leather goods, automobiles and civil aircraft.

In terms of overall FDI regulatory restrictiveness, Russia scores better than China and India but worse than Brazil and South Africa. In services, trade and FDI restrictiveness is especially high in banking, insurance, fixed telecommunications, electricity and air transport.

Russia's WTO-accession negotiations started in 1993, but they were only made a policy priority when President Putin took office in 2000. WTO accession has slipped down the priority list since 2004, corresponding with more statist policies at home. Russia has concluded bilateral market-access negotiations with all bar one of the WTO members in its Working Party. A few issues in terms of bringing Russian laws and regulations into line with multilateral rules remain unresolved. These concern agricultural subsidies, export tariffs, enforcement of intellectual-property rights, technical regulations and food-safety standards, and disciplines on state-owned enterprises.

Russia has hardly any cross-regional PTAs and is much less active compared with the other BRIICS on this front. That is largely because it is not yet a WTO member. WTO membership will probably trigger many new PTA negotiations, possibly including an FTA with the EU. Within the ex-Soviet Union, however, Russia has negotiated over 20 000 preferential arrangements with newly-independent neighbours since the early 1990s. Russia, Belarus and Kazakhstan have agreed to form a customs union.

Russia scores badly for ease of doing business – roughly in the same bracket as India, Brazil and Indonesia. It has the BRIICS's worst overall score for trading across borders. It ranks particularly badly for customs clearance and the cost of importing and exporting. Russia's governance indicators are the worst among the BRIICS.

Russia's trade-to-GDP ratio is 55%. It has been volatile since the 1990s, and has been declining in recent years. Trade has increased rapidly since 2001, fuelled by soaring commodity prices. Russia's share of world trade is 2% – the second highest in the BRIICS but still far behind China. Inward FDI has increased significantly in the last five years, reaching USD 30 billion in 2006, though it is highly concentrated in resource-based sectors. Russia has a 1.6% share of global inward FDI stock. Outward FDI has also increased, reaching USD 18 billion in 2006.

Energy and other commodities account for 85% of Russia's exports. Raw materials – mainly oil and natural gas – account for 60% of exports, and metals and chemicals for another 25%. Russia is the world's largest exporter of natural gas, and its second largest oil exporter. It has the world's largest natural gas reserves, the second largest reserves of coal and the eighth largest reserves of oil. Reliance on commodity exports has increased in the last few years.

Russia has enjoyed macroeconomic stability and high growth this decade, in stark contrast to chaos and poor economic performance in the 1990s. This is thanks largely to the global commodity boom. But the role of the state has increased in both internal and external commerce. Property rights have become more uncertain since the nationalisation of energy assets. Laws are opaque, non-uniform, and often applied unpredictably and arbitrarily. Resulting distortions have decreased the rate of investment and productivity in energy sectors. They have also cramped growth and innovation in non-energy sectors. All this bodes ill for Russia, especially if and when commodity prices start to decline.

3. Political economy and trade-policy reforms in the BRIICS

The politics of economic-policy reform is as much about distribution as it is about wealth-generation. This is true of international politics; it is even truer of domestic politics. Shifts in trade policy – from protection to openness or vice versa – trigger redistribution of gains and losses between regions (especially between rural and urban areas), sectors of the economy (agriculture, industry, services), classes (owners of capital, educated and skilled workers, semi- and unskilled workers), and even between ethnic groups. Such disruption, especially in the short-term, can be particularly unsettling in developing countries with political instability, corrupt elites, wide disparities in wealth and influence, meagre safety nets, ethnic divides and generally brittle institutions. Hence trade and other forms of liberalisation take place in a snakepit of messy and sometimes poisonous politics.

What are the determinants of trade-policy reform, especially in the direction of liberalisation? What follows is a simple taxonomy of relevant factors: a) circumstances, especially crises; b) country size; c) interests; d) ideas; e) institutions; f) factor endowments; g) foreign policy and international politics. (Box 4.1 summarises the political-economy factors driving trade-policy reforms in the BRIICS.)

a) Circumstances/crises

Events, dear boy, events. Harold Macmillan

When a man knows he is going to be hanged in a fortnight, it concentrates the mind wonderfully. Dr. Johnson

The practical politician, official or businessman knows that choices are dictated by responses to often unanticipated events. In reality, major episodes of economic-policy reform have mostly taken place in response to political and/or economic crises. A macroeconomic crisis, with symptoms such as extreme internal or external indebtedness, hyperinflation, a terms-of-trade shock, or a severe payments imbalance leading to a plummeting currency, provides the classic backdrop. Sometimes this is combined with a political crisis, whose most dramatic expression is a change of political system (from authoriarianism or totalitarianism to democracy or vice versa).

An economic crisis, with or without political system-change, is when "normal politics" is suspended, and when a period of "extraordinary politics" can provide a window of opportunity for thoroughgoing reforms (that would not be possible in "normal" political circumstances) (Haggard and Williamson, 1993: 527-596; Balcerowicz, 1995). Examples are legion: Chile in 1973/4; Mexico in 1986, followed by other Latin American countries in the late 1980s and early 1990s; several African countries in the 1980s and 1990s; Sri Lanka in 1977, followed by other south-Asian countries in the 1990s; eastern Europe and the ex-Soviet Union in the early 1990s; Australia and New Zealand in 1983/4.

The BRIICS mostly fit this pattern. By the late 1980s, Brazil was in the throes of external debt and hyperinflation, with a discredited military dictatorship. Economic-policy reform got going alongside the transition to full democracy. The first democratically-elected president after military rule, Fernando Collor de Mello, pushed through the first major installment of tariff liberalisation. The last major installment was part of President Cardoso's Plano Real for macroeconomic stabilisation in 1994.

India's big burst of external liberalisation, in 1991-93, was linked to macroecononic stabilisation, both set against the backdrop of an extreme balance-of-payments crisis in 1991. Indonesia's switch to market-oriented policies came after the military coup in 1966; but its decisive external opening came in the 1980s, following a plummeting oil price and escalating external debt. The next big wave of liberalisation had to wait for the Asian crisis in 1997/8. South Africa's opening in the mid 1990s took

place following the collapse of the apartheid economic and political systems and alongside the transition to multi-party democracy. The Rand crisis of 1996 induced a further bout of trade liberalisation.

Russia's first stabilisation-and-liberalisation attempts were triggered by the collapse of the command economy and Communist Party rule. But they were partial, fitful and much less successful than the twin political and economic transitions in east-central Europe and the Baltic states. The currency crisis in 1998 and the election of President Putin put Russia on the path to macroeconomic stabilisation and further liberalisation. The higher priority given to Russia joining the WTO bolstered the liberalisation agenda.

China is exceptional. Its reform path since 1978 has been gradual; it has not been dictated by political or economic crisis. The big external opening from the early 1990s was not crisis-induced; rather it built on the incremental reforms of the 1980s and followed the "reform pause" of 1989. In this respect, China's gradual, incremental reforms resemble those of the northeast and some southeast-Asian Tigers.

However, the crisis explanation cannot be taken too far. First, a crisis can precipitate swings both ways: sometimes towards liberalisation; sometimes the other way, as happened during the Depression in the 1930s, and, to a lesser extent, in the 1970s after the first oil-price shock. Second, different governments act in different ways in response to similar external shocks. Third, a crisis might trigger some reforms, but it is no guarantee of the sustainability of those reforms, nor of further reforms down the line. That is one key difference between east-central Europe and the Baltic states, on the one hand, and Russia and other parts of the ex-Soviet Union, on the other. Last, there are counter-examples of gradual, but cumulatively substantial, reforms without a sudden crisis as a triggering mechanism. That is, roughly, the east-Asian record.

Why have some countries sustained reforms while others have not? Why have some gone farther than others? What happens to a reform programme post-crisis, when "normal" political and economic conditions return?

The BRIICS's experience "post-crisis" points to the limits of crises as an explanation of *continuing* reforms, beyond short-term shifts. Above all, it shows how difficult it is to take liberalisation farther, especially into domestic regulatory territory, after a crisis has been overcome and in a relatively benign macroeconomic environment.

Brazil has not seen external opening since the mid 1990s. The currency crisis in 1998 did induce another macroeconomic stabilisation package, but not further liberalisation or structural reform. South Africa's external liberalisation has been stuck since the late 1990s. India has seen stop-go reforms since 1993; and they have been more "stop" than "go" since 2004. Indonesia has been reluctant to liberalise since the Asian crisis, and it has seen creeping protectionism at the margin. This has been reinforced by the messy transition to democratic politics. China accelerated its reforms right up to WTO accession in 2001; and its strong WTO commitments spurred further reforms afterwards. However, there are now signs of reform slowdown in certain areas.

In all these countries, post-crisis reform slowdown has not extended to the reversal of previous liberalisation. Russia is the exception. Reforms have been reversed in that the state has taken direct or indirect control of energy assets, and imposed monopolistic or oligopolistic conditions in these crucial sectors of the economy. That has inevitably spilled over into Russia's international trade and foreign (inward and outward) investments. Protection has also been maintained for "national champions" in certain manufacturing and services sectors. All this has occurred in the context of more authoritarian (certainly less "liberal-democratic") politics, and a rosy economic environment perfumed by rising commodity prices.

It may not seem urgent to pursue liberalising reforms in "normal" conditions, especially after so much reform heavy-lifting has been done. But complacency is dangerous. It means the economy continues to live off reforms accomplished some time ago. Reforms needed to make the economy flexible and adaptable to changing global conditions, and resilient to unanticipated shocks, are neglected. Meanwhile, distortions and rigidities build up. A future crisis is then the trigger for long overdue reforms. These come at a much higher political, economic and social cost than would otherwise be the case (OECD, 2007a).

Depending on a crisis for reform is myopic, and ultimately crazy, policy. It is far better to nurture a culture of permanent, incremental and mutually reinforcing reforms. But that is terribly difficult in practice. Still, star reformers such as Chile, Australia and New Zealand show that it can be done. All three have followed up crisis-induced first-generation reforms with deeper second-generation reforms rolled out over almost two decades (Bowen, 2007; Sandrey, 2007; Herreros, 2007). These, however, are small open economies where the reform imperative is stronger than in medium-sized and large economies. The BRIICS are in the latter category.

Now the global economy faces another crisis. How the BRIICS respond – China in particular – matters greatly. Ideally, the BRIICS would use this crisis as a window of opportunity to undertake the extra liberalisation and structural reforms they avoided up to 2008. But early reactions have been defensive. The danger is that creeping protectionism will accelerate, even to the extent of creating a tit-for-tat protectionist spiral and reversing previous liberalisation gains. The short-term challenge is to contain such threats. The medium-term challenge is to revive a sensible liberalisation and regulatory-reform agenda.

b) Country size

Generally. small countries reliant on the world economy have liberalised farther and faster than bigger countries. This is the case in the OECD and the developing world. Ireland, Chile, Australia, New Zealand and Estonia (among other east-central European and Baltic countries) stand out as very strong reformers. So do Hong Kong China and Singapore, with long traditions as free-port city-states. Sri Lanka pioneered liberalising reforms in south Asia, before ethnic conflict compromised economic prospects from 1983. Mauritius and Botswana stand out in Africa.

It is generally believed that the economics and politics of reform in small countries are easier. Larger countries have more differentiated economies. They are less reliant on the world economy and have more inward-looking, protectionist-inclined interests. That translates into more complicated politics. But big countries are not pre-programmed to avoid reforms or do them sluggishly. China is the most populous country on Earth, but it is arguably the strongest reformer among the BRIICS. Other BRIICS have more mixed records compared with some smaller countries in their respective regions, but they have all reformed substantially compared with their pre-reform starting positions.

c) Interests

A good cause seldom triumphs without someone's interest behind it. John Stuart Mill

Mainstream economists, following Adam Smith, tend to rely on an interest-group explanation of trade politics. Free trade is the optimal policy in most circumstances (they say), but protection more often the result, because organised rent-seeking interests demand protection, and politicians and officials supply it. The benefits of free trade are diffused over the broad majority of consumers, but its costs bear down disproportionately on minority producer interests. The latter, not the former, have the incentive to organise for collective action (Olson, 1971; Krueger, 1974: 291-303). In reality, "iron quadrangles" of

politicians, bureaucrats, employers and unions imposed a straightjacket of protection in developing countries from the 1930s to the 1970s. Mostly this benefited capital-intensive, unionised, urban manufacturing industries producing for the domestic market, at the expense of agriculture and tradable sectors. India's license raj was its most notorious incarnation. In many countries, a crisis was used to overcome interest-group opposition and push through liberalising reforms (as happened in India in 1991).

But what role do interest groups play after an initial burst of external liberalisation, and in post-crisis conditions when "normal" politics returns? Here the picture differs across countries and regions. In some parts of the world, protectionist coalitions have halted or slowed down liberalisation. This is the case in Russia, Ukraine and other parts of the ex-Soviet Union. Elsewhere, radical opening has triggered major economic shifts in favour of sectors exposed to the world economy. Traditional protectionist interests have been weakened, and countervailing coalitions have emerged. The latter comprise exporters, users of imported inputs, multinationals with global production networks, and cities and regions seeking to be magnets for trade and FDI. These interests lobby for the maintenance and extension of open trade and FDI regimes.[11] This has happened in strong-liberalising countries in east Asia, eastern Europe and Latin America. It happened in Australia and New Zealand from the early 1980s. It is also evident, though less pronounced, in south Asia, including India after the 1991 reforms.

Now turn to organised interests in trade policy in the BRIICS.

In Brazil, business associations, trades unions and NGOs are more active in trade negotiations, especially since the FTAA (Free Trade Agreement of the Americas) initiative in 1994. The main union federation, the CUT, is defensive, particularly to protect manufacturing industries built up during Brazil's decades of import substitution. Employers in these sectors as well as other manufacturing firms are grouped in the powerful National Industry Confederation (CNI). Here protectionist interests coexist with expanding export-oriented interests. Most strikingly, Brazil's agricultural sectors (such as sugar, corn, beef, poultry, soya and cotton) have become strongly export-oriented as a result of trade liberalisation, and are correspondingly much better organised and mobilised. They have even created a research institute devoted to trade negotiations. Brazil's services sectors, in contrast, are weakly organised and have no national representation. Agricultural, manufacturing and services interests come together in the Brazilian Business Coalition, which is dominated by the CNI (Marconini, 2005: 9-11).

Like Brazil, South Africa has a vibrant society with an array of interests engaged with this-or-that trade-policy issue. Some NGOs are active. The powerful national union federation, COSATU, an ally of the governing ANC, is generally sceptical about trade liberalisation and especially protectionist in manufacturing. Business is divided. Protectionist interests are bunched in manufacturing (especially garments and automobiles) and the public sector (*e.g.* state-owned enterprises in telecoms, utilities and transport). The big mining houses (who are members of Business Leadership South Africa) are export-oriented with multinational production. Export-oriented agriculture is also well organised. There are private-sector services providers expanding across Africa, but they are weakly organised. Organised business, COSATU and the government come together in NEDLAC (the National Economic Development and Labour Council) to formulate collective positions for trade negotiations. Overall, South Africa's open-economy business interests are not that active in promoting their trade-policy preferences. They are overshadowed by COSATU and more defensive business interests (Draper, 2007).

[11] Ricardo-Viner and Hecksher-Ohlin models of comparative advantage are used to explain interest-group activity pro and contra free trade in different countries with different factor endowments. See Frieden and Rogowski (1996) and Rogowski (1990).

In Indonesia, the transition from authoritarianism to democracy has not made a big dent into traditional patron-client relations, that is, "crony-capitalist" networks uniting politicians, officials and rent-seeking businessmen. But it has opened up public space for interests who were previously repressed, notably independent unions and NGOs. Some have become active in trade policy. That Indonesia has in common with Brazil and South Africa. Its newly-enfranchised trades unions and NGOs are generally inclined towards protection. In agriculture, such pressure is exerted in the name of rural livelihoods and "food security", though its beneficiaries are rent-seeking producers rather than poor farmers. Trades unions and NGOs have had greatest success in tightening up employment legislation and its enforcement. This has benefited a small minority of workers in the formal sector but restricted employment possibilities for the majority, including in export sectors. Indonesia's export-oriented interests are weakly organised and overshadowed by protectionist lobbies (Basri and Soesastro, 2005: 10-12; Manning, 2008).

India's culture of democracy has long accommodated lively and diverse interest-group activity. In trade policy, such activity sprang to life after the Uruguay Round. Trades unions remain very protectionist. Their fortress is extremely restrictive employment laws that make it unviable for firms to take on new workers beyond a certain size. Unions represent a tiny minority of workers in sectors that were long protected under the licence raj. In manufacturing, there are only six million workers in the formal sector, in a total employable population of 450 million or more. State-owned enterprises, for example in power, energy, infrastructure, agriculture and financial services, are also bastions of protection.

India's private sector, in contrast, has changed since the opening of the economy from 1991.[12] It was dominated by long-established conglomerates who benefited from the license raj. The two main industry associations, the CII (Confederation of Indian Industries) and FICCI (Federation of Indian Chambers of Commerce and Industry) were strong defenders of protectionism. Now the landscape is more varied. There remain influential protectionist interests in manufacturing. But India's leading business houses – some long-established, like the Tatas, others newer on the scene, such as Reliance, Mittal and Bharthi – have restructured, expanded exports and are investing in production abroad. Many still lobby for protection, but in more muted form given their wider international interests. This is reflected in the changing positions of the industry associations – more pronounced with the CII, which represents the big firms, less so with FICCI, which houses more inward-looking medium-sized firms. CII and FICCI, given the mixed interests they represent, tend to be defensive in trade negotiations, but somewhat more flexible on unilateral liberalisation.[13]

Finally, India's stellar IT firms, notably in software and business-process outsourcing, are very open-economy oriented. They operate in a far less regulated policy environment compared with other sectors, have myriad links with foreign multinationals, and have fast-expanding exports and foreign investments. They are represented by NASSCOM.

Interest-group activity in China and Russia, with authoritarian or semi-authoritarian political systems, differs from that in the other BRIICS, which are functioning democracies. Independent trades unions, NGOs and business associations are either repressed or exercise self-censorship, muted criticism and loyal followership of government policies.

China's strongest protectionist interests are state-owned industrial enterprises and services providers. But its massive opening to the world economy has rapidly created open-economy interests.

12 The following comments are based on discussions with industry representatives and government officials in India.

13 See, for example, CII (2006) and CII (2007).

Foreign MNEs, especially from the USA, have not only lobbied hard to further open the Chinese market; they have also lobbied their home governments effectively to contain protectionism directed at China. There is also a burgeoning class of local private-sector entrepreneurs with export interests. They are still weakly organised. Finally, there are large Chinese firms, either state-owned or state-linked and state-promoted, that are expanding abroad.

Russia's most powerful business interests are state-controlled firms, private-sector "oligarchs" with strong links to the state, and members of the state apparatus. These are the successors of the "nomenklatura" that had a stranglehold on government and the economy during Soviet times. They are especially powerful in energy sectors, which dominate Russia's trade and foreign investments. There are two main business associations, the Russian Union of Industrialists and Entrepreneurs (RSPP) and the Chambers of Commerce and Industry (TPP). Both were formed by directors of state-owned enterprises in the former Soviet Union. The RSPP is more "big-business" dominated than the TPP. Both blocked pro-market reforms in the 1990s. The RSPP went through a phase of supporting market reforms after 1998 when private-sector oligarchs joined it and took leadership positions in it. They actively promoted Russia's WTO membership. But, like the rest of Russian business, the RSPP has gone quiet on market reforms and WTO membership since 2003/4 for fear of offending a more powerful state apparatus (Åslund, 2006c).

What concluding generalisations can be made about organised interests in trade policy in the BRIICS? Interest-group landscapes have clearly changed with external opening, though less so in Russia than elsewhere. The balance has shifted towards open-economy interests. They form countervailing coalitions against protectionist interests, and decrease the risk of liberalisation reversal. But the picture is still variegated – inevitably so for such large, populous, complex economies and polities. Finally, there are pronounced differences among the BRIICS, not least resulting from contrasting political systems.

In the short-term, the biggest challenge is to prevent governments responding to the global economic crisis by strengthening domestic protectionist coalitions. That is a real danger, especially with the temptation to prop up state-owned enterprises (usually in capital or resource-intensive sectors) at the expense of both the domestic private sector and foreign competition. In the medium-term, the challenge is to harness open-economy interests to the wagon of further liberalisation, and especially to domestic regulatory reforms. Their stakes in structural, microeconomic reforms are becoming ever clearer. Previous liberalisation has spurred firm-level restructuring, export-orientation and overseas expansion. But firms remain hamstrung by high-cost domestic business environments, which they feel puts them at a disadvantage to foreign competitors with more salubrious business climates in their home markets. That also translates into defensiveness in trade negotiations. Structural reforms at home would lower business costs, boost the international competitiveness of local firms, make them less resistant to opening domestic markets to foreign competition, and translate into less defensive positions in trade negotiations.

Starting this virtuous cycle begins with reforms at home, not in the WTO or FTAs. In terms of interest-group activity, it implies a new and different political economy to that of hitching exporting interests to tariff concessions in trade negotiations.[14]

[14] The CII's official position is that domestic regulatory reform, especially on fiscal policy, infrastructure and labour markets, should be "calibrated" with the opening of the Indian economy to foreign competition. See CII (2006: 21). According to Marconini (2007), Brazilian business thinks similarly. Also see Bowen (2007) on Australian business pressure on the Hawke and Keating governments for microeconomic reforms following the first wave of liberalisation in the 1980s.

d) *Ideas*

It is the word in season that does much to decide the result. John Stuart Mill

Madmen who hear voices in the air are distilling their frenzy from the academic scribblings of some defunct economist or political philosopher. Indeed the world is ruled by little else.
John Maynard Keynes

It is always difficult to gauge the influence of ideas (or ideology) in policy.[15] But practical observation teaches us that the prevailing climate of ideas, interacting with interests and events, can entrench or sway this-or-that set of policies. A policy consensus on import-substitution, state planning and foreign aid was strongly embedded in developing-country governments and international organisations up to the 1970s. This was buttressed by a post-colonial political ideology of mercantilist state-building, and an interventionist consensus in development economics (Bauer, 2000; Lal and Myint, 1996). This set of ideas was overturned by what came to be called the Washington Consensus, which reflected sea-changes in political ideology and in development economics. The latter returned to classical and neoclassical foundations, emphasising market-based pricing, "outward orientation", the prevalence of "government failure" over "market failure", not to mention a dose of aid scepticism.

Now the climate of ideas is changing again. This does not yet presage a return to full-blown pre-Washington Consensus thinking. But there is more attention to market failure and government intervention, *e.g.* to ease back on further liberalisation, expand "policy space" and promote infant industries, defend "food security" and increase foreign aid. The global economic crisis has manifestly strengthened such thinking. The question is what effect this has, and is likely to have, on trade policies.

Much is made of technocrat-economists (dubbed "technopols" by John Williamson) as carriers of Washington Consensus ideas. They are often Western (especially US)-trained economists, many with IMF or World Bank experience (Williamson, 1993). The most famous example is that of the "Chicago Boys", Chicago-trained economists at the Catholic University in Santiago who controlled economic policy in Chile from the mid 1970s to the early 1980s (Herreros, 2007). Indonesia's "Berkeley Mafia" is another example. US-trained economists at the University of Indonesia held senior economic-policy positions for long periods during President Soeharto's rule. They were particularly influential in policy reform in response to crises (in the late 1960s and the 1980s), but their influence waned during periods of high growth and reform complacency (the 1970s, and then the 1990s up to the Asian crisis) (Basri and Hill, 2004).

Undoubtedly, technopols have been pivotal in specific circumstances. But, as a general explanation, their role in policy reform should not be exaggerated– a trap economists fall into when writing about fellow economists in policy-making positions. Economists are not Platonic Guardians; they are not immune to political pressures and the temptations of power; and this has often led to bad or indifferent decisions. India, for example, has an economic-policy "dream team" with excellent academic and research credentials, led by Prime Minister Manmohan Singh. But it has a reputation as a do-nothing team incapable of making basic policy decisions. The lesson to draw is that economists, and indeed other academic experts, should be on tap but not necessarily on top: they do not always make good high-level decision-makers.

At least as important as technopols are two other factors. First, "the vision thing" (to borrow a phrase coined by the first President Bush). Strong-reforming countries often have leaders and leadership

15 On "ideational" approaches, see Goldstein (1994).

teams who have a powerful vision of the future, with ambitious goals for growth, poverty reduction, job creation and global integration. East Asia stands out. The region has had national policy elites with a relentless focus on growth and prosperity, and with the will to mobilise resources and implement policies to achieve set goals.

Second, policy pragmatism that issues from past experience and a "demonstration effect". More important than ideology, perhaps, is the perception that past policies (for example macroeconomic profligacy and import-substitution) have failed, and that alternative policies have succeeded elsewhere. The experience of the east-Asian Tigers, of Chile in Latin America, and more recently of China, has exerted a powerful influence on policy-makers elsewhere, setting in train a process of copy-catting reforms.

The transmission of Washington Consensus ideas to policy reforms in the BRIICS has a mixed record. Technopols have had most influence in macroeconomic policy by occupying key positions in ministries of finance, central banks and presidential/prime-ministerial offices. This has translated into influence on liberalisation and microeconomic reform in crisis situations, but much less so post-crises. Liberal economists are less in evidence and less influential in line ministries and regulatory agencies, which control microeconomic policies in normal conditions.[16]

Russia is at one extreme. Liberal orthodoxy has prevailed in macroeconomic policy, but liberal reformers have been sidelined or removed in microeconomic policy. President Putin's rhetoric in his second term became increasingly anti-free market. He expressed his preference for price and trade controls, high tariffs, subsidies, infant-industry promotion, import-substitution, state support of national champions, and centralised micromanagement.

In Brazil, South Africa, India and Indonesia, Washington Consensus macroeconomic orthodoxy has also been more influential than ideas on liberalisation and microeconomic reform. South Africa has seen the pendulum swing towards selective industrial policies and away from trade liberalisation. This is reflected in the government's overarching economic-policy programme, ASGISA (Accelerated and Shared Growth Initiative), and the Department of Trade and Industry's NIPF (National Industrial Policy Framework). Meanwhile, the Ministry of Finance and the Reserve Bank have held the line on macroeconomic stability.

Finally, China retains a characteristically pragmatic mix of policy ideas. There is vague and faddish talk of a "Beijing Consensus". More relevant, the government has remained committed to macroeconomic stability and external liberalisation to achieve fast-paced global integration; but with an admixture of industrial policy to promote national champions in selected sectors. These are state-owned or state-linked firms; and they are promoted through a mix of subsidies, national standards, preferential government procurement policies and foreign-investment restrictions.

e) Institutions

In the broad sense, institutions are the steel-frame of the economy, its "formal rules and informal constraints", according to Douglas North. The political system springs to mind. So does the legal framework governing property rights and contracts. "Formal rules" comprise bankruptcy laws, competition laws, regulations governing financial markets and corporate governance, and much else

16 Barichello and Flatters (1991), for example, illustrate the difference between economists' influence on macroeconomic and microeconomic policies in Indonesia in the 1980s.

besides. "Informal constraints" are (often non-legal) traditions and norms influencing the intersecting worlds of business, government and the law.

Evidently, "institutions" are much broader and more difficult to pin down than "policies"; and the two are of course intimately connected. Historically-conditioned institutions, domestic and external, set the scene for government action, interest-group lobbying and the influence of ideas. They are the arena for policy choices and their implementation.

In the narrow sense, institutions are the organisational map of decision-making at the junction where politics and public policy meet business and society. On trade policy, this map is much more complicated than it used to be. Trade policy is no longer just about a clutch of border instruments, and the preserve of trade ministries. It is increasingly "trade-related", a matter of non-border regulation reaching deep into the domestic economy and its institutions. That is reflected in more complex multilateral, regional and bilateral trade agreements. This brings in agencies across the range of government, and many actors outside government as well. Now the management of trade policy involves: the division of labour between the executive, legislature and judiciary; the role of the lead ministry; the participation of other ministries and regulatory agencies on trade and trade-related policies; the WTO mission in Geneva; inter-agency coordination within government; the involvement of non-governmental actors, such as business and unions, and now including NGOs and think tanks; and the role of donors and international organisations.

Making generalisations about institutional constraints on policy choice, and how this might explain differences in national and regional economic performance over time, is notoriously difficult. Inasmuch as one can make generalisations about institutions and trade policy in developing countries – in the BRIICS in particular – here are a few.

First, to what extent must "good" institutions be in place before "good" policies can take hold and work their magic? Conversely, to what extent are institutions the result, rather than the cause, of policy choices? These are chicken-and-egg questions.

Writing from the 1990s rightly stresses institutional capacity, within the state and beyond it (World Bank, 1997; Rodrik, 2003). This fills in the institutional vacuum in studies on market-based policy reforms in the 1970s and 1980s. But the later literature sometimes goes too far in setting high institutional preconditions for reformist policies to work. The extreme is "institutions come first". The reality is a complex interplay between market-based policies, including trade and FDI liberalisation, and improving domestic institutions. Often policy reforms provide the stimulus for institutional change. As Adam Smith realised over two centuries ago, opening to international trade and investment triggers powerful incentives to improve infrastructure, public administration and the rule of law. Then producers and consumers can reap more gains from international commerce (Myint, 1977). China and Vietnam are shining successes of policy reform. But reforms in both countries, including opening to the world economy, began when institutions were very weak. That is also true of Indonesia in the mid 1960s, and Cambodia and Laos in the 1980s and 1990s.

Second, developing countries that have liberalised more and plugged themselves better into globalisation are more advanced in terms of per-capita income and human-welfare indicators. They have lower trade and FDI barriers, higher ratios of trade and FDI to GDP, and better-performing tradable sectors of the economy. They also have stronger institutions in the broad sense: better enforcement of property rights and contracts (*i.e.* the rule of law), better-functioning judiciaries and public administration, better-regulated financial markets, a stronger competition culture, less corruption and so on. This is the divide that separates Chile and a few other Latin American countries, eastern Europe, the northeast-Asian

and southeast-Asian Tigers, and a tiny handful of African countries (Mauritius, Botswana and South Africa), from the rest.

However, the BRIICS do not fit snugly into this pattern. China, India and Indonesia are still low-income countries with weak institutions (going by World Bank governance and business-climate indicators, in addition to other institutional indicators). Brazil and Russia are higher-income countries with relatively weak institutions. Where institutional improvements have taken place, they have lagged well behind big policy shifts – not least lower trade and FDI restrictions – and fast-paced global integration.

Third, what about the link between political systems and economic-policy reforms? Strong generalisations are difficult and misleading. In the BRIICS, as across the developing world, liberalisation has taken place under authoritarian and democratic systems. In the short to medium term, authoritarian regimes may find it easier to go further with reforms (China from the early 1990s, Indonesia in the 1980s). But in Russia, increasing authoritarianism under President Putin proceeded alongside partial reform reversal.

The complications of liberal-democratic politics – constitutional "checks and balances" to executive decision-making, freewheeling interest-group activity, media scrutiny, public discussion, multiple "veto points" - may slow down reforms. It becomes necessary to build reform-supporting coalitions among organised interests and the wider public, and forge consensus wherever possible. It increases the urgency to deliver results quickly for broad sections of the population, while compensating potential losers from reforms (for example through social safety nets, education and training programmes). Democracy also makes it difficult to pursue comprehensive reform, especially politically sensitive domestic regulatory reforms. Public-sector and labour-market reforms are perhaps the hardest nuts to crack, as reform experiences from India, Brazil, Indonesia and South Africa show. One last complication: Brazil, India and Indonesia are large, decentralised polities with much policy competence residing with state or provincial administrations. Brazil and India have federal constitutions.

In the medium to long term, a question marks hangs over authoritarian regimes due to arbitrary and opaque decision-making, and lack of popular legitimacy. That might compromise the durability of policy reforms. In reasonably stable liberal democracies, reforms, however slow and piecemeal, may be more durable due to their sanction in the political marketplace. That is the silver lining for Brazil and India, and perhaps for Indonesia and South Africa.

Fourth, take a look at institutions in the narrower sense of how trade-policy decision-making is organised. To start with general observations:

- In all the BRIICS, the capacity to formulate and implement trade policy has had to increase in line with the external opening of economies, the greater role of trade and FDI in GDP, and more complex and demanding international trade agreements. Greater demands on trade-negotiating capacity were felt from the late 1980s with the Uruguay Round negotiations and "new-generation" bilateral and regional FTAs.

- Strong and sustained trade-policy and wider economic-policy reforms were driven, more often than not, by powerful presidential or prime-ministerial offices, ministries of finance and central banks, insulated from blocking pressures in other parts of government and outside government. Ministries of finance were particularly important in driving trade liberalisation during crises, often overriding protectionist-inclined ministries of trade and industry. But, post-crises, the

former have retreated to their core macroeconomic functions, leaving line ministries and regulatory agencies to handle trade policy with much less oversight.

- As national economies have become more globally integrated, some regions *within* nations have risen to prominence. The coastal provinces in China, states in the south and west of India, and the Sao Paulo region in Brazil, come to mind. Sub-national policies to attract international trade and FDI have had more impact, not just in the regions concerned, but also in setting examples to be emulated in other sub-national regions.

Now turn to country detail. In Brazil, the Ministry of Finance spurred trade liberalisation in the early-to-mid 1990s, but not thereafter. The Ministry of External Affairs (MEA) rose to prominence and subsequently acquired control of trade negotiations, though regulatory and operational functions remain with the Ministry of Development, Industry and Foreign Trade. Organised business has become active in trade policy, but many business organisations have several complaints, directed particularly at the MEA. They say that it does not consult business seriously, gives too much weight to some NGOs and lacks transparency. Above all, they complain that, especially under President Lula da Silva, trade policy has too much of a "geopolitical" focus and does not focus enough on Brazilian commercial priorities (Marconini, 2007).

In India, trade policy is controlled by the Ministry of Commerce and Industry (MOCI). The Ministry of Finance was influential in liberalisation in 1991-1993, but less so thereafter. Organised business and NGOs have become more active since the Uruguay Round. Inter-agency coordination on trade policy functions badly, and state governments are largely left out of the loop (Sen, 2004; Narayan, 2007). Business input is still insufficient. The MOCI remains defensive in trade negotiations and ambivalent about unilateral liberalisation – rather at odds with the global integration of the Indian economy since 1991.

In China, the Ministry of Commerce (MOFCOM, formerly MOFTEC) is the central actor in trade policy. It tightly controlled WTO-accession negotiations, leaving other government agencies on the sidelines. Chinese trade-policy making is still very centralised, but there are more pressures on it post-WTO accession (Huang, 2004). The complexities of implementing WTO commitments, "WTO-plus" reforms and, more generally, the deeper integration of China into the world economy, all call for better integration of other actors - central-government agencies, the provincial governments and business - into trade policy.

Indonesia's trade-policy capacity is weak compared with China, India and Brazil. The transition to democracy has put extra pressures on it. The presidency is weaker; there are more divisions among cabinet members; the bureaucracy is constrained by multiple pressures; the parliament is more assertive and unpredictable; trades unions and NGOs are more active; and the decentralisation of power to the provinces has been messy (Manning, 2008). There are in-built tensions between the Ministry of Finance, which is responsible for tariffs and is more pro-liberalisation, and the Ministry of Trade and Industry and Ministry of Agriculture, which administer NTBs and are more protectionist (though the present trade minister, Mari Pangestu, is an economist with free-trade credentials). Thus trade policy can appear ad hoc and unpredictable, though the overall liberalisation trend has not been reversed (Basri and Soesastro, 2005).

In South Africa, trade-policy making reflects institutional flux in the transition from apartheid to multi-racial democracy. Policy-making is controlled by a strong, centralised executive, with a weak role for the parliament. The National Treasury, the cockpit of economic-policy reform overall and the guardian of macroeconomic stability, has remained on the sidelines of trade policy. The latter is run by

the Department of Trade and Industry (DTI), which has become more sceptical of trade liberalisation and inclined to industrial-policy intervention in recent years. The DTI's trade-policy capacity is shallow; it often seems dysfunctional; it is not transparent; and it is excessively sensitive to criticism (Draper, 2007).

Russia had a Ministry of External Economic Relations in the 1990s that consistently blocked trade liberalisation. It was abolished in 2000 and was replaced by the Ministry of Economic Development and Trade. The latter has since led and coordinated Russia's WTO-accession negotiations. It was headed by German Gref, one of the two leading market reformers in the Putin administration, until his dismissal in late 2007. Policy-making is controlled by a strong, centralised executive. Parliament acts mostly as a rubber-stamp for executive decisions. Russia's trade-policy capacity, while improving, remains weak, not least given that it is not yet a WTO member.

f) Factor endowments

Explaining the trajectory of policy reforms also has to factor in the relative mix of land (or natural resources), labour and capital in an economy.[17] We know from recent economic history that the star developing-country performers are from east Asia. These countries had different starting positions, but, at a certain stage of development, relative labour abundance allowed them to break into labour-intensive manufactured exports, which became an engine of growth and in turn aided poverty reduction and human-welfare improvement. China is the outstanding example. Of course this was not inevitable: it depended on the right policies and improving institutions. South Asia, with similar factor endowments, remained stuck on a low-growth, high-poverty path because it did not adopt market-based policies. That was true of India before 1991.

Latin American and African countries, on the other hand, are largely land- or resource-abundant and labour-scarce. Absent import-substitution policies, they are better able to exploit comparative advantage in land and resources – as Brazil, Argentina, Chile, Australia, New Zealand and even South Africa have done in agriculture since they liberalised; and as Brazil, Russia, South Africa and many other countries besides are doing in the recent China-driven commodities boom. Indonesia has exploited both resource and labour abundance, the latter particularly since external liberalisation in the 1980s.

Thus a simple story based on early 21st century comparative advantage would point to all-round gains from trade: for technologically-advanced and capital-abundant countries in the West; the labour-abundant countries of east and south Asia; and land and resource-abundant countries elsewhere.

But the political economy of factor endowments reveals a different and more problematic story. Arguably, land- and resource-abundant countries are at a structural disadvantage compared with labour-abundant countries. By plugging into global markets for manufacturing, and now labour-intensive services too, the latter seem to be on sustainable growth paths, notwithstanding occasional crises. Labour-intensive exports attract FDI (and the technology and skills that come with it), feed quickly into poverty-reducing, welfare-improving employment, and, more gradually, into better infrastructure and institutions. This creates and strengthens a constellation of interests to support open trade and FDI policies. This bodes well for China and India, and Indonesia to a lesser extent. All this depends, of course, on overcoming global recession and returning to open and growing markets for trade and investment in goods and services.

[17] Lal and Myint (1996) provide perhaps the best analysis of how factor endowments have influenced the political economy of post-colonial policy reforms in developing countries.

On the other hand, land- and resource-abundant countries, given their relatively high price of labour, seem to be crowded out of global manufacturing markets by east-Asian (especially Chinese) competition (Wolf, 2004). This leaves them dependent on cyclical and volatile commodities markets. Commodity booms induce "Dutch disease" and shift the terms of trade against non-resource sectors. FDI in resource-abundant countries tends to be capital-intensive and generate big rents in not-so-competitive market segments. Often the result is an FDI enclave, without an employment, technology or wealth spillover to the rest of the economy, but with big profits to distribute among a corrupt local business and political elite.

Thus most countries dependent on resources have the interest-group constellation to squander rents from resource booms, but not to spread wealth and improve governance and institutions. A retreat to protectionism, however, would repeat past mistakes and make matters worse. This is the dilemma inherent in the "China-in-Africa" phenomenon. It is an acute dilemma for Russia, given its extreme resource dependence. It is a challenge for South Africa and for Indonesia to a lesser extent. Brazil is better cushioned given its diversified trade structure.

However, there are notable exceptions to the "resource-curse" rule: Chile has successfully exploited comparative advantage in agriculture and resources (mainly copper) through liberal trade policies, while diversifying the economic base and improving institutions (Herreros, 2007). That is also true of Australia and New Zealand (Sandrey, 2007; Bowen, 2007).

To the complacent, these resource challenges seemed academic up to mid-2008, when commodity prices peaked. Since then they have plummeted. That raises serious questions about the capacity of resource-abundant countries to cope with a global economic downturn, and to position themselves for recovery. These questions extend to their vulnerable political economy.

g) Foreign policy and international politics

> *Unhampered trade dovetails with peace; high tariffs, trade barriers and unfair economic competition with war.... I will maintain faith in my belief that the security, peace and welfare of nations are indissolubly connected with friendship, fairness, equality and the maximum practicable degree of freedom in international trade.* Cordell Hull

Trade policy links down to national economic policies and institutions. But it also links up to foreign policy and international politics. A reasonably stable international political order is the categorical imperative for economic development. Without the global Pax - an orderly framework for international relations - there can be no security for international commerce.

The end of the Cold War and the collapse of the Soviet Union reshaped international politics. It was the catalyst for twin political and economic transitions in eastern Europe and the former Soviet Union. But it also reverberated elsewhere – nowhere more so than in India. India's foreign policy was gutted: it lost its "first friend", the Soviet Union; and its leadership of the Non-Aligned Movement was meaningless. This brought on a foreign-policy transformation. India looked west to a *rapprochement* and closer relations with the USA, and in the second instance with Europe. It also looked east, first to southeast Asia and then to China. Closer engagement, looking east and west, started in the early 1990s, paused in the mid to late 1990s, and has been renewed and strengthened ever since. It corresponds with the timing of external liberalisation. Stronger security relations with the USA and other countries have proceeded in tandem with stronger commercial relations with the same countries. Arguably, India's foreign-policy shift is an important factor influencing its belated embrace of the world economy (Narayan, 2007; Baru, 2006).

China's foreign-policy transformation began in the 1980s and accelerated in the 1990s. Its emphasis is on "constructive engagement" with the USA, Europe and emerging developing-country powers. China's "soft power" has been very effective in its east-Asian neighbourhood, though less so with Japan (not to mention Chinese Taipei). Its self-advertised "peaceful rise" is geared to regional political stability and steady integration into the world economy. Trade diplomacy, in the WTO and FTAs, is perhaps the most visible sign of China's foreign-policy transformation.

Of all the BRIICS, Brazil has the tightest formal link between foreign policy and trade policy. The MEA leads and coordinates trade negotiations. These, in both the WTO and FTAs, are geared to achieving foreign-policy goals, such as Brazilian leadership in South America, and alliances with other "southern" powers, notably India, China and South Africa, to counterbalance US power.

South African foreign policy came out of its long apartheid isolation to prioritise closer relations with the West and a leadership role in Africa. Like Brazil, South Africa now has a stronger accent on South-South alliances, which strongly influences its WTO and FTA activities.

As for Indonesia, it should not be forgotten that economic-policy reform and opening to the world economy under President Soeharto took place in the context of close relations with the USA and an anti-communist US security umbrella for east Asia.

Finally, Russia's trade policy has followed the swings of its foreign policy. The opening of the economy in the 1990s occurred alongside closer relations with the USA and western Europe. This seemed to be reinforced during President Putin's first term. But his second term has seen a distancing of relations with the West, and a more aggressive stance towards Russia's "near abroad", particularly through energy politics. Cutting off gas deliveries to neighbouring countries in mid-winter, with collateral damage to third countries, is symptomatic. It is part of Russia's assertion of "big-power" status. This is the context for more statist energy policies and ambivalence about further external liberalisation.

h) Preliminary summary

Box 4.1 summarises the political-economy factors driving trade-policy reforms in the BRIICS. In all the BRIICS save China, an economic crisis, sometimes combined with a political crisis, has led to a big opening of the economy. New open-economy interest-group constellations have emerged to counter traditional protectionist interests. Washington Consensus ideas have spread through technopols (though more influential in macroeconomic than microeconomic policy), leadership focus on growth (much more so in China than in the other BRIICS), and pragmatic emulation of successful policies elsewhere. In the BRIICS democracies, a party-political and wider public consensus, however partial and patchy, has gradually formed around reforms. Gradually improving institutions are better able to support and manage open-market policies, though they remain relatively weak in the BRIICS. Shifts in foreign policy have also encouraged external opening and closer relations with major trading partners. Russia is the major exception to these trends, given partial reform reversal.

Labour-abundant countries in east Asia, and now in south Asia, have the most promising political economy to support external liberalisation and global integration – China and India prominent among them. Resource-abundant countries in Latin America, Africa, the Middle East, Russia and other parts of the ex-Soviet Union, are now doing well in the China-driven commodities boom. But their political economy is problematic: their predatory governments and interest groups are geared more to squandering rents than to creating and spreading wealth sustainably. Among the BRIICS, Russia is particularly vulnerable.

Box 4.1. The Political Economy of Trade-Policy Reforms

	Crisis-induced liberalisation	*Country size (population)*	*Interests*	*Ideas (Washington Consensus)*	*Institutions*	*Factor Endowments*	*Foreign policy*
Brazil	Yes (1988/89-94). Political and economic system-change	Large	Diverse. Mixed preferences. Export-oriented business better mobilised, especially agriculture	Strong in macroeconomic policy, weaker in liberalisation/ structural reforms	Democratic politics. Federal system. Strong trade-policy capacity. MEA lead. Weak involvement of MOF except in crisis	Land/ resource abundant	Emphasis on South-South alliances to counterbalance US power under Lula
India	Yes (1991-93). Political continuity	Very large	Diverse. Mixed preferences. Business gradually more open-economy oriented, especially IT services	Ditto	Multi-party coalition politics. Federal system. Strong trade-policy capacity. MOCI lead. Weak involvement of MOF except in crisis	Labour abundant	Reorientation of policy from early 1990s. Look West (USA and Europe) and Look East (ASEAN and China)
China	No. Gradual reform. Political continuity	Very large	Mixed preferences. MNEs lobby effectively to contain protectionism	Strong across macro and microeconomic policy, weaker in structural reforms. Industrial-policy intervention mixed in. Overall policy pragmatism	Authoritarian politics. Strong trade-policy capacity. Centralised decision-making. MOFCOM lead	Labour abundant	Constructive engagement with major powers (esp. USA). Soft power in east Asia. Regional Stability
Indonesia	Yes (1966-68, mid 1980s, 1998). Political system-change 1998	Large	Diverse. Mixed preferences. Export-oriented lobbies relatively weak. More influence for unions and NGOs after Asian crisis	Strong in macroeconomic policy (Berkeley Mafia), weaker in liberalisation/ structural reforms	Democratic politics since 1998. Decentralisation to provinces. Weak trade-policy capacity. Institutional instability and policy-making divisions after Asian crisis	Resource/ labour abundant	Close relations with USA and US security umbrella during Soeharto period
South Africa	Yes (mid 1990s). Political and economic system-change	Medium	Diverse. Mixed preferences. Open-economy business muted. Protection-	Ditto. Industrial-policy intervention now more popular	Democratic politics. Decision-making centralised in Executive. Shallow trade-policy capacity.	Resource abundant	Reorientation of policy with end of apartheid. Leadership in Africa. Now more emphasis on

Box 4.1. The Political Economy of Trade-Policy Reforms							
			seeking firms, unions and NGOs more vocal		DTI lead. Little MOF involvement		South-South alliances
Russia	Yes (1990s). Political and economic system-change. More authoritarian politics and partial reform reversal since 2003/4	Large	Energy interests very strong. Symbiotic links with the state. Monopolistic/ oligopolistic markets. The new nomenklatura	Ditto. Partial liberalisation reversal and more industrial-policy intervention	Authoritarian democracy under Putin. Recentralised decision-making. Shallow trade-policy capacity	Resource abundant	Colder relations with the West. Attempt to dominate "near abroad". Aggressive energy politics

4. Multi-track trade policy

Another way of cutting into trade-policy reform is to look at it on several tracks. Some reforms are carried out unilaterally; others reciprocally through (bilateral, regional, multilateral) trade negotiations, or in agreements with donors. Most developing countries now do trade policy on all these tracks concurrently, though the relative balance differs from country to country. Now turn to the main features of "multi-track" trade policy in the BRIICS. (Box 4.2 summarises multi-track trade policy in the BRIICS.)

a) Unilateral liberalisation

I trust the government…. will not resume the policy which they and we have found most inconvenient, namely the haggling with foreign countries about reciprocal concessions, instead of taking that independent course which we believe to be conducive to our own interests. … let us trust that our example, with the proof of practical benefits we derive from it, will at no remote period insure the adoption of the principles on which we have acted.
Sir Robert Peel, announcing the repeal of the Corn Laws, House of Commons, 1846

Liberalise first, negotiate later. Mart Laar, former prime minister of Estonia

Compelling political and economic arguments favour unilateral liberalisation, with governments freeing up international trade and flows of capital and labour independently, not in the first instance via international negotiations. As any student of trade economics knows, welfare gains result directly from import liberalisation, which replaces comparatively costly domestic production and reallocates resources more efficiently, and spurs capital accumulation, economies of scale as well as longer-run dynamic gains such as the transfer of technology and skills.[18] Similar and related arguments apply to the liberalisation of inward investment and the cross-border movement of people.

[18] There is the theoretical possibility of (usually large) countries being able to exercise long-run market power in international demand for certain goods. This enables them to shift the terms of trade in their favour by means of an "optimal tariff". The corollary is that these countries should only lower tariffs if others reciprocate, in order to avoid worsening terms of trade. In reality, very few countries have such long- run market power. And retaliatory tariffs by other countries could nullify terms-of-trade gains. Thus – not for the first time – a neat theory turns out to have limited practical relevance. See Irwin, 1996: 106-115.

Such gains come quicker through own, unconditional liberalisation than through protracted, politicised and bureaucratically cumbersome international negotiations. This Nike strategy ("Just Do It!") can make political sense too. Rather than relying on one-size-fits-all international blueprints, governments have the flexibility to initiate policies and emulate better practice abroad in experimental, trial-and-error fashion, tailored to specific local conditions. In David Landes' words, it is "initiated from below and diffused by example." This was the preferred method of the classical economists from Smith to Marshall, and of the titans of mid-Victorian British politics (Sally, 1998).

In twentieth and twenty-first century conditions of democratic politics and vigorous interest-group lobbying, unilateral liberalisation is of course a much more difficult proposition than it was in the nineteenth century. But observers often forget that the recent trade-policy revolution outside the West has come more "from below" than "from above". The World Bank estimates that, between 1983 and 2003, about 65% of developing-country tariff liberalisation (a 21% cut in average weighted tariffs) has come about unilaterally, with 25% coming from the Uruguay Round Agreements and only 10% from preferential trade agreements (PTAs) (Figure 4.12). True, many governments liberalised reluctantly as part of IMF and World Bank structural adjustment programmes. But the strongest liberalisers have been unilateral liberalisers, going ahead under their own steam without the need for much external pressure. Prominent among them are the east-Asian countries, as well as Chile, Mexico, the east-European countries, Australia and New Zealand.

Unilateral liberalisation has been particularly strong in east Asia (see Figure 4.13 for unilateral tariff-cutting in selected countries). The bulk of trade-and-investment liberalisation by the first and second-generation Tigers of northeast and southeast Asia was done unilaterally. In the 1980s, the old ASEAN countries – including Indonesia - reduced import and inward-investment barriers simultaneously in order to attract Japanese manufacturing multinational enterprises (which relied on imports of capital goods and components for labour-intensive local processing and assembly of goods for export). This is how they inserted themselves into regional and global manufacturing supply chains, first in electronics and then spreading to other industries (*e.g.* sport footwear, televisions and radio receivers, office equipment, electrical machinery, power and machine tools, cameras and watches, and printing and publishing). In the 1990s, China also undertook unilateral and simultaneous trade and inward investment liberalisation, and thereby inserted itself as the cheap-labour, final-assembly stage in these expanding supply chains. This in turn triggered additional unilateral liberalisation by the southeast-Asian countries. More openness to trade and FDI allowed the more advanced ASEAN countries to move up to higher-value production of parts and components in "Factory Asia", while more labour-intensive production migrated to China, and more recently to Vietnam. To repeat: these measures were not brought about by GATT/WTO, AFTA or other FTA agreements; rather they were unilateral responses to market conditions, resulting in market-led regional and global integration (Baldwin, 2006a and 2006b; Athukorala, 2006).

The BRIICS fit the general pattern more or less: trade and FDI liberalisation has been primarily unilateral. That applies to Brazil. In India, the IMF package in 1991 induced some trade opening, but liberalisation thereafter was genuinely unilateral: it was not the result of donor pressure or international trade negotiations. Indonesia liberalised unilaterally in the 1980s, but liberalisation after the Asian crisis was the result of IMF conditionality. Russia's opening in the 1990s was a combination of IMF conditionality and unilateral measures. Unilateral trade-related reforms followed in President Putin's first term, but they were much influenced by WTO-accession negotiations.

South Africa relied more on trade agreements than the other BRIICS for its external opening. It had a burst of unilateral liberalisation in 1996 in response to the Rand crisis, but before that liberalisation came via its strong Uruguay Round commitments. These, however, were much more the lever used by the

transitional government to open up the economy than the result of haggling over reciprocal concessions. Then, in the late 1990s, there was further opening through the FTA with the EU.

What about China? True, the WTO played a larger part in opening the Chinese economy than in the other BRIICS except South Africa. But the main liberalisation thrust was domestic, coming from the Beijing leadership. It used WTO-accession negotiations as a strategic lever to consolidate and accelerate national reforms. In fact, most of China's trade and FDI liberalisation was done unilaterally, before WTO accession. Its WTO commitments, and its pragmatic participation in the WTO after accession, can be read as more the consequence than the cause of its sweeping unilateral reforms.

China's external liberalisation now matters most, for it is the biggest the world has ever seen, with the biggest spillover effect in Asia. Indeed, China is in many ways today what Britain was in the second half of the nineteenth century: the unilateral engine of freer trade. Granted, China is far from being the top dog Britain was in the nineteenth century. But it is now the most powerful signal-transmitter in Asia. China's opening not only spurred southeast-Asian liberalisation pre-Asian crisis; it probably helped to prevent liberalisation reversal post-Asian crisis. It has also encouraged east-Asian countries to further liberalise at the margin post-Asian crisis – for fear of losing trade and FDI to China. Not least, China has probably had a knock-on effect on Indian opening to the world economy. India has recently accelerated its liberalisation of tariffs, and eased FDI restrictions in some services sectors. This has occurred outside trade negotiations, as was the case with previous Indian trade-and-investment liberalisation since 1991. Would this have happened, or happened as fast, if China had not concentrated minds? Probably not.

For other east and south-Asian countries to take advantage of the opportunities offered by China's global integration, and overcome more-exposed weaknesses caused by protectionist policies and weak institutions, there has to be further liberalisation and regulatory reform. This is less likely to come about through the WTO, FTAs and regional institutions such as ASEAN and SAFTA, and more likely to result from unilateral measures by individual governments in response to internal and external conditions. That is the best prospect for east-Asian countries to integrate themselves better into, and reap the benefits from, expanding regional and global supply chains. And that is the best prospect for south-Asian countries to insert themselves into these supply chains.

That is not to say that China-induced unilateral liberalisation is a total solution. It is unlikely to induce further external liberalisation in the developed world, and least of all in the USA, EU and Japan. In the developing world, its results will inevitably be patchy and messy. Unilateral liberalisation has been more successful in manufacturing than in services and agriculture; and it has tackled border barriers much better than non-border regulatory barriers. For instance, unilateral liberalisation in east Asia has been strong in "fragmentation-based" manufacturing products that feature in global supply chains, as well as in labour-intensive consumer goods such as garments and toys. But it has been weaker in other areas of manufacturing, very uneven in services, especially weak in agriculture, and still has a long way to go with trade-related structural reforms in goods, services and investment. More generally, unilateral measures do not lock in liberalisation against future backtracking. They do not provide fair, stable and predictable rules for international commerce.

Finally, unilateral liberalisation has slowed down across the developing world, including the BRIICS. In Brazil and South Africa, trade policy has forsaken unilateral liberalisation and become totally reliant on trade negotiations. India continues incremental unilateral liberalisation, though at a slower pace than before. Indonesia's unilateral liberalisation has petered out. In China, it has slowed down post-WTO accession. In Russia, it has stalled and even gone into reverse gear. Now, with the onset of global economic crisis, unilateral liberalisation has effectively stalled, in the BRIICS and elsewhere. Unilateral protectionist measures have crept upwards, with the threat of further escalation.

On its own, therefore, unilateral liberalisation cannot slay protectionist dragons and solve international commercial conflicts. That leaves room for reciprocal negotiations and international agreements, *i.e.* for the WTO and FTAs.

b) Multilateral liberalisation

> *The great political virtue of multilateralism, far exceeding in importance its economic virtues, is that it makes it economically possible for most countries, even if small, poor and weak, to live in freedom and with chances of prosperity without having to come to special terms with some Great Power.* Jacob Viner

> *In recent years, the impression has often been given of a vehicle with a proliferation of backseat drivers, each seeking a different destination, with no map and no intention of asking the way.* The Sutherland Report

Given the realities of modern politics – interest-group lobbying for protection, ingrained mercantilist thinking, the perception that liberalisation hurts the poor and vulnerable – unilateral liberalisation is often difficult to achieve in practice. The rationale of "multilateralised reciprocity" is that GATT/WTO negotiations help to contain protectionist interests and mobilise exporting interests; and multilateral agreements provide fair, non-discriminatory rules for all. Perhaps the greatest utility of the WTO is that it provides a framework of rules to assist (mainly developing-country) governments that have strategically chosen to take their national economies in a market-oriented, globally-integrated direction. The accessions of China and Vietnam are textbook examples of how the WTO should work.

That said, the standard *raison d'être* for multilateral rules-based trade liberalisation was easier said in the old GATT than done in the WTO. In many ways the WTO is the victim of its own success; of the successful conclusion of the Uruguay Round and the huge transition from the GATT to the WTO.[19]

Multilateral liberalisation was successful during the GATT when the latter had a relatively slimline agenda, club-like decision-making dominated by a handful of developed countries (especially the USA and EU), and the glue of Cold War alliance politics. It has proved spectacularly unsuccessful in the WTO. Now, the WTO agenda, especially on non-border regulation, is technically more complicated, less amenable to the reciprocal exchange of concessions, administratively more burdensome and politically much more controversial; decision-making is a chaotic mess in a general assembly with near-universal membership; and the unifying glue of the Cold War has dissolved. The failure of the Doha Round (as of the time of writing) probably shows that future multilateral liberalisation will be elusive and modest at best.

Arguably, the best the WTO can hope for post-Doha Round is to lock in pre-existing unilateral liberalisation through binding commitments, and gradually improve the functioning of non-discriminatory multilateral rules. That is especially important to contain protectionism in the wake of the global economic crisis. But it implies scaling back ambitions and expectations. Market-access negotiations (to deliver extra liberalisation) should be more modest and incremental; and maybe trade rounds should become a thing of the past. There should be a shift of focus to safeguarding and improving trade rules. This is more important for most WTO members than extra multilateral liberalisation. Finally, to get business done, WTO decision-making should fall in line with political and economic realities outside Geneva. About 30 countries (counting the EU as one) account for almost 90% of international trade and FDI. That includes 20-25 developing countries. They should gather in plurilateral "coalitions of the

19 The following argument draws on Sally, 2006c.

willing" to make key market-access and rule-making decisions, and correspondingly take on stronger commitments than the rest of the WTO membership. In other words, the WTO needs "variable geometry" in order to function effectively.

All the BRIICS save Russia (which is not yet a WTO member) should be active in a broad, informal WTO "first division" of 30 or so countries. South Africa and Indonesia are developing-country "middle powers" who can make a stronger contribution that the bulk of developing countries. But China, India and Brazil are the three developing-country "big beasts" in the WTO. They should exercise co-leadership alongside the USA, EU and perhaps Japan (if the latter can get its act together). Without that, nothing will move.

Now take a look at the BRIICS's record in the WTO.

Along with India, Brazil remains the most active developing-country member in the WTO. It is active on all fronts. In dispute settlement, it launched and won landmark cases against the USA on cotton and the EU on sugar. In the Doha Round, it launched and has since led the G20 in agriculture. Inevitably, Brazil has a combination of offensive and defensive positions on specific negotiating issues. But many voices from organised business in Brazil complain that these positions are not congruent with Brazil's commercial interests, and have been hijacked by extraneous foreign-policy goals (such as a permanent seat on the UN Security Council and leadership credentials in the South). Notably, Brazil's accommodation of India in the G20 means that it cannot promote its agricultural exporting interests as strongly as it could otherwise. Also, its defensive position in the NAMA (non-agricultural market-access) negotiations does not reflect Brazil's export strength in industrial goods (Marconini, 2007).

India's defensiveness in the Uruguay Round has continued in the Doha Round. It is rigidly defensive in agriculture and rather defensive in NAMA. It was strongly opposed to the inclusion of most of the Singapore issues, and remains in favour of strong Special and Differential Treatment for developing countries. That said, India is not as militantly obstructive as it was in the GATT. Its main negotiating shift has been in services, where it has discovered offensive interests in the wake of the IT-services take-off at home (Hoda, 2005).

Still, Indian trade policy appears somewhat schizophrenic: domestic economic considerations have driven unilateral liberalisation, but this has not translated into greater flexibility in the WTO (except to some extent in services). The domestic backlash against India's Uruguay Round commitments (negotiated by the MOCI largely without wider consultation or discussion) and messy coalition politics have combined to restrict the government's room for manoeuvre in the WTO. Hence unilateral and multilateral trade-policy tracks seem disconnected (Narayan, 2007).

South Africa appears superficially active in the WTO, especially so when Alec Erwin was the minister of trade and industry. But its trade-policy capacity, in its Geneva mission and back in Pretoria, is shallow. It lacks depth compared with China, India and Brazil. It is a member of the Cairns Group, but its negotiating activity in agriculture has been focused on the G20 since the Cancun Ministerial Conference. It is defensive in NAMA and inactive in services. These positions do not seem consonant with South Africa's export interests. These are not only in agriculture, which has a relatively small share in total exports, but also in intermediate manufactures and services, especially to other African countries (Draper, 2007).

Indonesia has weak trade-policy capacity compared with the other BRIICS. It is less active in the WTO compared with fellow ASEAN members Singapore, Malaysia and Thailand. It benefited from collective ASEAN action in the Uruguay Round; but since then ASEAN cooperation in the WTO has been much weaker due to widening intra-ASEAN differences. Indonesia's defensiveness in the Doha

Round is a reflection of domestic economic turbulence, nascent democratic politics and liberalisation-scepticism in the wake of the Asian crisis. It is defensive across market-access issues; and its priority is to exempt "special products" from agricultural liberalisation. Indonesia chaired the G-33 on Special Products at the Cancun Ministerial Conference. Such positions crowd out the government's ability to promote Indonesia's export interests, particularly manufactured exports to other developing countries (Basri and Soesastro, 2005; Sally, 2004).

China's WTO commitments are the strongest of any developing country (at least until the accession of Vietnam in 2006). That applies not only to tariff ceilings on goods (including agriculture), but also to NTBs on goods and services. There are strong disciplines on domestic regulation in order to improve transparency, as well as administrative and judicial-review procedures to make sure WTO commitments are implemented domestically.

The strength of China's WTO commitments ensures a better correspondence between what China does on unilateral and multilateral trade-policy tracks compared with the other BRIICS. It is aware of its strong stake in well-functioning multilateral trade rules. This is reflected in some aspects of China's post-accession WTO activity. It has been serious about implementing the bulk of its WTO commitments in timely fashion. It is very active in the WTO's regular committees, particularly on core rules issues. It has joined several cases as a third party in dispute settlement. Many of its Doha Round positions, for example on the Singapore issues and Special and Differential Treatment, have been more flexible compared with many other developing countries, including other BRIICS. Compared with the other BRIICS – India and Brazil in particular – China has kept its rhetoric low-key and avoided confrontation.

That said, China's overall negotiating position, in common with other RAMs (Recently Acceded Members), is that it is willing to contribute very little beyond its existing WTO commitments. It has been rather quiet, indeed passive, in the Doha Round, quite in contrast to India and Brazil. Finally, there are blemishes in its implementation of WTO commitments, especially in services, subsidies and intellectual-property rights.

Finally, consider Russia's WTO-accession negotiations. Nearly all the hard work and deals have been done. WTO membership will bring Russia modest gains in terms of extra export market access. That is because the bulk of its exports (in natural resources) do not suffer from protectionism abroad and are only weakly covered by WTO disciplines. Overwhelmingly, Russia's gains will come from its own liberalisation and trade-related reforms in line with WTO commitments. The average tariff will decline to about 8%; the tariff structure will be simpler and more transparent; NTBs will decrease; and services sectors will be opened up, notably in insurance, banking, telecommunications, professional services and distribution. In general, these concessions are no more severe than they have been for other newly-acceded members, and indeed less severe compared with China and Vietnam (Tarr, 2007; Tarr and Navaretti, 2005).

Russia's prospective accession to the WTO differs from China's already accomplished accession in important respects. First, it matters much less for Russia since most of its trade will barely be affected by WTO disciplines. The WTO will impose little constraint on Russian government intervention in energy trade. In that respect Russia is in the same category as Nigeria and Saudi Arabia, both predominantly oil-exporting WTO members. All the other BRIICS have much wider swathes of economic activity covered by WTO disciplines.

Second, Russia views WTO membership more in foreign-policy than in commercial or economic terms. It is about membership of an important international club in which Russia can exert its influence as a big power, and get the special treatment it feels it deserves. It is much less about using the WTO as a

strategic lever for market reforms at home and to integrate Russia into the global economy (Åslund, 2006b). For China, unilateral reforms in a labour-abundant economy led to and were reinforced by strong WTO commitments. For Russia, weaker unilateral reforms – now stalled and reversed – in a resource-based economy have formed a different view of the WTO and led to less fruitful negotiations.

Hence it would be naïve to rely on WTO accession to force the pace of market reform in Russia, in the absence of domestic political will and a unilateral reform thrust. It would be equally naïve of WTO members to allow Russia into the club on lax terms, especially concerning Russian compatibility with and subsequent implementation of WTO agreements. That would be an invitation for Russia to play foreign-policy games and undermine WTO rules once it becomes a member.

Overall, the BRIICS have some way to go before they make a positive contribution to setting the WTO on its legs again. They need to be less defensive and more flexible across negotiating issues. China, India and Brazil need to move from reactive positioning to proactive leadership. Most important, perhaps, is the need for China to move from the background to the foreground of the WTO. Finally, Russia should only be allowed into the WTO on economically sensible terms rather than those dictated by short-term (and misguided) political expediency. All these factors assume more importance in the "post-Doha" future of the WTO.

c) Bilateral and regional liberalisation

We will work with can do, not won't do, countries. Robert Zoellick

All hat and no cattle. Mexican rural proverb

Negotiations for new PTAs – overwhelmingly FTAs, but also some customs unions and partial-scope agreements – have increased pace since 1999/2000, and even more so since the launch of the Doha Round (Crawford and Fiorentino, 2005). Eastern Europe, Africa and Latin America have long been involved in PTA activity. East Asia, which previously relied on non-discriminatory unilateral and multilateral liberalisation, is now playing PTA catch-up, as is south Asia. All the major regional powers – China, India and Japan – are involved in Asian PTAs, as are the USA, EU, Korea, Australia, New Zealand, Hong Kong, China other south-Asian countries and the ASEAN countries.

Why this rush of PTA activity? Proponents argue that small clubs of like-minded members can take liberalisation and rules faster, wider and deeper than in the WTO, and act as "building blocks" to further multilateral liberalisation and rule-making. Sceptics say they are "stumbling blocks", diverting attention from the WTO, creating "spaghetti bowls" of discriminatory trade restrictions, and generally favouring powerful players at the expense of the weak (World Bank, 2004, ch. 6).

The reality is mixed. Non-discriminatory unilateral and multilateral liberalisation blunt the damaging effects of PTAs. There is little prospect of the world economy retreating to the warring trade blocs of the 1930s. Strong, "WTO-plus" PTAs, *i.e.* with comprehensive sectoral coverage, more ambitious market-access and rules commitments than in the WTO, and simple, harmonised rules of origin, can also make sense. But these are rare. The EU, NAFTA and Australia-New Zealand CER are relatively strong PTAs.

However, most other FTAs and customs unions are weak, often falling short of WTO provisions. This is particularly true of South-South PTAs (*i.e.* between developing countries), but also holds for many North-South PTAs. These tend to be driven by foreign-policy aspirations, but with justifications that are all too often vague, muddled and trivial, having little relevance to commercial realities and the economic nuts and bolts of trade agreements. This can amount to little more than symbolic copycatting of other

countries' PTA activity and otherwise empty gesture politics. In such cases economic strategy is conspicuous by its absence. In short, such PTAs are "trade-light".

The predictable results of foreign-policy-driven PTA negotiations light on economic strategy are bitty, quick-fix sectoral deals. Politically sensitive sectors in goods and services are carved out, as are crucial areas where progress in the WTO is elusive (especially disciplines on anti-dumping duties and agricultural subsidies). Little progress is usually made in tackling domestic regulatory barriers (*e.g.* relating to investment, competition, government procurement, trade facilitation, cross-border labour movement, and food-safety and technical standards).These PTAs hardly go beyond WTO commitments, deliver little, if any, net liberalisation and pro-competitive regulatory reform, and get tied up in knots of restrictive, overlapping rules of origin (ROOs). Especially for developing countries with limited negotiating capacity, resource-intensive PTA negotiations risk diverting political and bureaucratic attention from the WTO and from necessary domestic reforms. Finally, the sway of power politics can result in highly asymmetrical deals, especially when one of the negotiating parties is a major player.

Latin America and Africa have a messy patchwork of weak PTAs. This is also the emerging picture of PTAs in east and south Asia (Sally, 2006b). Now take a look at the BRIICS's record on PTAs. (See Tables 6 a-f for lists of PTAs in the BRIICS.)

Brazil's main PTA is Mercosur, its customs union with Argentina, Paraguay and Uruguay, which has a common external tariff (CET). Mercosur is pretty weak: the CET has several loopholes; little progress has been made on NTBs, services and investment; and Brazil has undermined the customs union by pursuing separate FTAs with third countries. Brazil has prioritised the latter (such as a triangular PTA with South Africa and India) alongside Mercosur FTAs with third countries. These are mostly very trade-light, amounting to fixed preferences on a limited range of tariff lines.

Business representatives complain that these FTAs are foreign-policy driven and do not make commercial sense. They are mostly with countries with which Brazil does little trade, while the Brazilian government has neglected FTA initiatives with its two most important trading partners, the EU and USA. EU-Mercosur FTA negotiations have been stuck for several years; and Brazil has put the FTAA negotiations on the backburner. Mario Marconini, Brazil's former foreign trade secretary, characterises Brazil's approach to the latter two FTA negotiations as "aimless wandering" (Marconini, 2008).

South Africa's PTA picture looks similar. It is the lead player in SACU, which, since 2004, is supposed to decide on tariffs and trade remedies jointly, and have a common tariff revenue-sharing arrangement. But SACU has hardly any supranational capacity to implement joint powers. Moreover, it is undermined by overlapping FTAs with third countries. South Africa has or is negotiating separate FTAs with the EU (its strongest FTA), India, Brazil and others. It is also a member of SADC, which plans a customs union by 2010, followed later by a common market and then a monetary union. SADC's joint capacity is extremely weak; and some of its members belong to two other PTAs, COMESA (Community of Southern and Eastern African States) and the EAC (East African Community). To complicate matters further, the EU plans Economic Partnership Agreements (EPAs) with members of SADC, COMESA and EAC, but not with South Africa.

The result is a comical mess of overlapping PTAs in southern Africa, with a plethora of different and restrictive ROOs. Not least, it adds to the complexity of South Africa's trade regime. Finally, like Brazil, South Africa is prioritising FTAs with countries with which it does relatively little trade – more for foreign-policy than commercial reasons. Its most commercially serious FTA negotiation – with the USA – stalled precisely because South Africa and other SACU members were not interested in the kind of strong WTO-plus FTA the USA insists on (Draper, 2007; Flatters and Stern, 2007).

Indonesia's main FTA is AFTA, which has an accelerated timetable for intra-ASEAN tariff elimination with relatively simple rules of origin (40% local content across the board). There are plans for an ASEAN Economic Community – a single market for goods, services, capital and skilled labour – by 2015. This looks good on paper, but ASEAN has made very little progress beyond tariff elimination, for example on NTBs, services, investment and mutual recognition of standards. These "AFTA-plus" items – all concerning regulatory barriers to trade – are far bigger obstacles than tariffs to regional economic integration.

Indonesia is not as active with FTAs as its ASEAN neighbours Singapore, Thailand and Malaysia. It has one bilateral FTA with Japan, though it is considering others. But it is part of ASEAN FTAs with several third countries. Some of these negotiations, for example with China and South Korea, have made headway with tariff elimination, but so far they have done little to tackle far more important regulatory barriers to trade and investment. A "noodle bowl" of different ROOs within and across ASEAN FTAs is also problematic (Sally, 2006b).

India is very active with FTAs, in its South-Asian backyard and in other developing-country regions. Hitherto loose regional cooperation is supposed to be transformed into the South Asian FTA (SAFTA) by 2010, leading to a customs union by 2015 and economic union (whatever that means) by 2020. This looks unachievable in practice. For starters, SAFTA excludes Indo-Pakistani trade. Planned negotiations are only on goods; they do not cover services, investment and other non-border market-access issues. There are bound to be plenty of exemptions, given similar trade structures with competing products (especially in agriculture).

India's approach to FTAs outside South Asia is mostly about foreign policy and is trade light. An FTA with ASEAN is planned for completion by 2011; and bilateral FTAs are also in place with Thailand and Singapore. ASEAN-India and India-Thailand negotiations have been bedevilled by India's insistence on exempting swathes of products and on very restrictive rules of origin for products covered. Fear of Chinese competition is probably the main factor driving product exemptions and restrictive ROOs. In addition, India is part of the BIMSTEC group (the other members being Bangladesh, Sri Lanka, Nepal, Bhutan, Thailand and Myanmar) that plans an FTA by 2017. It has mini-FTAs – basically limited tariff-concession schemes – in force or planned with several countries and regions, for example Chile, SACU, Mercosur and IBSA. FTA negotiations with South Korea and Japan are ongoing (Sally, 2006b).

India's most serious FTA negotiation is with the EU. Both sides have committed to an ambitious agreement, with tariff elimination on more than 90 % of goods trade and a strong GATS-plus agreement in services. Most of agriculture will be exempted by mutual agreement. Whatever the rhetoric, the EU will find it extremely difficult to tackle India's high trade-related regulatory barriers through an FTA, and, specifically, to open up government procurement and some services sectors (for example professional services, financial services, retail and distribution). Given stalled policy reforms in Delhi, snail-like unilateral liberalisation, WTO defensiveness and other trade-light FTAs, a "deep-integration" FTA with India is next to impossible (Sally, 2007b).

China is the driving force for FTAs in Asia. The China-ASEAN set of negotiations, more than any other FTA initiative, is the one to watch in the region. It will be the largest FTA ever negotiated, covering 11 diverse economies with a population of 1.7 billion. There has been reasonable progress in eliminating tariffs on trade in goods. However, little progress to date has been made on non-tariff barriers in goods, services (where a relatively weak agreement has been reached), investment and other issues. China has stronger WTO-plus FTAs with Hong Kong, China and Macau (both admittedly special cases) and with New Zealand; a comprehensive FTA on goods with Chile; and is negotiating FTAs with Australia and Singapore. It has a partial-scope tariff agreement with Pakistan. It is also negotiating or thinking of

negotiating rather weak FTAs elsewhere in the developing world, for example with Mercosur and SACU. These are shallow - mostly preferential tariff reductions on a limited range of products.

China's approach to FTAs is pragmatic and eclectic, but mostly trade light. Even the China-ASEAN FTA is unlikely to create much extra trade and investment if it does not go substantially beyond tariff elimination in goods. China's FTAs are driven more by "high politics" (competition with Japan to establish leadership credentials in East Asia; securing privileged influence in other regions) than economic strategy (Sally, 2006b).

In addition to bilateral FTAs, Asia – east Asia in particular – is awash in regional economic integration initiatives. An APEC FTA initiative (FTAAP – Free Trade Area of the Asia Pacific) was launched at the APEC Hanoi Summit in 2006. It will go nowhere: political and economic divisions in such a large, heterogeneous grouping are manifold and intractable. An "ASEAN Plus Three" FTA (the "three" being Japan, South Korea and China) has been touted, as has an East-Asian FTA that might include Australia and New Zealand. There is talk of a pan-Asian FTA that would include India or SAFTA. Visions of an East Asian Economic Community and even an Asian Economic Community have appeared on the horizon.

So far this talk is loose and empty – nothing more. Regional players are speeding ahead with quick and dirty bilateral FTAs, while little progress is being made with the larger ASEAN FTAs (beyond tariff elimination in goods trade). The emerging pattern is of a patchwork of bilateral "hub-and-spoke" FTAs, in a noodle bowl of trade-restricting rules of origin. This threatens to slow down and distort the advance of regional and global production networks. In particular, it could undermine the dense networks of east-Asian production-sharing and trade in manufacturing parts and components ("fragmentation-based trade", or what Richard Baldwin calls "Factory Asia"), which are in turn linked to final export markets in Europe and North America.[20] More generally, bitter nationalist rivalries (especially in northeast Asia and between India and Pakistan), and vast inter-country differences in economic structure, development, policies and institutions, will continue to stymie Asian regional-integration efforts for a long time to come. This applies to east Asia; it applies even more to south Asia.

Finally, Russia is largely absent from PTAs outside its neighbourhood. But it is at the centre of a huge PTA spaghetti bowl in the Commonwealth of Independent States, and plans a customs union with Kazakhstan and Belarus. Preferential arrangements with neighbouring countries are contradictory, not applied or weakly enforced.

d) The role of donors[21]

Foreign aid, with conditions attached by the IMF, World Bank and other donors, has clearly played a big part in driving Washington Consensus-type reforms in many developing countries. This has gone way beyond developing countries' (relatively weak) liberalising commitments in the WTO and PTAs. Arguably, unilateral liberalisation has not been truly "unilateral" when it has depended on donor policy preferences and aid with strings attached. The record of IMF stabilisation packages and World Bank structural adjustment packages has been mixed at best, and certainly disappointing compared with optimistic expectations in the 1980s (World Bank, 1998a and World Bank, 1998b). Often donor-driven reforms have proceeded in stops and starts, with reversals en route. Projected growth and poverty-alleviation effects have not materialised. The politics of aid is even more dubious than its economics.

20 Athukorala (2006: 1-27).

21 This section draws on Erixon and Sally (2006: 69-77).

"Conditionality" is empty rhetoric when self-serving interests at both ends of pipeline ensure that aid continues to flow, even when promised reforms are not delivered. And the perception that Western donors are imposing reforms on otherwise reluctant countries is hardly sustainable: local "ownership" is lacking (to borrow aid jargon), and it invites a backlash and reform-reversal at home (Bauer, 2000).

The bottom line is that countries that have seen strong, sustained, unilateral liberalising reforms are those whose governments have driven reforms ("from below", as it were) rather than having them imposed by donors ("from above"). Aid at its best has smoothed short-term adjustments, as happened with the IMF package to India in 1991, and Japanese aid to Indonesia in the 1980s. The IMF and World Bank have sometimes been useful sources of policy and technical advice. More than anything else, donor conditionality has provided a "good housekeeping seal of approval" – an international signal of reform credibility – for determined home-driven reforms. In these countries (most in east Asia and eastern Europe, and a few in Latin America), aid has played a marginal role. This applies to the BRIICS as well. Where there has been more reliance on aid and donor conditionality – especially in Africa - reforms have a far worse record.

Hence grand aid blueprints, notably the UN Millennium Project and the Africa Commission Report, are not relevant to the BRIICS. Nor is the WTO's "aid-for-trade" initiative.

e) Preliminary summary

Box 4.2 summarises multi-track trade policy in the BRIICS. The BRIICS have relied mostly on unilateral liberalisation to open their economies to the world. But unilateral liberalisation has stalled or slowed down; and Russia has seen partial reform reversal. In some BRIICS trade negotiations have gained the upper hand over unilateral measures, but led to little or no additional liberalisation.

The WTO has been of second-line assistance by providing a framework of multilateral trade rules for unilateral reforms. But GATT/WTO commitments have contributed little to liberalisation itself in the BRIICS, except in South Africa and China. In both countries, however, the primary thrust of reforms was domestic, coming from national leaderships rather than external pressure in trade negotiations. Russia has yet to join the WTO (at the time of writing). WTO accession negotiations aided market reforms earlier this decade, but much less so in the last few years.

The BRIICS's PTAs are trade-light: they are driven more by foreign policy than commercial strategy; their noodle-bowl discriminatory patchwork causes complications for business and multilateral rules; and they are unlikely to spur regional or global integration. Hence further substantial liberalisation through trade negotiations, whether in the WTO or PTAs, is unlikely. Trade negotiations and resulting agreements are subject to diminishing returns as a vehicle for extra liberalisation, especially on non-border regulatory issues.

Foreign aid has been important in some crisis situations in the BRIICS. But it has played a marginal role in medium to long-term trade-policy reforms. Generally, aid-induced liberalisation has not really worked: its political economy is dubious. Hence it would be a mistake to rely on aid for further market-based reforms.

Finally, looking beyond the global economic crisis, unilateral measures and competitive emulation are likely to be the main vehicle for future trade and FDI liberalisation. Much depends on a Chinese engine. Further unilateral liberalisation in China will probably set imitative reforms in train, elsewhere in Asia and beyond. A workable post-Doha WTO can help to lock in reforms, but more by strengthening multilateral rules than through market-access negotiations. Much more caution needs to be exercised with

PTAs; and serious attempts made to minimise the damage from their discriminatory provisions. The BRIICS – China in particular – have important roles to play on both WTO and PTA tracks.

Box 4.2. Multi-track trade policy

	Unilateral liberalisation	*Multilateral liberalisation*	*Regional/bilateral liberalisation*	*Role of donors/policy conditionality*
Brazil	Strong (1988/89-94). Little thereafter	Weak. But very active in WTO	Weak. Very active with PTAs. Trade-light PTAs	Weak
India	Incremental since 1991	Weak. But very active in WTO	Ditto	Weak, except IMF package 1991
China	Strong (1990s)	Very strong WTO commitments. Active in WTO (but low-key in DDA)	Ditto	Weak
Indonesia	Strong (mid1980s-early 1990s)	Weak. Defensive in DDA	Weak. Mainly ASEAN FTAs. Relatively trade-light PTAs	Mixed. Japanese aid in 1980s, IMF package 1998
South Africa	Rand crisis 1996. Little thereafter	Strong Uruguay Round commitments. Defensive in DDA since Cancun	Weak. Very active with PTAs. Trade-light PTAs	Weak
Russia	Stops and starts in 1990s. Weak since 2003/4. Some reform reversal	Not yet acceded to WTO	Trade-light PTAs in CIS	IMF packages in 1990s

5. Conclusion: What lessons for future reforms?

To recapitulate: The conditions for further liberalisation and associated structural reforms are much more difficult today than they were in the heyday of the Washington Consensus. Reform complacency resulted from a post-crisis environment of buoyant growth and normal interest-group politics. There has been dissatisfaction with previous reforms in parts of the developing world. Some anti-liberalisation ideas are enjoying a revival. These trends have been reinforced by the global economic crisis since late 2008, accompanied, inevitably, by an anti-market backlash.

Lastly, the politics of "second-generation" trade-policy reforms is proving more difficult than that of "first-generation" reforms. The latter involve the reduction and removal of border barriers. This is relatively simple technically and can be done quickly – though politically these measures are rarely easy. The former are all about complex domestic (though trade-related) regulation, such as services regulation, regulation of food-safety and technical standards, intellectual-property protection, public procurement, customs administration and competition rules. These reforms are technically and administratively difficult, and take time to implement. They demand a minimum of capacity across government, especially for implementation and enforcement. Above all, they are politically very sensitive, as they affect entrenched interests that are extremely difficult to dislodge.

The immediate and paramount challenge is to contain mounting protectionist threats in the wake of the global economic crisis. If not contained, these threaten to reverse the hard-won liberalisation gains of the 1980s and 1990s. Tit-for-tat protectionism will deepen and prolong a global recession, and it will compromise prospects for a strong and sustainable recovery. But that is by no means enough: there remains a strong case for *further* market-based reforms in general, and for external liberalisation in particular. Reduction of what are still high barriers to trade, foreign investment and the cross-border movement of people holds out the promise of higher growth, and significant poverty reduction and improvements in human welfare. Stalled reforms and reform reversal threaten to deprive hundreds of millions of people of the life-chances they deserve. These are the stakes – for the BRIICS, and for developing countries generally. Against this backdrop, the following challenges lie ahead.

The BRIICS are "first-division" reformers. They belong to a group of 20-25 developing countries – the "new globalisers" - that have already gone far with macroeconomic stabilisation, and internal and external liberalisation. They have plugged themselves into globalisation. Russia fits this pattern least well, given the predominance of energy and other resources in its external commerce, and greater state interference in these sectors in recent years.

The BRIICS's task is to go further with dismantling border barriers to trade and opening the door to FDI. But their bigger challenge is to make much more progress on trade-related domestic reforms – the "microeconomic", "structural" and "institutional" reforms where progress to date has been too slow. This entails tackling the second-generation issues mentioned above. What is needed is a culture of permanent, incremental reforms, mainly of the second-generation variety, that build on the foundations of first-generation reforms, so that the economy adapts flexibly to changing global conditions. That is easier said than done. That has proved elusive in conditions of normal interest-group politics, without an economic crisis to concentrate minds. The consequence is creeping sclerosis in times of plenty, and excessive reliance on a crisis for the next reform wave (Olson, 1982 and OECD, 2007a). That cannot be good for long-term political, social and economic health. Now the BRIICS face economic crisis again. We will see which way they turn.

Such are the broad trade-policy priorities for the BRIICS. In this context, the following points deserve emphasis.

First, there needs to be a clearer link between trade policy, on the one hand, and *domestic* economic-policy and institutional reforms, on the other. Trade policy should be coupled strongly with competition-friendly measures to improve the domestic business climate. It should be better hitched to domestic reforms. For example, there should be ways of linking trade and FDI liberalisation, and trade-related regulatory reform, to measures to shorten and simplify regulations that hinder business at home. Such red tape includes procedural hurdles to overcome before starting a business, dealing with various licensing procedures, registering property, getting access to credit, employing workers, paying taxes, protecting investors and bankruptcy procedures. Red tape directly affecting exports and imports include the documentation, time taken and costs of clearing goods through customs. These regulations are documented, classified and ranked in the World Bank's annual *Doing Business* Report. Second-generation trade-policy reforms depend on the quality of public administration and the rule of law (*i.e.* the quality of the legal framework governing property rights and contracts, and their enforcement by the judicial system). They also relate, ultimately, to the political system.

All the BRIICS do badly - some very badly - in the World Bank's business-climate and governance indicators (not to mention similar rankings done by a host of other organisations). That indicates how partial reforms have been to date. They have barely touched highly restrictive labour markets and the bloated, malfunctioning domain of the state.[22] That affects external as well as internal trade, and foreign as well as domestic investment. In essence, such policies continue to restrict economic freedom for individuals and enterprises, consumers and producers. They act as structural, long-term deterrents to productive investment, entrepreneurship and wealth creation (Greenspan, 2007). That leaves a vast pro-market reform agenda yet to be tackled.

Second, and following directly from the previous point, trade policy should be seen less through the prism of trade negotiations, international organisations and (often unrelated) foreign-policy agendas, and (as argued above) more through the prism of the domestic economy. Second-generation reforms in particular are bundled up with domestic politics and economics; initiating and implementing them is overwhelmingly a domestic affair; and the scope for productive international negotiations and solutions is restricted. That is already becoming evident with the regulation of services trade and trade-related product standards, and of policies towards inward investment. It will become even more evident as global production networks and the movement of people across borders bite ever deeper into domestic institutions.

As trade policy becomes ever more entwined with domestic policies and institutions, it follows that there should be more reliance on unilateral measures, including external liberalisation, and correspondingly less reliance on reciprocal liberalisation through the WTO and PTAs. Unilateral reforms should then be locked in through stronger WTO commitments.

Third, there should be much more policy *transparency.* Trade-policy making is usually opaque. Too little is known and understood about the effects of this-or-that set of trade policies. Consequently, public discussion of policy choices is usually uninformed and misguided. This applies to all the BRIICS. It is the Achilles Heel of their trade-policy making. It is a general weakness in trade policy in developing

22 China has much more flexible employment practices than the other BRIICS, though its *hukou* system limits the freedom of workers to move from the countryside to the cities. And China has a long, long way to go with public-sector reforms.

countries generally. And one should add that trade-policy transparency is not vastly better in most developed countries.

What is lacking is what Patrick Messerlin calls a "culture of evaluation" (Messerlin, 2006). Independent think tanks and even government bodies should do much more detailed research and analysis on the costs and benefits of trade policies in different sectors of the economy, and then disseminate findings to the public. This would facilitate more informed, intelligent public discussion of policy choices.

One model to examine is that of the Australian Productivity Commission (formerly called the Tariff Board, and then the Industries Assistance Commission). This is a governmental body, but it is independent and has statutory powers. It provides research and analysis on trade-related issues in Australia; and its conclusions do make their way into the public debate. The Tariff Board's ground-breaking work did much to reveal the costs of protection to the Australian public back in the 1970s, at a time when Australia was a highly-protected economy. This generated much public discussion at the time, and in many ways prepared the ground for the radical opening of the Australian economy in the 1980s (Bowen, 2007). Such "transparency boards" could be set up at relatively low cost in developing countries. The BRIICS should be first in line.

Finally, the WTO's Trade Policy Review Mechanism, while welcome, is stuck within the rarefied bureaucratic confines of far-away Geneva. It has limited effect in terms of *domestic* transparency – which is what matters. Hence it is no substitute for national transparency boards.

Taken together, these reform priorities are as much about *simplicity* and *transparency* as they are about *liberalisation*. The case for transparency has been made above. Simplicity is all about making complex bureaucratic procedures shorter, more predictable, and also more transparent. This would lessen the costs of doing business – for domestic *and* foreign traders and investors. Hence the importance of linking trade policy to nitty-gritty domestic reforms.

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Tables and Figures

Table 4.1. Economic and Trade Indicators 2006

	GDP Current (US$ bn)	GDP Growth (%)	Population (mn)	PPP Per Capita GDP (US$)	PPP GDP (US$ bn)	Merchandise Exports (US$ bn)	Service Exports (US$ bn)	Total Merchandise Trade (US$ bn)	Total Service Trade (US$ bn)	Trade/ GDP (%)	FDI Inflow (US$ bn)	FDI Inflow / GDP (%)
World	48,244.9	4.0	6,517.8	10,252.4	66,823.0	12,063.5	2,768.3	24,341.9	5,406.4	52,1[a]	1,305.9	2.1
EU[b]	12,957.8	3,0[c]	461.1	28,101.9	12,386.4	1,481.7	555.4	3,179.5	1,027.1	21,9[d]	531.0	4.1
US	13,201.8	3.3	299.0	44,155.0	13,201.8	1,038.3	388.8	2,957.7	696.6	25.9	175.4	1.3
Brazil	1,068.0	3.7	188.7	9,054.0	1,708.4	137.5	17.9	233.4	44.8	26.4	18.8	1.8
Russia	986.9	6.7	142.4	11,974.3	1,704.8	304.5	30.1	468.4	74.4	55.8	28.7	2.9
India	906.3	9.2	1,109.8	3,827.1	4,247.4	120.3	73.8	295.1	137.5	41.8	16.9	1.9
Indonesia	364.5	5.5	223.0	4,130.4	921.2	103.5	5.1	183.8	22.3	60.4	5.6	1.5
China	2,668.1	10.7	1,311.8	7,659.7	10,048.0	968.9	91.4	1,760.4	191.7	69.0	69.5	2.6
South Africa	255.0	5.0	47.4	11,960.2	566.8	58.4	11.7	135.7	25.7	57.5	-0.3	-0.1
TOTAL BRIICS	6,248.7	-	3,023.1	48,605.7	19,196.6	1,693.1	230.1	3,076.8	496.4	-	139.1	-

a. Number for 2004.

b. Numbers for GDP and PPP GDP presumably given for 2005 at WTO as differs compared to 2004 numbers - WDI doesn't have data on EU as one entity.

c. Data from Eurostat as World Bank does not show data for EU 25. For comparison: Eurostat gives 2.9 GDP Growth Rate in US for 2005 (http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1996,39140985&_dad=portal&_schema=PORTAL&screen=detailref&language=en&product=STRIND_ECOBAC&root=STRIND_ECOBAC/ecobac/eb012).

d. Number for 2005.

Source: World Bank WDI, WTO Statistical Database, UNCTAD WIR 2007.

Table 4.2a. Bound and Applied MFN Tariffs (World Bank 2005)

	Binding Coverage (All Goods)	Simple Mean Bound Rate (All Goods)	Simple Mean Tariff (Manufactures)	Simple Mean Tariff (Agriculture)	Simple Mean Tariff (All Products)	Weighted Mean Tariff (All Products)	Share of Lines with Int. Peaks (All Products)	Share of Lines with Spec. Rates (All Products)
EU	100.0	4.2	1.7	7.9	2.7	2.0	6.7	9.0
US	100.0	3.6	3.3	2.8	3.2	1.6	6.1	5.9
Japan	99.7	3.0	2.3	8.4	3.3	2.5	8.1	2.7
Brazil	100.0	31.4	12.6	7.9	12.3	7.1	27.7	0.0
Russia	0.0	-	11.5	10.7	11.4	9.6	17.9	16.0
India	73.8	49.6	15.9	24.4	17.0	14.5	15.5	3.5
Indonesia	96.6	37.1	6.4	7.2	6.5	6.0	8.7	0.0
China	100.0	10.0	9.2	8.8	9.2	4.9	19.1	0.0
South Africa	96.3	19.4	8.8	5.4	8.5	5.4	21.3	1.0
Low and Middle Income Countries	76.2	34.8	9.4	9.0	12.3	6.1	17.8	0.9
High Income Non-OECD	67.3	21.3	3.7	6.3	4.1	1.2	5.0	0.8
High Income OECD	98.6	7.4	3.0	3.7	3.1	2.0	3.7	0.0

Note for all countries except Russia: Rates are either partially or fully recorded applied rates. All other simple and weighted tariff rates are MFN rates.
Source: http://siteresources.worldbank.org/INTRES/Resources/469232-1107449512766/WDI_table6_7_tariff_barriers.xls.

Table 4.2b. Bound and Applied MFN Tariffs (WTO - Country Profile Reports 2006)

	Binding Coverage (All Goods)	Simple Mean Bound Rate (All Goods)	Simple Mean Tariff (Manufactures)	Simple Mean Tariff (Agriculture)	Simple Mean Tariff (All Products)	Weighted Mean Tariff (All Products)	Share of Lines with Int. Peaks (All Products)	Share of Lines with Spec. Rates (All Products)
EU	100.0	4.2	1.7	7.9	2.7	2.0	6.7	9.0
US	100.0	3.6	3.3	2.8	3.2	1.6	6.1	5.9
Japan	99.7	3.0	2.3	8.4	3.3	2.5	8.1	2.7
Brazil	100.0	31.4	12.6	7.9	12.3	7.1	27.7	0.0
Russia	0.0	-	11.5	10.7	11.4	9.6	17.9	16.0
India	73.8	49.6	15.9	24.4	17.0	14.5	15.5	3.5
Indonesia	96.6	37.1	6.4	7.2	6.5	6.0	8.7	0.0
China	100.0	10.0	9.2	8.8	9.2	4.9	19.1	0.0
South Africa	96.3	19.4	8.8	5.4	8.5	5.4	21.3	1.0
Low and Middle Income Countries	76.2	34.8	9.4	9.0	12.3	6.1	17.8	0.9
High Income Non-OECD	67.3	21.3	3.7	6.3	4.1	1.2	5.0	0.8
High Income OECD	98.6	7.4	3.0	3.7	3.1	2.0	3.7	0.0

a. Simple Average of *ad-valorem* duties.

b. 2005.

c. SAIIA.

Source: WTO Tariff Profiles.

Table 4.3. Average Applied Tariffs for BRIICS (unweighted in %)

	1985	1990	1995	2000	2005
EU	-	8.7	4.3	2.2	2.5
US	-	6.3	4.3	3.6	3.0
Brazil	51.0	32.2	13.2	16.6	12.2
Russia	-	7,3[a]	11,2[b]	11.1	10.0
India	100.0	81.8	41.0	32.7	16.0
Indonesia	27.0	20.6	14.0	7.8	6.5
China	38,1[c]	40.3	22.4	16.2	9.0
South Africa	29,0[d]	11.0	15,0[b]	6.9	7.8

a. 1993.

b. 1996.

c. 1986.

d. 1984.

Note: All tariffs rates are based on unweighted averages for all goods in ad valorem rates, or applied rates, or MFN rates whichever data is available in a longer period.

Source: World Bank http://siteresources.worldbank.org/INTRES/Resources/tar2005.xls

Table 4.4. Decline in Effective Rates of Protection for Manufacturing in BRIICS

	Year	ERP	Source
Brazil	1987	86	Ferreira and Rossi (2003)
	1990	55	Ferreira and Rossi (2003)
	1997	18	Ferreira and Rossi (2003)
India	1986-90	107	Sen (2008)
	1996-00	42	Sen (2008)
Indonesia	1975	74	World Bank (1993)
	1987	70	Fane and Condon (1996)
	1990	59	World Bank (1993)
	1995	25	Fane and Condon (1996)
South Africa	1993	48	Edwards (2005)
	2000	15	Edwards (2005)
	2004	12.7	Edwards (2005)

Sources:

Sen, Kunal (2008), 'Trade, FDI and Industrial Transformation in India', paper presented at the research workshop, 'Emerging Trends and Patterns of Trade and Investment in Asia', Ninth Global Network Conference, Brisbane, Australia, 1-2 February.

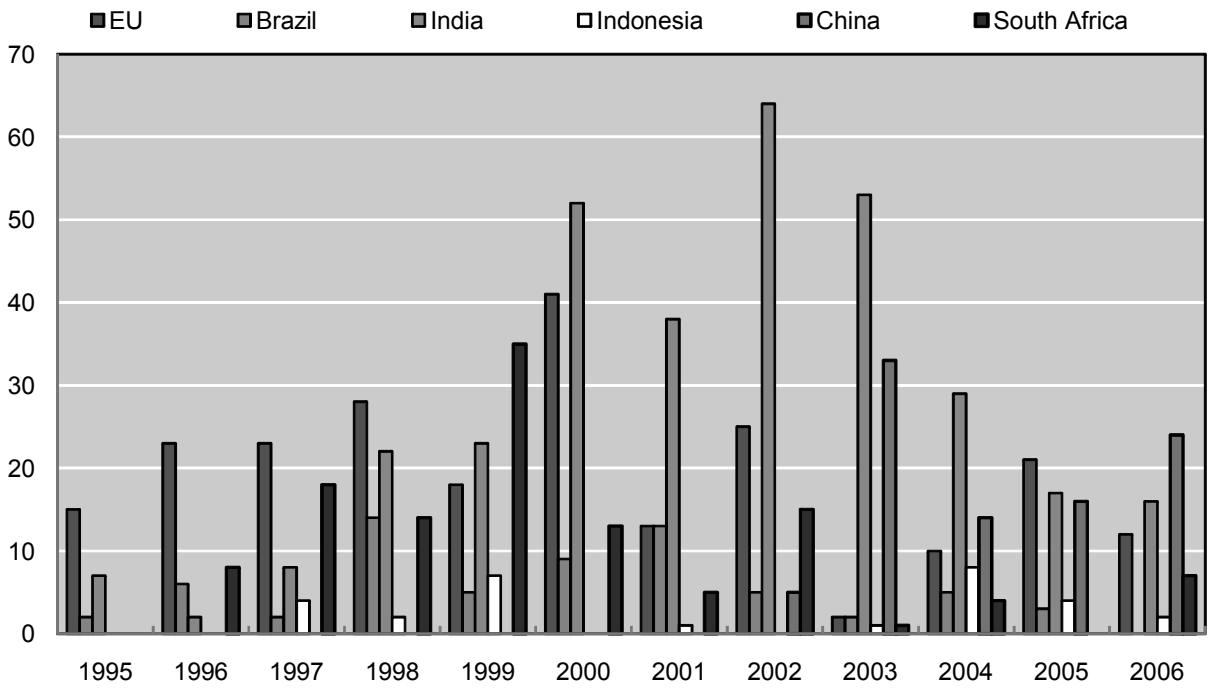
World Bank (1993), The East Asian Miracle: Economic Growth and Public Policy, New York: Oxford University Press.

Ferreira, Pedro Cavalcanti and Jose Luiz Rossi (2003), "New Evidence from Brazil on Trade Liberalisation and Productivity Growth", International Economic Review 44 (4) 1383-1405.

Fane, G. and T. Condon (1996), 'Trade Reforms in Indonesia:, 1987-1995', Bulletin of Indonesian Economic Studies, 27(1), 105-125.

Edwards, Lawrence (2005) 'Has South-Africa Liberalised its Trade?' South African Journal of Economics Vol. 73:4 December 2005, pp. 768.

Figure 4.1. Use of AD Measures by BRIICS - except Russia (1995-2006)



Note: Anti-dumping measures: by reporting Member.

Source: WTO, http://www.wto.org/english/tratop_e/adp_e/adp_stattab7_e.xls

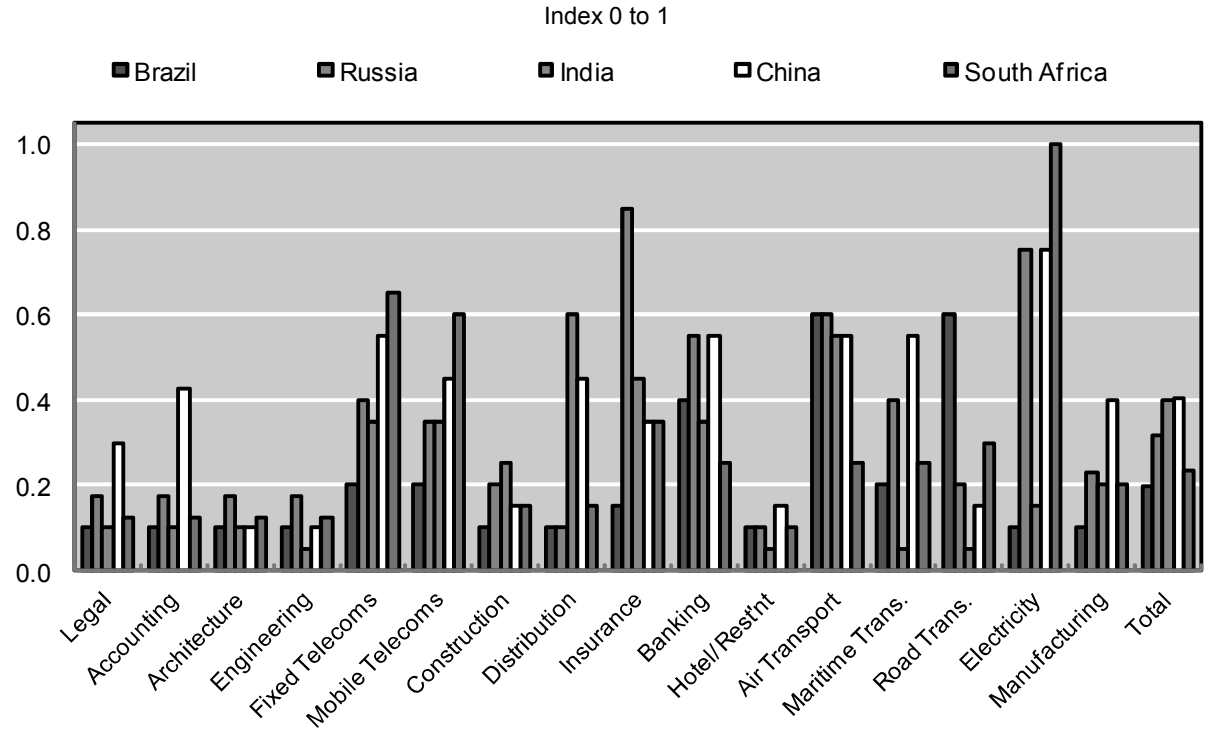
Table 4.5. Coverage Ratio of Non-tariff Barriers in Import Trade (Unweighted/ Simple Averages in %)

	1984-87	1988-90	1991-93	1997-2000	2001
Brazil	35.3	3.2	1.5	-	3.8
Russia	-	-	-	-	0.9
India	80.7	65.4	62.6	-	34.7
Indonesia	94.7	9.4	2.7	3.1	1.8
China	10.6	23.2	11.3	5.7	7.6
South Africa	-	-	-	-	1.1

Note: Calculated as percentage of import value of HS6 tariff lines affected by NTBs in total imports. NTBs include quantitative restrictions in the form of all types of licenses and import authorisation, quotas, import prohibitions, advanced import deposits, foreign exchange restrictions, fixed customs valuations, and state trading monopolies. Figures reported under a given sub-period relate a single year within that sub-period.

Source: Hoekman, Mattoo and Engels (2002) Development, Trade and the WTO: A Handbook, World Bank (Table A-4 Appendix) and WTO, Trade Policy Review – Country Report (various). Figures for 2001 come from World Bank: siteresources.worldbank.org/INTRES/Resources/469232-1107449512766/ntb2001.xls.

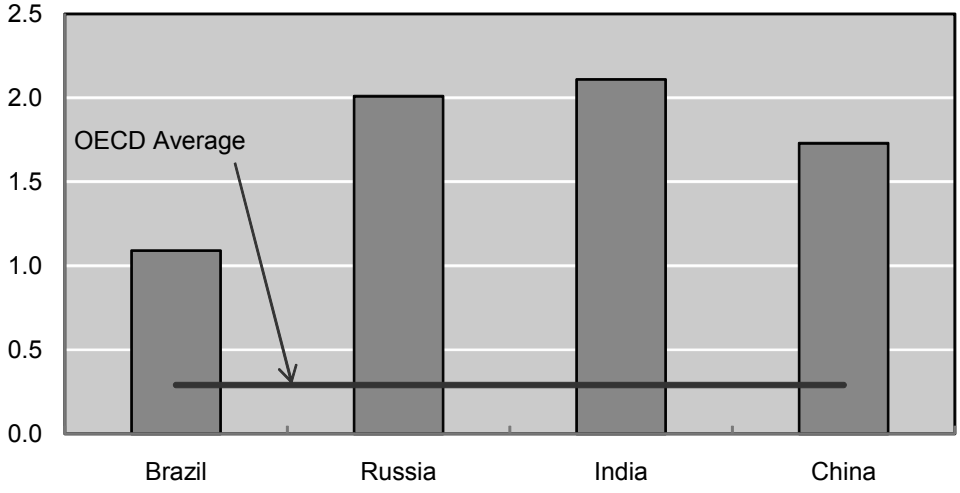
Figure 4.2. OECD FDI Regulatory Restrictiveness Scores for BRIICS - excl. Indonesia



Source: Koyama and Golub (2006) OECD'S FDI Regulatory Restrictiveness Index: Revision and Extension to more Economies, Economic Department Working Papers No. 525, pp. 8-10.

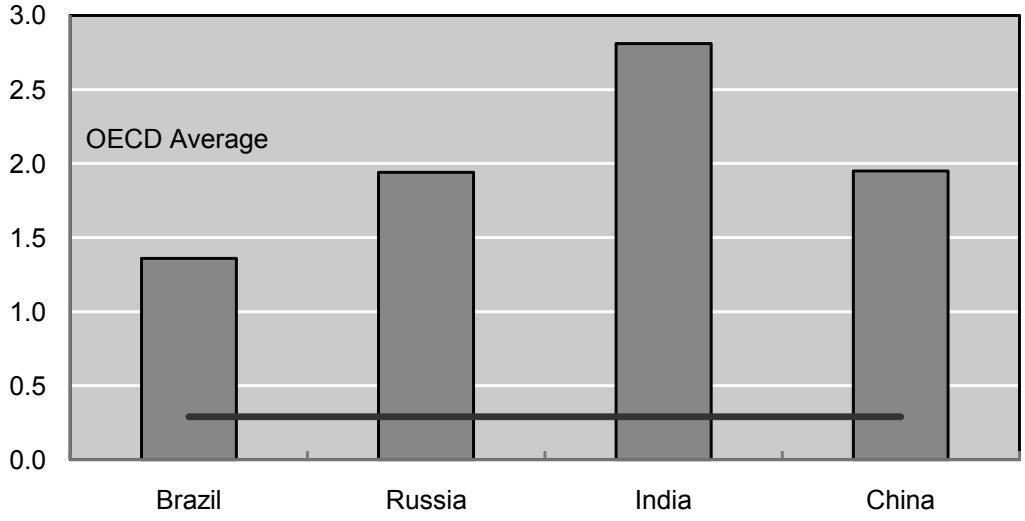
Figure 4.3. OECD Trade Restrictiveness Index for BRIICS in Banking, Insurance, Fixed Telecom, Mobile Telecom and Distribution

Figure 4.3a. OECD Trade Restrictiveness Index for BRIICS in Banking



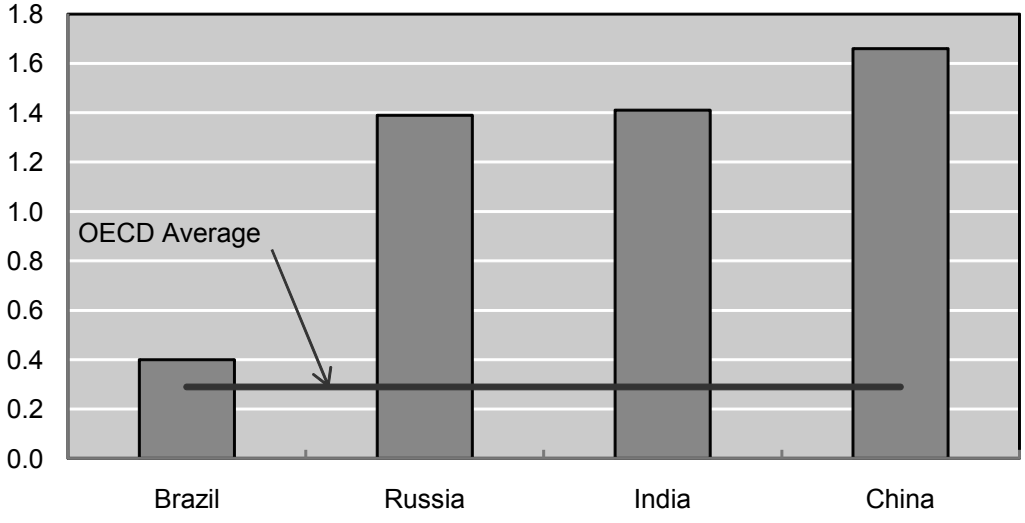
Source: OECD (2007), Modal Estimates of Services Barriers, OECD Trade Policy Working Paper No. 51, pp. 23-27.

Figure 4.3b. OECD Trade Restrictiveness Index for BRIICS in Insurance



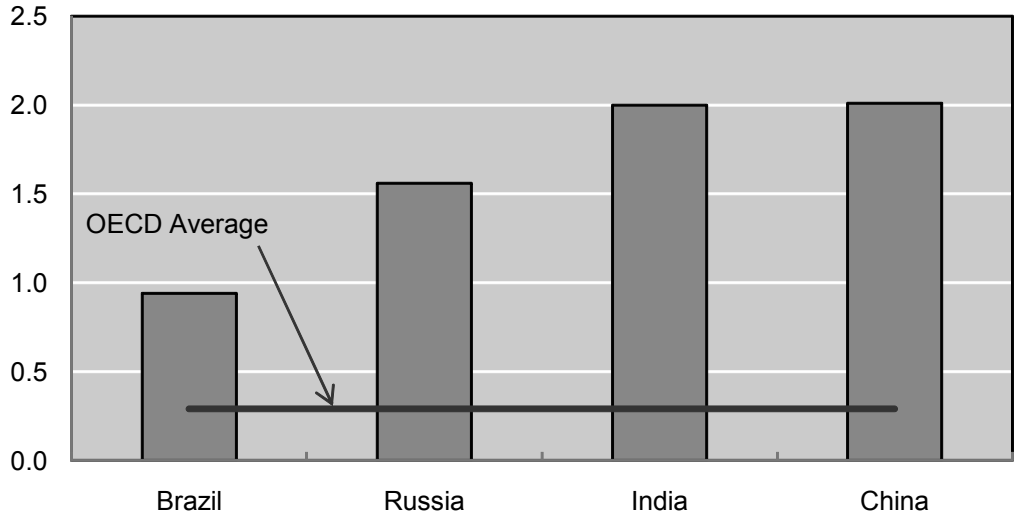
Source: OECD (2007), Modal Estimates of Services Barriers, OECD Trade Policy Working Paper No. 51, pp. 23-27.

Figure 4.3c. OECD Trade Restrictiveness Index for BRIICS in Fixed Telecom



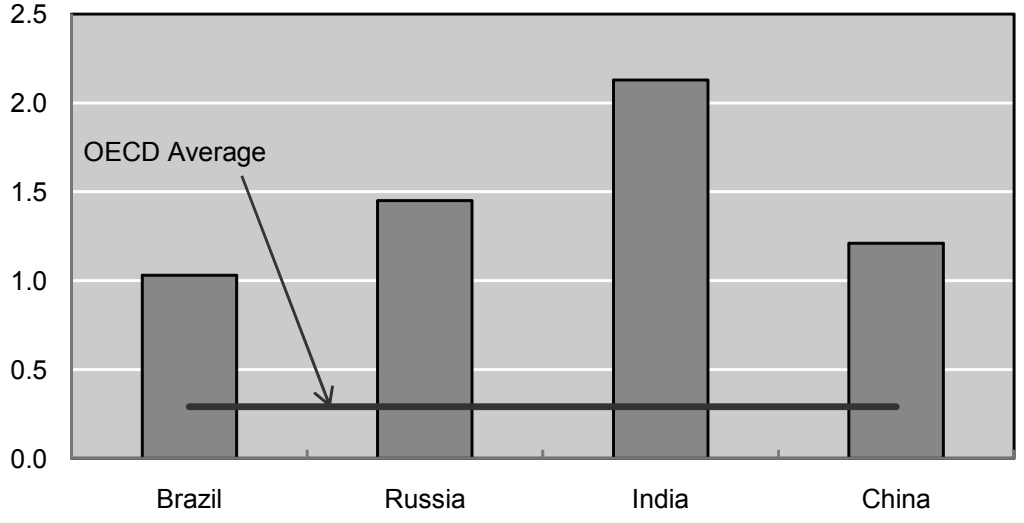
Source: OECD (2007), Modal Estimates of Services Barriers, OECD Trade Policy Working Paper No. 51, pp. 23-27.

Figure 4.3d. OECD Trade Restrictiveness Index for BRIICS in Mobile Telecom



Source: OECD (2007), Modal Estimates of Services Barriers, OECD Trade Policy Working Paper No. 51, pp. 23-27.

Figure 4.3e. OECD Trade Restrictiveness Index for BRIICS in Distribution



Source: OECD (2007), Modal Estimates of Services Barriers, OECD Trade Policy Working Paper No. 51, pp. 23-27.

Table 4.6. List of Recently Established or Proposed RTAs/ CEPAs/ FTAs for BRIICS

Table 4.6a. Recently Established or Proposed RTAs/CEPAs by Brazil (2000-2007)

Trading Partners	Nature of Agreement	Status of Agreement 2007
Mercosur	RTA	Agreement (weakly) in force
ANDEAN	FTA	Signed by Mercosur
Chile	FTA	Signed by Mercosur
Bolivia	FTA	Signed by Mercosur
Peru	FTA	Signed by Mercosur
Egypt	FTA	Framework Agreement signed by Mercosur
South Africa	FTA	Framework Agreement signed by Mercosur
India	FTA	Framework Agreement signed by Mercosur
Mexico	FTA	Framework Agreement under negotiation by Merosur
EU	FTA	Under negotiation by Merosur
Caricom	*FTA*	Under discussion
ALADI	RTA	Agreement in force
FTAA	RTA	Faltered
Japan	FTA	Under study

Source: Chaire MERCOSUR Science Po Paris, WTO TPR Brazil (2004) and bilaterals.org.

Table 4.6b. Recently Established or Proposed RTAs/CEPAs by Russia (2000-2007)

Trading Partners	Nature of Agreement	Status of Agreement 2007
US	WTO Bil. Market Acces Agr.	Under negotation
South-Korea	FTA	Pilot talks
India	CEPA	Proposed
Pakistan	IA	Agreement signed
Uruguay	FTA	Under negotation

Source: bilaterals.org.

Table 4.6c. Recently Established or Proposed RTAs/CEPAs by India (2000-2007)

Trading Partners	Nature of Agreement	Status of Agreement 2007
Singapore	FTA	Agreement in force
Sri Lanka	FTA	Agreement in force
APTA	FTA	Agreement in force
Bhutan	FTA	Agreement in force
Nepal	FTA	Signed
SAFTA	FTA	Signed
Trinidad & Tobago	BIPA	Signed
CEFTA	FTA	Agreement signed
Thailand	EPA/ FTA	Framework Agreement signed
ASEAN	FTA	Framework Agreement signed
BIMSTEC	FTA	Framework Agreement signed
SACU	FTA	Framework Agreement signed
COMESA	FTA	Framework Agreement signed
MERCOSUR	FTA	Framework Agreement signed
GCC	FTA	Framework Agreement signed
Afghanistan	PTA	PTA signed
Chile	PTA	PTA signed
Russia	CEPA	Proposed
USA	FTA	Proposed
China	BIPA & FTA	Proposed
India	PTA	Under negotiation
Korea	FTA & CEPA	Under negotiation
Mauritius	CEPA	Under negotiation
Japan	EPA/ FTA	Under negotiation
Indonesia	EPA/ FTA	Under negotiation
Australia	EPA/ FTA	Under negotiation
Egypt	PTA	Under negotiation
EU	FTA	Negotiation planned
EFTA	FTA	Under study
Malaysia	FTA	Under study

Source: Razeen Sally, (2007) *EU-Asia FTAS*, Slide 22 and WTO TPR India (2007).

Table 4.6d. Recently Established or Proposed RTAs/CEPAs by Indonesia (2000-2007)

Trading Partners	Nature of Agreement	Status of Agreement 2007
ASEAN	FTA	Agreement in force
CER	FTA	Framework Agreement signed with ASEAN
China	EPA/ FTA	Framework Agreement signed with ASEAN
Japan	EPA/ FTA	Under negotiation with ASEAN
Korea	FTA	Under negotiation with ASEAN
Inda	FTA	Under negotiation with ASEAN
USA	TIFA	Under negotiation with ASEAN
EU	FTA	Under negotiation with ASEAN
Japan	EPA/ FTA	EHP
USA	FTA	Proposed
Pakistan	FTA	Under study
India	FTA	Under study
Japan	EPA/ FTA	Under discussion
Australia	FTA	Proposed
New Zealand	FTA	Proposed

Source: Razeen Sally, (2007) EU-Asia FTAS, Slide 32, WTO TPR Indonesia (2007) and bilaterals.org.

Table 4.6e. Recently Established or Proposed RTAs/CEPAs by China (2000-2007)

Trading Partners	Nature of Agreement	Status of Agreement 2007
Pakistan	FTA	Agreement signed
ASEAN	EPA/ FTA	Framework Agreement signed
Singapore	FTA	Under negotiation
Thailand	PTA	Agreement in force
India	BIPA & FTA	Proposed
Australia	FTA	Under negotiation
New Zealand	FTA	Under negotiation
Macao	EPA/ FTA	Agreement in force
Hong Hong	EPA/ FTA	Agreement in force
Chile	FTA	Agreement in force
SACU	FTA	Proposed
GCC	FTA	Under negotiation
Iceland	FTA	Proposed
Korea	FTA	Under study
Japan	FTA	Proposed
Peru	FTA	Proposed
Norway	FTA	Proposed

Source: Razeen Sally, (2007) *EU-Asia FTAS*, Slide 9 and WTO TPR China (2006).

Table 4.6f. Recently Established or Proposed RTAs/CEPAs by South Africa (2000-2007)

Trading Partners	Nature of Agreement	Status of Agreement 2007
SACU	RTA	Agreement in force
European Union	EPA/ FTA	Agreement in force with SACU
India	FTA	Under Negotiations with SACU
Mercosur	FTA	Framework Agreement Signed
SADC	PTA	Agreement signed
Nigeria	FTA	Proposed
Zimbabwe	FTA	Agreement in foce (1990)
Malawi	PTA	Agreement in force (1968)

Source: SAIIA and WTO TPR SACU (2003).

Table 4.7. World Ranking in Ease of Doing Business (2007)

	Ease of Doing Business	Starting a Business	Dealing with Licenses	Employing Workers	Registering Property	Getting Credit	Protecting Investors	Paying Taxes	Trading Across Borders	Enforcing Contracts	Closing a Business
US	3	4	24	1	10	7	5	76	15	8	18
Singapore	1	9	5	1	13	7	2	2	1	4	2
Hong Kong	4	13	60	23	58	2	3	3	3	1	15
Japan	12	44	32	17	48	13	12	105	18	21	1
Brazil	113	120	95	116	109	80	62	139	70	112	136
Russia	112	45	172	102	44	156	81	126	155	19	81
India	120	111	134	85	112	36	33	165	79	177	137
Indonesia	123	168	99	153	121	68	51	110	41	141	136
China	83	135	175	86	29	84	83	168	42	20	57
South Africa	35	53	45	91	76	26	9	61	134	85	68

Note: The numbers correspond to each country's aggregate ranking on the ease of doing business and on each of the ten topics that comprise the overall ranking.

Source: The World Bank Doing Business Database: http://www.doingbusiness.org.

Table 4.8. Indicators for Trading Across Borders (2007)

	Ease of Trading Across Borders (World Ranking)	Documents for export (number)	Time for export (days)	Cost to export (USD per container)	Documents for import (number)	Time for import (days)	Cost to import (USD per container)
OECD	-	4.5	9.8	905	5	10.4	986
US	15	4	6	960	5	5	1.16
Singapore	1	4	5	416	4	3	367
Hong Kong	3	4	6	525	4	5	525
Japan	18	4	10	989	5	11	1.047
Brazil	70	8	18	1090	7	22	1240
Russia	155	8	36	2050	13	36	2050
India	79	8	18	820	9	21	910
Indonesia	41	5	21	667	6	27	623
China	42	7	21	390	6	24	430
South Africa	134	8	30	1.087	9	35	1.195

Note: The costs and procedures involved in importing and exporting a standardised shipment of goods are detailed under this topic. Every official procedure involved is recorded – starting from the final contractual agreement between the two parties, and ending with the delivery of the goods.

Source: The World Bank Doing Business Database: http://www.doingbusiness.org.

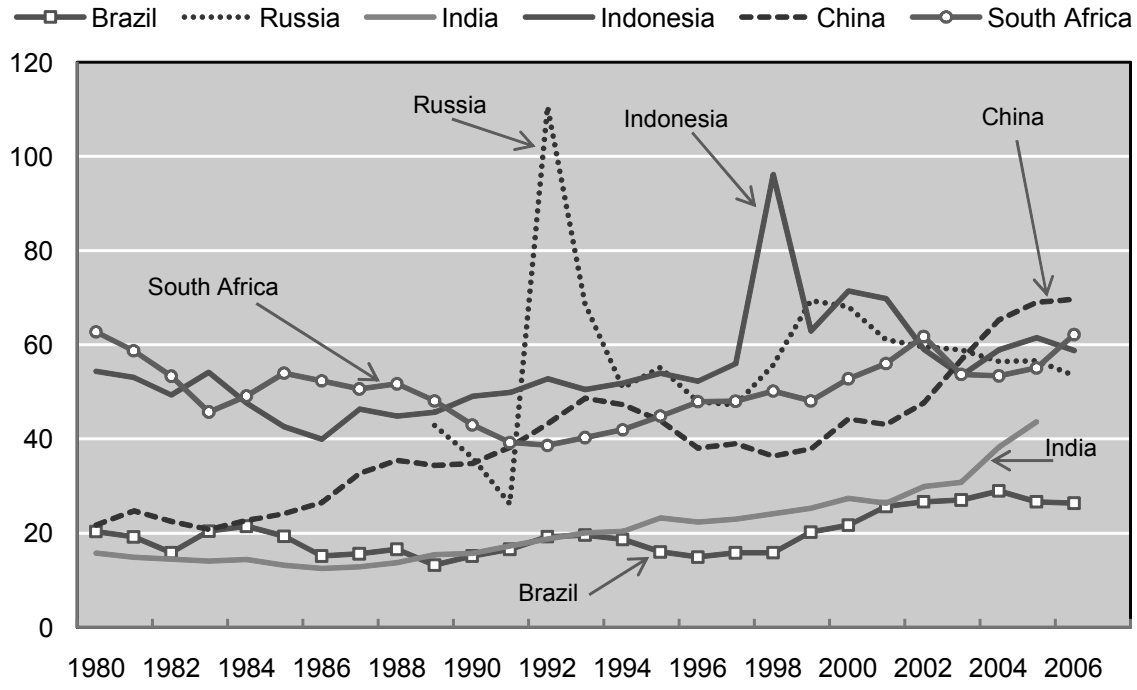
Table 4.9. Percentile world rank of governance indicators for year 2006(Governance Matters 2007 – World Wide Governance Indicators 1996-2006)

	Voice and Accountability	Political Stability/ No Violence	Government Effectiveness	Regulatory Quality	Rule of Law	Control of Corruption
OECD	90.6	76.4	90.0	89.6	90.0	90.2
US	83.7	57.7	92.9	93.7	91.9	89.3
Singapore	46.6	94.7	99.5	99.5	95.2	98.1
Hong Kong	64.9	88.9	93.8	100.0	90.5	92.7
Japan	75.5	85.1	88.2	87.3	90.0	90.3
Brazil	58.7	43.3	52.1	54.1	41.4	47.1
Russia	24.0	23.6	37.9	33.7	19.0	24.3
India	58.2	22.1	54.0	48.3	57.1	52.9
Indonesia	41.3	14.9	40.8	43.4	23.3	23.3
China	4.8	33.2	55.5	46.3	45.2	37.9
South Africa	67.3	44.2	76.8	70.2	58.6	70.9

Note: Percentile rank indicates the percentage of countries worldwide that rate below the country (subject to margin of error). Higher values indicate better governance ratings. Percentile ranks have been adjusted to account for changes over time in the set of countries covered by the governance indicators.

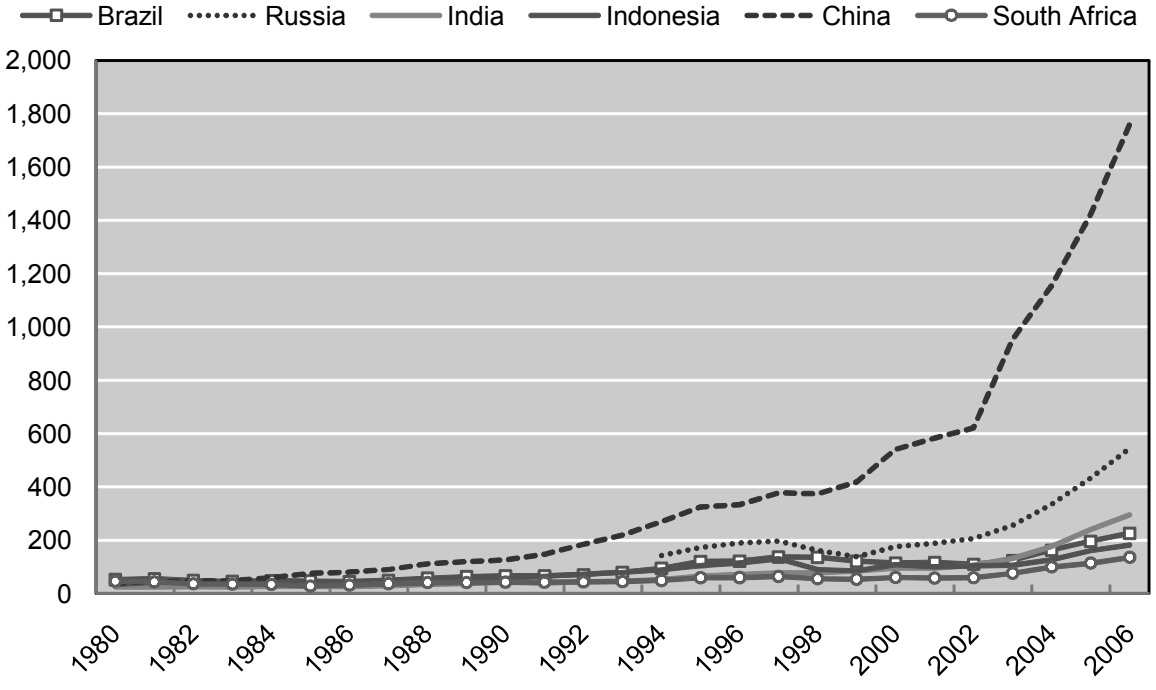
Source: World Governance Indicators: http://www.govindicators.org.

Figure 4.4. Trade of goods and services as a percentage of GDP, 1980-2006



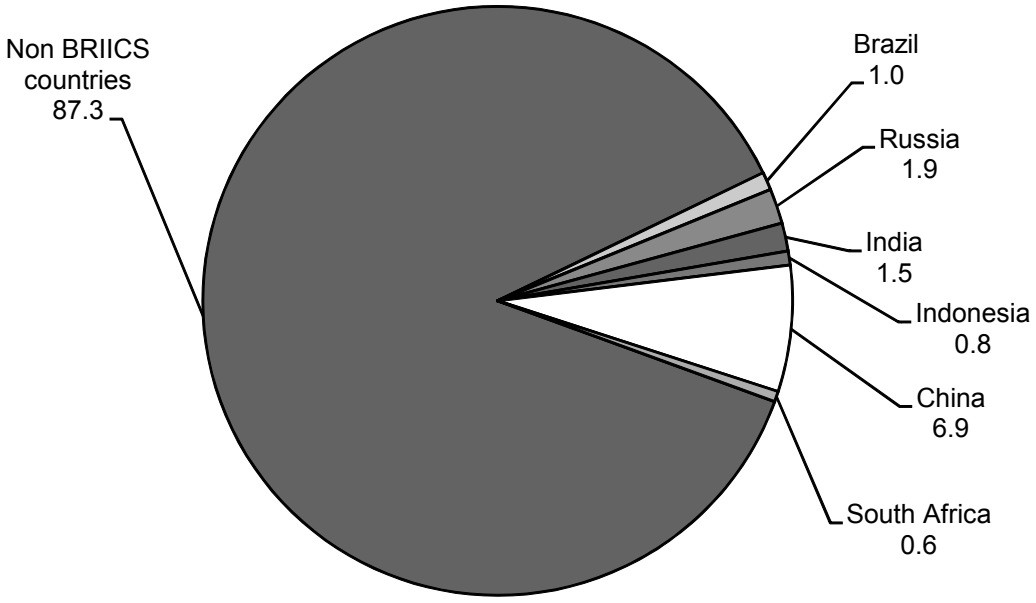
Source: World Bank World Development Indicators (WDI).

Figure 4.5. Total Trade (Goods and Services) in USD bln for BRIICS (1980-2006)



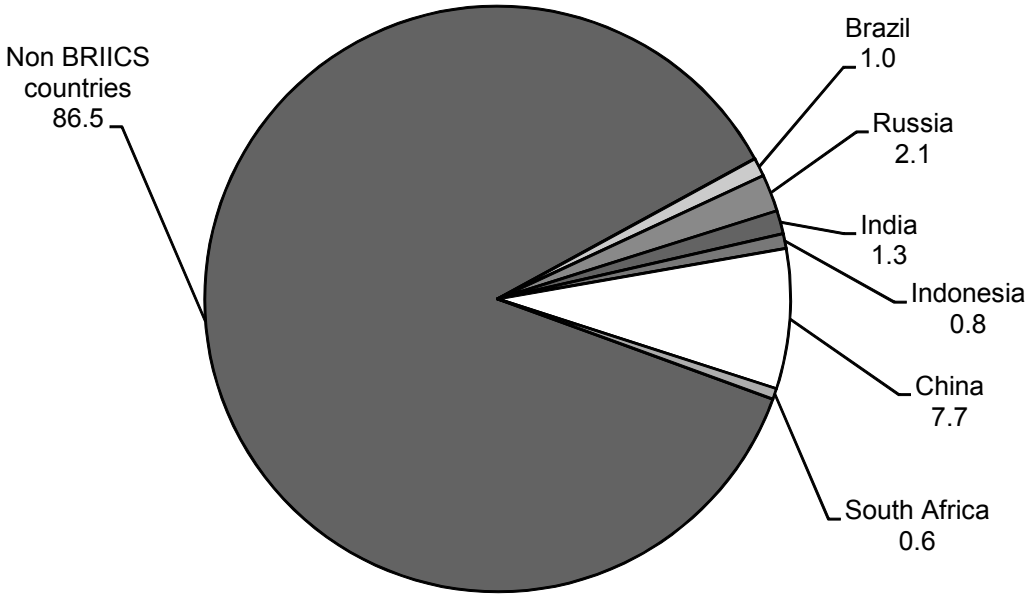
Source: World Bank World Development Indicators (WDI).

Figure 4.6. BRIICS Share in Global Trade in Goods and Services (2006)



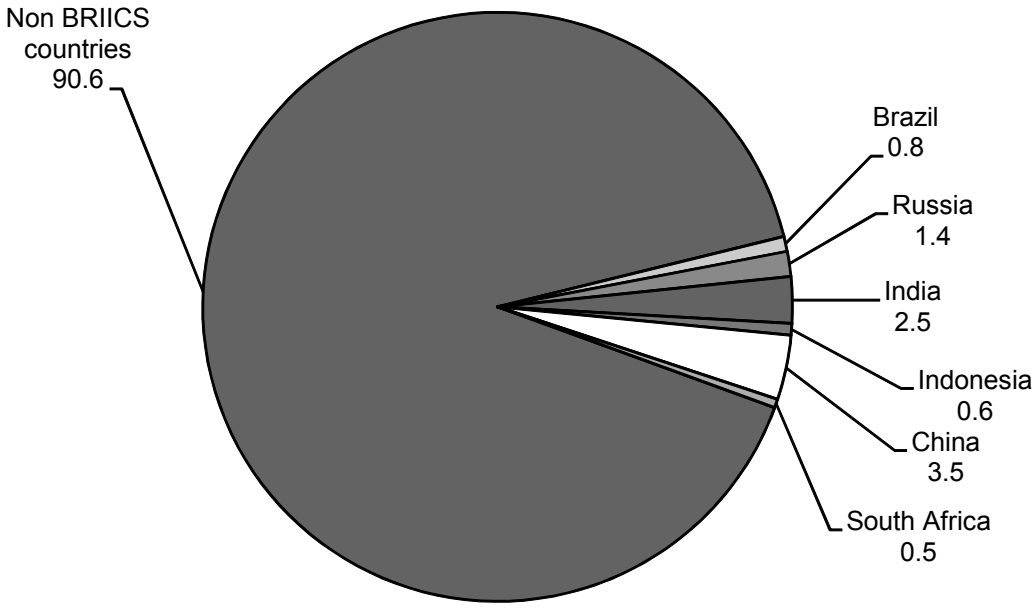
Note: Data including intra EU25 trade.
Source: WTO Statistics.

Figure 4.7. BRIICS Share in Global Trade in Goods (2006)



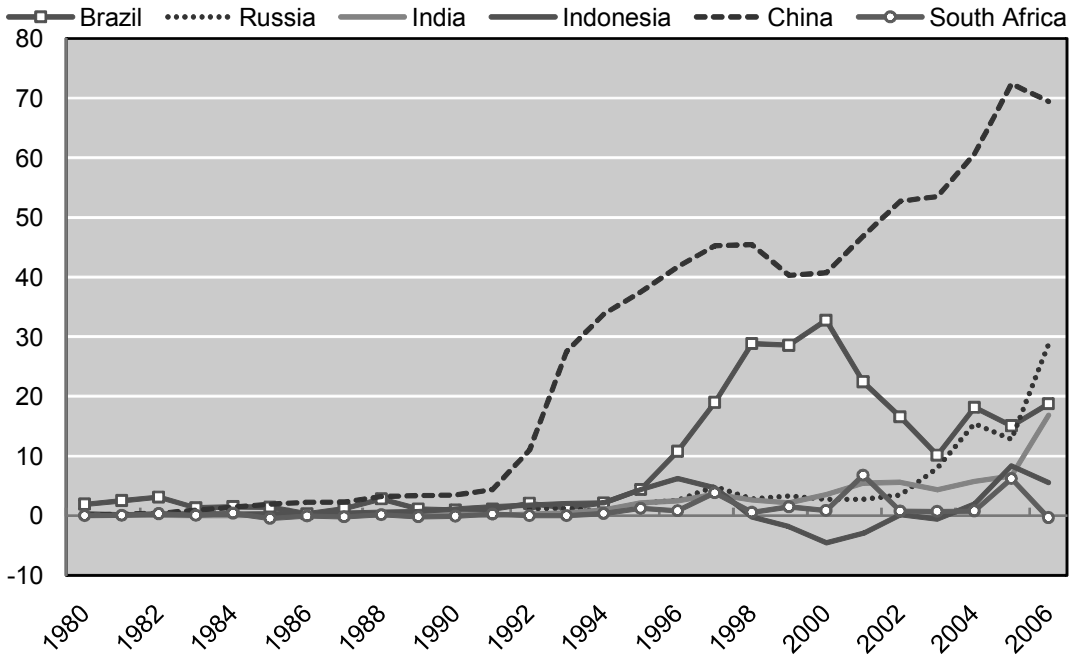
Note: Data including intra EU25 trade.
Source: WTO Statistics.

Figure 4.8. BRIICS Share in Global Trade in Services (2006)



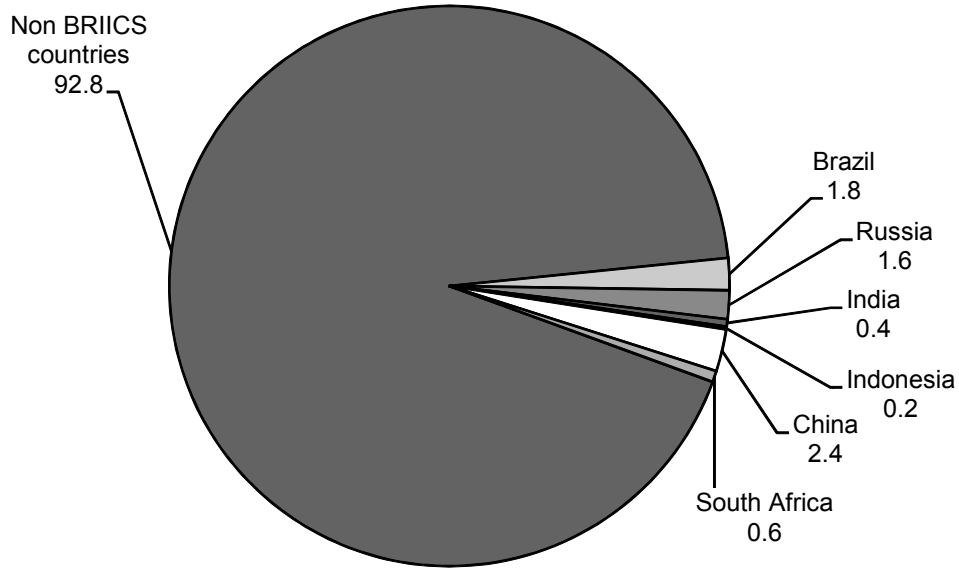
Note: Data including intra EU25 trade.
Source: WTO Statistics.

Figure 4.9. Inward FDI flows for BRIICS in USD bln (1980-2006)



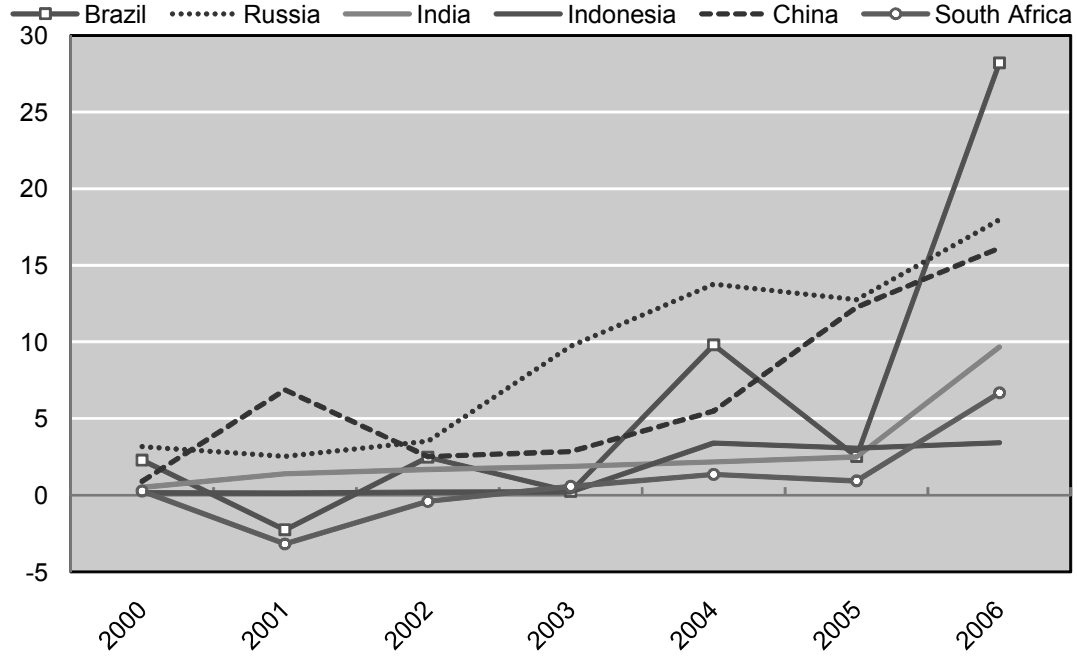
Source: UNCTAD World Investment Report (WIR):
http://www.unctad.org/Templates/Page.asp?intItemID=3277&lang=1.

Figure 4.10. Share of Global Inward FDI Stock for BRIICS (2006)



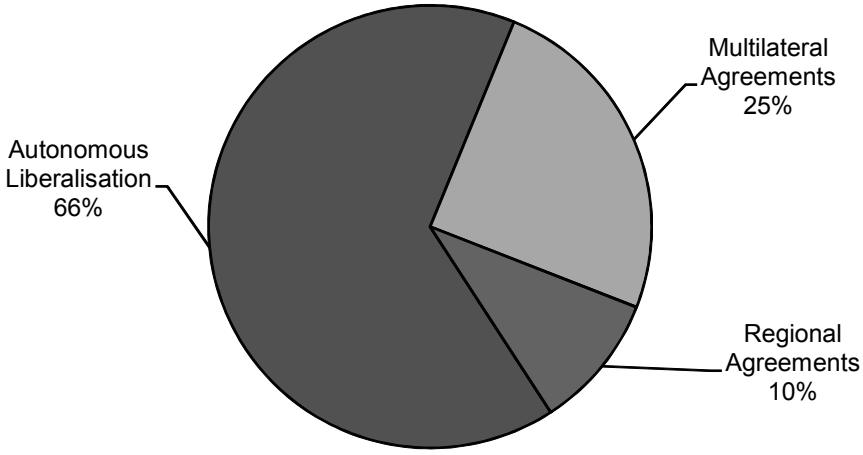
Source: UNCTAD World Investment Report (WIR):
http://www.unctad.org/Templates/Page.asp?intItemID=3277&lang=1.

Figure 4.11. Outward FDI flows to BRIICS in USD bln (2000-2006)



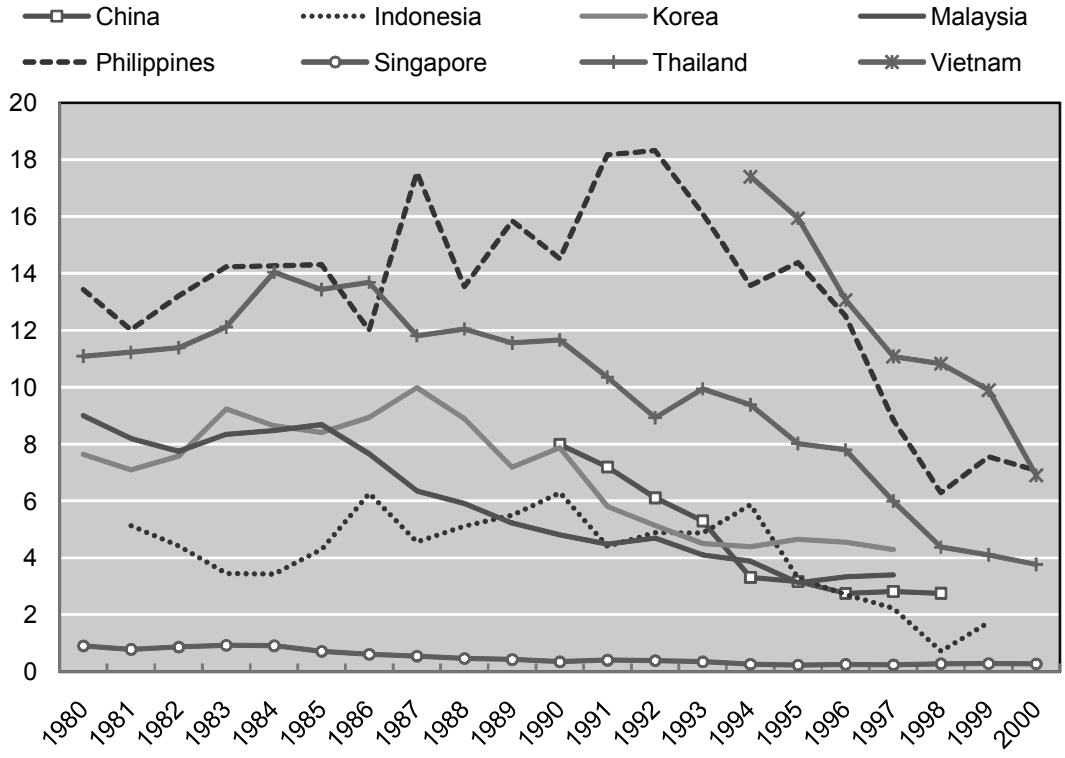
Source: UNCTAD World Investment Report (WIR):
http://www.unctad.org/Templates/Page.asp?intItemID=3277&lang=1

Figure 4.12. Share of total tariff reduction, by type of liberalisation (1983–2003)



Source: World Bank: http://siteresources.worldbank.org/INTGEP2005/Resources/GEP107053_Ch02.pdf.

Figure 4.13. Tariffs in East Asia, import-weighted (1980-2001)



Source: Ando and Kimura (2005)*, which was drawn from Ando and Estevadeordal (2003). (Original data source: World Bank Indicators 2002 (CD-ROM)) and also used by Baldwin (2006).

*Ando, M. and Kimura, F. (2005). The formation of international production and distribution networks in East Asia. In T. Ito and A. Rose (Eds.), *International trade* (NBER-East Asia seminar on economics, volume 14), Chicago: The University of Chicago Press. First version, NBER Working Paper 10167.

Chapter 5

Storm in a Spaghetti Bowl: FTAs and the BRIICS

by

Kozo Kiyota, Margit Molnar and Robert M. Stern

I. Introduction

The six BRIICS countries (Brazil, Russia, India, Indonesia, China and South Africa) are strongly integrated in global trade as well as having generally dynamic economic performance. This integration has partly been driven by their proliferating free trade areas (FTAs) with their major trade partners and with countries in their regions.

In this study we analyse the welfare and sectoral effects of a variety of options for the formation of free trade agreements by the BRIICS economies. These options include FTAs involving OECD countries in the region of the respective BRIICS country as a base scenario, then adding to the list of FTA partners other feasible OECD countries, China, ASEAN and India. There are altogether, five computational scenarios.

The analysis here is carried out using the Michigan Model of World Production and Trade, which is a multi-country, multi-sectoral computational general equilibrium (CGE) model of the global trading system. The version of the model that we use includes 31 countries/regions plus the rest-of-world and 27 sectors in each country/region. The main data source used in the model is "The GTAP-6.0 Database" of the Purdue University Center for Global Trade Analysis Project (Dimaranan and McDougall, 2005). A detailed description of the Michigan model of World Production and Trade is included in the Annex.

In Section II we present the computational results for the BRIICS bilateral FTAs, focusing on the effects on economic welfare and the sectoral effects on output, exports, imports, employment. To provide some perspective on the FTA results, we present in Section III welfare comparisons of the BRIICS FTAs with the effects of unilateral free trade and global free trade. Conclusions and implications for further research are presented in Section IV.

II. How Large an Impact May BRIICS FTAs Bring About?

An important measure to evaluate FTAs is their impact on global welfare and on output, trade and employment in participating countries. We ran five FTA scenarios for the BRIICS countries to evaluate these impacts. Each FTA scenario differs somewhat depending on the country pairs included (for the detailed pairs, see Annex Table 5A.1). In the first scenario, it is assumed that each of the BRIICS countries signs an FTA with the major OECD trade partner in its respective region. Then, in the second scenario, FTAs between BRIICS and other OECD countries are assumed to be formed. In the third scenario the BRIICS are assumed to enter into an FTA with China, in addition to likely OECD-BRIICS bilateral agreements. In Scenario 4, FTAs are assumed to be formed involving ASEAN, and, in Scenario 5, with India. The AFTA (Asian Free Trade Area) is assumed to be an FTA in all scenarios.

The unique feature in modelling the individual scenarios is that we assume in each case that the country-pair FTAs are carried out simultaneously. That is, the effects on individual BRIICS countries take into account both the direct effects of each BRIICS FTA on the individual country/region noted as well as the cross effects of all other FTAs included in the scenario.

It is not surprising that FTAs bring about specialisation in all participating countries according to their comparative advantage. Moreover, this specialisation is stronger the more FTAs in which countries are involved. For smaller countries, this specialisation may reshape the sectoral landscapes. That is, a large shift of labour is observed in countries with a comparative advantage in labour-intensive manufacturing (sometimes also in some agriculture and services sectors), which, due to the full employment assumption, implies shifts of labour out of other sectors and reduced output in these sectors. Nevertheless, the net output and welfare effects remain positive. Let us then consider the various modelling results.

Global Welfare Effects

A primary interest in this chapter is to determine the effects of the different BRIICS countries FTAs in terms of global welfare. The welfare impacts to be noted are expressed in millions of US dollars (USD) and as a percentage of GDP for the 31 countries/regions covered in the model. As will be noted, the global welfare effects are comparatively small.

In Scenario 1, the greatest absolute increases in welfare occur for the major industrialised countries, that is, Japan, United States, and the EU/EFTA, for which bilateral FTAs are assumed to be carried out (see Annex Table 5A.2). It is interesting to note that the increase in terms of absolute values is the greatest for Japan, which takes part in three FTAs in this scenario. Japan is followed by the EU (which is assumed to take part in two FTAs). The welfare increase for the United States (assumed to have only one FTA) is less than half of that for Japan and the EU. However, these welfare increases are all relatively small as a percentage of GDP, noticeably less than 1%.

All the BRIICS except China (which records a small decrease) experience fairly small absolute and percentage increases in welfare. In this scenario, Russia's gains are the largest among the BRIICS countries at 2.1% of GDP. This reflects the importance of the EU market for Russia.

In Scenarios 2-5 the global and country/region welfare effects can be seen to increase somewhat when particular FTAs are expanded to include more bilateral partners, Annex tables 5A.3-5A.6. The welfare effect for China becomes positive in Scenarios 3-5 with the addition of more FTA partners. It is further noteworthy that most of the bilateral FTAs have positive effects on non-participating countries/regions. Thus, in general, there is not much evidence of trade diversion. The only exceptions are for China's FTAs that show small negative welfare impacts in some cases on a number of developing countries in Asia and Latin America.

In comparing the scenarios, it is clear that the involvement of more OECD countries in FTAs results in larger global welfare increases, while the increase of global welfare from more FTAs among BRIICS themselves is relatively small. In particular, China's FTAs with other BRIICS only bring about a very marginal global welfare increases. These findings may be related to the similarities in comparative advantages among BRIICS and also to the greater importance of trade barriers between OECD and BRIICS countries than between BRIICS.

Sectoral Effects

While the global effects of FTAs involving the BRIICS countries may not be very large, there may be significant sectoral shifts within countries. That is, as a result of the assumed formation of additional FTAs, BRIICS countries become increasingly specialised in sectors in which they have comparative advantage. This may draw away resources from other sectors owing to the assumption of full employment and thus result in declining output in those sectors. Nevertheless, the net impact remains positive in most cases. The results of changes in exports, imports, output, and employment by sector for the individual

BRIICS countries, Japan, EU/EFTA, and the United States for each scenario can be found in Kiyota, Molnar, and Stern (KMS) (2008).[1]

Brazil

It is assumed that Brazil signs an FTA with the United States only in the first scenario and also with the EU/EFTA in the other scenarios. The sectoral results for a Brazil-US FTA show that Brazil's exports increase across all of its sectors. These results for Brazil reflect the effects both of the Brazil-U.S. FTA together with the other FTAs included in Scenario 1 (Annex Table 5A.7). The most remarkable increase is seen in the exports of leather products and footwear, in which Brazil has strong comparative advantage. The increase in exports in absolute terms is also large in transportation equipment, food and beverages and chemicals (though not in percentage terms). The sectoral effects on Brazil's imports, output, and employment are given in KMS (2008) and are available on request. Brazil's imports of agricultural and mineral products decline while imports of capital-intensive manufactures services expand noticeably. Outputs rise moderately in all sectors except in chemicals, machinery & equipment, and services. There are employment increases in Brazil's agricultural and mineral sectors, textiles, leather products & footwear, wood & wood products and transportation equipment, and employment declines in wearing apparel, chemicals, non-metallic and metal products, machinery & equipment and services. The percentage changes in employment are comparatively small, except for the 10.3% employment increase in leather & leather products.

In Scenario 2, where Brazil signs an FTA with the US and the EU, the sectoral impacts are considerably greater than in Scenario 1 (Brazil-US FTA). The detailed results are reported in KMS (2008) and are available on request. Exports and imports increase in almost all sectors. The expansion and contraction of outputs are considerably greater across Brazil's sectors. The employment increases and declines are also much larger in absolute and percentage terms with the expanded FTA, and these changes suggest that some measures of adjustment assistance might be warranted to moderate the employment reallocation involved. As reported in KMS (2008), the results in Scenarios 3-5 – where Brazil maintains its FTA assumptions with the US and the EU but there are additional FTAs between other BRIICS and OECD countries – differ slightly from those in Scenario 2, reflecting the variations in the other BRIICS FTAs that are being taken into account.

Russia

All five scenarios include a Russia-EU FTA as it is assumed unlikely for Russia to sign an FTA with other BRIICS or other major OECD countries. Notwithstanding Russia's assumed limited participation in FTAs, its gains are large and relatively constant across all scenarios. Only China registers larger gains in terms of exports in any scenario and no country in terms of output. Large gains from an FTA with a single economic area reflect the large potential of that market for Russia and the presence of substantial existing trade barriers. The finding that gains are constant across scenarios suggests that Russia is not affected much by trade diversion related to other countries' FTAs. This is not so surprising given the relative uniqueness of Russia's comparative advantages in mining and other products.

In Scenario 1 there are small changes in Russia's exports and imports of agricultural products, significant increases in other exports, a small decline in imports of mineral products and an expansion of exports and imports of manufactures and services, Annex Table 5A.7 and KMS (2008). The large overall output gain stems mainly from gains in the mining, metal products and chemicals sectors - over 100 000

[1] The computational results presented reflect both the direct effects of the bilateral FTAs and the effects of the other FTAs assumed to be undertaken. In other words, the results reflect the direct effects of the bilateral FTAs as well as trade creation and trade version effects from other FTAs.

jobs are created in the metal products sector. Outputs fall to some extent in the agricultural sectors and leather & leather products and increase in other sectors. Employment declines broadly across most of the agricultural sectors and to some extent in manufactures and services. Employment increases noticeably in natural resources, mineral products, wearing apparel, chemicals and metal products. The sectoral results in the other scenarios remain unchanged: Russia remains the biggest gainer among the BRIICS in terms of output. The large output gains may be related to the increase in exports and the shift of employment to sectors where the per employee output is large such as in metal products, mining, and chemicals. Employment is reduced in sectors where the value of output per employee is small such as in food and beverages and leather products.

India

India is assumed to participate in FTAs with Japan only in Scenario 1, with Japan and the United States in Scenarios 2-3, with Japan, United States and ASEAN in Scenario 4 and with Japan, United States, ASEAN and China in Scenario 5. The output gains related to the FTAs are much smaller for India than for China or Russia and most of the time even for Indonesia. In terms of exports, an FTA with the ASEAN in addition to the FTAs with Japan and the United States brings about substantial gains.

The results of Scenario 1, where India signs an FTA with Japan only, indicate small increases in exports (Annex Table 5A.7). As reported in KMS (2008), there are declines in imports of agricultural and mineral products, wearing apparel and leather & leather products, and sizable increases in imports of capital-intensive manufactures. There are increases in output in some agricultural sectors, mineral products, textiles and wearing apparel, other manufactures, and some services sectors. There are employment increases especially in mineral products, food, beverages & tobacco, labour-intensive manufactures, trade & transport, and other private services. The employment changes are relatively small in percentage terms. The limited export gains from an FTA with Japan may be related to trade diversion by China and Indonesia that also are assumed to have an FTA with Japan in this scenario.

Scenario 2 involves an FTA between India-Japan and India-United States. As noted in KMS (2008), the most notable output changes are a sizable increase in output and employment in plant-based fibres and declines in all other agricultural and food sectors. The output and employment increases are concentrated in labour-intensive manufactures and other private services. There are employment declines in capital-intensive manufactures and most services. The sectoral results in Scenario 3 are more or less comparable since Scenario 3 refers to the same India FTA as Scenario 2.

Scenario 4 adds ASEAN to India's FTA with Japan and the United States. The patterns of the changes parallel those in Scenario 3, but the positive and negative effects are now much larger. Scenario S5 adds China to India's FTA with Japan, the United States, and ASEAN. The patterns of change in Scenario 5 are similar to those in Scenario 4, but the negative and positive effects now are significantly larger with the addition of China.

Indonesia

Indonesia, as a member of ASEAN, is assumed to trade freely with all other AFTA members in all scenarios. In addition, in Scenario 1, it participates in an FTA with Japan and in Scenario 2 also with the United States. In Scenario 3, China is added as an FTA partner and in Scenario 4, in addition to the partners in Scenario 3, India has an FTA with the ASEAN. The FTA partners for Indonesia do not change in Scenario 5.

Scenario 1 refers to an FTA involving Indonesia together with the other ASEAN members and Japan. With the recent establishment of an EPA (Economic Partnership Agreement) between Japan and

Indonesia, this part of Scenario 1 has now become reality. Indonesia's export increases are concentrated in food, beverages & tobacco, textiles and wearing apparel, wood & wood products, and transportation machinery (Annex Table 5A.7). As reported in KMS (2008), import increases are substantial in food, beverages & tobacco, chemicals, capital-intensive manufactures, trade & transport, and other private services. Substantial increases in both exports and imports in the food and beverages and transport equipment sectors may be related to product variety. There are sizable increases in sectoral output in natural resource products, food, beverages & tobacco, textiles & wearing apparel, wood & wood products, and machinery & equipment. Employment increases in several agricultural sectors, natural resources, textiles and wearing apparel, wood & wood products and machinery & equipment. There are employment declines in oil seeds and sugar, chemicals, transportation equipment and services.

Scenario 2 takes into account an enlargement of the Indonesian FTA to include the United States. There are now more negative output and employment impacts across the Indonesian agricultural, natural resource and mineral sectors, manufactures, and services, KMS (2008). Output and employment increases are significant in labour-intensive manufactures such as wearing apparel.[2] Scenario 3 reflects an enlargement of the Indonesian FTA to include China. In this scenario, Indonesia's rice and natural resource sectors expand, as do the labour-intensive manufactures. There are declines across the other agricultural sectors, minerals, capital-intensive manufactures and services. The results of this scenario show that China's effect on Indonesia is far from being as negative as feared by many. That is, Indonesia is not turning into a natural resource-supplier. On the contrary, even in a setting of free trade with China, Indonesia is able to expand its wearing apparel, textiles and leather exports significantly. This reflects Indonesia's strong comparative advantages and market positions in these sectors.

Scenario 4 considers a further enlargement of an Indonesian FTA to include India. Indonesia's rice sector further expands together with sugar, plant-based fibres, and livestock. The output and employment increases for labour-intensive manufactures and decreases across the remaining manufactures sectors and services are comparable to Scenario 3. The results for Scenario 5 are broadly similar to those in Scenario 4, with the differences reflecting the other BRIICS FTAs included in Scenario 5.

China

China is assumed to participate in an FTA with Japan in all scenarios. In addition, in Scenario 3, it is assumed to have an FTA with Indonesia, in Scenario 4 with the ASEAN, and in Scenario 5 with India. Among all BRIICS countries, China registers by far the largest export gains in all scenarios, reflecting its comparative advantage in a wide range of product categories - in particular in labour-intensive manufacturing industries. Its output declines though in the first two scenarios and increases only slightly in the third. FTAs with ASEAN and India, however, also bring about substantial output increases.

Scenario 1 refers to an FTA between China and Japan. As noted in Table A5.7, China's exports of agricultural products, food, beverages & tobacco, labour-intensive manufactures, and services increase. According to KMS (2008), its imports are concentrated in textiles and capital-intensive manufactures. There are sizable increases in output and employment across the agricultural and labour-intensive manufacturing sectors and declines in the capital-intensive and services sectors. The sectoral results in Scenario 2 are broadly similar, reflecting the variations in FTAs in Scenario 2.

While Scenario 3 adds Indonesia to a China-Japan FTA, the sectoral results are broadly similar to those for Scenario 2. The same is true for Scenario 4 in which ASEAN replaces Indonesia in a

[2] It should be noted that as the year 2001 is chosen for benchmark, the gains related to the phase out of quotas under the MFA in 2005 have not been taken into account. Therefore, the actual gains in the textiles and clothing sectors related to the FTAs may be somewhat smaller.

China-Japan FTA. Scenario 5 involves an FTA for China together with Japan, ASEAN, and India. Here also the sectoral results are broadly parallel to those in the preceding discussion.

South Africa

Scenarios 1-5 all involve an FTA between South Africa and the EU. The sectoral results are thus broadly similar, reflecting the variations in the FTAs for the other BRIICS countries that are taken into account. The major positive sectoral changes that occur for South Africa are concentrated in its agricultural and mineral sectors and in metal products. There are negative employment effects across the remainder of manufactures and all of the services sectors. The magnitude of gains both in terms of exports or output remains limited for South Africa, Annex Tables 5A.7 and 5A.8. This contrasts with the results for Russia, which registers sizable gains both in terms of exports and output. To a limited extent this difference may be related to trade diversion by other FTAs, but overall it reflects the fact that South Africa's comparative advantages are in a more limited product range.

Japan

The sectoral effects for Japan reflect both the effects of the various FTAs for which Japan is a partner as well as the effects of all other FTAs on Japan in the individual Scenarios 1-5. It can be seen that Japan's manufactures expand considerably (Annex Table 5A.7). Japan's imports of agricultural, natural resource, and mineral products increase somewhat, and there are significant increases in imports of all manufactures, especially food, beverages & tobacco and labour-intensive products and services, KMS (2008). The changes in output and employment reflect the changes in trade, with declines in agricultural, natural resource and mineral products and labour-intensive manufactures. There are significant increases in output and employment in textiles, capital-intensive manufactures and services. The foregoing changes are broadly reflected in Scenarios 2-5 that cover somewhat different FTA arrangements.

EU/EFTA

The EU/EFTA is assumed to participate in FTAs with Russia and South Africa in all scenarios and in addition with Brazil in Scenarios 2-5. In Scenario 1, as reported in Table A5.7, EU/EFTA exports of vegetables and fruits and other crops increase somewhat, and exports increase for most of the manufactures and services sectors. EU/EFTA imports increase to some extent across most of the agricultural, natural resource and mineral, manufactures and services sectors, KMS (2008). Output and employment rise somewhat in most agricultural sectors, food, beverages & tobacco, chemicals, non-metallic mineral products, transportation equipment and services. There are declines in output and employment in mineral products and labour-intensive manufactures. Employment also declines in metal products and machinery & equipment.

The sectoral pattern and magnitudes of change are somewhat different in Scenarios 2, reflecting the inclusion of an FTA involving Brazil together with the United States and EU/EFTA. The main differences are increased negative impacts on the EU/EFTA agricultural and food, beverages & tobacco sectors and labour-intensive manufactures. The pattern and magnitudes of changes noted are broadly similar to those in Scenario 2, reflecting the various FTAs that are being covered.

United States

In Scenario 1, with a Brazil-U.S. FTA, U.S. exports of agricultural products and labour-intensive manufactures decline while exports of capital-intensive manufactures and services increase, Annex Table 5A.7. U.S. imports increase to some extent in virtually all of the sectors shown, KMS

(2008). There are declines in output and employment in most US agricultural sectors, labour-intensive manufactures, metal products, and other products. The main increases in output and employment are in the U.S. capital-intensive sectors and services: although they are fairly small in percentage terms.

When the United States expands its FTAs to include India and Indonesia (in addition to Brazil) the pattern and magnitudes of the sectoral effects change somewhat in the agricultural sectors. Output becomes more negative in labour-intensive manufactures and more positive in the capital-intensive sectors and in services. The sectoral results in Scenarios 3-5 appear broadly similar to those in Scenario 2.

III. Computational Results for Unilateral Free Trade and Global Free Trade

Having analysed the economic effects of a variety of BRIICS FTAs in our different scenarios, it is of interest to compare the FTA results with the assumed adoption of unilateral free trade by the individual BRIICS nations and global (multilateral) free trade by all of the countries/regions covered in the Michigan Model. The top part of Annex Table 5A.9 summarises the welfare effects on each of the six BRIICS nations of the FTAs included in Scenarios 1-5. These effects and the global totals take into account the simultaneous implementation of all of the FTAs covered in each scenario. The bottom left part of the table contains the welfare effects for the BRIICS nations that would result from unilateral trade liberalisation, both in terms of the impacts on the individual countries and the associated global effects. The bottom right part of the table indicates the changes in welfare for the BRIICS nations that would result from all 31 countries/regions eliminating all of their trade barriers multilaterally.

Brazil's economic welfare is projected to increase from USD 2.4 to USD 6.4 billion (0.27-0.71% of GDP) based on the five FTA options in Scenarios 1-5. This compares with welfare improvements of USD 26.0 billion (2.91% of GDP) from unilateral liberalisation and USD 26.4 billion (2.94% of GDP) from global free trade. Russia gains between USD 11.5 and USD 11.8 billion from its FTA options compared to USD 24.9 billion (4.53% of GDP) from unilateral liberalisation and USD 41.0 billion (7.48% of GDP) from global free trade. India gains from USD 2.1 to USD 18.0 billion (0.24-2.12% of GDP) with FTAs compared to USD 28.8 billion (3.40% of GDP) from unilateral liberalisation and USD 50.0 billion (5.89% of GDP) from global free trade. Indonesia gains between USD 4.4 and USD 13.3 billion (1.70-5.16% of GDP) from FTAs compared to USD 12.1 billion (4.70% of GDP) from unilateral liberalisation and USD 26.6 billion (10.30% of GDP) from global free trade. China gains from minus USD 0.07 and USD 18.8 billion (-0.03-0.91% of GDP) from FTAs compared to USD 107.1 billion (5.19% of GDP) from unilateral liberalisation and USD 131.4 billion (6.37% of GDP) from global free trade. South Africa gains around USD 2.6 billion (1.28-1.35% of GDP) from its FTAs compared to USD 12.0 billion (5.94% of GDP) from unilateral liberalisation and USD 16.2 billion (8.05% of GDP) from global free trade.

These results add evidence to the contention that the welfare benefits to the BRIICS economies from unilateral or global (multilateral) free trade are much greater than the benefits to be derived from FTAs. Furthermore, this would be the case even if there would be less than complete free trade globally. That is, if existing trade barriers were to be reduced multilaterally by one-third or one-half, for example, the resulting global and national gains would be proportionally lower. However, the global free trade gains are generally so much larger than they are for FTAs that global freer trade can be considered superior to FTAs. Furthermore, there are a range of other negative features to FTAs including complex sets of rules of origin. Accordingly, even if there were be positive non-trade and dynamic benefits from foreign direct investment and increased capital formation stemming from the FTAs that are not accounted for here, FTAs are unlikely to be superior to multilateral freer trade.

IV. Conclusions and Implications for Further Research and Policy

The computational analysis that we have presented has been based on the Michigan Model of World Production and Trade, which is a multi-country/multi-sector computable general equilibrium (CGE) model that has been used for over three decades to provide estimates of the economic effects of multilateral, regional, and bilateral trade negotiations and other aspects of changes in trade policies of the world's major trading countries/regions. The version of the model used covers 27 economic sectors, including agriculture, manufactures, and services, in each of 31 countries/regions. The distinguishing feature of the Michigan Model is that it incorporates elements of imperfect competition, including increasing returns to scale, monopolistic competition, and product variety. The data for the model are based on Version 6.0 of the GTAP database for 2001 together with data derived from other sources.

While it is likely that FTAs would be phased in over time for some products and sectors, it is assumed for modelling purposes that all of the barriers are removed at the same time. The model is then solved computationally to represent the percent changes in the variables of interest and to calculate the absolute changes in employment by sector. Because full employment is assumed, the employment results presented indicate the shifts in sectoral employment that will occur with FTA liberalisation. As indicated in the detailed sectoral tables in KMS (2008), some sectors will have increases in employment, others will have decreases, and there is no change in employment overall. Broadly speaking, the sectoral changes mirror the comparative advantages of the BRIICS countries in agricultural, natural resource and mineral products and in labour-intensive manufactures. The comparative advantages of Japan, EU/EFTA and the United States lie in capital-intensive manufactures and in services.

The unique feature of our study is that we have analysed the simultaneous removal of trade barriers for the BRIICS countries with a variety of FTA partners. The computational results presented thus reflect both the direct effects of the bilateral FTAs and the effects of the other postulated FTAs. It appears that the welfare effects of the different FTA options are for the most part fairly small in absolute terms and as a percentage of GDP. However, in a number of cases, the intersectoral shifts in output and employment are substantial, indicating a possible need for some sort of adjustment if the FTAs were actually carried out. The global results of the different FTA scenarios suggest some trade diversion for non-member countries but the welfare reductions are small.

There is no evidence from these results that China's is crowding-out other countries from global markets and reinforcing specialisation in raw materials in these countries. The computational results clearly show that while there may be significant sectoral shifts owing to freer trade, there are large potential benefits available for many countries.

To provide some perspective on the results of the FTAs, the model was also used to calculate the effects of unilateral tariff removal by the BRIICS countries and global (multilateral) free trade. Not surprisingly, these calculations suggest that much greater increases in economic welfare could be gained from more broadly based trade liberalisation than by negotiating FTAs.

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Annex: The Michigan model of world production and trade

Overview of the Michigan Model

The version of the Michigan Model that we use in this study covers 27 economic sectors, including agriculture, manufactures, and services, in each of 31 countries/regions. The distinguishing feature of the Michigan Model is that it incorporates some aspects of trade with imperfect competition, including increasing returns to scale, monopolistic competition, and product variety.[1] A more complete description of the formal structure and equations of the model can be found on line at www.Fordschool.umich.edu/rsie/model/. For the technical properties of the model, see Annex A.

Sectors and market structure

As mentioned, the version of the model to be used in this study consists of 27 production sectors and 31 countries/regions (plus rest-of-world). The sectoral and country/region coverage is indicated in the tables below. Agriculture is modelled as perfectly competitive with product differentiation by country of origin, and all other sectors covering manufactures and services are modelled as monopolistically competitive. Each monopolistically competitive firm is assumed to produce a differentiated product and to set price as a profit-maximising mark-up of price over marginal cost. Free entry and exit of firms then guarantees zero profits.

Expenditure

Consumers and producers are assumed to use a two-stage procedure to allocate expenditure across differentiated products. In the first stage, expenditure is allocated across goods without regard to the country of origin or producing firm. At this stage, the utility function is Cobb-Douglas, and the production function requires intermediate inputs in fixed proportions. In the second stage, expenditure on monopolistically competitive goods is allocated across the competing varieties supplied by each firm from all countries. In the perfectly competitive agricultural sector, since individual firm supply is indeterminate, expenditure is allocated over each country's sector as a whole, with imperfect substitution between products of different countries.

The aggregation function in the second stage is a Constant Elasticity of Substitution (CES) function. Use of the CES function and product differentiation by firm imply that consumer welfare is influenced both by any reduction in real prices brought about by trade liberalisation, as well as increased product variety. The elasticity of substitution among different varieties of a good is assumed to be three, a value that is broadly consistent with available empirical estimates. The parameter for the sensitivity of consumers to the number of product varieties is set at 0.5.[2]

1 See also Deardorff and Stern (1990, esp. pp. 9-46) and Brown and Stern (1989a, b).

2 If the variety parameter is greater than 0.5, it means that consumers value variety more. If the parameter is zero, consumers have no preference for variety. This is the same as the Armington assumption according to which consumers view products as distinguished by country of production.

Production

The production function is separated into two stages. In the first stage, intermediate inputs and a primary composite of capital and labour are used in fixed proportion to output.[3] In the second stage, capital and labour are combined through a CES function to form the primary composite. In the monopolistically competitive sectors, additional fixed inputs of capital and labour are required. It is assumed that fixed capital and fixed labour are used in the same proportion as variable capital and variable labour so that production functions are homothetic. The elasticities of substitution between capital and labour vary across sectors and were derived from a literature search of empirical estimates of sectoral supply elasticities. Economies of scale are determined endogenously in the model.

Supply prices

To determine equilibrium prices, perfectly competitive firms operate such that price is equal to marginal cost, while monopolistically competitive firms maximise profits by setting price as an optimal mark-up over marginal cost. The numbers of firms in sectors under monopolistic competition are determined by the zero profits condition. The free entry condition in this context is also the basic mechanism through which new product varieties are created (or eliminated). Each of the new entrants arrives with a distinctly different product, expanding the array of goods available to consumers.

Free entry and exit are also the means through which countries are able to realise the specialisation gains from trade. In this connection, it can be noted that in the commonly used GTAP-type model based on nationally differentiated products and the so-called Armington assumption, production of a particular variety of a good cannot move from one country to another. In such a model, there are gains from exchange but no gains from specialisation. However, in the Michigan Model with differentiated products supplied by monopolistically competitive firms, production of a particular variety is internationally mobile. A decline in the number of firms in one country paired with an expansion in another essentially implies that production of one variety of a good is being relocated from the country in which the number of firms is declining to the country in which the number of firms is expanding. Thus, we have both an exchange gain and a specialisation gain from international trade.[4]

Capital and labour markets

Capital and labour are assumed to be perfectly mobile across sectors within each country. Returns to capital and labour are determined so as to equate factor demand to an exogenous supply of each factor. The aggregate supplies of capital and labour in each country are assumed to remain fixed so as to abstract from macroeconomic considerations (*e.g.* the determination of investment), since our microeconomic focus is on the inter-sectoral allocation of resources.

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3 Intermediate inputs include both domestic and imported varieties.

4 The international relocation of a particular variety of a good can be understood in the context of the ongoing outsourcing debate. Domestic firms require intermediate inputs, in addition to capital and labour. To the extent that tariff reduction leads a firm to substitute toward traded intermediate inputs, domestic firms can be thought of as outsourcing some component of production. This is particularly the case if there is a decline in the number of domestic firms in the sector from which intermediate inputs are purchased and an expansion in the supplier country.

World market and trade balance

The world market determines equilibrium prices such that all markets clear. Total demand for each firm or sector's product must equal total supply of that product. It is also assumed that trade remains balanced for each country/region, that is, any initial trade imbalance remains constant as trade barriers are changed. This is accomplished by permitting aggregate expenditure to adjust to maintain a constant trade balance. Thus, we abstract away from the macroeconomic forces and policies that are the main determinants of trade imbalances. Further, it should be noted that there are no nominal rigidities in the model. As a consequence, there is no role for a real exchange rate mechanism.

Trade policies and rent/revenues

We have incorporated into the model the import tariff rates and export taxes/subsidies as policy inputs that are applicable to the bilateral trade of the various countries/regions with respect to one another. These have been computed using the "GTAP–6.0 2001 Database" provided in Dimaranan and McDougall (2005). The export barriers have been estimated as export-tax equivalents.[5] We assume that revenues from both import tariffs and export taxes, as well as rents from NTBs on exports, are redistributed to consumers in the tariff- or tax-levying country and are spent like any other income.

Tariff liberalisation can affect economic efficiency through three main channels. First, in the context of standard trade theory, tariff reductions both reduce the cost of imports for consumers and for producers purchasing traded intermediate inputs, thus producing an *exchange* gain. Second, tariff removal leads firms to direct resources toward those sectors that have the greatest value on the world market. That is, we have the standard *specialisation* gain. Third, tariff reductions have a pro-competitive effect on sellers. Increased price pressure from imported varieties forces incumbent firms to cut price. Surviving firms remain viable by expanding output, thereby moving down their average total cost (ATC) curve. The consequent lower ATC of production creates gains from the *realisation of economies of scale*.

Model closure and implementation

We assume in the model that aggregate expenditure varies endogenously to hold aggregate employment constant. This closure is analogous to the Johansen closure rule (Deardorff and Stern, 1990, pp. 27-29). The Johansen closure rule consists of keeping the requirement of full employment while dropping the consumption function. This means that consumption can be thought of as adjusting endogenously to ensure full employment. However, in the present model, we do not distinguish consumption from other sources of final demand. That is, we assume instead that total expenditure adjusts to maintain full employment.

The model is solved using GEMPACK (Harrison and Pearson, 1996). With the introduction of policy changes into the model, the method of solution yields percentage changes in sectoral employment and certain other variables of interest. Multiplying the percentage changes by the absolute levels of the pertinent variables in the database yields the absolute changes, positive or negative, which might result from the various liberalisation scenarios.

[5] Export tax equivalent includes the export quotas on textiles and clothing (wearing apparel) exports under the Agreement on Textiles and Clothing (ATC). For more detail about the protection data in GTAP-6.0 2001 Database, See Dimaranan and McDougall (2005, Section 16).

Interpreting the modelling results

To help the reader interpret the modelling results, it is useful to review the features of the model that serve to identify the various economic effects to be reflected in the different applications of the model. Although the model includes the aforementioned features of imperfect competition, it remains the case that markets respond to trade liberalisation in much the same way that they would with perfect competition. That is, when tariffs or other trade barriers are reduced in a sector, domestic buyers (both final and intermediate) substitute toward imports and the domestic competing industry contracts production while foreign exporters expand. Thus, in the case of multilateral liberalisation that reduces tariffs and other trade barriers simultaneously in most sectors and countries, each country's industries share in both of these effects, expanding or contracting depending primarily on whether their protection is reduced more or less than in other sectors and countries.

Worldwide, these changes cause increased international demand for all sectors. World prices increase most for those sectors where trade barriers fall the most.[6] This in turn causes changes in countries' terms of trade that can be positive or negative. Those countries that are net exporters of goods with the greatest degree of liberalisation will experience increases in their terms of trade, as the world prices of their exports rise relative to their imports. The reverse occurs for net exporters in industries where liberalisation is slight – perhaps because it may already have taken place in previous trade rounds.

The effects on the welfare of countries arise from a mixture of these terms-of-trade effects, together with the standard efficiency gains from trade and also from additional benefits due to the realisation of economies of scale. Thus, we expect on average that the world will gain from multilateral liberalisation, as resources are reallocated to those sectors in each country where there is a comparative advantage. In the absence of terms-of-trade effects, these efficiency gains should raise national welfare measured by the equivalent variation for every country,[7] although some factor owners within a country may lose, as will be noted below. However, it is possible for a particular country whose net imports are concentrated in sectors with the greatest liberalisation to lose overall, if the worsening of its terms of trade swamps these efficiency gains.

On the other hand, although trade with imperfect competition is perhaps best known for introducing reasons why countries may lose from trade, actually its greatest contribution is to expand the list of reasons for gains from trade. Thus, in the Michigan Model, trade liberalisation permits all countries to expand their export sectors at the same time that all sectors compete more closely with a larger number of competing varieties from abroad. As a result, countries as a whole gain from lower costs due to increasing returns to scale, lower monopoly distortions due to greater competition, and reduced costs and/or increased utility due to greater product variety. All of these effects make it more likely that countries will gain from liberalisation in ways that are shared across the entire population.[8]

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6 The price of agricultural products supplied by the rest of the world is taken as the numeraire in the model, and there is a rest-of-world against which all other prices can rise.

7 The equivalent variation is a measure of the amount of income that would have to be given or taken away from an economy before a change in policy in order to leave the economy as well off as it would be after the policy change has taken place. If the equivalent variation is positive, it is indicative of an improvement in economic welfare resulting from the policy change.

8 In perfectly competitive trade models such as the Heckscher-Ohlin Model, one expects countries as a whole to gain from trade, but the owners of one factor – the "scarce factor" – to lose through the mechanism first explored by Stolper and Samuelson (1941). The additional sources of gain from trade due to increasing returns to scale, competition, and product variety, however, are shared across factors, and we routinely find in our CGE modelling that both labour and capital gain from multilateral trade liberalisation.

The various effects just described in the context of multilateral trade liberalisation will also take place when there is unilateral trade liberalisation, although these effects will depend on the magnitudes of the liberalisation in relation to the patterns of trade and the price and output responses involved between the liberalising country and its trading partners. Similarly, many of the effects described will take place with the formation of bilateral or regional FTAs, which are the focus of the present study. But in these cases, there may be trade creation and positive effects on the economic welfare of FTA-member countries together with trade diversion and negative effects on the economic welfare of non-member countries. The net effects on economic welfare for individual countries and globally will thus depend on the economic circumstances and policy changes implemented.[9]

In the real world, all of the various effects occur over time, some of them more quickly than others. However, the Michigan Model is static in the sense that it is based upon a single set of equilibrium conditions rather than relationships that vary over time.[10] The model results therefore refer to a time horizon that depends on the assumptions made about which variables do and do not adjust to changing market conditions, and on the short- or long-run nature of these adjustments.[11] Because the supply and demand elasticities used in the model reflect relatively long-run adjustments and it is assumed that markets for both labour and capital clear within countries,[12] the modelling results are appropriate for a relatively long time horizon of several years – perhaps two or three at a minimum. On the other hand, the model does not allow for the very long-run adjustments that could occur through capital accumulation, population growth, and technological change. The modelling results should therefore be interpreted as being superimposed upon longer-run growth paths of the economies involved. To the extent that these

9 It may be noted that, in a model of perfect competition, bilateral trade liberalisation should have the effect of contracting trade with the excluded countries, thereby improving the terms of trade for the FTA members vis-à-vis the rest of world. But in a model with scale economies, the pro-competitive effect of trade liberalisation can generate a cut in price and increase in supply to excluded countries. The terms of trade of FTA members may therefore deteriorate in this event.

10 As noted above, macroeconomic closure in the model involves the equivalent of having expenditure equal to the sum of earned incomes plus redistributed net tax revenues. However, the actual solution is attained indirectly, but equivalently, by imposing a zero change in the trade balance. Since the model allows for all net tax and tariff revenues to be redistributed to consumers, when tariffs are reduced with trade liberalisation, the model implicitly imposes a non-distorting tax to recoup the loss in tariff revenues.

11 It is important to understand that CGE modelling simulation results provide indications of the potential economic changes involved. In this respect, they are not meant to be empirical forecasts or predictions of the changes since they are not derived from econometric methods that can yield statistically-based estimations. Further, because they are microeconomic in character, CGE models of necessity abstract from the macroeconomic forces at work at the aggregate level in individual countries. As a consequence, it may be very difficult to compare CGE modelling results with the actual changes that occur in the economic variables over given periods of time. A further important consideration is that CGE models used to analyse the effects of trade liberalisation may differ because of the assumptions that characterise their framework. In any event, CGE modelling results are therefore to be interpreted as the potential effects of trade liberalisation at the microeconomic level, holding macroeconomic influences constant. The magnitudes and directions of change indicated by the CGE models are thus very useful in their own right, subject to the caveats just mentioned.

12 The analysis in the model assumes throughout that the aggregate, economy-wide, level of employment is held constant in each country. The effects of trade liberalisation are therefore not permitted to change any country's overall rates of employment or unemployment. This assumption is made because overall employment is determined by macroeconomic forces and policies that are not contained in the model and would not themselves be included in a negotiated trade agreement. The focus instead is on the composition of employment across sectors as determined by the microeconomic interactions of supply and demand resulting from the liberalisation of trade.

growth paths themselves may be influenced by trade liberalisation, therefore, the model does not capture such effects.

Benchmark Data

Needless to say, the data needs of this model are immense. Apart from numerous share parameters, the model requires various types of elasticity measures. Like other CGE models, most of our data come from published sources.

The main data source used in the model is "The GTAP-6.0 Database" of the Purdue University Center for Global Trade Analysis Project (Dimaranan and McDougall, 2005). The reference year for this GTAP database is 2001. From this source, we have extracted the following data, aggregated to our sectors and countries/regions:

- Bilateral trade flows among 31 countries/regions, decomposed into 27 sectors. Trade with the rest-of-world (ROW) is included to close the model.
- Input-output tables for the 31 countries/regions, excluding ROW.
- Components of final demand along with sectoral contributions for the 31 countries/regions, excluding ROW.
- Gross value of output and value added at the sectoral level for the 31 countries/regions, excluding ROW
- Bilateral import tariffs by sector among the 31 countries/regions.
- Elasticity of substitution between capital and labour by sector.
- Bilateral export-tax equivalents among the 31 countries/regions, decomposed into 27 sectors.

The monopolistically competitive market structure in the non-agricultural sectors of the model imposes an additional data requirement of employment and the numbers of firms at the sectoral level. These data have been adapted from a variety of published sources as will be noted below.

The GTAP-6.0 2001 database has been projected to the year 2020, which is when we assume that the Doha Round will have been completed and fully implemented. In this connection, we extrapolated the labour availability in different countries/regions by an annual-average, weighted-population growth rate that varies by country/region.[13] All other major variables have been projected, using an average weighted growth rate of GDP of 3.1%. In the computational scenarios to be presented below, we use these extrapolated data as the starting point to carry out our liberalisation scenarios for the various BRIICS FTAs and for the accompanying unilateral and global free trade scenarios.

In the GTAP-6.0 2001 database, the barriers on agricultural products consist of import tariffs, export subsidies/taxes, and domestic support. Tariffs on food and agriculture come from the Agricultural Trade Policy Database of the Economic Research Service in the US Department of Agriculture. Domestic support data are based on the producer support estimates for OECD countries and input-output tables for

[13] The growth projection of labour force from 2001 to 2020 is obtained from U.S. Census Bureau, IDB Summary Demographic Data for Chinese Taipei and United Nations, World Population Prospects (The 2004 Revision, medium variant, http://esa.un.org/unpp) for other countries/regions. For a more elaborate and detailed procedure for calculating data extrapolations, see van der Mensbrugghe (2005) and related documents.

non-OECD countries if data are available. Tariffs on merchandise come from the World Integrated Trade Solutions system of the World Bank and UNCTAD. To incorporate the implementation of the Doha Round, the GTAP-6.0 2001 database has been adjusted using the tariff-cutting scenario provided by GTAP.[14] The assumed implementation of the Doha Round means that developed countries will cut agricultural protection by the percentages specified in the Doha Development Agenda, and all countries are assumed to adopt 50% tariff cuts for non-agricultural goods and manufactures.

The services barriers are based on financial data on average gross (price-cost) margins constructed initially by Hoekman (1995, 2000) and adapted for modelling purposes in Brown, Deardorff, and Stern (2002, 2003). The gross operating margins are calculated as the differences between total revenues and total operating costs and are presumed to reflect the barriers on the various modes of services transactions. Some of these differences are presumably attributable to fixed costs. Given that the gross operating margins vary across countries, a portion of the margin can be attributed in particular to barriers to FDI. For this purpose, a benchmark is set for each sector in relation to the country with the smallest gross operating margin, on the assumption that operations in the benchmark country can be considered to be freely open to foreign firms. The excess in any other country above this lowest benchmark is then taken to be due to barriers to establishment by foreign firms.

That is, the barrier is modelled as the cost-increase attributable to an increase in fixed cost borne by multinational corporations attempting to establish an enterprise locally in a host country. This abstracts from the possibility that fixed costs may differ among firms because of variations in market size, distance from headquarters, and other factors. It is further assumed that this cost increase can be interpreted as an ad valorem equivalent tariff on services transactions generally. The services barriers based on Hoekman (2000) are considerably higher than the import barriers on manufactures and reflect the fact that many services sectors are highly regulated and therefore may restrain international services transactions considerably. Nonetheless, as noted, because of the variations that exist in fixed costs, it is possible that the Hoekman services barriers may be overstated. We have accordingly reduced these barriers by 50% for modelling purposes.

Employment data, defined as labour force (LF_i), were obtained from Ministry of Home Affairs (2003) for India, Council for Economic Planning and Development (2006) for Chinese Taipei, and World Bank (2006) for other countries or regions. Since employment data are not available at the sectoral level, we estimated the sectoral employment share s_{ij}, using the latest available data from UNIDO (2006) for manufacturing and from ILO (2006) for non-manufacturing sectors. Multiplying the share by the total labour force (*i.e.* $LF_i \times s_{ij}$), we estimated the sectoral employment data. Employment in the agricultural sector was further decomposed into 10 detailed agricultural sectors, using the labour endowment data in the GTAP-6.0 2001 database (*i.e.* the employment was decomposed by the labour endowment shares).

Data on the number of firms were obtained from UNIDO (2006). If the number of firms was not available, we used the data for the number of establishments. Since the latest available years are different among countries and regions, we adjusted the number of firms, using the per-capita GDP growth rate. For instance, if the latest available year was 2000, we multiplied the per-capita GDP growth rate from 2000 to 2001 by the number of firms. When the number of firms was not available, we first estimated the total number of firms in the manufacturing sectors and then decomposed this total to the sectoral level, using the sectoral employment shares. In some cases, the total number of firms was estimated from the number of firms and the relative per capita GDP in comparable, neighbouring countries.

14 For more detail, see https://www.gtap.agecon.purdue.edu/databases/v6/V6_dohascen.asp

The sectoral data for the individual BRIICS economies that we have used for our modelling purposes are recorded in BKS (2008, Tables 1-6). These data cover the Post-Doha Round tariff rates on agricultural and natural resource products and manufactures, tariff equivalents on services, the values and percentage distribution of exports and imports for the world and the OECD countries, and employment.

Annex Tables

Annex Table 5A.1. Scenarios

	Country pairs
Scenario 1	1) Brazil - United States; 2) Russia - European Union; 3) India - Japan; 4) AFTA; 5) Indonesia - Japan; 6) China - Japan; 7) South Africa - European Union
Scenario 2	1) Brazil - United States; 2) Brazil - European Union; 3) Russia - European Union; 4) India - Japan; 5) India - United States; 6) AFTA; 7) Indonesia - Japan; 8) Indonesia - United States; 9) China - Japan; 10) South Africa - European Union
Scenario 3	1) Brazil - United States; 2) Brazil - European Union; 3) Russia - European Union; 4) India - Japan; 5) India - United States; 6) AFTA; 7) Indonesia - Japan; 8) Indonesia - United States; 9) Indonesia - China; 10) China - Japan; 11) South Africa - European Union
Scenario 4	1) Brazil - United States; 2) Brazil - European Union; 3) Russia - European Union; 4) India - Japan; 5) India - United States; 6) India - ASEAN; 7) AFTA; 8) Indonesia - Japan; 9) Indonesia - United States; 10) Indonesia - China; 11) China - Japan; 12) China - ASEAN; 13) South Africa - European Union
Scenario 5	1) Brazil - United States; 2) Brazil - European Union; 3) Russia - European Union; 4) India - Japan; 5) India - United States; 6) India - ASEAN; 7) India-China; 8) AFTA; 9) Indonesia - Japan; 10) Indonesia - United States; 11) Indonesia - China; 12) China - Japan; 13) China - ASEAN; 14) South Africa - European Union

Annex Table 5A.2. Scenario 1 - Global Welfare Effects of BRIICS Free Trade Agreements

(billions of U.S. dollars and percentage)

Home	Brazil		Russia		India		Indonesia		China		South Africa		Scenario 1	
Partner	US		EU		Japan		ASEAN, Japan		Japan		EU			
	Welfare		Welfare		Welfare		Welfare		Welfare		Welfare		Welfare	
	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP
Japan	0.1	0.0	0.7	0.0	7.1	0.1	4.7	0.1	45.8	0.6	-0.1	0.0	58.2	0.8
United States	20.4	0.1	2.3	0.0	0.4	0.0	0.9	0.0	1.1	0.0	0.4	0.0	25.5	0.1
Canada	0.4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.6	0.0
Australia	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.1	0.0	0.0	0.5	0.1
New Zealand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1
EU and EFTA	-0.2	0.0	39.0	0.3	0.4	0.0	0.4	0.0	0.2	0.0	12.0	0.1	51.6	0.3
China	0.3	0.0	0.6	0.0	0.0	0.0	0.1	0.0	-1.7	-0.1	0.0	0.0	-0.7	0.0
Hong Kong	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.1	-0.3	-0.1	0.0	0.0	0.1	0.0
Indonesia	0.0	0.0	0.0	0.0	0.0	0.0	4.5	1.8	-0.1	0.0	0.0	0.0	4.4	1.7
Korea	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	-0.6	-0.1	0.0	0.0	-0.9	-0.1
Malaysia	0.0	0.0	0.0	0.0	0.0	0.0	3.9	2.5	-0.3	-0.2	0.0	0.0	3.5	2.3
Philippines	0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.5	0.0	0.0	0.0	0.0	1.9	1.5
Singapore	0.0	0.0	0.1	0.1	0.0	0.0	2.6	1.9	-0.1	-0.1	0.0	0.0	2.7	1.9
Taiwan	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	-0.7	-0.2	0.0	0.0	-0.7	-0.1
Thailand	0.0	0.0	0.1	0.0	0.0	0.0	3.2	1.6	-0.2	-0.1	0.0	0.0	3.1	1.5
Vietnam	0.0	0.0	0.0	0.1	0.0	0.0	0.6	1.0	-0.1	-0.1	0.0	0.0	0.5	0.9
India	0.0	0.0	0.0	0.0	2.1	0.2	0.1	0.0	-0.1	0.0	0.0	0.0	2.1	0.2
Rest of Asia	0.0	0.0	0.1	0.0	0.0	0.0	0.3	0.1	-0.1	0.0	0.0	0.0	0.3	0.1
Russia	-0.1	0.0	11.6	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.5	2.1
Turkey	0.0	0.0	0.3	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.1
Rest of Middle East	0.0	0.0	0.2	0.0	0.0	0.0	1.0	0.1	0.3	0.0	0.0	0.0	1.5	0.1
Mexico	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.4	0.0
Argentina	-0.5	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.5	-0.1
Brazil	2.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	2.4	0.3
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Colombia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uruguay	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest of Central and Latin America	0.1	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.5	0.1
South Africa	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	2.6	1.3	2.7	1.3
Africa	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.1	0.0	0.4	0.0
Total	23.3		55.3		10.2		24.5		43.9		15.0		172.2	

Annex Table 5A.3. Scenario 2 - Global Welfare Effects of BRIICS Free Trade Agreements

(billions of U.S. dollars and percentage)

Home	Brazil		Russia		India		Indonesia		China		South Africa		Scenario 2	
Partner	US, EU		EU		Japan, US		ASEAN, Japan, US		Japan		EU			
	Welfare		Welfare		Welfare		Welfare		Welfare		Welfare		Welfare	
	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP
Japan	0.1	0.0	0.7	0.0	7.2	0.1	4.3	0.1	45.8	0.6	-0.1	0.0	57.8	0.8
United States	20.5	0.1	2.3	0.0	16.1	0.1	8.2	0.1	1.1	0.0	0.4	0.0	48.6	0.3
Canada	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.8	0.1
Australia	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.1	0.0	0.0	0.6	0.1
New Zealand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1
EU and EFTA	33.5	0.2	39.0	0.3	0.7	0.0	0.5	0.0	0.2	0.0	12.0	0.1	85.8	0.6
China	0.5	0.0	0.6	0.0	0.0	0.0	0.2	0.0	-1.7	-0.1	0.0	0.0	-0.5	0.0
Hong Kong	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.1	-0.3	-0.1	0.0	0.0	0.1	0.1
Indonesia	0.0	0.0	0.0	0.0	0.0	0.0	8.8	3.4	-0.1	0.0	0.0	0.0	8.6	3.3
Korea	-0.1	0.0	0.0	0.0	0.0	0.0	-0.4	-0.1	-0.6	-0.1	0.0	0.0	-1.0	-0.1
Malaysia	0.0	0.0	0.0	0.0	0.0	0.0	3.7	2.4	-0.3	-0.2	0.0	0.0	3.3	2.2
Philippines	0.0	0.0	0.0	0.0	0.0	0.0	1.8	1.4	0.0	0.0	0.0	0.0	1.8	1.5
Singapore	0.0	0.0	0.1	0.1	0.0	0.0	2.6	1.8	-0.1	-0.1	0.0	0.0	2.7	1.9
Taiwan	0.0	0.0	0.1	0.0	0.0	0.0	-0.2	0.0	-0.7	-0.2	0.0	0.0	-0.8	-0.2
Thailand	0.1	0.0	0.1	0.0	0.0	0.0	3.1	1.5	-0.2	-0.1	0.0	0.0	3.0	1.5
Vietnam	0.0	0.0	0.0	0.1	0.0	0.0	0.6	1.0	-0.1	-0.1	0.0	0.0	0.5	0.9
India	0.1	0.0	0.0	0.0	8.1	1.0	-0.1	0.0	-0.1	0.0	0.0	0.0	8.1	1.0
Rest of Asia	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.0	-0.1	0.0	0.0	0.0	0.3	0.1
Russia	0.2	0.0	11.6	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.8	2.2
Turkey	0.1	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2
Rest of Middle East	0.1	0.0	0.2	0.0	0.0	0.0	1.4	0.1	0.3	0.0	0.0	0.0	2.0	0.2
Mexico	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.5	0.1
Argentina	-1.2	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.2	-0.3
Brazil	6.4	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	6.4	0.7
Chile	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.2
Colombia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uruguay	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
Rest of Central and Latin America	0.2	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.6	0.1
South Africa	0.1	0.0	-0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	2.6	1.3	2.7	1.4
Africa	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.1	0.0	0.7	0.1
Total	61.9		55.3		32.5		35.4		43.9		15.0		244.0	

Annex Table 5A.4. Scenario 3 - Global Welfare Effects of BRIICS Free Trade Agreements

(billions of U.S. dollars and percentage)

Home	Brazil		Russia		India		Indonesia		China		South Africa		Scenario 3	
Partner	US, EU		EU		Japan, US		ASEAN, Japan, US,		Japan, Indonesia		EU			
	Welfare		Welfare		Welfare		Welfare		Welfare		Welfare		Welfare	
	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP
Japan	0.1	0.0	0.7	0.0	7.2	0.1	3.8	0.1	45.2	0.6	-0.1	0.0	57.3	0.8
United States	20.5	0.1	2.3	0.0	16.1	0.1	8.0	0.0	0.9	0.0	0.4	0.0	48.4	0.3
Canada	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.7	0.1
Australia	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.3	0.1	0.0	0.0	0.6	0.1
New Zealand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1
EU and EFTA	33.5	0.2	39.0	0.3	0.7	0.0	0.2	0.0	-0.2	0.0	12.0	0.1	85.5	0.6
China	0.5	0.0	0.6	0.0	0.0	0.0	2.6	0.1	0.8	0.0	0.0	0.0	2.0	0.1
Hong Kong	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.1	-0.3	-0.1	0.0	0.0	0.1	0.1
Indonesia	0.0	0.0	0.0	0.0	0.0	0.0	11.8	4.6	2.9	1.1	0.0	0.0	11.7	4.5
Korea	-0.1	0.0	0.0	0.0	0.0	0.0	-0.5	-0.1	-0.8	-0.1	0.0	0.0	-1.2	-0.2
Malaysia	0.0	0.0	0.0	0.0	0.0	0.0	3.7	2.4	-0.3	-0.2	0.0	0.0	3.3	2.2
Philippines	0.0	0.0	0.0	0.0	0.0	0.0	1.8	1.4	0.0	0.0	0.0	0.0	1.8	1.4
Singapore	0.0	0.0	0.1	0.1	0.0	0.0	2.6	1.8	-0.1	-0.1	0.0	0.0	2.7	1.9
Taiwan	0.0	0.0	0.1	0.0	0.0	0.0	-0.3	-0.1	-0.8	-0.2	0.0	0.0	-0.9	-0.2
Thailand	0.1	0.0	0.1	0.0	0.0	0.0	3.1	1.5	-0.2	-0.1	0.0	0.0	3.0	1.5
Vietnam	0.0	0.0	0.0	0.1	0.0	0.0	0.6	1.0	-0.1	-0.1	0.0	0.0	0.5	0.9
India	0.1	0.0	0.0	0.0	8.1	1.0	-0.1	0.0	-0.2	0.0	0.0	0.0	8.0	0.9
Rest of Asia	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.0	-0.1	0.0	0.0	0.0	0.3	0.1
Russia	0.2	0.0	11.6	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.8	2.2
Turkey	0.1	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2
Rest of Middle East	0.1	0.0	0.2	0.0	0.0	0.0	1.6	0.1	0.5	0.1	0.0	0.0	2.3	0.2
Mexico	0.3	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	0.1	0.0	0.0	0.0	0.5	0.0
Argentina	-1.2	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.2	-0.3
Brazil	6.4	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	6.4	0.7
Chile	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.2
Colombia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uruguay	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
Rest of Central and Latin America	0.2	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.6	0.1
South Africa	0.1	0.0	-0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	2.6	1.3	2.7	1.4
Africa	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.1	0.0	0.7	0.1
Total	61.9		55.3		32.5		39.6		48.1		15.0		248.2	

Annex Table 5A.5. Scenario 4 - Global Welfare Effects of BRIICS Free Trade Agreements

(billions of U.S. dollars and percentage)

Home	Brazil		Russia		India		Indonesia		China		South Africa		Scenario 4	
Partner	US, EU		EU		Japan, US, ASEAN		ASEAN, Japan, US,		Japan, ASEAN		EU			
	Welfare		Welfare		Welfare		Welfare		Welfare		Welfare		Welfare	
	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP
Japan	0.1	0.0	0.7	0.0	7.5	0.1	2.8	0.0	44.0	0.6	-0.1	0.0	56.4	0.8
United States	20.5	0.1	2.3	0.0	16.1	0.1	6.6	0.0	-0.5	0.0	0.4	0.0	47.0	0.3
Canada	0.3	0.0	0.0	0.0	0.2	0.0	-0.5	0.0	-0.3	0.0	0.0	0.0	0.3	0.0
Australia	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.4	0.1	0.0	0.0	0.6	0.1
New Zealand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1
EU and EFTA	33.5	0.2	39.0	0.3	-0.3	0.0	-4.5	0.0	-3.8	0.0	12.0	0.1	80.8	0.5
China	0.5	0.0	0.6	0.0	0.5	0.0	15.2	0.7	12.8	0.6	0.0	0.0	14.5	0.7
Hong Kong	0.1	0.1	0.1	0.0	0.1	0.0	0.3	0.1	-0.2	-0.1	0.0	0.0	0.2	0.1
Indonesia	0.0	0.0	0.0	0.0	1.6	0.6	13.5	5.2	3.0	1.2	0.0	0.0	13.3	5.2
Korea	-0.1	0.0	0.0	0.0	0.0	0.0	-1.1	-0.2	-1.4	-0.2	0.0	0.0	-1.7	-0.2
Malaysia	0.0	0.0	0.0	0.0	1.7	1.1	11.4	7.5	5.6	3.7	0.0	0.0	11.0	7.2
Philippines	0.0	0.0	0.0	0.0	0.4	0.3	3.2	2.6	1.1	0.9	0.0	0.0	3.3	2.6
Singapore	0.0	0.0	0.1	0.1	0.6	0.4	5.1	3.6	1.9	1.3	0.0	0.0	5.2	3.7
Taiwan	0.0	0.0	0.1	0.0	0.0	0.0	-0.5	-0.1	-1.0	-0.2	0.0	0.0	-1.1	-0.2
Thailand	0.1	0.0	0.1	0.0	1.1	0.5	8.5	4.2	4.1	2.0	0.0	0.0	8.4	4.1
Vietnam	0.0	0.0	0.0	0.1	0.2	0.3	0.9	1.5	0.1	0.2	0.0	0.0	0.9	1.5
India	0.1	0.0	0.0	0.0	15.4	1.8	7.0	0.8	-0.3	0.0	0.0	0.0	15.2	1.8
Rest of Asia	0.1	0.0	0.1	0.0	0.3	0.1	0.6	0.1	0.0	0.0	0.0	0.0	0.7	0.2
Russia	0.2	0.0	11.6	2.1	0.1	0.0	-0.2	0.0	-0.3	-0.1	0.0	0.0	11.6	2.1
Turkey	0.1	0.0	0.3	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.5	0.2
Rest of Middle East	0.1	0.0	0.2	0.0	0.0	0.0	2.2	0.2	1.1	0.1	0.0	0.0	2.8	0.3
Mexico	0.3	0.0	0.0	0.0	0.0	0.0	-0.3	0.0	-0.1	0.0	0.0	0.0	0.3	0.0
Argentina	-1.2	-0.3	0.0	0.0	-0.1	0.0	-0.1	0.0	-0.1	0.0	0.0	0.0	-1.3	-0.3
Brazil	6.4	0.7	0.0	0.0	0.0	0.0	-0.2	0.0	-0.1	0.0	-0.1	0.0	6.2	0.7
Chile	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2
Colombia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Peru	0.0	0.0	0.0	0.0	-0.2	-0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.2	-0.1
Uruguay	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
Rest of Central and Latin America	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1
South Africa	0.1	0.0	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.1	0.0	2.6	1.3	2.6	1.3
Africa	0.3	0.0	0.0	0.0	0.2	0.0	0.3	0.0	-0.1	0.0	0.1	0.0	0.7	0.1
Total	61.9		55.3		45.2		70.4		66.2		15.0		279.0	

Annex Table 5A.6. Scenario 5 - Global Welfare Effects of BRIICS Free Trade Agreements

(billions of U.S. dollars and percentage)

Home	Brazil		Russia		India		Indonesia		China		South Africa		Scenario 5	
Partner	US, EU		EU		Japan, US, ASEAN,		ASEAN, Japan, US,		Japan, ASEAN, India		EU			
	Welfare		Welfare		Welfare		Welfare		Welfare		Welfare		Welfare	
	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP
Japan	0.1	0.0	0.7	0.0	7.6	0.1	2.8	0.0	44.1	0.6	-0.1	0.0	56.5	0.8
United States	20.5	0.1	2.3	0.0	16.2	0.1	6.6	0.0	-0.4	0.0	0.4	0.0	47.1	0.3
Canada	0.3	0.0	0.0	0.0	0.2	0.0	-0.5	0.0	-0.2	0.0	0.0	0.0	0.3	0.0
Australia	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.4	0.1	0.0	0.0	0.6	0.1
New Zealand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1
EU and EFTA	33.5	0.2	39.0	0.3	-0.2	0.0	-4.5	0.0	-3.8	0.0	12.0	0.1	80.9	0.5
China	0.5	0.0	0.6	0.0	4.8	0.2	15.2	0.7	17.1	0.8	0.0	0.0	18.8	0.9
Hong Kong	0.1	0.1	0.1	0.0	0.1	0.1	0.3	0.1	-0.2	-0.1	0.0	0.0	0.3	0.1
Indonesia	0.0	0.0	0.0	0.0	1.6	0.6	13.5	5.2	3.0	1.2	0.0	0.0	13.3	5.2
Korea	-0.1	0.0	0.0	0.0	0.1	0.0	-1.1	-0.2	-1.3	-0.2	0.0	0.0	-1.7	-0.2
Malaysia	0.0	0.0	0.0	0.0	1.7	1.1	11.4	7.5	5.6	3.7	0.0	0.0	11.0	7.2
Philippines	0.0	0.0	0.0	0.0	0.4	0.3	3.2	2.6	1.1	0.9	0.0	0.0	3.3	2.6
Singapore	0.0	0.0	0.1	0.1	0.6	0.4	5.1	3.6	1.9	1.3	0.0	0.0	5.2	3.7
Taiwan	0.0	0.0	0.1	0.0	0.0	0.0	-0.5	-0.1	-1.0	-0.2	0.0	0.0	-1.1	-0.2
Thailand	0.1	0.0	0.1	0.0	1.1	0.5	8.5	4.2	4.1	2.0	0.0	0.0	8.4	4.1
Vietnam	0.0	0.0	0.0	0.1	0.2	0.3	0.9	1.5	0.1	0.2	0.0	0.0	0.9	1.5
India	0.1	0.0	0.0	0.0	18.2	2.1	7.0	0.8	2.5	0.3	0.0	0.0	18.0	2.1
Rest of Asia	0.1	0.0	0.1	0.0	0.3	0.1	0.6	0.1	0.0	0.0	0.0	0.0	0.7	0.2
Russia	0.2	0.0	11.6	2.1	0.1	0.0	-0.2	0.0	-0.3	-0.1	0.0	0.0	11.6	2.1
Turkey	0.1	0.0	0.3	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.5	0.2
Rest of Middle East	0.1	0.0	0.2	0.0	0.0	0.0	2.2	0.2	1.0	0.1	0.0	0.0	2.8	0.2
Mexico	0.3	0.0	0.0	0.0	0.0	0.0	-0.3	0.0	-0.1	0.0	0.0	0.0	0.2	0.0
Argentina	-1.2	-0.3	0.0	0.0	-0.1	0.0	-0.1	0.0	-0.1	0.0	0.0	0.0	-1.3	-0.3
Brazil	6.4	0.7	0.0	0.0	0.0	0.0	-0.2	0.0	-0.1	0.0	-0.1	0.0	6.2	0.7
Chile	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2
Colombia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Peru	0.0	0.0	0.0	0.0	-0.2	-0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.2	-0.1
Uruguay	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
Rest of Central and Latin America	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1
South Africa	0.1	0.0	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	2.6	1.3	2.6	1.3
Africa	0.3	0.0	0.0	0.0	0.2	0.0	0.3	0.0	-0.1	0.0	0.1	0.0	0.7	0.1
Total	61.9		55.3		52.6		70.4		73.5		15.0		286.4	

Annex Table 5A.7. Scenario 1 - BRIICS Free Trade Agreements: Change in Exports for BRIICS countries, Japan, EU and the United States

	Brazil		Russia		India		Indonesia		China		South Africa		Japan		EU/EFTA		United States	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Rice	0.0	0.9	0.1	0.6	3.0	1.0	0.0	3.1	5.4	3.7	0.0	0.0	-29.7	-1.8	0.0	0.0	1.9	0.3
Wheat	0.0	1.0	-1.9	-0.6	7.8	1.0	0.0	-0.1	0.5	0.6	0.5	0.6	0.0	-1.5	-6.2	-0.3	-9.3	-0.1
Other grains	8.3	0.6	-11.1	-5.1	0.6	1.3	2.6	24.6	67.0	4.7	-3.3	-1.0	0.0	-0.6	1.9	0.1	-63.8	-0.6
Vegetables and fruits	18.0	2.3	2.6	1.5	20.1	1.5	17.7	5.8	482.9	12.2	329.7	16.0	0.7	1.1	103.9	4.1	19.5	0.2
Oil seeds	59.5	1.2	3.2	2.0	4.5	1.0	0.8	3.0	13.1	1.4	0.3	0.5	0.2	2.8	-0.6	-0.2	-12.0	-0.1
Sugar	0.0	1.4	0.0	1.2	0.1	1.1	0.0	-0.3	0.1	0.7	0.0	4.2	0.0	-1.0	0.0	-0.3	0.1	1.3
Plant-based fibers	3.6	1.1	0.5	0.4	1.1	1.2	0.0	0.5	-0.7	-0.4	0.5	1.1	0.1	3.3	3.8	0.5	-6.1	-0.1
Other crops	193.8	4.1	0.4	0.6	10.3	0.4	53.4	1.4	79.8	3.0	16.6	3.8	-0.8	-0.3	73.2	1.6	-17.5	-0.3
Livestock	7.2	1.9	14.3	2.9	3.1	1.1	4.4	2.4	59.9	1.9	1.0	0.3	24.8	9.5	7.3	0.2	-10.5	-0.2
Other natural resources	3.3	2.2	124.4	4.2	1.4	1.2	32.9	3.4	53.6	4.8	31.8	12.2	-1.4	-0.6	15.0	0.9	14.1	0.5
Mining	105.8	1.4	1 917.0	2.7	17.1	0.7	-145.7	-0.7	1.2	0.0	147.7	1.9	8.7	3.4	-148.8	-0.9	-19.0	-0.2
Food, Beverages & Tobacco	325.1	1.9	-13.7	-0.3	172.0	2.5	564.1	7.2	3 772.7	22.8	190.6	5.2	158.0	3.9	1 773.3	2.5	61.2	0.1
Textiles	117.3	7.0	86.2	9.2	61.9	0.5	294.2	3.7	2 381.7	5.5	16.1	1.7	5 039.3	30.5	51.8	0.1	-110.6	-0.5
Wearing Apparel	45.0	9.7	113.4	13.5	82.1	0.8	219.9	2.6	8 850.3	13.1	22.2	4.1	72.1	8.2	244.5	1.4	-87.1	-1.0
Leather Products & Footwear	764.8	16.4	4.3	1.5	13.3	0.4	23.0	0.4	2 146.7	3.7	-1.2	-0.3	15.6	3.0	-16.5	-0.1	-57.1	-1.7
Wood & Wood Products	200.1	2.3	279.2	4.3	6.2	0.5	730.5	4.4	363.8	1.3	31.1	0.9	253.8	4.5	879.9	1.6	40.9	0.1
Chemicals	315.5	3.1	2 408.6	8.8	16.4	0.1	97.9	0.9	13.2	0.0	79.6	1.1	3 448.7	4.5	1 558.8	0.7	1 120.3	0.6
Non-metallic Min. Products	136.3	5.8	55.7	3.6	8.0	0.4	91.0	4.5	14.4	0.1	7.6	0.9	495.5	3.8	464.4	1.4	142.1	0.6
Metal Products	281.0	2.5	3 368.0	8.6	7.1	0.1	177.8	3.0	-93.2	-0.3	582.4	2.8	1 794.4	3.6	338.5	0.4	106.3	0.2
Transportation Equipment	447.6	2.8	228.6	3.4	0.1	0.0	123.8	9.8	-111.7	-0.7	402.1	8.1	1 577.5	0.9	2 335.3	1.2	38.0	0.0
Machinery & Equipment	251.7	1.8	176.4	2.3	25.2	0.3	761.7	3.5	-103.6	0.0	85.7	1.3	12 068.4	3.2	-383.6	-0.1	2 682.2	0.5
Other Manufactures	46.4	3.8	120.5	5.8	134.4	1.0	43.4	1.9	1 183.8	1.6	40.0	1.4	174.7	1.1	81.4	0.1	38.2	0.1
Construction	0.2	1.2	7.6	0.8	0.0	0.1	-0.1	-0.4	-0.9	-0.1	8.4	1.3	-0.3	-1.2	-53.4	-0.9	-4.0	-0.2
Elec., Gas & Water	0.7	1.3	22.1	10.8	0.2	0.7	7.5	2.5	13.8	1.0	0.3	3.6	82.8	1.1	146.1	1.0	8.0	0.2
Trade & Transport	175.0	4.2	1 094.0	14.6	224.8	2.6	61.5	2.0	620.0	2.4	528.1	11.3	395.5	1.2	3 067.8	1.4	253.4	0.2
Other Private Services	653.9	6.6	786.9	15.5	242.7	1.9	48.0	1.3	116.6	1.4	141.6	9.9	4.8	0.0	3 917.2	1.4	1 070.8	0.5
Government Services	199.0	15.9	262.0	15.2	24.7	1.8	4.7	1.4	86.0	2.0	57.0	10.6	-10.9	-0.4	168.5	0.4	357.2	0.5
Total	4 360		11 049		1 088		3 215		20 016		2 717		25 573		14 623		5 557	

Annex Table 5A.8. Scenario 5 - BRIICS Free Trade Agreements: Change in Exports for BRIICS countries, Japan, EU and the United States

	Brazil		Russia		India		Indonesia		China		South Africa		Japan		EU/EFTA		United States	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Rice	0.1	2.9	0.1	0.5	9.6	3.2	0.1	9.5	12.2	8.4	0.0	0.1	-35.9	-2.2	0.1	0.6	1.3	0.2
Wheat	0.0	2.4	-2.0	-0.6	38.8	5.1	-0.7	-3.4	2.1	2.1	0.6	0.7	0.0	-1.6	-11.8	-0.5	-19.6	-0.3
Other grains	2.5	0.2	-11.2	-5.2	2.3	4.8	2.3	22.0	102.1	7.1	-3.1	-1.0	0.0	-0.3	-3.3	-0.2	-73.4	-0.7
Vegetables and fruits	92.3	11.7	2.9	1.7	56.5	4.2	33.4	11.0	618.8	15.6	336.9	16.4	1.1	1.8	111.2	4.4	144.9	1.6
Oil seeds	383.6	7.5	1.0	0.6	29.0	6.3	1.6	5.8	17.9	2.0	-0.1	-0.2	0.2	2.5	-1.4	-0.4	-34.7	-0.3
Sugar	0.0	8.0	0.0	1.8	0.3	2.6	0.0	-2.0	0.1	1.1	0.0	5.3	0.0	0.1	0.0	-0.4	0.1	1.2
Plant-based fibers	14.0	4.4	0.1	0.1	2.3	2.5	0.0	-0.7	2.7	1.6	3.3	7.1	0.3	8.1	11.6	1.5	96.7	2.4
Other crops	577.0	12.3	0.4	0.5	79.4	3.3	-1.5	0.0	180.5	6.8	16.3	3.7	-1.6	-0.5	79.2	1.7	4.3	0.1
Livestock	16.5	4.3	14.7	3.0	12.6	4.4	0.5	0.3	169.0	5.3	2.0	0.6	25.7	9.9	14.4	0.4	0.7	0.0
Other natural resources	9.9	6.5	131.3	4.4	5.6	4.9	57.8	6.0	57.2	5.2	32.8	12.6	-1.1	-0.5	16.0	0.9	17.1	0.6
Mining	257.1	3.3	1 995.2	2.8	46.8	2.0	-616.3	-3.2	402.1	4.7	155.3	2.0	11.1	4.4	-182.4	-1.1	-10.5	-0.1
Food, Beverages & Tobacco	4 733.7	28.0	-17.9	-0.3	677.0	10.0	1 368.6	17.6	4 195.9	25.4	193.1	5.2	158.6	3.9	1 916.7	2.7	276.0	0.5
Textiles	179.1	10.7	83.7	9.0	1 324.4	9.8	1 531.9	19.1	3 266.0	7.5	13.5	1.4	4 934.8	29.9	-18.2	-0.1	-197.6	-0.9
Wearing Apparel	60.3	13.1	104.4	12.4	2 405.4	23.5	3 027.3	35.2	9 088.5	13.5	16.8	3.1	66.5	7.5	112.9	0.6	-138.2	-1.5
Leather Products & Footwear	1 052.2	22.6	3.4	1.2	259.3	8.5	1 577.2	29.4	1 673.6	2.9	-2.5	-0.7	14.9	2.9	-174.8	-0.9	-65.0	-1.9
Wood & Wood Products	371.8	4.4	274.8	4.2	47.5	3.8	884.9	5.4	570.0	2.0	41.8	1.2	274.3	4.9	1 090.1	2.0	169.9	0.3
Chemicals	460.5	4.6	2 325.9	8.5	868.9	6.3	534.4	5.0	1 932.1	3.9	69.0	1.0	3 288.0	4.3	2 634.7	1.1	1 859.7	1.0
Non-metallic Min. Products	186.1	8.0	54.7	3.5	91.4	5.0	131.4	6.5	372.2	2.4	8.5	1.0	502.8	3.9	609.8	1.8	224.1	0.9
Metal Products	646.1	5.8	3 371.5	8.6	342.3	5.1	-147.3	-2.5	757.9	2.3	479.9	2.3	1 871.2	3.8	746.7	0.9	312.5	0.5
Transportation Equipment	916.9	5.8	181.8	2.7	98.4	4.7	87.2	6.9	886.2	5.8	400.8	8.0	1 496.7	0.9	3 350.7	1.7	146.5	0.1
Machinery & Equipment	378.1	2.7	153.2	2.0	270.7	3.6	586.8	2.7	4 176.8	1.9	82.7	1.3	11 829.3	3.1	2 155.4	0.5	3 328.4	0.7
Other Manufactures	57.0	4.7	121.6	5.8	780.8	5.8	-47.5	-2.1	1 777.3	2.3	43.4	1.6	175.1	1.1	-170.7	-0.3	260.2	1.0
Construction	0.4	2.5	7.2	0.8	0.5	2.0	-1.0	-4.0	3.5	0.6	7.7	1.2	-0.3	-1.1	-85.3	-1.4	-4.5	-0.2
Elec., Gas & Water	3.5	6.6	22.3	10.9	1.4	4.5	5.4	1.8	37.4	2.8	0.3	3.6	92.6	1.3	152.1	1.1	13.2	0.3
Trade & Transport	657.9	15.7	1 099.9	14.7	1 046.0	12.2	204.5	6.8	1 169.7	4.6	537.1	11.5	419.9	1.3	4 735.6	2.2	755.1	0.7
Other Private Services	2 030.1	20.4	799.3	15.7	1 544.4	12.4	142.2	3.8	276.8	3.4	145.2	10.1	61.7	0.2	7 530.3	2.7	3 174.8	1.6
Government Services	259.8	20.7	265.1	15.4	229.4	16.8	25.0	7.7	149.8	3.5	58.2	10.8	-9.1	-0.3	318.4	0.7	772.7	1.0
Total	13 347		10 983		10 271		9 388		31 898		2 639		25 177		24 938		11 015	

Annex Table 5A.9. Welfare Effects of BRIICS Free Trade Agreements

(billions of U.S. dollars and percentage)

BRIICS Free Trade

	Scenario 1 Welfare		Scenario 2 Welfare		Scenario 3 Welfare		Scenario 4 Welfare		Scenario 5 Welfare	
	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP	U.S.$	% of GDP
Brazil	2.4	0.27	6.4	0.71	6.4	0.71	6.2	0.69	6.2	0.69
Russia	11.5	2.10	11.8	2.15	11.8	2.15	11.6	2.11	11.6	2.11
India	2.1	0.24	8.1	0.95	8.0	0.94	15.2	1.79	18.0	2.12
Indonesia	4.4	1.70	8.6	3.34	11.7	4.52	13.3	5.16	13.3	5.16
China	-0.7	-0.03	-0.5	-0.02	2.0	0.10	14.5	0.70	18.8	0.91
South Africa	2.7	1.32	2.7	1.35	2.7	1.35	2.6	1.30	2.6	1.28
Global	172.2		244.0		248.2		279.0		286.4	

Unilateral Free Trade

	Welfare	
	U.S.$	% of GDP
Brazil	26.0	2.91
Global	73.9	
Russia	24.9	4.53
Global	83.1	
India	28.8	3.40
Global	102.2	
Indonesia	12.1	4.70
Global	40.0	
China	107.1	5.19
Global	253.4	
South Africa	12.0	5.94
Global	27.1	

Global Free Trade

	Welfare	
	U.S.$	% of GDP
Brazil	26.4	2.94
Russia	41.0	7.48
India	50.0	5.89
Indonesia	26.6	10.30
China	131.4	6.37
South Africa	16.2	8.05
Global	2 870.1	

Chapter 6

Brazil

by

Ralph Lattimore and Przemyslaw Kowalski

Introduction

This chapter introduces a broad range of trade and trade related issues in Brazil. The paper takes a historical perspective in order to shed light on some current trade policy settings in Brazil. Brazil has faced a number of challenges in achieving a highly sustainable rate of economic growth and an improvement in income distribution over the last 60 years.

Brazil has reinvigorated its trading relationship with world markets. Trade is now twice as important as it was two decades ago. In 1988, trade constituted 14% of GDP; it was 30% in 2006. Inflation has been driven down to around 3%, while growth has recovered to the 4-5% range in recent years. Successive governments have succeeded in cultivating strong renewed hope for economic success on all fronts. For all these reasons Goldman Sachs announced that Brazil showed enough promise of high sustained growth to include it in their BRIC group of emerging economies.

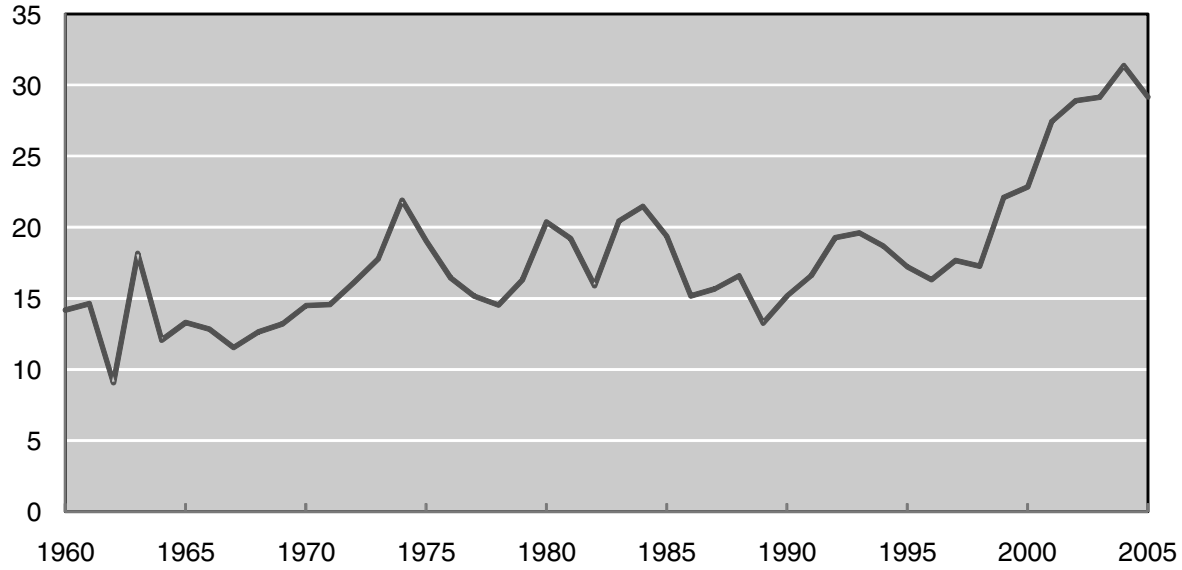
A Brazilian World View

Brazil's import substitution programme of the post-World War II period constrained trade at around 15% of GDP. However, over the last 15 years, trade has accelerated from about 14% of GDP in 1988 to nearly 30% in 2005, Figure 6.1. Brazil has rejoined the world trade environment. In the five years leading up to May 2007, the annual rate of growth of Brazilian exports was 22%. Average world export growth was 8.5% for the same period. This trade indicator marks Brazil's re-entry into the mainstream of global market developments following its trade and macroeconomic reforms since the late 1980s. The following analysis investigates these trends in the context of Brazilian trade-related policy and global market developments.

Brazil is a large country with a diversified set of resource endowments and an associated broad production base. The country also has a particular set of comparative advantage strengths in selected food and agricultural products given its large agricultural land base over a wide range of climatic zones. Brazil is also rich in mineral resources and it has developed a broad non-food manufacturing base consistent with its resource base and the size of its domestic market. This pattern presents Brazil with major international trade policy challenges considering the strong international protectionist bias against exports of food and agricultural products, Table 6.1.

The Brazilian economy has had a long and varied association with international goods, foreign direct investment and other financial markets. Government has supported these linkages through deep involvement in international relations. In this sense, Brazil is an advanced economy from an international relations perspective, which gives the country a deep and broad historical platform from which to actively participate in international affairs on its own account, and to represent developing country interests in the G4 and other fora. For example, Brazilian patent law dates from 1809 (70 years before Germany) and Brazilian Governments have participated in every international conference on intellectual property rights since that time. Brazil was one of the 23 founding members of the GATT in 1947.

Figure 6.1. Total trade as a percentage of GDP



Source: WDI.

The Brazilian economy is influenced by a wide range of world markets, institutions and global policy settings. Some of the most significant influences on the Brazilian economy are within the American hemisphere, in Latin America and in South America. However, Europe, the Middle East, Africa and Asia are also very important in terms of two-way trade, foreign investment opportunities and immigration.

Table 6.1. Trade Restrictions faced by Exporters

Percent tariff equivalent

	Agriculture and Food	Other Manufactures	All Tradables
Brazil	**45**	**8**	**16**
Argentina	45	13	24
Canada	45	9	12
Australia	54	9	21
Mexico	25	7	8
Indonesia	36	12	14
China	27	6	6
Russia	49	8	10
United States	48	7	11
EU15	37	9	12

Source: World Bank (2006).

Brazil's two most important trading partners are the European Union and the United States due to the complementarities that exist with respect to Brazilian export competencies and import requirements (in terms of capital equipment, other technology and foreign savings). These relationships imply that Brazil must place a high priority on multilateral trade liberalisation and the WTO. Given the global trade

policy bias reflected in the relative tariffs in Table 6.1, it is estimated that Brazil would be one of the largest beneficiaries of free trade in food and agricultural products Table 6.2.

Brazil also has a very natural tendency to stimulate trade and development around its home base – South and Latin America – because the continent would be more secure in geopolitical terms, with faster economic growth and an improved distribution of income. Accordingly, Brazil puts significant weight on the development of the Mercosur FTA. This arrangement has its own challenges of course. The comparative advantages and disadvantages within Latin America and Mercosur show a degree of similarity in terms of market sophistication (level of development) and product mixes.

The growth of China has created important new opportunities for Brazil because there are strong complementarities in comparative advantage between these two countries. The complementarities are beginning to show up in higher relative prices for resource-based products (*vis-à-vis* light manufactures) and changing bilateral trade shares in Brazil – towards China and away from the EU and US. The recent increase in resource-based product prices is not expected to be a permanent shift but rather the short-term effect of the increased demand for these products and the relatively slow supply response associated with primary products.

Global business cycles impact predictably on Brazil and recent buoyancy reflects itself in increased Brazilian exports. Global recessions, like the one that occurred in 2001, can produce economic shocks in Brazil that strain its ability to maintain domestic economic programmes that are important for long term growth, welfare and trade.

Table 6.2. Changes in Exports from Multilateral Free-Trade, Post Uruguay

USD 2001, billions

	Agriculture and food	Textiles and clothing	Other merchandise
China	7.7	36.7	7.8
Indonesia	1.1	3.2	-0.3
Other Southeast Asia	6.7	8.8	6.5
India	6.0	4.8	14.6
Other South Asia	1.3	4.2	1.3
Argentina	1.5	-0.2	1.4
Brazil	**8.3**	**-0.6**	**-0.7**
Other Latin America	5.6	3.9	4.9
All low and middle income	48.3	68.7	49.9
All high income countries	47.7	18.3	178.7
All countries	96.0	87.0	228.6

Source: Hertel and Keeney (2005, Table 7).

A wide range of commodity and product prices are of importance to Brazilian exports and imports. They include mineral products (iron and steel, aluminium), energy products (oil, gas, petroleum, electricity and biofuel), agricultural products (orange juice, poultry, soybean products, coffee, sugar, maize and wheat) and other manufactured products (machinery and equipment, aircraft and motor vehicles and IT products and services).

Brazil is a middle income country with longstanding investment opportunities; it has also traditionally been a net foreign borrower. Accordingly, the international cost of capital is a constraint on domestic investment, as the country typically operates with a current account deficit. World financial markets were benign over the period from 2002 to 2006 and the liquidity situation over that time assisted Brazil in achieving macroeconomic stability. However, as recent events in global capital markets show,

Brazilian institutions need to be very robust to cope with of global business cycles and financial market volatility.

Over the last ten years, financial market behaviour in conjunction with macroeconomic policies in the OECD and in other large economies have led to destabilised exchange rates; this has also occurred in response to current account deficits and surpluses (Wade, 2007). Managing the volatility and risks associated with this situation presents Brazil with economic policy challenges. One highly visible element in this global monetary environment is the US and Chinese balance of payments policy. The US has continued to run a large current account deficit while a number of other countries (including China) have accommodated this stance by running large current account surpluses and associated increases in foreign exchange reserves. In recent years, this situation has tended to produce a balance between a high US dollar and a low Chinese yuan. This puts pressure on the part of Brazil's importable sector that competes with China.

Historical Impacts of Trade and Industry Policy in Brazil

Brazil has had a long and varied economic and trade history. Brazil initially developed a strong comparative advantage in a range of products including rubber, cocoa, sugar, coffee and beef. This advantage was (and still is) coupled with a comparative disadvantage in non-food manufactured products. In this structural economic environment, Brazil has tended to pursue import substitution policies with import tariffs, quantitative import restrictions and selected export taxes protecting the non-food manufacturing sector and disadvantaging the export sector of the economy (by the Lerner symmetry theorem[1]).

Brazil is the largest economy in South America with just over 1.5% of world GDP and just under 3% of the world's population. It is richly endowed with natural resources including agricultural land, tropical forests, water resources, hydro electric power and a range of mineral deposits including oil and mineral ores. It has over 5% of the world's agricultural land (twice Argentina's share), World Bank, 2006. The Brazilian primary sector is relatively unsubsidised and it has always had a strong comparative advantage. This agricultural comparative advantage has broadened in recent decades to include soybeans, maize, oranges, poultry and ethanol.

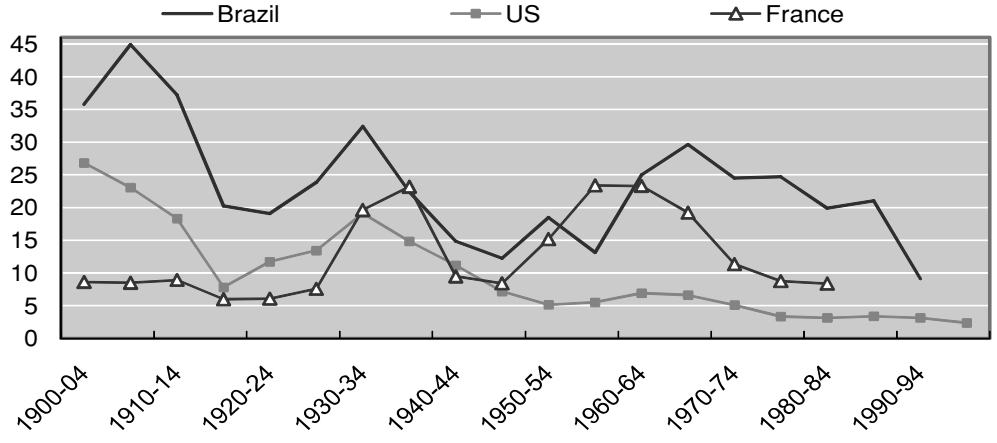
For the first half of the 20th century, the general pattern of import restrictions followed by Brazil was very similar to that pursued by many high income countries. This is demonstrated in Figure 6.2, which compares the average applied tariff in Brazil with the average applied tariff of the United States and France (counted as total customs revenue divided by imports). France is chosen as a comparator because it had the same relative size agricultural sector in the 1930s.

Much of the world economy was in a globalisation period from the mid-1800s until around 1914. Accordingly, the average tariffs at the beginning of this graph (1900-1914) show the degree of import substitution these countries imposed on their economies in this earlier globalisation period. In 1900, the Brazilian tariff was almost the same as the US tariff and both were significantly higher than the French tariff. After an initial rise, the Brazilian tariff then fell in tandem with the US tariff to the end of the globalisation period in 1914, and they both continued to fall until the early 1920s. During the turbulent economic environment of the 1920s, the tariffs of Brazil, France and the US rose gradually, culminating in the tariff spikes just after the Great Depression. These tariff spikes were part of a general pattern of

1 The Lerner symmetry theorem states that import tariffs are equivalent to export taxes when trade is balanced (and vice versa).

(`beggar thy neighbour') trade policy responses to the Great Depression. The US spike was caused by the Hawley-Smoot tariff.

Figure 6.2. Applied Tariff



Source: Mitchell (2003) and World Bank (2006).

The tariffs of all three countries immediately began declining once the worst effects of the Great Depression were over and they continued to decline right up until after World War II. At this point the tariffs of the countries were very similar. However, the first Getulio Vargas Government in Brazil (1930-45) set the stage for the Brazilian Import Substitution (IS) programme that would develop later. These pre-War developments anticipated the policy that was advanced by the UN Economic Centre for Latin America (CEPAL) in the 1950s and 1960s – the IS policy promoted by Raul Prebisch.

An important part of these developments in Brazil in the 1930s was the renunciation of the Madrid Agreement on the International Registration of Trademarks (1891). From this point on, Brazil had a standard domestic IPR policy (for products produced in Brazil) and a developmental or IS approach to international agreements in intellectual property rights (IPR). Brazil wanted to stimulate innovation domestically without giving away monopoly rents to foreign companies exporting to Brazil. As the survey of the economics of patents and copyrights dating back to Machlup (1958) shows, there was nothing unusual about the approach Brazil took to intellectual property rights.

The formation of the GATT in 1947 led to general reductions in import protection for non-food manufactures in some countries. The results of these efforts do not appear in the US series used in Figure 6.2 until the 1970s. French import protection rose in the 1950s but then declined as the EU, along with the US and some other GATT members, gradually reduced non-agricultural protection.

The liberalisation of trade in non-food manufactures in the GATT was led by founding members who had a comparative advantage in these products – the United Kingdom, United States, France, Belgium, Luxembourg etc. The early GATT talks stepped away from promoting a more liberal trade policy regime in the highly protected food and agricultural sectors. Had they embraced liberalisation in food it would have benefitted a large proportion of the 23 founding GATT members. In this context then, it is perhaps not surprising that nearly half the founding GATT members chose an alternative trade policy path – import substitution (Anderson *et. al*., 2007). Brazil embarked on its IS programme by raising its applied tariff from less than 10% to over 30% in the late 1950s.

Brazilian industrial and trade policy has had strong dualistic elements reflecting structural challenges that persist to the current period. Over the last century, the challenge has been to develop a broad innovative culture in business, one capable of raising productivity in line with other countries and achieving a level of wealth and distribution of living standards that the productivity growth would supply. From the developments of aviation (Santos Dumont) in the early 1900s to farming and agribusiness developments in recent years, Brazil has produced many valuable ideas. However, the country lacks sufficient technological innovators to make firms more competitive, which would help close the income gap with high income countries. Industries that have been successful technologically have also been successful in international trade, where trade policy has not discouraged exports. Industries that have been less successful technologically have struggled to compete with international competition even when trade policy has protected their position.

Trade policy in Brazil has long been associated with a search for balanced development. The objective has been to encourage productivity growth across a broad range of industries in the tradable and non-tradable sectors through technological improvements based on a home-grown innovation platform. This is the driver behind Brazil's approach to international agreements on intellectual property. It lay behind the import substitution strategy during the period to the late 1980s and it lies behind the trade liberalisation strategy of the last 17 years.

The changing impacts of Brazil's trade policy stance over the century can be seen in the following set of tables. Prior to World War II, the agricultural sectors of Brazil and France were the same relative size (Table 6.3). By contrast, Brazil's industrial sector represented less than half the size of France's industrial sector with the difference being made up by a much larger service sector in Brazil. The relative size of Brazil's industrial sector began to grow from 1940 even before the introduction of the high tariffs. Industry represented 23% of GDP by 1950-54. From the 1935-39 period, the agricultural sectors of Brazil and France began to shrink but at a much faster pace in France.

During the most recent import substitution period in Brazil (1950-90), the Brazilian applied tariff fluctuated around 25%. The industrial sector (mainly manufacturing) expanded in this environment to reach 40% of GDP in the 1980s. This was achieved at the expense of agriculture and the service sector, but mainly agriculture. Resources tended to move to the more highly protected areas of manufacturing.

Table 6.3. Sectoral Composition of Brazil and France

As a percentage of GDP

	Agriculture		Industry		Services	
	Brazil	France	Brazil	France	Brazil	France
1920-24	24		13		63	
1925-29	22		13		65	
1930-34	24		13		63	
1935-39	23	22	14	36	63	42
1940-44	21		18		61	
1945-49	18	18	21	36	61	46
1950-54	16	13	23	48	61	39
1955-59	15	10	26	48	59	42
1960-64	13	8	29	48	58	44
1965-69	13	7	30	48	57	45
1970-74	11	6	33	38	55	56
1975-79	11	5	35	36	54	59
1980-84	10	4	40	32	50	64
1985-89	9	4	40	30	51	66
1990-94	7	2	34	28	59	69
1995-99	7	2	26	26	67	72
2000-04	8	2	32	24	61	74

Source: Michell (2003) and World Bank (2006).

By contrast, the relative size of the industrial sector in France was getting smaller, from its very strong position (48%) in the 1950s.

The size of the Brazilian service sector went down over the IS period as resources were attracted towards the industrial sector. In the period 1970-74, the French service sector finally exceeded the Brazilian service sector. The relative size of the service sector in Brazil continued to decline until the late 1980s.

It should be noted that there are a number of factors influencing the relative sizes of these sectors over time – not just import protection of the tradable sector. In countries with large domestic markets, like Brazil and France, income growth tends to favour growth in the service and manufacturing sectors at the expense of the primary sector (via Engel's Law[2]). The sectoral shares are also affected by the growth rates in trade of the exportable and importable products.

Brazilian exports of non-food manufactured products grew even more rapidly than the relative size of the industrial sector might suggest: from their small base of 4% in 1960-64 they grew to reach 56 % of merchandise exports by 1990-94, Table 6.4. Imports of non-food (other) manufactures were more volatile over this period, falling to a low of 36% of merchandise imports over the period 1980-84.

2 Engel's Law is that as consumers incomes rise they tend to consume relatively fewer (and less) staple products and relatively more luxury goods.

Table 6.4. Sectoral Composition of Exports

As a percentage of merchandise exports

	Agriculture and Food	Other primary	Other manufactures
1960-64	88	8	4
1965-69	83	8	9
1970-74	69	10	20
1975-79	57	12	30
1980-84	45	15	39
1985-89	35	14	50
1990-94	30	14	56
1995-99	34	11	54
2000-04	32	13	54

Source: World Bank (2006).

An index of revealed comparative advantage advantage (RCA) is a useful guide to sectoral trade performance over the period of IS (Table 6.5). The RCA index for agriculture deteriorated from 1965-69 (3.3) reaching an index low of 2.4 over the period 1985-94. This fall in revealed comparative advantage is to be expected given the export tax implicit in the import substitution programme. However, the payoff from import substitution is a rising RCA index in the protected sector. As the estimates show, the degree of comparative disadvantage of the non-food manufacturing sector was reduced over this period as reflected in the RCA index rising from 0.1 in 1960-64 to 0.8 in 1990-94. However, in spite of the heavy protection, the sector never broke through the barrier of unity (1.0) which would have revealed a comparative advantage in non-food manufacturing overall. It should be borne in mind that we are presenting RCA indices here at a highly aggregated level. The aggregate sectors will include specific agricultural industries in Brazil (like wheat) with a true comparative disadvantage and specific non-food manufacturing industries (biofuel and aircraft) with a true comparative advantage.

The positive side of the IS programme was the broadening and deepening of the non-food manufacturing sector. IS policies are one of the ways of mobilising resources for economic development. Brazil developed a number of large manufacturing sectors over this period. They included, among others, the manufacture of machinery and equipment, an automotive and aviation industry, chemical manufacturing and textiles, clothing and footwear manufacturing.

The Other Primary sector (minerals, oil etc) switched from being a sector with a comparative disadvantage in 1960-64 to a sector with a comparative advantage in 1990-94 (RCA of 1.2). This was achieved largely by mineral exploration and related refining and processing investments.

Table 6.5. Revealed Sectoral Comparative Advantage

	Agriculture and Food	Other primary	Other manufactures
1960-64	3.0	0.7	0.1
1965-69	3.3	0.6	0.1
1970-74	3.1	0.7	0.3
1975-79	2.9	0.8	0.5
1980-84	2.7	0.9	0.6
1985-89	2.4	1.1	0.7
1990-94	2.4	1.2	0.8
1995-99	3.2	1.0	0.7
2000-04	3.6	1.1	0.7

Source: World Bank (2006).

The downward pressures put on the competitiveness of agriculture throughout the IS period are also illustrated in Table 6.6. Brazil had a somewhat declining share of world agricultural exports from 2.63% in 1960-64 to 2.26% in 1990-94 (though with much volatility caused by global variations in climatic and other factors). The other manufacturing sector (non-food), on the other hand, gained world market share from 0.06% in 1960-64 to peak at 0.83% in 1985-89. This is unsurprising given the subsidy equivalent associated with the IS programme.

Table 6.6. Share of World Exports

Percentages

	Agriculture and Food	Other primary	Other manufactures	Services
1960-64	2.63	0.59	0.06	
1965-69	2.71	0.53	0.12	
1970-74	3.03	0.69	0.3	
1975-79	2.96	0.77	0.47	0.49
1980-84	3.16	1.01	0.73	0.47
1985-89	2.72	1.31	0.83	0.39
1990-94	2.26	1.13	0.72	0.41
1995-99	2.85	0.91	0.64	0.46
2000-04	3.41	1.06	0.67	0.57

Source: World Bank (2006).

Economic Reform and the Current Macroeconomic Environment

The Brazilian economy has been undergoing an extended period of macroeconomic stabilisation since 1988 – extended in part because Brazil has been affected by a number of major external economic shocks. The economy was also affected for a short period after the 2001 global recession by a severe weakening in government confidence that was quite destabilising.

There have been no major external or internal shocks over the last five years. Indeed, the recent oil discoveries coupled with more general world resource-based product price buoyancy has reinforced political stability. In this environment it has been possible for government to apply monetary and fiscal discipline to its anti-inflation programme. Inflation has been brought down to around 3%, real GDP growth has averaged over 3% per annum and employment has been steadily rising. Foreign exchange reserves have been rebuilt (USD 146 billion in May 2007).

The short-term costs of this type of programme are high real interest rates (7-10%) and associated pressure for the exchange rate to appreciate. In recent months the Brazilian Real has been appreciating against a weak US dollar. The high real interest rates adversely affect the competitiveness of exporting firms, though the exchange rate's strength does facilitate foreign direct investment by larger Brazilian firms.

The distribution of income remains a major challenge for Brazil – it still has the most skewed distribution in South America (and South America itself is amongst the worst in the world). The structural problems in education, training and health will take many years to overcome. In the meantime, Government has introduced a comprehensive social support safety net that is expected to buffer the worst aspects of the distributional issues.

There are a number of macro issues that are currently having specific negative effects on trade performance. Brazil has a State administered value added tax (ICM) that is not operating efficiently in

both the export and import competing sectors. The Federal Government operates as a clearing house to the States for export credits due to exporting firms. Such credits are not always paid with exporters bearing the additional burden. The ICM is also applied unevenly by some State Governments in attempts to attract new industries, both domestic and foreign, to their jurisdiction. Some States have offered multi-year ICM tax holidays to particular firms and this has created something of an interstate "fiscal war".

Brazil has a series of major issues with transport infrastructure affecting exports – particularly bulk agricultural exports. Industry groups are particularly concerned with roads and port facilities. In the San Francisco valley in the North East, horticultural exporters have gone to the extent of building a private international airfield to transport higher valued products to Europe and North America.

Industry groups are also concerned with the effect of payroll taxes on firm competiveness. These taxes are also likely to be adversely affecting labour employment and labour informality which has been a growing issue in Brazil until recently.

Table 6.7. Index of Business Restrictiveness, 2006

Rank out of 175 countries

	Brazil	China	India	Russia	Indonesia	S. Korea	Germany
Doing business	*121*	*93*	*134*	*96*	*135*	*23*	*21*
Starting a business	115	128	88	33	161	116	66
Dealing with licenses	139	153	155	163	131	28	21
Employing workers	99	78	112	87	140	110	129
Registering property	124	21	110	44	120	67	42
Getting credit	83	101	65	159	83	21	3
Protecting investors	60	83	33	60	60	60	83
Paying taxes	151	168	158	98	133	48	73
Trading across borders	53	38	139	143	60	28	7
Enforcing contracts	120	63	173	25	145	17	29
Closing a business	135	75	133	81	136	11	28

Source: World Bank, Doing Business.

The World Bank index of business restrictiveness (Table 6.7) highlights Brazil's relatively poor performance across a number of areas of "doing business" – many of which will be relevant to firms in the tradable sector. Brazil does poorly compared to China and Russia and is about on a par with India on this index.

Trade Liberalisation and Trade Performance

Trade Liberalisation

The trade reforms after 1990 included major reductions in trade barriers encompassing goods and services, tariff and non-tariff barriers and quantitative restrictions. The changes in tariffs are documented in Table 6.8. Tariffs on agricultural and food products fell from a simple average of 26% in 1990 to 10% in 2005. The simple mean tariff on non-agricultural products fell to the same degree from 33% in 1990 to 13% in 2005. The maximum tariff was halved to 55% and the standard deviation on tariffs dropped to around a third of their 1990 levels. The Brazilian reforms coupled trade reforms on goods with increased completion in the service sector. Furthermore, service sector reform involves an on-going process of relaxing the participation of foreign firms in these industries. The official restrictions on foreign participation in a range of industries as of July 2007 are listed in Lattimore and Kowalski (2008).

Table 6.8. Changes in Brazil's Tariff Structure

	Agricultural and Food Products			Non-Agricultural Products			Maximum Rate
	Simple mean tariff	Weighted Average	Std Dev.	Simple mean tariff	Weighted Average	Std Dev.	
1990	26.20	20.32	23.24	33.25	18.78	19.37	105
1991	20.31	19.74	21.00	26.91	16.12	16.72	85
1992	15.88	14.42	17.55	22.18	15.89	13.67	65
1993	10.44	7.91	6.56	14.65	13.81	8.50	40
1994	9.05	7.54	6.77	13.38	14.22	8.41	40
1995	9.86	10.86	5.45	13.61	13.00	7.05	33
1996	10.05	10.01	5.72	14.00	14.52	8.88	70
1997	10.06	9.90	5.55	13.67	14.67	7.88	63
1998	12.87	12.61	5.99	16.50	16.49	7.47	49
1999	12.91	12.73	5.99	16.27	14.09	7.07	35
2000	12.83	12.04	5.81	16.04	12.87	6.92	35
2001	12.52	11.38	6.22	14.50	10.50	7.16	55
2002	11.67	10.71	6.09	14.15	9.93	6.98	55
2003	11.68	9.81	6.10	13.78	9.39	6.83	55
2004	11.68	10.66	6.11	13.72	8.86	6.89	55
2005	10.26	10.11	5.79	12.73	8.38	6.93	55

Source: UN Trains.

The new tariff levels represent a large relative decline from those in place during the IS programme in Brazil but they still represent a significant cost to consumers and especially low income consumers. The current tariffs also increase the cost of doing business in terms of capital equipment costs and the cost of imported components. As shown in Table 6.9, the applied tariffs on motor vehicles, metal products, electronic equipment and other machinery and equipment are both a significant subsidy to the import competing sector producing these goods in Brazil and a significant penalty for doing business in Brazil for firms and consumers using these products.

Table 6.9. Brazil's Top 10 import Tariffs, 2005

	Value of imports	% of total imports	Simple Average		Weighted Average		Std. Dev.	Maximum	Domestic peaks	International peaks
			Applied	Bound	Applied	Bound				
CRP - Chemical, rubber, plastic products	17 664 917	23,11	8,66	22,56	7,93	23,06	5,78	35	2	194
OME - Machinery and equipment n.e.c.	14 057 324	18,39	13,86	32,14	12,61	30,73	6,06	20	0	560
ELE - Electronic equipment	9 609 389	12,57	14	33,04	8,43	33,5	7,73	20	0	251
OIL - Oil	7 840 164	10,26	0	35	0	35	0	0	0	0
MVH - Motor vehicules and parts	4 740 882	6,20	25,34	32,26	19,79	32,44	10,51	35	52	108
P_C - Petroleum, coal products	3 904 610	5,11	0,86	35	0,67	35	1,63	6	0	0
OTN - Transport equipment n.e.c.	2 450 148	3,21	11,4	33,28	2,96	33,71	7,88	35	1	29
NFM - Metals n.e.c.	1 867 679	2,44	7,23	31	6,45	21,35	4,46	18	0	1
COA - Coal	1 563 779	2,05	0	25	0	16,61	0	0	0	0
FMP - Metal products	1 366 708	1,79	15,9	33,91	15,81	33,5	3,07	20	0	188

Source: UN Trains.

In the long run, the greatest drawback associated with the current level of tariffs is the effect they will have on the quality of Brazilian import competing goods and on the incentive to invest in R&D to improve that quality. When the import competing sector is exposed to world class product competition in its home market at world competitive prices, it has the maximum incentive to match or exceed that quality. Furthermore, in the absence of tariff protection, Brazil will attract foreign investment that is attuned to Brazil's economic strengths rather than attract foreign firms who are merely interested in jumping over tariff walls to access the large domestic market. These foreign firms are also very likely to be "foot-loose" in the sense that they do not deeply integrate their activities in Brazil and leave Brazil if their tariff protection is reduced. There is some evidence that a number of foreign firms who set up operations in Brazil during the IS era were of this foot-loose type. As demonstrated in Table 6.11, in the fine chemical industry alone, 1451 industrial projects were stopped or discontinued in the decade

following trade liberalisation. According to Professor Barbosa (University of Rio de Janeiro), many of the firms involved were foreign subsidiaries that did not deeply integrate into the Brazil economy as the IS programme had intended them to.

Table 6.10. Foreign Firms leaving Brazil following Trade Liberalisation, Fine Chemicals

Projects chemical plants ceasing operations or not implemented in Brazil, 1989-1999

	Intermediate products	Pharmaceuticals	Agricultural chemicals	Additives, aromaties, etc…	Total
Operations stopped	241	407	73	375	1096
Projects not implemented	208	110	10	27	355
Total	449	517	83	402	1451

Source: Denis Borges Barbosa Advogados.

Another aspect of the unilateral tariff liberalisation is that it has left a large gap between applied tariffs and tariffs bound at the end of the last GATT Round, (Table 6.9). This gap amounts to ‘‘policy space’’ in the current Doha Round which is naturally viewed very positively in Brazil. However, policy space held by any negotiating country has a negative connotation to negotiating partners because it signals a reduced commitment to make large tradeoffs. For example, the presence of large policy spaces means that a country has to make a very large tariff cut offer in order to provide even a small increase in market access to demandeurs. Furthermore, large bound-applied gaps may be a signal to potential investors in the export industry of a country that government could contemplate large tariff increases in the future.

The new tariff structure in Brazil maintains its former progressive tariff structure with its highest tariffs on consumer goods and its lowest tariffs on raw materials and intermediate goods. This structure, of course, tends to be less efficient than a uniform tariff because it allocates resources further towards selected inefficient import substitute enterprises.

The IS programme in Brazil protected import competing industries using a combination of tariffs and quantitative restrictions. As we have just seen, tariff protection also involved progression from raw material up to consumer products. For these reasons, applied tariffs underestimate the protection offered industries. A better guide to industry protection in this context is the effective rate of protection (ERP), (Table 6.11).

Prior to the trade liberalisation programme in 1987, the most heavily protected industries in Brazil were plastics, clothing, fabrics and footwear, rubber products and electronic and communications equipment manufacturers – all with three digit effective rates of protection. Motor vehicles and transport equipment had an ERP over 100% in 1990. In other words, the protective structure in 1987 increased value added in these industries by more than 100% (relative to value added at world prices). A number of other industries had ERP’s over 50%.

Table 6.11. Effective Rates of Protection in Manufacturing

Percent

	1987	1990	1997
Nonmetal mineral products	32	42	15
Metalworking	60	35	18
Machinery	19	41	14
Electronic and communications equipment	108	53	17
Transport eq. and motor vehicles	44	178	34
Paper and paper products	31	23	13
Rubber products	125	67	15
Chemicals	65	22	10
Pharmaceuticals	52	36	10
Perfumes, soap and candles	96	76	26
Plastic products	428	54	22
Textiles	53	50	22
Clothing, fabric products and footwear	241	65	23
Food	33	34	16
Beverages	-8	93	20
Tobacco	-5	3	11
Average	86	55	18
Standard deviation	106	39	6

Source: Ferreira and Rossi (2003).

By 1997, ERP's had been reduced across the manufacturing sector to an average of 18% with a very large reduction in its standard deviation. Six industries had ERP's greater than 20% with the transport equipment and motor vehicle industry standing out with an ERP of 34%.

In the exportable segment of the tradable sector, industry protection is much lower. In fact, the ERP in the agricultural sector is probably close to zero based on OECD estimates of the producer support estimate in agriculture, (OECD, 2005). Accordingly, while the trade liberalisation programme has resulted in a substantial reduction in import protection, the economy still has an import substitution bias to a degree in manufacturing, as reflected in the 1997 ERP's. In other words, the import substitute sector is still bidding some resources away from the export and other sectors where they would be more efficiently employed. In this environment, the Brazilian economy will not perform optimally and material living standards (overall) are still lower than they could be. Furthermore, since the export sector employs relatively more low wage workers than the import substitute sector, (OECD, 2005), the trade policy balance still tends to compound the problems associated with the distribution of income (which is heavily skewed in favour of higher income employees).

Manufacturing trade crucially depends on some backbone services, such as transport, logistics, financial and telecom services. Efficiency gains in these sectors translate into higher competitiveness of downstream (goods) industries, thus affecting the volume of goods trade.

Efficient transport services and infrastructure imply lower trade costs. Internet access and IT technology might increase export performance by making it easier for enterprises to communicate with foreign buyers, by improving access and information on markets, or by allowing enterprises to bid for contracts over the internet or to participate in business to business exchanges. This decline in trade costs has an impact on the volume of both exports and imports. By the same token, efficient telephone and internet services lower communication costs which are important inputs into international transactions

involving movable goods. More specifically, theory suggests that communication networks such as internet reduce sunk costs associated with trade. Studies have found that since the mid-1990s, internet connectivity has become increasingly important as an explanatory factor for bilateral merchandise trade flows in a cross-section of countries.

The role of the financial sector in facilitating international exchange in goods (and services) is twofold. Banks finance export activities by providing appropriate lines of credit to the buyer or to the seller. This is the more straightforward view. It is less straightforward to see that the financial sector fosters the supply of exports by promoting specialisation. Specialisation in production requires transactions and information. If the associated costs are low and the services provided by financial institutions are efficient, it is more likely that specialisation will actually occur.

In addition to the direct effects on export performance determined by reductions of trade costs, the lowering of the services-link costs can have significant impacts on the fragmentation of production processes.

Trade restrictions in the service sectors in Brazil tend to be somewhat higher than in OECD countries but lower than in other emerging economies (Figures 4.3a-e, Sally, chapter 4). These Figures provide estimates of the trade restrictiveness in five service sectors in Brazil: banking, insurance, fixed and mobile telecoms and the distribution sector. Many of the restrictions for the five service industries which led to the TRI's estimated above are the result of Brazilian policy limiting foreign participation in selected product and factor markets.

Current Trade Performance

The trade policy liberalisation programme had important effects on the sectoral structure of the Brazilian economy and on the composition of trade. Since the trade liberalisation programme, the agricultural sector has actually expanded one percentage point to 8% of GDP (2000-2004), (Table 6.3). Furthermore, the food manufacturing sector (the largest component of the industrial sector) expanded alongside agriculture. The trade liberalisation reduced the implicit export tax on the exportable sector and allowed it to better compete for resources in the face of rising world prices for resource-based products.

The industrial sector shrank from 40% of GDP to 26% in the period 1995-99 as firms contracted or stopped production of import competing products. The sector then proceeded to expand back out to 32% in the following period. This may have involved an overshooting response and/or a reallocation of resources within the industrial sector (towards food manufacturing, for example). The freed up resources then enabled the services sector to expand by over 10 percentage points from its low point in the period 1980-84.

Food and agriculture exports expanded from their low point of 30% in 1990-94 to 34% in the following period, Table 6.4. There was a relatively small contraction in exports of *other manufactures* from the earlier period. This demonstrates significant competitive strength in the non-food manufacturing sector. On the import side, food and agricultural imports declined from around 13% of merchandise trade in 1990-94 to 8% in 2000-04. The share of imports of other (non-food) manufactured imports doubled from their low of 36% in 1980-84, in part because firms had cheaper access to imported intermediate inputs and capital equipment.

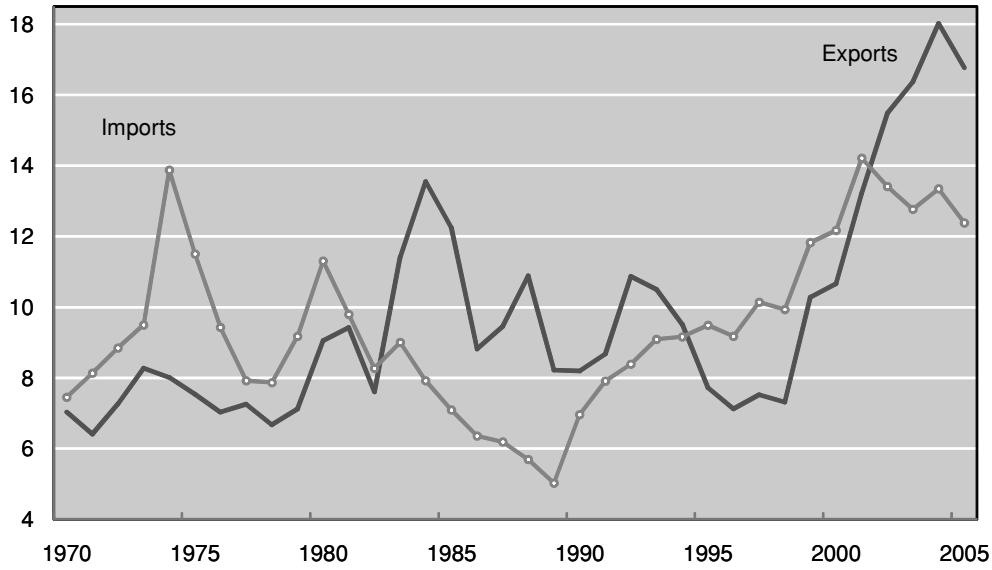
The RCA index for agriculture and food increased rather dramatically following the trade liberalisation episode, Table 6.5. It rose from an index of 2.4 in 1985-89 to 3.6 in 2000-04. The RCA index for other manufacturing fell, as expected, but it didn't fall very much. This reflects both the

international competitiveness of many Brazilian manufacturers and the remaining high protection for selected industries.

Brazil's world market share for agriculture and food products rose over 50% following trade liberalisation, Table 6.6. The world market share of non-food manufacturers fell from their peak of 0.83% in 1985-89 to 0.67% in 2000-04. These patterns in Brazilian world trade shares and RCA, of course, are simply reflecting the underlying true comparative advantages of the sectors following liberalisation.

One final point on the liberalisation episode concerns the speed of sectoral adjustment. It is reasonably clear from this data that adjustment takes some years to occur. Indeed, it is probably the case that the Brazilian economy is still experiencing the redeployment of resources in 2007. In other words, the data to 2004 reveal some, but not all, reform dividends. Some of these later dividends will show up in the more detailed and in more up-to-date data that follows.

Figure 6.3. Imports and exports of goods and services as a percentage of GDP, 1970-2005

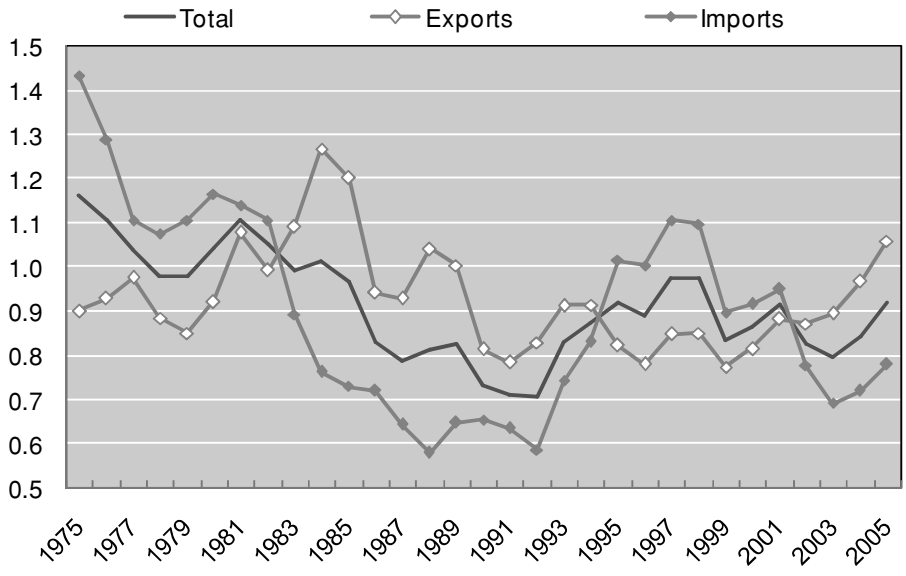


Source: WDI.

The annual OECD data on Brazilian imports and exports of all goods and services portrays the same trends as before (Figure 6.3). Immediately after the trade liberalisation programme began, imports of goods and services began to rise and rose steadily through 2002. Export growth took longer to consolidate but has continued to rise through 2004.

Brazil's share of world trade has continued to rise after 2003, both for imports and exports, Figure 6.4.

Figure 6.4. Share of Brazil's goods and services in world total



Source: WDI.

Services

Brazilian exports and imports of services have both increased after the opening up of the economy after the 1980s (Table 6.12). Brazilian service exports tend to be lower than for the world as a whole while Brazilian imports tend to higher. This is consistent with Brazil's stage of development and its requirements for foreign savings.

Table 6.12. Services exports and imports in total trade, World and Brazil

Percentages

	Brazil		World	
	Exports	Imports	Imports	Exports
1975	10.9	15.6	18.1	17.7
1980	7.9	16.3	18.2	16.9
1985	7.5	20.9	18.6	18.1
1990	10.7	25.0	20.0	19.9
1995	11.7	20.1	19.5	19.6
2000	14.7	22.0	18.8	19.5
2005	12.0	23.8	18.4	19.3

Source: WDI.

The Revealed Comparative Advantage (RCA) Index indicates that service exports in Brazil are below the world average (Table 6.13). The percentage of services in Brazilian exports increased in the 1990s but this development has partly reversed since 2000. Despite the decline, however, Brazil has maintained a comparative advantage in services relative to China and Russia. However, compared to the world average and India's phenomenal service sector specialisation, Brazilian services remain underdeveloped.

Table 6.13. Revealed comparative advantage indices in services, selected countries

	1994	1997	2000	2002	2005
Brazil	**0.492**	**0.514**	**0.761**	**0.668**	**0.615**
China	0.685	0.602	0.564	0.532	0.456
India[a]	0.940	1.032	1.441	1.350	1.402
Russia	0.546	0.708	0.432	0.551	0.470

a) 2003 for India instead of 2005.

Source: IMF Balance of Payments (2007).

The breakdown by services sector in Table 6.14 reveals that *Other Services* have grown to be the major services export sector, more than doubling their share of services trade since 1994. Within this sector, *Other business services, Government,* and *Financial services* are the biggest sub-sectors. Expansion of these sub-sectors, coupled with preliminary diversification attempts into new service industries in 2000, has facilitated the growth of the *Other Services* sector. The most recent data indicates that *Transportation Services* and *Other Services* experienced a limited increase in 2005, contributing to an overall 28% increase in service exports.

Table 6.14. Services trade composition

USD million and %

	1990	1994	2000	2003	2004	2005
SERVICES	**-3 761**	**-5 346**	**-7 162**	**-4 931**	**-4 677**	**-8 148**
Total credit	**3 762**	**4 908**	**9 498**	**10 447**	**12 584**	**16 095**
Transportation services, credit	35.8	44.8	14.8	17.4	19.6	19.8
Travel, credit	36.8	19.2	19.1	23.7	25.6	24.0
Other services, credit	27.4	35.9	66.1	58.8	54.8	56.2
Communications	*..*	*..*	*0.6*	*7.3*	*3.5*	*2.6*
Construction	*..*	*..*	*3.6*	*0.2*	*0.0*	*0.1*
Insurance	*11.2*	*8.6*	*5.0*	*2.0*	*1.5*	*1.5*
Financial	*..*	*..*	*6.0*	*5.9*	*6.1*	*5.6*
Computer and information	*..*	*..*	*0.5*	*0.5*	*0.8*	*1.0*
Royalties and licence fees	*1.2*	*1.1*	*2.0*	*1.8*	*1.7*	*1.1*
Other business services	*82.3*	*85.1*	*72.8*	*67.2*	*71.6*	*74.3*
Personal, Cultural and recreational	*..*	*..*	*1.0*	*0.9*	*0.7*	*0.6*
Government, n.i.e.	*5.4*	*5.2*	*8.6*	*14.3*	*14.1*	*13.2*
Total debit	**-7 523**	**-10 254**	**-16 660**	**-15 378**	**-17 260**	**-24 243**
Transportation services, debit	39.8	41.9	25.8	22.2	25.8	20.5
Travel, debit	20.0	21.0	23.4	14.7	16.6	19.5
Other services, debit	40.2	37.0	50.8	63.1	57.6	60.0
Communications	*..*	*..*	*0.4*	*3.8*	*0.7*	*0.8*
Construction	*..*	*..*	*0.0*	*0.0*	*0.0*	*0.0*
Insurance	*6.1*	*6.9*	*3.7*	*5.8*	*6.5*	*4.8*
Financial	*..*	*..*	*7.9*	*7.7*	*5.0*	*5.1*
Computer and information	*..*	*..*	*13.5*	*10.9*	*12.9*	*11.8*
Royalties and licence fees	*1.8*	*6.3*	*16.7*	*12.7*	*12.0*	*9.7*
Other business services	*66.0*	*75.8*	*40.6*	*45.1*	*47.1*	*51.4*
Personal, Cultural and recreational	*..*	*..*	*4.3*	*3.5*	*4.1*	*3.1*
Government, n.i.e.	*26.1*	*11.0*	*12.8*	*10.6*	*11.6*	*13.4*

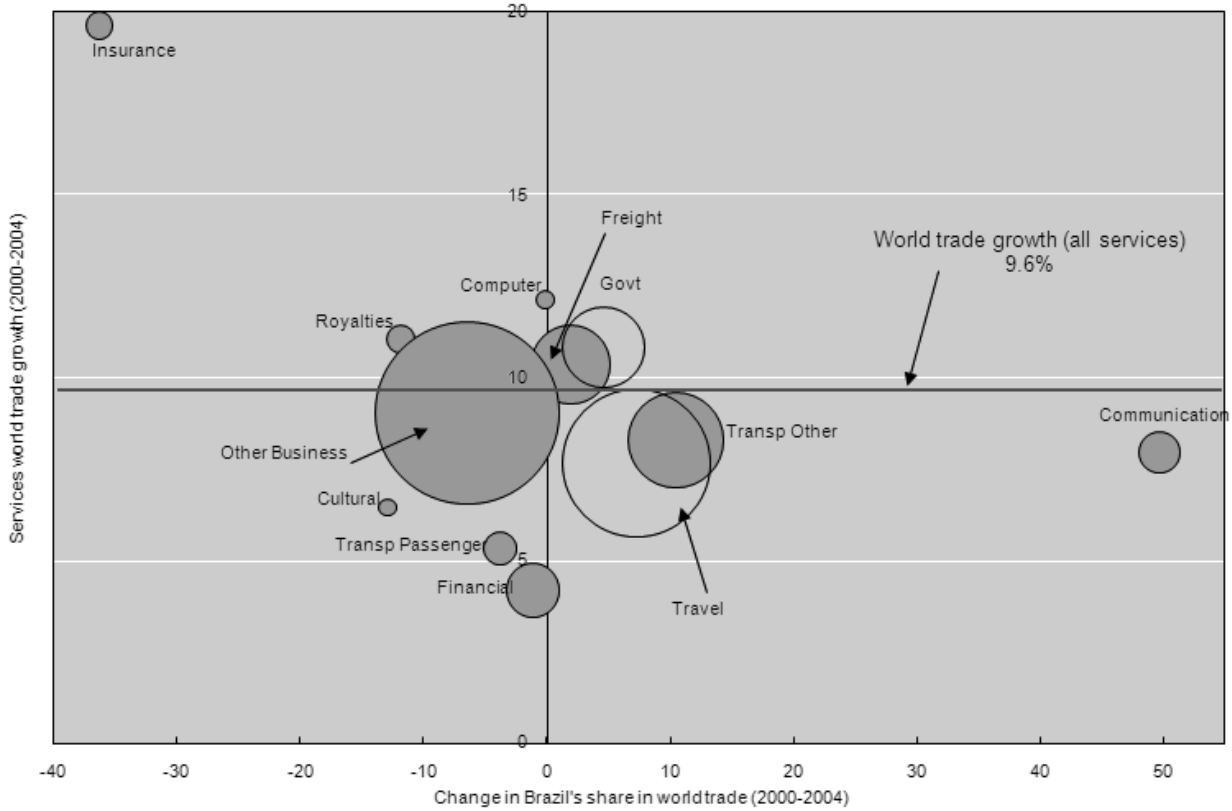
Source: IMF BOP (2007).

Services imports increased 40% between 2004 and 2005 to approximately USD 24 billion. As *Transportation Services* has decreased, this growth in imports can be attributed to an increase in *Travel* and *Other Services*. *Other business services* and *Government* are the two primary sub-sectors that grew in 2005. While *Travel* imports remained stable from 1994 to 2005, *Transportation* decreased by nearly 50% and *Other Services* grew by approximately 50%.

"Quadrant" or "matrix" analysis reveals further information about Brazil's export performance and sectors with high growth potential. The methodology employed in Figures 6.5 and 6.7 assesses exports by product group. The horizontal axis measures the Compound Annual Growth Rate (CAGR) of Brazil's share in world trade by product category. The vertical axis measures the CAGR of world imports to reveal the average world trade growth by product category. The size of a sector in Brazil's export basket is illustrated by the size of balloon. This form of analysis is particularly valuable because it indicates whether the sector's performance was dynamic, stagnant or declining during the respective time period.

Trade potential is highest for sectors located in the top-right hand quadrant of the trade matrix, indicating growing market share and growth in world imports. Conversely, sectors in the bottom left-hand quadrant have limited trade potential, challenged by declining market share and low world demand. Sectors for which *either* Brazil's market share *or* world trade growth is dynamic are depicted in the bottom right-hand quadrant (for "achievers in adversity" or "winners in declining markets") and the top left-hand quadrant (for "underachievers" or "losers in growth markets"). The presence of extraneous factors like scale intensity and initial positioning, however, makes the trade potential of these product categories more difficult to evaluate.

Figure 6.5. Brazil's export performance: trade in services, 2000-2004



Source: IMF BOP.

The trade in services matrix in Figure 6.5 reveals that Brazil has only developed service categories in sectors with positive world trade growth. A nucleus of service categories has formed along the y-axis, indicating growth in line with global trends for many sectors. However, *Travel* and *Transport Other* have been outpacing world trade growth, while the *Other Services* sector has lagged behind world growth. The matrix reveals different patterns for the *Communications and Insurance* sectors, which are gaining and losing market share, respectively. Most service categories are floating near the average world trade growth line. Due to the time period of available services data (relative to goods data), however, interpretation of this matrix is limited.

In the period leading up until 2002, the Netherlands, Bermuda, Luxembourg and Canada increased their FDI inflows to Brazil, Table 6.15. France maintained its FDI flow. US inflows rose rapidly to 1999 but declined significantly thereafter. Spain was also a significant investor in the middle of the period from 1998 to 2001.

Table 6.15. Top 10 sources of FDI inflows to Brazil

	1996	1997	1998	1999	2000	2001	2002
Netherlands	526.8	1 487.9	3 365.0	242.5	2 228.0	1 891.8	3 372.5
US	1 975.4	4 382.3	4 692.5	8 087.6	5 398.7	4 464.9	2 614.6
France	969.9	1 235.3	1 805.4	1 982.1	1 909.7	1 912.8	1 815.0
Cayman Islands	655.7	3 382.9	1 807.1	2 114.5	234.5	1 755.1	1 554.5
Bermuda	33.8	241.1	53.6	242.6	315.4	606.9	1 468.8
Portugal	202.7	681.0	1 755.1	2 409.4	2 514.8	1 692.3	1 018.8
Luxembourg	290.7	57.7	114.5	289.7	1 027.2	284.7	1 012.8
Canada	118.5	66.2	278.6	445.4	192.8	441.1	989.3
Germany	212.0	195.9	412.8	480.8	374.6	1 047.5	628.3
Spain	586.6	545.8	5 120.2	5 702.2	9 592.9	2 766.6	586.9

Source: UNCTAD WIR.

Goods

The trade liberalisation process has changed the relative sizes of industrial sectors quite significantly (Table 6.16). The *oil* industry has boomed with recent off-shore discoveries, as previously discussed. Coupled with this, growth in *oil extraction* has more than doubled in real added value, particularly in petroleum manufacturing (*coke, petroleum, nuclear fuel and ethanol* manufacturing). There has also been significant expansion in value added in the *metallic mining* industry.

Within manufacturing (transformation industries) there have been a number of growth poles. The *food and beverage* industry is by far the largest manufacturing sector in absolute size and it has grown 10% in real terms over the period 1996-2004. There has been significant growth in *wood* products, *basic metals*, *other transport equipment* and *recycling* over the period. The large *chemical, rubber* and *plastic* products have grown to a similar degree as *food and beverages*.

In the machinery and equipment categories there has been some expansion and some contraction. *Metal* products has not changed, while there have been modest increases in real value added (RVA) in *machinery and equipment*, *office equipment*, *precision equipment*, vehicle manufacturing and a doubling of RVA in *other transport* equipment. On the other hand, *machines* and *electrical equipment* manufacture has contracted, as has *furniture* manufacture.

Table 6.16. Real Value Added, by Industry

Index Numbers, 1996=100

	1997	1998	1999	2000	2001	2002	2003	2004
All industry	**100**	**97**	**105**	**112**	**116**	**117**	**116**	**125**
Extractive Industries	**102**	**115**	**141**	**139**	**152**	**166**	**163**	**193**
Coal mining	126	121	113	141	108	111	101	135
Oil extraction	136	179	174	229	410	1153	1506	1680
Mining metallic minerals	106	123	163	158	175	183	175	215
Mining non-metallic minerals	91	93	95	96	98	97	92	96
Transformation Industries	**100**	**96**	**104**	**111**	**115**	**116**	**115**	**123**
Food and beverages	102	99	100	91	108	111	110	110
Tobacco products	94	83	99	81	92	91	75	83
Textiles	88	87	99	97	90	88	78	83
Clothing	91	91	89	85	85	76	69	70
Leather products	85	78	89	94	107	110	106	108
Wood products	102	96	132	120	131	149	172	190
Paper products	92	91	113	128	119	142	134	129
Printing and publishing	107	103	89	93	87	77	72	74
Coke, petroleum, nuclear fuel and ethanol	84	89	148	225	207	213	246	251
Chemical products	101	97	116	105	106	103	102	110
Rubber and plastic product manufacture	100	95	98	100	90	93	109	107
Non-metallic minerals	107	115	114	121	130	134	123	121
Basic metal manufacturing	108	100	117	132	132	152	158	215
Metal products excl. machinery and equipment	98	98	93	91	100	97	88	100
Machinery and equipment	102	91	89	87	101	105	97	107
Office equipment	110	109	162	251	315	172	144	120
Machines and electrical equipment	107	116	99	103	114	101	92	97
Electronic equipment	96	76	85	106	107	90	57	74
Precision equipment	97	99	103	114	107	110	93	106
Car, truck, bus manufacture incl. parts	106	95	78	94	92	101	108	118
Other transport equipment	125	134	184	205	281	287	238	287
Furniture and other manufacturing n.e.i.	99	102	98	106	100	97	86	87
Recycling	109	116	112	109	161	171	183	205

Source: Computed from IPEA – PIA.

Six firm case studies are presented in Lattimore and Kowalski (2008). They illustrate the diversity of successful Brazilian firms. The case studies focus on research and development efforts that have contributed to this success.

The recent employment growth picture is generally expansive (Table 6.17). Employment has grown eight fold in oil extraction compared to a sixteen fold increase in RVA. However, employment has shrunk in coke, petroleum, nuclear fuel and ethanol manufacture. More generally, employment has increased in most other industries demonstrating increases in labour productivity almost across the board – whether the industry was expanding or contracting in terms of RVA.

Table 6.17. Employment by Industry

Index numbers, 1996=100

	1997	1998	1999	2000	2001	2002	2003	2004
All Industry	**97**	**95**	**97**	**103**	**106**	**108**	**116**	**124**
Extractive Industries	**94**	**90**	**94**	**99**	**100**	**105**	**110**	**121**
Coal mining	100	97	94	117	108	104	96	125
Oil extraction	129	133	124	237	323	515	630	846
Mining metallic minerals	81	74	72	76	76	79	84	94
Mining non-metallic minerals	100	98	107	108	108	108	112	116
Transformation Industries	**97**	**95**	**97**	**103**	**106**	**108**	**116**	**124**
Food and beverages	98	99	99	104	110	112	123	135
Tobacco products	106	94	79	73	86	85	72	94
Textiles	87	87	88	95	97	96	99	107
Clothing	92	90	99	106	108	113	115	128
Leather products	90	88	102	118	128	132	149	161
Wood products	101	103	118	121	120	127	144	153
Paper products	94	90	92	91	96	104	105	106
Printing and publishing	101	101	101	101	103	97	101	103
Coke, petroleum, nuclear fuel and ethanol	85	58	54	48	48	50	60	66
Chemical products	100	96	101	106	106	104	113	117
Rubber and plastic product manufacture	102	99	103	114	111	110	130	130
Non-metallic minerals	104	106	110	117	114	115	115	121
Basic metal manufacturing	97	94	93	95	98	97	104	113
Metal products excl. machinery and equipment	101	100	99	107	111	115	114	126
Machinery and equipment	97	92	95	100	107	110	122	126
Office equipment	110	103	113	151	145	117	147	165
Machines and electrical equipment	97	98	93	103	107	106	107	114
Electronic equipment	91	79	83	96	88	85	76	91
Precision equipment	97	101	105	107	104	109	121	124
Car, truck, bus manufacture incl. parts	104	91	89	94	94	99	116	121
Other transport equipment	95	98	99	105	121	137	173	197
Furniture and other manufacturing n.e.i.	102	110	106	116	111	115	114	116
Recycling	114	112	136	173	231	278	394	472

Source: IPEA – PIA.

The productivity story is very positive. The trade liberalisation episode has resulted in an acceleration of total factor productivity (TFP) over earlier periods (Table 6.18). Furthermore, Ferreira and Rossi (2003) have shown that the growth rate in TFP was related to the decline in industry protection. According to their estimates, the decline in nominal tariffs faced by an industry resulted in an 8-12% increase in the growth rate of TFP (3-6% if effective rates of protection are used instead of nominal tariffs).

Table 6.18. Growth in Total Factor Productivity

Annual %

	1985-90	1991-97	1994-97
Nonmetal mineral products	-3.0	3.2	5.4
Metalworking	-2.9	4.0	4.4
Machinery	-2.1	3.4	0.6
Electronic and communications equipment	-2.9	4.3	2.7
Transport eq. and motor vehicles	-9.1	4.6	5.7
Paper and paper products	-4.3	2.7	2.0
Rubber products	-4.6	1.6	4.7
Chemicals	-5.0	3.5	4.8
Pharmaceuticals	-4.2	-1.3	-0.4
Perfumes, soap and candles	-0.4	1.8	1.4
Plastic products	-6.4	2.8	8.4
Textiles	-5.7	3.6	1.5
Clothing, fabric products and footwear	-5.3	0.7	3.0
Food	-3.3	2.8	3.4
Beverages	-1.1	2.7	2.1
Tobacco	-1.1	1.8	3.5
Average	**-3.8**	**2.8**	**3.3**

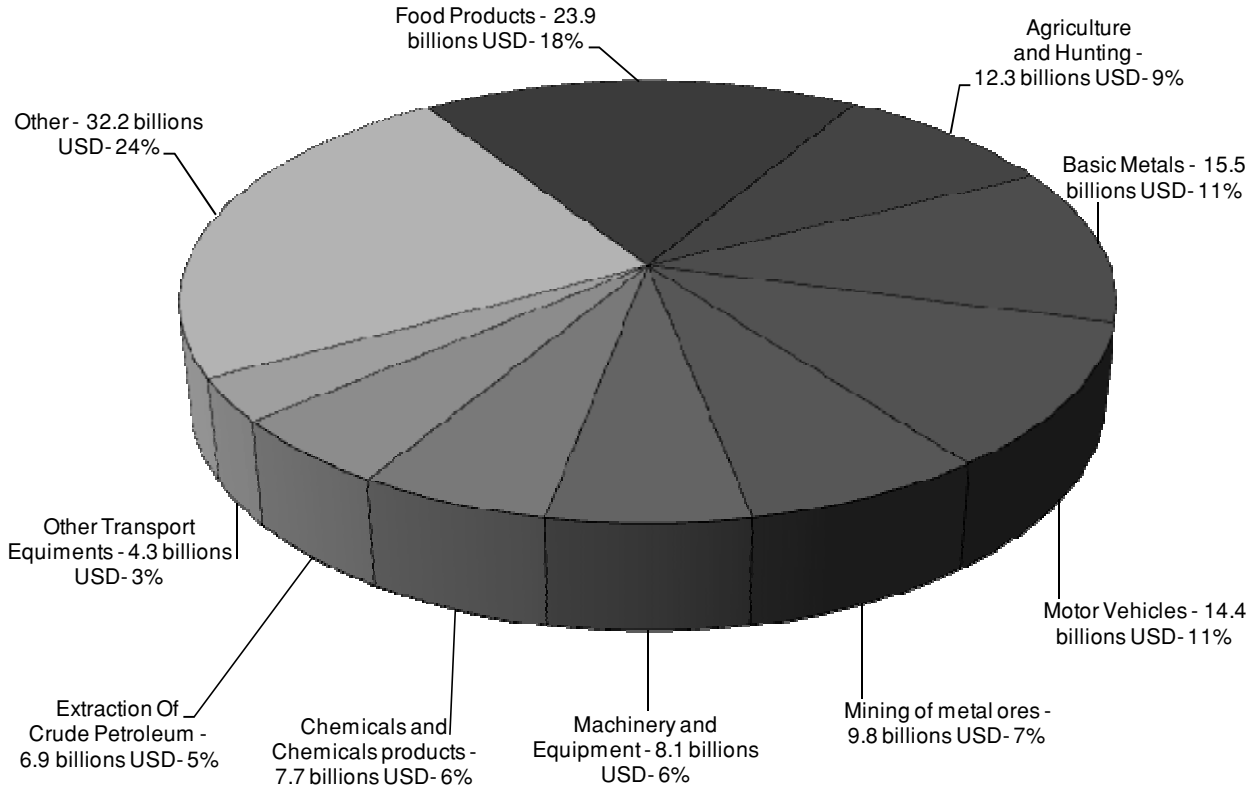
Source: Ferreira and Rossi (2003).

As the data in Table 6.18 show, some of the largest TFP gains, post liberalisation, occurred in the higher technology industries like machinery and equipment. Labour intensive industries like clothing captured smaller gains over the whole period 1991-97, but with an increasing trend (1994-97).

The distributional effects of the trade policy reforms are arguably as important as the productivity effects in the case of Brazil. The import protection structure during the IS period tended to benefit skilled workers so that the trade reforms tended to benefit unskilled workers and significantly reduced wage inequality in the manufacturing sector, (Ferreira, Leite and WaiPoi, 2007). Adding to this, it has been shown that the policy reforms in agriculture also improved the distribution of income because this sector tends to be relatively intensive in its employment of low income workers (OECD, (2005).

In this production environment, some significant changes in Brazil's trade portfolio occurred. As discussed earlier, Brazil's key goods (merchandise trade) exports are diversified across the primary and manufacturing sectors. Agricultural exports represented 9% of the total in 2006 with the food manufacturing sector adding a further 18% of export value for a total of 27%, Figure 6.6. Other primary exports from the mining industry contributed 7%, crude petroleum 5% with the remaining 61% from a diverse range of non-food manufactures.

Figure 6.6. Brazil key merchandise exports, 2006



Source: UN ComTrade.

More detailed tables of Brazil's main exports and imports, by product and trading firm are available in Lattimore and Kowalski (2008).

Brazil has a revealed comparative advantage in mining metal ores, agricultural products, food products, tanning and leather and wood products – all natural resource-based products (Table 6.19). It also has a RCA in paper, non-metallic mineral products, basic metals and motor vehicles. Again, all these products can be termed natural resource-based with the exception of motor vehicles (which has the highest remaining effective rate of protection, 34% in 1997).

In industries where revealed comparative advantage is greater than one (advantage), the RCA index has been rising since 1991 – for agriculture, food products, wood products, non-metallic mineral products and motor vehicles. For the most part, these are the exportable industries that have performed best in the recent world market environment. Other exportable industries including mining metallic ores, tanning and leather, paper and basic metals have seen their RCA index fall over the period.

Where the RCA index is less than one in Table 6.19, the industries tend to be import competing. In this group the RCA index has been rising for oil extraction, publishing and printing, coke, refined petroleum, nuclear fuel and ethanol, machinery and equipment n.e.c. (not elsewhere counted) and electrical machinery. These are the import competing industries that have performed best in the recent world market environment. The remaining 12 industries have lost ground over the period as a whole, given recent world market conditions.

Table 6.19. Revealed comparative advantages and growth rates

	1991	1996	2001	2006	Annual average growth rates 91-96	96-01	01-06
01 - Agriculture, hunting and related service activities	2.65	2.76	4.45	4.57	0.79	10.06	0.53
02 - Forestry, logging and related service activities	0.19	1.16	0.57	0.25	43.57	-13.29	-15.07
05 - Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing	0.11	0.16	0.32	0.16	7.38	14.81	-12.42
10 - Mining of coal and lignite; extraction of peat	0.00	0.00	0.00	0.00	5.02	0.68	-29.89
11 - Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction excluding surveying	0.00	0.01	0.22	0.87	310.04	103.48	31.16
12 - Mining of uranium and thorium ores	..	..	..	..	..	..	..
13 - Mining of metal ores	13.59	13.97	14.30	10.20	0.55	0.48	-6.53
14 - Other mining and quarrying	1.52	0.62	0.98	1.08	-16.44	9.57	1.98
15 - Manufacture of food products and beverages	2.91	3.20	3.52	4.32	1.91	1.93	4.18
16 - Manufacture of tobacco products	1.09	2.47	0.16	0.30	17.73	-42.06	12.93
17 - Manufacture of textiles	0.99	0.61	0.48	0.36	-9.38	-4.42	-5.81
18 - Manufacture of wearing apparel; dressing and dyeing of fur	0.32	0.16	0.14	0.08	-12.77	-2.91	-10.00
19 - Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear	4.57	3.07	3.32	2.45	-7.66	1.58	-5.89
20 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	1.09	1.77	2.58	1.96	10.25	7.76	-5.36
21 - Manufacture of paper and paper products	1.58	1.82	1.95	1.57	2.91	1.33	-4.15
22 - Publishing, printing and reproduction of recorded media	0.15	0.13	0.14	0.22	-3.73	2.35	8.98
23 - Manufacture of coke, refined petroleum products and nuclear fuel	0.02	0.08	0.02	0.71	26.88	-22.79	102.91
24 - Manufacture of chemicals and chemical products	0.69	0.71	0.57	0.54	0.49	-4.42	-0.90
25 - Manufacture of rubber and plastics products	0.67	0.72	0.67	0.63	1.32	-1.40	-1.24
26 - Manufacture of other non-metallic mineral products	0.88	0.99	1.13	1.45	2.36	2.72	5.06
27 - Manufacture of basic metals	3.28	2.51	1.98	1.68	-5.25	-4.65	-3.20
28 - Manufacture of fabricated metal products, except machinery and equipment	0.59	0.59	0.54	0.46	0.12	-1.79	-3.21
29 - Manufacture of machinery and equipment n.e.c.	0.54	0.65	0.60	0.70	3.79	-1.66	3.34
30 - Manufacture of office, accounting and computing machinery	0.18	0.14	0.12	0.07	-4.26	-4.08	-10.46
31 - Manufacture of electrical machinery and apparatus n.e.c.	0.39	0.42	0.41	0.44	1.50	-0.55	1.17
32 - Manufacture of radio, television and communication equipment and apparatus	0.21	0.16	0.38	0.27	-4.95	18.90	-6.45
33 - Manufacture of medical, precision and optical instruments, watches and clocks	0.14	0.13	0.19	0.14	-1.77	8.92	-6.26
34 - Manufacture of motor vehicles, trailers and semi-trailers	0.61	0.82	0.94	1.12	6.07	2.90	3.51
35 - Manufacture of other transport equipment	0.41	0.52	1.79	0.91	4.91	28.24	-12.60
36 - Manufacture of furniture; manufacturing n.e.c.	0.33	0.40	0.44	0.36	3.78	1.96	-4.05
40 - Electricity, gas, steam and hot water supply	..	..	..	..	..	..	..

Source: UN ComTrade.

The share of Brazil's so-called "high-technology" exports, as a percentage of manufactured exports, rose sharply in the 1990s, only to fall again between 2001 and 2004 (Table 6.20). The latest data indicate that this decline recovered slightly in 2005. Meanwhile, China's share of technology exports has shown a steady upward trend and India's share has remained low but relatively stable for the last decade. These data need to be interpreted with considerable care because they refer to exports of final products which are high technology. Very often however, the design and manufacture of the high technology components and parts did not originate in the country where final assembly took place. This is especially true of China, which tends to import high technology parts and components for final assembly and export – particularly machinery and equipment items including electronics goods, from a range of OECD and non-OECD countries (Athukorala, 2007). Accordingly, China's net trade in high technology components is strongly negative. It is not clear what Brazil's net trade balance is in high technology components.

Table 6.20. High-technology exports[a]

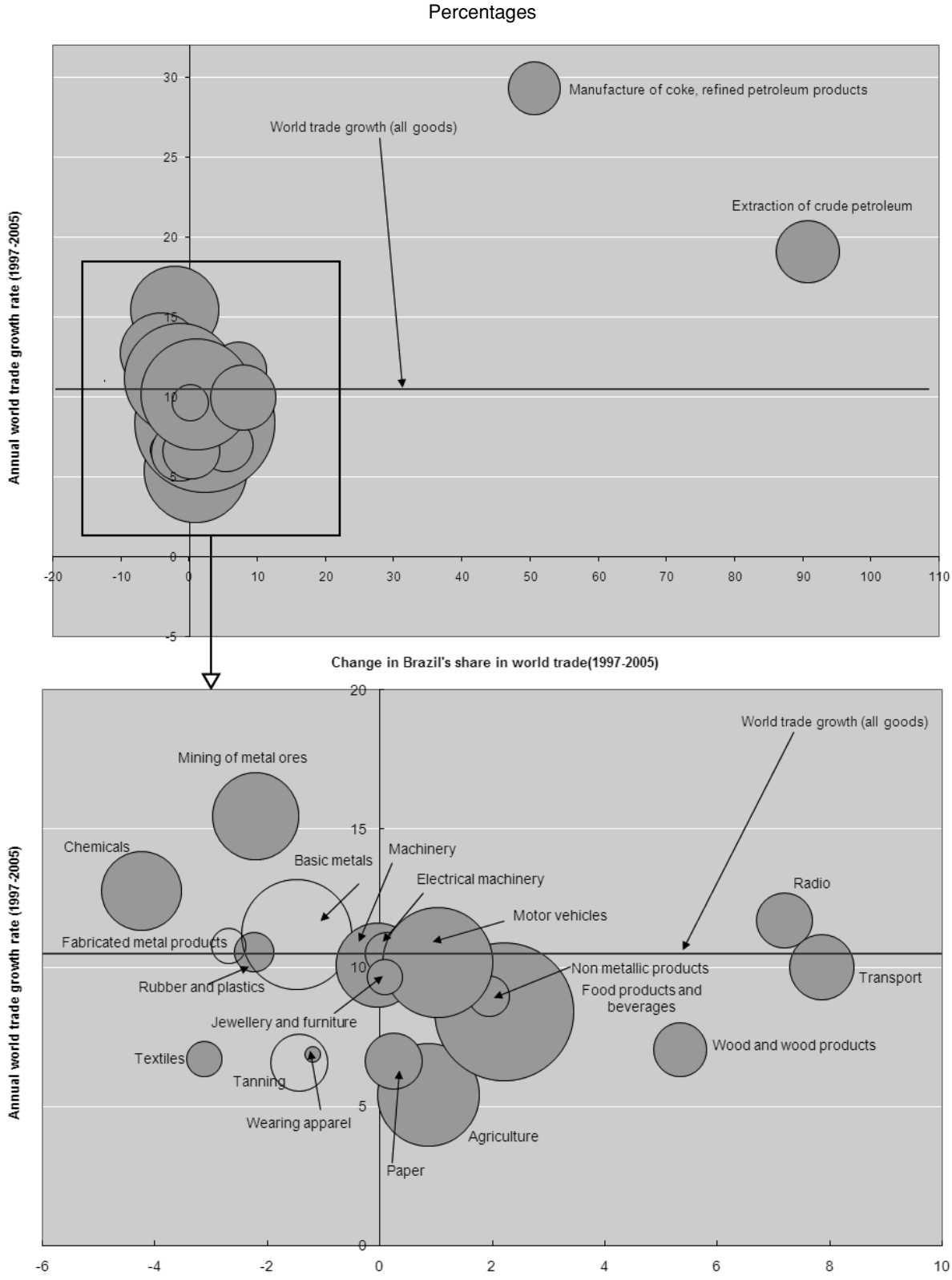
As a percentage of manufactured exports

	Brazil	China	India
1992	5.37	6.11	2.17
1993	4.14	6.84	2.46
1994	4.76	7.95	2.98
1995	4.85	10.04	4.31
1996	6.09	12.00	5.12
1997	7.32	12.68	4.77
1998	9.17	15.08	4.12
1999	12.97	16.76	4.26
2000	18.61	18.58	5.01
2001	19.12	20.57	5.39
2002	16.83	23.31	4.76
2003	11.96	27.10	4.75
2004	11.59	29.81	4.88
2005	12.85	30.60	..

a) High-technology exports are products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery (United Nations, COMTRADE database definition).
Source: WDI.

As illustrated by the trade in goods matrix, *Extraction of crude petroleum* and *Manufacture of coke, refined petroleum products* are the highest performing product categories (Figure 6.7). Brazil's coke and refined petroleum sector has achieved significant growth relative to other Brazilian export sectors and has profited from an increase in world imports. This rise is predominantly due to the recent discovery and growing exploitation of deepwater petroleum fields off the coast of Brazil. Brazil became self-sufficient in oil in 2006. Petrobas, Brazil's national oil company has invested heavily in the development of this new resource in order to capitalise on the global rise in demand for oil. The Brazilian government has also promoted growth in the oil sector by privatising Petrobas in 1995 (the government remaining the majority shareholder) and by creating the National Petroleum Agency in 1997 to facilitate foreign and domestic private investment. While the long-term future of Brazil's refined petroleum sector is optimistic, it is still uncertain due to the indefinite size of the deepwater oil fields and the country's need for technological advancements to successfully develop the industry.

Figure 6.7. Brazil's export performance: trade in goods (1996-2005). Fig. 6.7A Below



Source: UN ComTrade.

Figure 6.7A focuses more closely on product categories near the origin of the graph, revealing that sectors like *Chemicals* and *Textiles* are losing market share. *Transport, Radio, Motor Vehicles,* and *Food and Beverage products* appear to be performing well. In the *transport* equipment industry, Embraer, the main aircraft producer in Brazil, has grown to be one of the world's four largest aircraft exporters. The company's privatisation initiative in 1994 has been a strategic ingredient in the expansion and rising global competitiveness of this industry for Brazil. The motor vehicle industry's diversification into the market of economic car models may have facilitated the country's success as a global producer of automobiles and parts but the high remaining protection of the industry raises some doubts about the extent of its long term competitiveness.

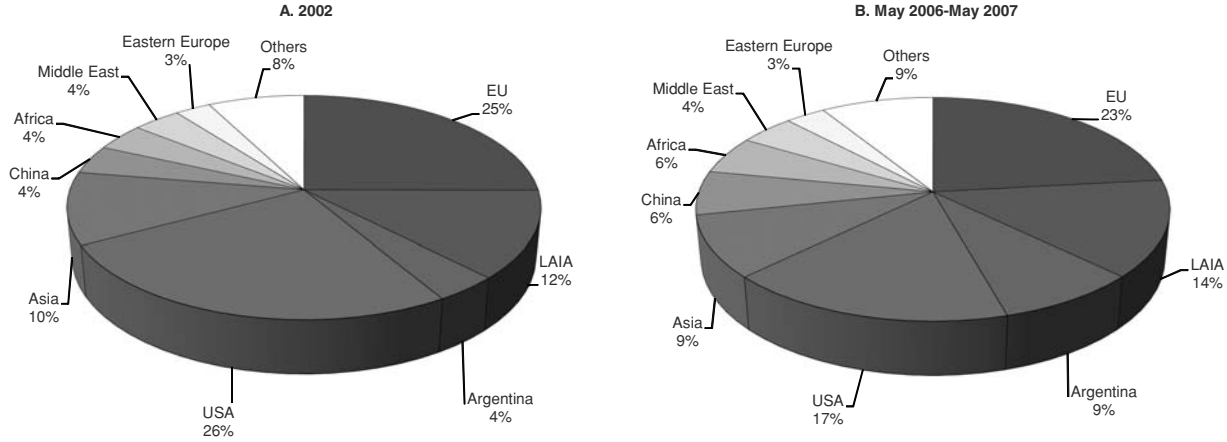
Brazil's agriculture sector faces growing environmental concerns. Soya beans, in particular, are evoking a strong reaction from environmentalists because of the extensive forest destruction involved in soybean production. In response to European and Japanese demands for Non-Genetically-Modified Organisms, Brazilian regulation has been created to promote more traditional production methods and to restrict crop plantings in the Amazon region.

The market distribution of Brazilian exports has changed in recent years in the face of rising world price relatives for resource-based products – shifting away from OECD markets towards China. Exports to OECD countries have fallen from 64% of merchandise exports in 2000 to 51% in 2006. In fact, exports to most of Brazil's top buyers have fallen (Figure 6.8). The EU and the United States remain the two primary destinations, but have decreased exports by 2% and 9%, respectively. This decline can be attributed to Brazil's primary sector revealing more of its comparative advantages following trade liberalisation and the recent changes in the prices of resource products relative to manufactures. Furthermore, the strong growth in petroleum exploitation and exports had added to the export strength of the primary sector and altered the bilateral direction of trade.

Since 2002, China, the Latin America Integration Association (LAIA), Africa and Argentina are the only regions of the Top 10 Destinations to have grown as export destinations for Brazil. The increase in exports to China corresponds with the rising prominence of China in global trade. Export growth to Argentina and the LAIA reflects the increase in regional trade for Latin American countries.

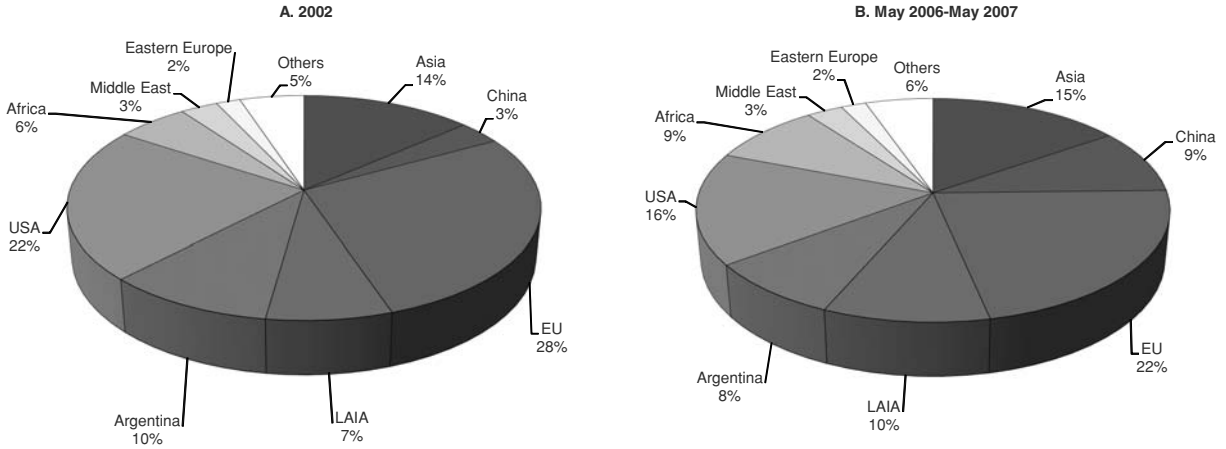
Brazilian imports from China have tripled (to 9%) over the recent period, 2002-2007 (Figure 6.9). Asia, Africa and the LAIA have also increased. Imports from the US and the EU have fallen to 16% and 22% respectively. In this environment it is easy to see why Brazilian foreign policy has tended to embrace new groupings in India, China and Africa. South-South trade looks increasingly important for both imports and exports.

Figure 6.8. Top 10 merchandise exports destinations for Brazil, 2002 and 2006-2007



Source: Ministry of Finance.

Figure 6.9. Top 10 merchandise imports origins for Brazil, 2002 and 2006-2007



Source: Ministry of Finance.

Table 6.21 reveals that Brazil has increased market share in all of its key markets since 2000. Indeed, the annual growth rate figures indicate that Brazil has reclaimed and exceeded market share levels from 1990 in all key markets except Japan and the United States. The decline in trade with Japan is not surprising considering the dramatic rise in bilateral trade between Japan and China since 2000.

Numerous studies have shown that regional trade agreements, like the Mercosur Common Market, do not provide the same policy space for Brazil, because the lack of global national treatment causes significant trade diversion effects. Some of these costs are lower in the current environment because certain key leakages are occurring in the administration of Mercosur – the absence of a tariff revenue sharing agreement and the frequent non-collection of the external tariff by Paraguay and Uruguay. A choice needs to be made with respect to these issues – either dispense with the external tariff and hence remove trade diversion effects (*vis-à-vis* free trade) or tighten the existing structure of the agreement and suffer the corresponding efficiency and equity losses.

Table 6.21. Evolution of Brazil's market share in key markets

Percentages

	1990	2000	2006	Annual growth rate 1990-2006
China	0.72	0.48	1.06	2.49
EU 25	0.67	0.64	0.88	1.70
India[a]	0.70	0.46	0.82	1.00
Japan	1.02	0.65	0.67	-2.53
Russia[b]	0.76	1.25	2.50	12.62
US	1.50	1.08	1.29	-0.90
Indonesia	0.78	0.65	0.79	0.05
South Africa[c]	0.97	1.13	2.11	5.76

a) 2005 instead of 2006.

b) 1996 instead of 1990.

c) 1992 instead of 1990.

Source: UN ComTrade.

Trade, Technology and Development

Introduction

Brazil has struggled over many decades to devise a set of industry and trade policies that would stimulate a sustained rise in technical progress and lead to concomitant increases in productivity, especially the labour productivity of the poor. The results have been quite mixed as economic progress in Brazil has fallen behind the growth of other emerging nations. The distribution of income remains the most skewed in Latin America. Hence this area of industry and trade policy represents perhaps the greatest challenge facing government.

The focus here is on the Brazilian innovation environment – how is it performing and what steps might be taken to improve its performance so as to raise productivity levels and contribute to faster economic growth and a better distribution of that growth. It is worth recalling from the earlier discussion that Brazil has a strong comparative advantage in a range of primary industries and manufacturing industries that transform Brazilian primary products. Given that structure, the recent world market environment has stimulated exports of products from these industries at the (small) relative expense of exports of other manufactured products, Tables 6.4 and 6.6. This is what degrees of comparative advantage infer, of course. The fact that non-food (actually, non-primary based) manufactured exports have remained strong following trade liberalisation is evidence that some industries which were heavily protected during the IS period have developed international competiveness. These industries in selected areas of chemicals, machinery and equipment might turn out to be infant industries that have grown up – time will tell. The key to future export strength in these industries will lie in future innovation success and their exposure to international competition.

A recent set of studies by the Brazilian Institute for Applied Economic Research (IPEA, 2007) paints a picture of an innovation culture in Brazil that has been energised by the economic reforms and put it on a par with lower end EU countries (but significantly below that of leading countries like Germany).

Only 1% of GDP in Brazil is devoted to research and development effort and this index is lower than in OECD countries, for example, where technological progress is much higher (OECD,2006). However, there does appear to be a major exception to this conclusion in Brazil and that is in agriculture. For over thirty years now Brazil has had a Government agricultural research organisation, EMBRAPA, which is an internationally reputable research organisation that is thought to have made significant contributions to the growth of Brazilian agriculture over the period. Brief outlines of innovation efforts in EMBRAPA and in a range of other Brazilian firms are available in Lattimore and Kowalski (2008).

There may be some lessons associated with EMBRAPA's success in Brazil but they need to be tempered by the structural environment in which it operates. One of the distinguishing characteristics of the agricultural sector is that it is comprised of, more or less, atomistic producers who have little individual private incentive to fund research. Furthermore, much agricultural technology is readily emulated simply by "looking over the fence". So, while a large government sponsored research institute can be ideal in agriculture, it may not be the best approach to stimulate innovation in the manufacturing and service sectors. Indeed at a recent conference on innovation in Brazil, Professor Hill "cautioned emerging economies against the prevailing tendency to replicate innovation strategies from the US, EU and Japan: focusing resources solely on creating the strongest governmental laboratories and the best higher education system is a generally misguided approach to innovation policy development that diverts attention away from real opportunities and needs", Hill (2007).

Commercial incentives matter in all but the most basic research enterprises and accordingly, it is important for applied research managers to be guided by commercial opportunities and threats. Commercial firms are ideally placed to provide that focus especially in areas where the firm can capture the gains of technical advancement. Government owned research laboratories can be guided by commercial interests but there is a greater danger that their agendas are subordinated to a wider range of objectives. The result can be lower returns to research.

From one point of view the 1% of GDP Brazil invests in R&D may not be a (serious) constraint on growth. There are two broad types of technology – technology embodied in hardware (embodied technology within machinery and equipment) and technology disembodied from hardware (and embodied in software and operators). If the tradable and service sectors require mainly embodied technology and if world class capital goods of this type are available to firms in Brazil at world prices, then Brazil does not have to invest more in R&D. In short, the technology can be imported from abroad. Free trade in capital goods is a crucial element of this condition – a subject that will be returned to under import substitution policy. Brazil scores highly on the adoption of technology embodied in capital equipment (IPEA, 2007) and capital equipment imports have doubled over the last five years.

Park and Lippoldt (2008) have found some association between the increasing Brazilian imports of high technology equipment and their strengthening intellectual property rights law. Their empirical analysis centres on the evaluation of two hypotheses regarding the experience of the developing world (including Brazil) with strengthened IPRs:

H1) IPRs stimulate technology transfer, particularly the transfer of technology-intensive goods, services and capital.

H2) IPRs can directly stimulate local innovation as well as indirectly by stimulating the transfer of technologies that foster local innovation.

The main empirical results support a positive assessment of both hypotheses. These results are as follows:

The index for patent rights tends to be positively associated with inward FDI, merchandise imports and service imports, holding other factors constant. This relationship holds for all groups of countries – developed, developing and least developed – though quantitatively the association is strongest in developed countries.

- The indexes for copyrights and trademark rights are less strongly associated with technology transfer than is the patent rights index.
- Focusing on technology transfer to developing countries, the study finds that stronger levels of patent protection are positively and significantly associated with the inflows of *high-tech* products, like pharmaceutical goods, chemicals, aerospace, computer services, information, and office and telecom equipment.
- Developing country patent applications (by both residents and non-residents) and expenditure on R&D (as a percentage of GDP) tend to have a positive and significant relationship to the strength of patent rights.
- In certain specifications of the model with respect to developing country resident patent applications, the control variables for merchandise imports, services imports and inward FDI are also significant and positive. Similarly, merchandise imports also tend to be significantly and positively related to R&D expenditure. (When FDI and service imports are interacted with merchandise imports in these specifications of the model, merchandise imports tend to dominate, however.) The intuition is that the inflows of goods, services, and capital are a source of knowledge spillovers, as well as a source of inputs with which to conduct innovation (such as laboratory equipment).

Imports of goods and services and FDI inflows are also significantly and positively associated with non-resident patenting in developing countries. This association suggests that foreign imports and FDI contain patentable technological assets for which non-residents have a vested interested in seeking protection. Thus, stronger patent rights in developing countries appear to have the potential not only to stimulate international technology transfer but also to provide incentives for foreigners to transfer *new* technologies.

The deeper challenge for Brazil is to innovate to the point where the economy is competitive in producing and adapting technology itself – as it has so successfully done in agriculture. At the present time this is very largely the domain of OECD countries and they profit significantly from the enterprise because they receive the residual returns. There are two payoffs to Brazil from extending its commercial reach in the production of embodied and disembodied technology. The first payoff arises directly from the residual returns that would accrue to Brazil from the sales of the goods (goods embodying new technology) or the licensing and FDI returns associated with disembodied technology. The second payoff is associated with the fact that technology developed in Brazil is more likely to match domestic resource availability and relative factor prices than imported OECD technology. Evenson and Westphal (1995) would argue strongly that this adaption of technology to the local environment has historically been a crucial element in translating capital goods (embodied technology) into actual productivity growth. They argue that new technology cannot be simply purchased "off the shelf".

Brazil's recent economic history provides some evidence of the linkages between market structures and technology development and technology transfer – particularly since the strong import substitution bias in trade policy was reduced. Braga and Willmore (1991), for example, found that there is, at least, weak evidence that firms in protected industries in Brazil are less likely to engage in technological activity.

At the time Brazil embarked on its import substitution strategy, the development of new technology was viewed as a more or less independent (exogenous) process. New technology was produced by the research divisions of firms and was most prevalent in the North where most of the world's research was carried out. In 1966 Raymond Vernon developed the "product cycle" theory to describe some of the most important international trade ramifications of this view of the world – a set of processes than continue to be important today in the case of China, for example, and in Brazil. [Product cycle processes are also referred to today as "offshoring", "outsourcing" and "trade in tasks". While each refers to slightly different phenomena, there are common features with the Vernon thesis.][3]

A number of manufacturing industries in Brazil were hit hard by the trade liberalisation episode of the early 1990s even though many of these industries had significant residual import protection in the form of tariffs. It is evident that the firms and projects that exited the fine chemicals industry in Brazil following the trade reforms were of the product cycle or "tariff jumping" type without being deeply embedded in the country's economy.

The opening up of China since the late 1970s has stimulated the product cycle process tremendously because China has been prepared to make available huge labour and capital resources highly suited to codified production processes (particularly product assembly based on components designed in the North and manufactured in a wide range of other countries). This has caused significant dislocation of similar production in Latin American countries, particularly in Mexico but also in Brazil, in OECD countries and in other regions. The product cycle implies continuously changing degrees of comparative advantage in products and services. The movement of call centres from OECD countries to India is another case in point.

The rapidly changing technological environment coupled with "footloose industry" means that change is frequent and inevitable (short of large, welfare reducing government subsidies) and that policies that facilitate change and resource reallocation will be valuable. This is a very big challenge for middle income countries where the cost of social safety nets is relatively high and governance generally remains a challenge.

In theory, import substitution and infant industry policies have the potential to stimulate technological progress in an economy. The larger import substitute sector could provide some fertile ground for R&D investments. The Brazilian non-food manufacturing sector has certainly not collapsed following trade liberalisation. It has shrunk in places but maintained its high export share generally. However, the across the board rise in TFP following liberalisation is evidence that more openness to world markets is better than less and that the further removal of trade barriers would result in further efficiency gains.

There are, moreover, a range of well known negative consequences for productivity arising from IS policies. First, import restrictions stem the flow of technology embodied in imported capital goods and services. In extreme cases, the competitiveness of protected firms gets so low that protected industries can begin to shrink in size as demand begins to contract. Second, protected firms lose the stimulus to compete economically and to compete with international best practice. The result can be that once import protection is removed, firms fail. Third, the presence of imported consumer goods and competitive

[3] Product cycle theory shows how some new products (product technology) will tend to be developed in a high income country (the North) and that, initially, the process technology required for its production will be unrefined. As a result, the product will be produced in the North. The text book example often used is the firm Adidas, who invented a modern sports shoe which was initially manufactured in Germany using highly paid labour, so as to cope with the uncertainties expected to arise in production.

service providers in markets helps maintain standards over a range of qualities and prices. These signals include information about the types of products that are not worth trying to emulate given the extent of variations in comparative advantage[4].

The trade through technology challenge then is to create an industry environment that attracts start-ups in Brazil and foreign firms to Brazil based on its production and marketing possibilities (including exports). This involves two sets of policies. First, trade and tax policy should be as neutral as possible so as to avoid attracting firms interested mainly in government protection. Second, the quality of government services and business infrastructure must be gradually improved to meet global expectations.

Research and development incentives are best targeted by the firms themselves because technological effort in applied areas needs to be demand driven. Where, then, has Brazil developed and sustained technical depth in industry, following all the adjustments that have taken place post-trade reform? In other words, can one predict Brazil's future comparative advantages from the trade data on the recent past?

Predicting Brazil's Future Comparative Advantages

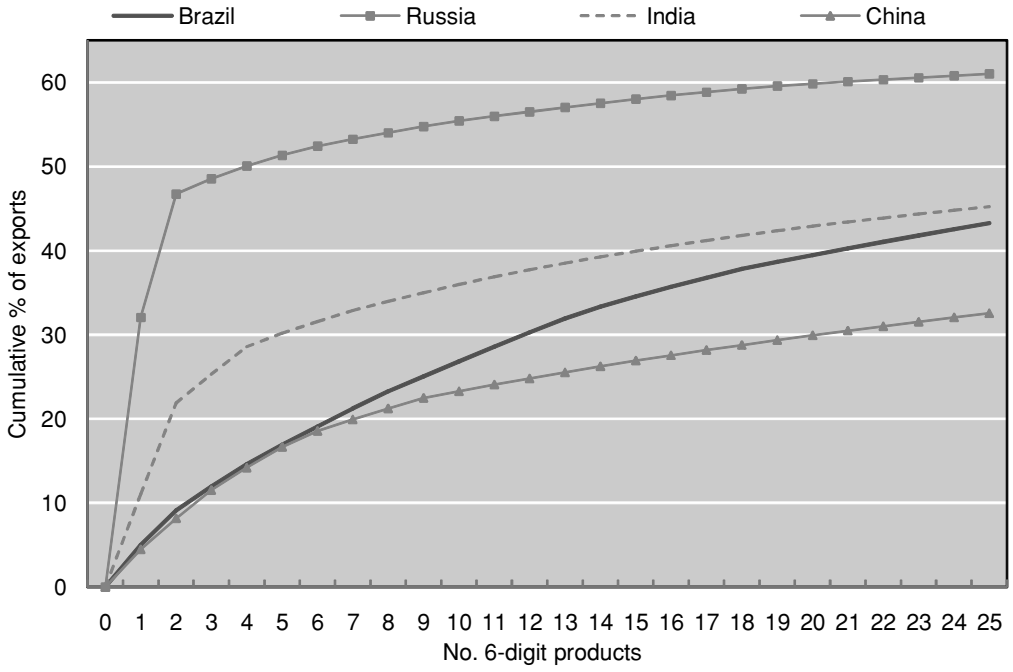
In the introductory sections of this report, comparative advantage measures were used to examine the very broad structural strengths of the Brazilian economy. That approach, however, is of very limited usefulness in future planning by entrepreneurs and government agencies because the broad sectors (primary, manufacturing and services) each produce thousands of products. An alternative approach based upon examining export performance at the 6-digit HS product level drills down closer to firm level performance and offers more focus on future comparative advantage, Hausmann and Rodrik, (2003).

Comparative advantage at the broad sector level is well explained by factor proportions theory but it can be misleading from a business strategy perspective – countries with, for example, a comparative advantage in manufacturing or agriculture usually have quite different comparative advantages at the 6-digit level. A number of other factors also come into play at the 6-digit product level including "historical accidents and serendipitous choices by entrepreneurs" (Hausmann and Rodrik, p. 616).

Having just carried out major unilateral trade reforms and structural adjustment, it is interesting to focus on the specific products in which Brazil appears to have a comparative advantage – products being produced by industries that are very likely to be deeply embedded in the economy and of sufficient size and competitiveness that they are producing external economies of value to industries as a whole. These industries are defined here by the largest 25 (out of roughly 6500) six digit export product groupings in 2006.

4 Brazil has recently considered imposing a specific tariff on imports of Chinese sunglasses that are so cheap that it is recommended the tariff be expressed in reais per kilogram!

Figure 6.10. Brazil: Export Concentration



Source: UN Comtrade.

These 25 export products are given in Lattimore and Kowalski (2008, Annex 4). In 2006, these 25 product groups represented around 47% of total merchandise exports from Brazil (Figure 6.21). This degree of concentration is typical of developed economies like Germany and Chinese Taipei. It is also about the same as for India but is interestingly, higher than for China which is 33%. Developing countries tend to have much higher export concentrations – Honduras 83% and over 60% for Russia, Bangladesh, Pakistan, South Korea and the Dominican Republic (Hausmann and Rodrik, 2003). Accordingly, this 6-digit export concentration index indicates some maturity in Brazil's export competitiveness.

The proportion of exports represented by the top 25 products is also quite evenly spread in Brazil, as it is are in China. The top three average around 3% points each. This contrasts strongly with India and Russia where there is much higher export concentration in the top two products, Figure 6.10.

Brazil also stands out with respect to export diversity amongst the top 25 six-digit products. This group includes soya beans, raw and refined sugar, unroasted coffee, frozen beef, oil-cake (soya beans), frozen orange juice, tobacco and frozen chicken – from the food and agriculture grouping. It includes crude and refined oil, iron ores, pig iron, unwrought aluminium, aluminium oxide and semi-finished iron products from the other primary and related products grouping. The set includes undenatured ethanol from the chemical group. It also includes small and medium size automobiles, radio transmission apparatus, large aircraft, footwear with rubber soles and leather uppers and diesel engine parts – all from chapters 7 and 8 of the HS code. This spread contrasts somewhat with China where 20 of their top 25 products are from chapters 7-9 with a very heavy concentration in electrical appliances, electronic and communications equipment.

The diversity in Brazil's top exports is some evidence that the economy is less exposed to product cycle influences than is China because domestic firms of longstanding are involved in the production of

these products. This points to deeper backward linkages through industry to R&D, as illustrated by the selective firm case studies in Lattimore and Kowalski (2008).

Trade Policy Challenges for Brazil

The proceeding discussion points to a number of areas where future trade and industrial policy might be considered in pursuit of growth and equity in Brazil.

Unilateral options

There is some evidence that the export sector has become more concentrated in the hands of the largest firms over the last few years[5]. Government has taken some action to assist SME's gain competitiveness in exporting (Complementary Law No. 123, 14 December 2006) but there remain many infrastructural barriers to exporting which are constraining firms significantly in the view of industry associations and experts.

Brazilian import protection is still high by OECD standards. It is also high by standards that relate to consumer access to goods and services and firm's access to intermediate goods, capital goods and services at world prices. Trade barriers to services also act as a constraint in this context. Firm competitiveness across the economy continues to be reduced by a lack of access to the best equipment at world competitive prices.

Further trade policy liberalisation may also improve the distribution of wage income. Brazil is in the fortunate position of being able to increase economic efficiency and improve the distribution of income at the same time, without trade adjustment compensation[6]. Further trade liberalisation may also tend to encourage greater technical innovation – it will certainly encourage export-oriented technical change.

Brazil has recently made some U-turns on tariffs in areas where they face some of the stronger international competition from imports. Brazil asked its Mercosur partners to approve increases in import protection on goods imported from China in the areas of textiles, clothing and footwear. This is very likely a backward step – holding valuable resources in industries that cannot make the best use of them.

Geography, economic size and relative openness obviously led Goldman Sachs to include Brazil in its BRIIC's grouping a few years ago. Brazil does have the opportunity to establish itself as the business centre of South America much beyond its current status in that role.

Brazil has a number of "behind the border" trade issues that were outlined in the report. The most important ones noted by industry in Brazil concerned roads, port facilities and a range of government regulatory issues. The recently announced private-public partnership arrangement to improve major roads should greatly assist in this regard.

Multilateral Agreements

Multilateral agreements appear to have become considerably more difficult to achieve since the WTO agenda has become more complex. In contrast with successive GATT rounds, negotiators are currently engaged in negotiations on agriculture, on opening up markets for trade in services and in dealing with trade facilitation. This complexity is also compounded by the greater diversity of negotiating

5 Dr. Renato Baumann, CEPAL, Brasilia. pers. comm.

6 Something that Chile, Mexico and Columbia were not able to achieve, Ferreira, Leite and Wai-Poi (2007).

parties. Developing countries are now much more active participants in the negotiating process. The range of players is certainly wider than during the Uruguay Round, with the G20, which includes Brazil, China, India and South Africa, playing a crucial role in seeking to secure developing country interests, especially in agriculture. At the same time, unilateral trade reforms have been quite prevalent over the last 20 years, reflecting mounting evidence on the contribution of openness to growth.[7] Lack of progress on the multilateral front may thus be reflecting concerns (from an economic standpoint) over the distribution of trade adjustment costs.

Brazil would be one of the largest beneficiaries of a successful DDA outcome because its export profile includes some of the most highly protected agricultural and food products, including ethanol and biodiesel. At the same time it has set itself some challenges in the DDA by virtue of its own position on liberalisation of trade in services. That challenge is magnified by its role representing developing countries and the associated responsibility of finding a forward (EU, US and Japan), and a backward (its developing country constituents) consensus. The next twelve months may provide a period in which to develop such a consensus. However, considerable effort will be required from all WTO members to achieve this.

From the point of view of demandeurs, the wide gap between bound and applied tariffs in Brazil does not appear to be serving Brazil's interests well in the WTO negotiations and in setting appropriate signals to the investment community.

The EU and the US are Brazil's largest export markets. Brazil is pursuing a range of possible regional trade agreements through Mercosur with them and a number of smaller groupings. RTAs like these could provide benefits to Brazil but they are most unlikely to be on a scale that would match a successful DDA solution. Especially is that true in the case of IPR.

RTAs

Brazil wishes to persist in developing the Mercosur common market. This is a major challenge. The group of four all have strong and overlapping comparative advantages in food and agricultural products which limits the possible gains from trade. Brazil and Argentina have relatively large manufacturing sectors that are import competing in global terms while Paraguay and Uruguay do not. High common external tariffs will, accordingly, tend to have trade diversion effects that have the potential to cause greater harm to the smaller members than the larger members. This does not auger well for regional economic development. If the current protective structure was fully operational there would be some tendency for the tradable sectors of two smaller members to stagnate economically. That is not what Brazil would want to occur. Ways will have to be found to give Paraguay and Uruguay free trade access to world markets while retaining preferential market access to Argentina and Brazil. The Fund for the Structural Convergence of MERCOSUR (FOCEM) was designed to offset such effects on the smaller partners. Under this arrangement Brazil essentially subsidises social and economic development in Uruguay and Paraguay. However, it is important to recognise that such approaches are second-best options while the common external tariff remains.

[7] Indeed, it can appear that unilateral trade policy reforms are easier to negotiate within countries than multilateral reforms are internationally. This is a paradox given that the adjustment costs to unilateral trade policy reforms are significantly higher than they are under a multilateral agreement.

Given these pressures it is not surprising that a high proportion of Mercosur imports are entering the smaller countries free of duty[8]. This provides an opportunity for Mercosur to move towards a more open trading arrangement.

There are a number of administrative challenges within Mercosur including the need to reinforce the secretariat as a trade policy administration centre. For example, the absence of a customs revenue sharing arrangement is thought to be diverting significant trade within the union.

8 FISPE, Sao Paulo.

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Russia

by

David G. Tarr

I. Introduction

Russia is the largest economy in the world that is not a member of the World Trade Organisation (WTO), and, as of early 2008, it was among 30 countries in the long process of negotiating its accession to the WTO. Russia applied for membership in the General Agreement on Tariffs and Trade (GATT) in June 1993 and the GATT Working Party was transformed into the World Trade Organisation Working Party in 1995. During his first Administration, President Putin made WTO accession a priority for Russia, and after languishing for several years, the Russian accession negotiations began to see real progress under his administration. By early 2008, Russia had achieved bilateral agreements with almost all nations on its WTO Working Party, however, significant differences with Georgia and some other contentious issues remained.

In this paper I refer to and summarise numerous other papers that my co-authors and I have written to analyse Russian WTO accession and its trade policy. First, in sections II and III, I discuss the computable general equilibrium models we developed to assess the impact of Russian WTO accession on the regions of Russia, on Russian poverty, on the distribution of gains from WTO accession, and on the impact of the Doha Development agenda. I show that commitments to foreign investors in services is the key source of the gains to Russia from WTO accession, and this is much more important than any impacts from the Doha Development agenda or the improved market access Russia may obtain from WTO accession. In section IV, I show that specific tariffs in Russia have been the cause of an increase in the country's average Most-Favored Nation (MFN) tariff since 2001, and have significantly increased the variance of the tariffs. In section V, I explain why discriminatory pricing of natural gas between its export and domestic markets is in Russia's interest. In section VI, I summarise Russia's commitments in goods, agriculture and services and conclude in section VII that these commitments are no more burdensome than the typical commitments taken on by non-LDC acceding countries. I explain in section IX why the United States will remove the Jackson-Vanik restrictions against Russia once Russia becomes a member of the WTO. I discuss the principal remaining issues and prospects for accession in the final two sections.

II. Past Analysis of the Impact of Russia WTO Accession

In response to numerous calls from the Russian media for a quantitative assessment of the impact of WTO accession in Russia, the Government of Russia requested that the World Bank assess the impact of WTO accession on Russia and its regions and to evaluate the impacts on poverty. When we undertook this analysis, we observed that the Russian tariff structure contained some high tariff sectors, but overall, the Russian economy was not highly protected by tariffs (see below for details). We did not expect, therefore, that market access negotiations on tariffs would be a major obstacle to Russian accession, nor that tariff reduction in Russia, negotiated as part of accession, would be the source of the principal gains. Moreover, while the Russian Government maintained that market access for its exporters was an important source of its gains from WTO accession, Russia already had MFN status or better with virtually all its trading partners. So we did not assess market access as the principal source of the gains Russia would obtain from WTO accession. On the other hand, as I discuss below, we found that there were considerable barriers to foreign direct investors in services, and Russian line Ministries responsible for the services sectors were reluctant to make market access offers. The problem was highlighted by the inability of the Russian negotiating team to table its initial services offer until 1999, six years after Russia

applied for accession. Thus, we concluded that Russia would have some of its greatest difficulties in the negotiations in services, where it would stand to gain the greatest from its own commitments.

Consequently, in Markusen, Rutherford and Tarr (2005), we developed a stylised version of a new and innovative class of computable general equilibrium models, with foreign direct investment in business services and endogenous productivity effects from additional varieties of services. In Jensen, Rutherford and Tarr (2007), we applied this approach to data for a real economy when we estimated the economy-wide and sector impacts of Russian WTO accession. In this model, as in all my subsequent modelling efforts on Russian WTO accession, we also allowed for endogenous productivity effects from additional varieties of goods produced under imperfect competition. In Jensen, Rutherford and Tarr (2007), we show that, for Russian WTO accession, a model which allows for foreign direct investment in business services and endogenous productivity effects from liberalisation of goods and services produces estimated welfare gains many times larger than a constant returns to scale (CRTS) model. A CRTS model will capture only the resource allocation efficiency gains from trade in goods, as well as any terms of trade gains.

There is considerable concern about the disparity in incomes in Russia. The richest Russian regions are 67 times richer than the poorest Russian regions in nominal terms and 33 times richer when price differences between the regions are taken into account (World Bank, 2005). The richest regions include the European North, Moscow and the resource rich regions of Siberia and the Far East. The poorest regions include the North Caucuses, Southern Siberia and Central Russia. Persons with the same characteristics in terms of education, employment status and urbanisation are three times more likely to be poor in Dagestan or Tuva Republic, compared with the rich Tumen Oblast or Moscow city. However, despite the large differences in incomes between the regions of Russia, 90% of this income inequality is due to within-region inequality and only 10% is due to between-region differences in incomes (World Bank, 2005, p. xix).

Given the considerable variation in incomes across households of Russia, Rutherford and Tarr (2008) assessed the impacts of Russian WTO accession on all 55 000 household types in the Russian Household Budget Survey by incorporating all the households into the model. This was a challenge as Russia is geographically very large and diverse. There are parts of European Russia close to markets of Western Europe and parts of Far Eastern Russia that are close to the markets of China and Japan, while large portions of Siberia are relatively isolated. We can expect the impacts across the regions to be very diverse, even for the same industry. Consequently, Rutherford and Tarr (2006) developed a ten-region, comparative-static, computable general equilibrium model of Russia for the purpose of assessing the impacts across these ten regions. Finally, Rutherford and Tarr (2008b) developed a ten-region model of Russia, with ten households in each region.

In this section we summarise the results of Rutherford and Tarr (2008) and Rutherford and Tarr (2006). The sectors in our model are listed in Table 7.1. The regions of the ten-region model are listed in Table 7.2.

Estimates of the *ad valorem* equivalence of these and other barriers to FDI in services are a key determinant of the estimates. Consequently, we commissioned 20-page surveys from Russian research institutes that specialise in these sectors. Based on these surveys, Kimura, Ando and Fujii (2004a,b,c) estimated the *ad valorem* equivalence of barriers to foreign direct investment in telecommunications; banking, insurance and securities; and maritime and air transportation services.[1] They applied C. Findlay

[1] The three papers by Kimura, Ando and Fujii as well as the underlying responses to the surveys are available at www.worldbank.org/trade/russia-wto.

and T. Warren's (2000) methodology. In the case of maritime and air transportation services, we assume that the barrier will only be cut by 15 percentage points, since pressure from the Working Party in these sectors is not strong. The results of the estimates are listed in Table 7.1, along with the other parameters that change in the simulations [2]

The exogenous changes that we model as part of Russian WTO accession are (i) liberalisation of barriers against multinational providers of business services; (ii) a 50% reduction in tariffs on goods; and (iii) an improvement in market access for Russian exports to WTO member country markets. The overall results for the ten regions are listed in Table 7.3. More detailed impacts on labour markets and sectors are shown in the original papers.

The key messages from these papers are that the liberalisation of barriers against multinational providers of business services will provide the greatest gains to Russia from WTO accession, and we must employ a model with endogenous productivity effects from FDI in services to capture these impacts. Traditional models focus on the Harberger triangle (efficiency) gains from resource reallocation effects due to tariff reduction or from the terms of trade gains due to improved market access; these models will miss the crucial aspects of what is at stake in WTO accession for Russia (and we believe in trade and FDI liberalisation more generally). Liberalisation of barriers against multinational providers of business services results in additional varieties of business services. Through the Dixit-Stiglitz-Ethier endogenous productivity mechanism, this leads to welfare gains that dominate the results. A traditional perfect competition, constant returns to scale model is not able to capture the productivity effects of trade or FDI liberalisation in services. To demonstrate this, we simulate Russian WTO accession in a perfect competition, constant returns to scale model and find that the estimated gains in our central model with imperfect competition and FDI liberalisation in services are at least six times greater than in the constant returns to scale model.[3]

Partly our results derive from the fact that estimated barriers against multinational service providers are higher than tariffs on goods, but the significant cost share of business services in the production of manufacturing and agriculture is also important. At the regional level, regions vary significantly in their gains based on their capacity to attract additional multinational providers of business services. Thus, while improving its offer to foreign services providers within the context of the GATS has been one of the most difficult aspects of Russia's negotiation for WTO accession, our estimates suggest that the most important component of WTO accession for Russia and its regions in terms of the welfare gains is liberalisation of its barriers against FDI in services sectors.

More specifically, our central estimates in our regional model show that the overall gains to Russia from WTO accession are 7.8% of Russian consumption (or 4.3% of GDP). We estimate that three regions will gain considerably more than the national average gain in welfare as a percent of GDP: Northwest (6.2%), St. Petersburg (5.7%) and Far East (5.2%). The four regions with the largest welfare gains are the

2 For each of these service sectors, authors in the Findlay and Warren volume evaluated the regulatory environment across many countries. The price of services was then regressed against the regulatory barriers to determine the impact of any of the regulatory barriers on the price of services. Kimura et al. then assumed that the international regression applied to Russia. Applying that regression and their assessments of the regulatory environment in Russia from the questionnaires and other information sources, they estimated the *ad valorem* impact of a reduction in barriers to foreign direct investment in these services sectors. See Jensen, Rutherford and Tarr (2007) for an explanation of the estimate in telecommunications.

3 The model with FDI in services and endogenous productivity effects yields gains that are six times greater than the CRTS model in the household model (Rutherford and Tarr, forthcoming) but 20 times greater in the regional model (Rutherford and Tarr, 2006).

regions with the largest initial shares of multinational investment. On the other hand, we estimate that the Urals will gain only 3.3% of GDP, considerably less than the national average. But the Urals have relatively little FDI in the services sectors. See Figure 7.1 for a depiction of the gains by region as a percent of regional GDP.

We observe that the reduction in barriers to FDI alone results in an improvement in Russian welfare on average across regions of 6.7% of consumption (or 3.7% of GDP). The other exogenous changes that we assume to be part of the WTO accession scenario are improved market access for Russian exporters and Russian tariff reduction. These contribute to an improvement in Russian welfare by 0.3% and 0.7% of consumption, respectively, or a combined 1%. Thus, by accounting for about 85% of the gains from WTO accession, by far the most important effect derives from the reduction in barriers to FDI in services.

In the sensitivity analysis, we also incorporate data on the investment potential of regions based on the investment potential rankings of Expert RA. The principal result is that the estimated gains for the Moscow, St. Petersburg and Tumen regions increase and the estimated gains for Siberia, Northwest, North, Central and the Far East decline. Despite smaller estimated gains in this scenario, Far East and Northwest are still estimated to receive above average gains. The results suggest that the gains for a region could vary considerably depending on whether it succeeds in creating an atmosphere conducive to investment.

In business services, due to offsetting impacts that are explained in Markusen, Rutherford and Tarr (2005), employment effects vary across sectors in each region. The demand for labour in business services should increase to the extent that newly entering multinationals will demand Russian labour when they locate in Russia, and the demand for business services increases overall due to the decline in the quality adjusted price. But the demand for labour in business services declines to the extent that multinationals use Russian labour less intensively than Russian companies. But users of business services will become more internationally competitive as they improve the quality and increase the diversity of available competitively priced business services.

In goods sectors, we estimate that the ferrous metals, non-ferrous metals and chemicals sectors will expand in the regions where these are important. These are the sectors that export the most intensively. They also experience a terms of trade gain from improved treatment in antidumping cases. We estimate that food, machinery and equipment and construction materials will decline in several regions as these sectors export relatively less and are relatively highly protected.

Regarding the distributional impacts, Rutherford and Tarr (2008) estimate that 99.9% of the households will gain from 2% to 25% of their household income. We find that poor households gain slightly more than rich households on average, since the return on capital does not increase as much as the wages of skilled and unskilled labour (see Figure 7.2).

The CRTS version of our 55 000 agent model precludes the possibility of FDI in services and endogenous productivity gains from services liberalisation. With this CRTS model, the distribution of gains has a mean of 1.2% of consumption (with a standard deviation of 0.7% of consumption) and we estimate that 7% of the households would experience losses. Thus, for about 7% of the households, the sign of the impact of the policy change is altered. Thus, modelling foreign direct investment with endogenous productivity effects in business services and imperfectly competitive goods is crucial, not only for the magnitude of the average results, but also for the sign of the results for about 7% of the households. Figure 7.3 encapsulates these key results well.

We conduct systematic sensitivity analysis to determine the robustness of the results to random selection of parameter values by executing the model 30 000 times. We find that our results are robust with respect to parameter specification. There is virtually no chance that the weighted average welfare gains as a percent of consumption for the poorest decile of the population is less than 5% or more than 11%; a 99% confidence interval is 5.6% to 9.5%. For the richest decile, the gains are slightly smaller; a 99% confidence interval for the richest decile of the population is 4.6% to 8.8% (see Figure 7.4).

Despite the significant gains we estimate from WTO accession, during a transition period it is likely that many households with displaced workers will lose as they are forced to seek new employment. Displaced workers will suffer losses from transitional unemployment and will likely incur expenses related to retraining or relocation. Some of the poorest members of the population are ill equipped to handle these transition costs. Thus, despite a likely substantial improvement in the standard of living for almost all Russians after adjustment to the WTO, government safety nets are very important to help with the transition, especially for the poorest members of society.

III. The Impact of WTO Accession and the Doha Development Agenda

In Hertel and Winters (2006) these authors report the results of the project they led to assess the impact of the Doha Development Agenda (DDA) on poverty. In their project they first employed the global trade model known as GTAP to assess the impact of an ambitious outcome of the DDA on world prices, and more precisely, on the change in the vectors of import and export prices faced by the countries in their study. A similar set of simulations was done to assess the impact of global free trade. Along with about 15 other country teams, Rutherford, Tarr and Shepotylo (2006) undertook the analysis for Russia.

At the conclusion of the Doha Development Agenda, Russia will face a new set of prices for its exports and imports on world markets. What will be the impact of these new world prices on Russia and on Russian poverty? We used the model we developed to assess the impact of WTO accession on Russian poverty to analyse this question.

We took the GTAP model simulations of the vectors of percentage changes in the price of exports and imports for Russia as a result of the completion of the Doha agenda or global free trade as the starting point for our analysis. We took these new price vectors from the GTAP model as exogenous shifts in the terms of trade facing Russia, and thereby evaluated the impact of the likely changes in world prices as a result of a conclusion of the Doha Development Agenda (and of global free trade) on Russia and on poverty in Russia. We also compared these effects with the impact on Russia of Russian WTO accession.

The model and dataset we used to analyse the impact on poverty in Russia of the Doha Development Agenda as well as a result of global free trade is the model explained in Rutherford and Tarr (2008). Our results for the Doha Development agenda are reported in Rutherford, Tarr and Shepotylo (2005) Moreover, we compare these impacts with the impact on Russia of its own liberalisation through the commitments it will make as part of its WTO accession. Russian WTO accession is primarily a set of commitments by Russia to liberalise its own trade and, crucially, to open up its foreign direct investment regime in business services. The comparison of Russian WTO accession with the impact of the Doha Agenda on Russia then devolves fundamentally to a question of whether Russia can gain more from trade and subsidy reform in the rest of the world or from its own liberalisation. We examine impacts on Russia overall, at the decile level, as well as impacts on the entire distribution of Russian households through our "real household" model of Russia.

Cuts in the tariffs and subsidies of other countries will impact Russia in certain ways. Global free trade (which encompasses free trade in goods outside of Russia and the elimination of export subsidies, with domestic support for agriculture retained) would result in a weighted average gain to households in

Russia of 0.2% of consumption, with a standard deviation of 0.2% of consumption. We estimate that a successful completion of the Doha Development Agenda (which we model as the elimination of export subsidies, substantial cuts in tariffs outside of Russia and reduction in domestic support for agriculture) would result in a weighted average gain to households of -0.3% of consumption. Russia, as a net food importer, loses from subsidy elimination, and the gains to Russia from tariff cuts in other countries are too small to offset these losses. The impacts on Russia from these terms of trade changes tend to favour neither the rich nor the poor. The distribution of these impacts across all 55 000 households in Russia are depicted in Figures 7.5 and 7.6.

In Figure 7.7, we compare the distribution of gains from the DDA, global free trade and Russian WTO accession, where the distribution of gains from Russian WTO accession is taken from Rutherford and Tarr (2008). It is striking that the gains from WTO accession are so much larger that the entire distribution is so far to the right that it barely overlaps in the tails with the global free trade distribution. That is, Russian WTO accession is dramatically more important to Russia than the DDA or even global free trade in the rest of the world. Thus, we find that, in the medium term, what other countries in the WTO do with tariff changes or changes in export subsidies or domestic support will have a very small effect on Russian households and poverty. On the other hand, we estimate that virtually all households will gain from Russian WTO accession, these gains are substantial and they are slightly progressive. The distribution of gains across the 55 000 households is decisively affected by including the liberalisation of barriers against foreign direct investment in business services sectors and endogenous productivity effects in business services and goods. These results strongly support the view that Russia has by far the most to gain from its own liberalisation, especially in business services, rather than from improvements in market access as a result of reforms in tariffs or subsidies in the rest of the world. Foremost among the source of gains from Russia's own liberalisation are the gains from liberalising barriers against foreign direct investment in business services.

IV. Examination of Russia's Tariffs from 2001-2005

What is the *structure* of the MFN tariff of Russia? How has it been changing over time? What are the sectors in which tariffs are high or low? How diverse is the tariff structure of Russia? Surprisingly, we only recently acquired the ability to answer these questions due to a lack of data that would allow calculation of the *ad valorem* equivalents of the specific Russian tariffs. This reflects a wider problem in the international trade literature: although we are making progress, to date, we do not have a set internationally comparable tariff rates for countries that use specific tariffs.[4]

Although the previous studies of the Russian tariff have provided a reasonable assessment of the Russian *ad valorem* tariffs,[5] previous efforts have been hampered by two problems: (1) about 10-15% of the tariff lines of Russia use a "combined" tariff rate system. For these tariff lines, both an *ad valorem* and specific tariff are indicated, and the actual tariff applied by Russian customs is the maximum of the two. To know the actual tariff, where specific tariffs are specified, we must calculate their *ad valorem* equivalents. This is a non-trivial task, and some previous unpublished efforts have simply ignored the specific tariffs, resulting in an underestimate of the actual tariff rates; and, more importantly, (2) until recently, tariff line data on the value and quantity of imports have not been available, and the data were not available electronically.[6] Consequently, earlier calculations were necessarily based on aggregates of

4 The International Trade Centre in Geneva is close to solving this problem, at least for very recent years.

5 This includes Tarr (1999) and Afontsev (2002, 2004).

6 The previous data available were the annual hard copy reports of the Russian Customs Committee. These reports reported aggregate information from the tariff line level, so that information is reported on about

tariff lines. Thus, these studies were simply not capable of assessing the tariff rates except at somewhat aggregate levels, and since the calculations were based on averages, the results were imprecise.

We have obtained a new data set that we describe below. As a result of these new data, we are able to calculate the *ad valorem* equivalents of the specific tariffs. This allows us to provide the first detailed and accurate assessment of the tariff structure of Russia. For the years 2001-2005, we are able to assess the actual number of tariff lines in which specific tariffs apply, which tariff lines have the highest tariffs, and investigate many other properties of the Russian tariff structure for the first time. We calculate and focus on the MFN tariffs. In an appendix to Shepotylo and Tarr (forthcoming), we also provide an estimate of the collected tariff rates where we adjust for the fact that most imports from CIS countries enter with zero tariffs.

Briefly, our key results, which are displayed in Table 7.4, are the following: the average tariff in Russia increased between 2001 and 2003 from about 11.5% to between 13% and 14.5%, but it held steady in 2004 and 2005. This places Russia's tariffs at a level slightly higher than other middle-income countries and considerably higher than the OECD countries. The tariff structure became much more diverse between 2001 and 2003, but the dispersion of the tariff moderated in 2004 and 2005. Notably the trade weighted standard deviation of the tariff approximately doubled from 9.5% in 2001 to 18% in 2003, but then fell to 15.2% by 2005. "Tariff peaks," that is, tariff lines with very high tariffs, are more of a problem in 2005 than in 2001, but less so than in 2003. The reason for the increase in the tariffs is the specific tariffs, as the *ad valorem* rates have not increased. More tariff lines are subject to specific tariffs in 2003-2005 than in 2001, and the appreciation of the euro, relative to 2001, has increased the *ad valorem* equivalents of the specific tariffs. The food sector and light industry are the aggregate sectors with the highest tariff rates – their tariff rates in 2005 were 23.1% and 19.5% on a trade-weighted basis.

Considerable variance in the tariff rates exists even at the two digit level of aggregation. The following sectors that have an average unweighted tariff of 20% or more (the average is over all tariff lines within the two-digit category): meats, edible offal (29%); meat and fish preparations (35%); sugar (24%); beverages and vinegar (21%); glues (20%); articles of leather (28%); carpets (20%); apparel (21%); footwear (27%); hats (20%); umbrellas (20%); clocks and watches (29%); furniture (21%); feathers (23%). On the other hand, most mineral products had low tariff barriers throughout the period.

Tariff peaks at the tariff line level (ten digit level) are very high. In 2005, there were 27 tariff lines with tariff rates of 100% or more. Still another 86 tariff lines had tariff rates above 50 but less than 100%. But about 94% of the tariff rates are less than 25%, 83% are less than 20%, and 41% of the tariff lines have tariff rates less than 1%. Clearly there is a lot of variance in the tariff structure.

V. The Merits of Dual Pricing of Russian Natural Gas

During the accession negotiations to enter the World Trade Organisation, the question arose whether Russia should charge the same price for the exports of its natural gas as it charges in its home market. This issue was highly controversial in Russia and was a major issue in the bilateral market access negotiations between the European Union and Russia. In Tarr and Thomson (2004) we analyse this question. We find that from Russia's perspective, there is a strong rationale for discriminatory pricing between gas sold domestically and exported gas. Although there have been significant increases in the price of natural gas charged by Gazprom since we did this analysis, the basic principle that it is not in

1 700 aggregated product codes out of about 11 000 tariff lines. Previously, we manually entered these data in order to perform the calculations that were possible with those data.

Russia's interest to unify natural gas prices has not changed. On the other hand, efficient pricing from the perspective of the world would call for unified pricing of gas. I explain that optimal two part tariff pricing by Gazprom would achieve efficient unified pricing, but our estimates show that it would approximately double the profits of Gazprom on its European sales.

In the Russia-European Union bilateral agreement on Russia's WTO accession, Russia reportedly was not required to unify its domestic and export price of natural gas. Russia, however, was expected to raise its domestic price to the long run marginal costs of Gazprom.

Russia's Reserves and Exports

Russia is endowed with very significant natural gas resources. Its proved reserves of 47.6 trillion cubic metres represent over 30% of the world's proved reserves.[7] Its 2001 production of 542 billion cubic metres (BCM) constituted 22% of world production and its reserves to production ratio is in excess of 80 years, higher than any other major producer. Russia is also by far the world's largest exporter of natural gas. In 2001, it exported about 127 BCM to Europe and Turkey and about 40 BCM to CIS countries and the Baltics.[8]

Optimal Export Prices

It is in Russia's interest to try to maximise the overall revenues associated with export volumes. Given the need to ship natural gas from Russia to Europe through a pipeline, Gazprom is able to "segment" the European market from the Russian market. Russia has a market share of approximately 27% of natural gas sales in Europe, which implies Gazprom has some market power in Europe.[9] In this situation, it is optimal for Gazprom to price above long run marginal cost to exploit this market power.[10]

The significant role Gazprom plays in supplying the European market, gives it market power.[11] The extent of the market power, however, is tempered by the existence of competing sources of gas. In addition, Gazprom wants to be perceived as a reliable supplier that can be trusted to continue to deliver gas (potentially in increasing quantities) at a fair price to European markets. In the long run, Gazprom faces risks that new competitors will erode its market share and those risks are greater the higher its markup over marginal costs.[12] Volumes for the next several years are constrained by transportation

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7 The source for the data in this paragraph is British Petroleum (2001).

8 Exports to Europe and Turkey include about 75 BCM to Western Europe, 40 BCM to Eastern Europe and 11 BCM to Turkey.

9 In the year 2000, Russia was responsible for 66% of the imports of Europe (including Turkey). The other principal suppliers of gas to the European market are Algeria (through a pipeline across the Mediterranean), Norway, the Netherlands and the UK. See British Petroleum (2000).

10 If in the future, competition is introduced in the Russian market, competition among Russian firms would erode monopoly profits in Europe. In effect, unified pricing would be achieved through structural reform of the Russian market, rather than by regulation. In the absence of the Gazprom monopoly, if Russia is to extract the available monopoly profits on its exports of gas to Europe, it will be in Russia's interest to impose export taxes on Russian gas exporters.

11 Based on data in the Europe market, in Appendix 1 of Tarr and Thomson, we present our calculations of the Lerner index of market power. We find that it is significant in comparison with estimates of the Lerner index for other industries.

12 Since higher prices will accelerate the entry of new competitors, optimal dynamic pricing by Gazprom would result in a lower price to deter entry. If in the future, supplies from new competitors increase faster than demand from Europe, the markup by Gazprom would fall. Moreover, elasticities of demand are greater

facilities and long-term contracts. This limitation, of course, can be overcome and new entrants are likely to emerge. However, the longer-term constraint is the absorptive capacity of export markets. Russia's proven reserves are sufficient to support a doubling, or even tripling, of its production capacity. In order to absorb this volume of gas, markets in Europe would have to increase dramatically.

The key point here is that Gazprom cannot sell significantly more natural gas in Europe without impacting the price of gas in Russia. To sell significantly more gas, Gazprom would have to accept a lower price, *i.e*. it faces a downward sloping demand curve. This means that there is no "world price" of gas that Russia faces. If Gazprom has to lower its export price to make significantly greater sales in Europe, Gazprom must calculate an optimal price for its gas sales in Europe that reflects the tradeoff it faces between the additional revenue from additional sales of gas and the lost revenue from the reduction of price. Gazprom's optimal price of gas in Europe will have to change over time as the demand for gas in Europe changes, but it is in Gazprom's interest to maximise its profits on exports.

Figure 7.8 presents the Tarr and Thomson model. We assume that Gazprom is optimising the price and quantity that it sells in Europe – this was between USD 79 and USD 99 per thousand cubic metres (TCM) plus USD 27 transport costs in 2000 and 2001. (Prices were about USD 380 per TCM in 2008.)[13]. The analysis reveals that if Russia was to sell its natural gas to Europe at only full long run marginal cost plus transportation costs, it would lose between USD 5 billion and USD 7.5 billion per year at 2001 values. On the other hand, consumers in Europe would gain even more (between USD 7.5 billion and USD 10 billion per year), as they would consume more gas at lower prices. If, instead, Russia were to raise its domestic prices to the prices it charges in Europe, Russian industry would incur very large adjustment costs as the gas cost increases would adversely impact on investment and unemployment in the short run. Absorbing the cost increases would induce Russian industry to switch to alternative fuels and produce less gas-intensive products that, as we explain below, cannot be justified on the basis of Russia's comparative advantage.

Domestic Market Pricing in Russia

The Russian market would be better served if Russia were to introduce competition in production of natural gas along with the provision of pipeline access for new gas suppliers. Gazprom, however, is presently close to a monopoly in Russia's domestic market. Efficient pricing of monopolies requires that they price in the domestic market at levels that reflect the true alternative economic value of the commodity in question.[14] If there was a world price, the opportunity costs of selling gas domestically would be the world price and it would be optimal for Russia to charge a unique price on its domestic and

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in the long run than in the short run, since, for example, inter-fuel substitution is possible in the long run. Greater elasticities imply less market power and lower the optimal markup over marginal costs. We presume, however, that Gazprom has optimised its markup based on long run calculations.

13 Gazprom president Alexei Miller reported on 14 March 2008 that ''the price [of Russian gas] in Europe now exceeds USD 370. We believe the average price in 2008 could be USD 378 and could even reach USD 400 per 1 000 cubic meters.'' Regarding demand in Russia, he noted that the rise of national industries, such as producers of cement, building materials, and fertilisers and gas refineries, is also pushing up Russian gas demands. Miller said that Gazprom plans to introduce market gas prices for Russian industrial consumers in 2011. See Johnson's Russia List, http://www.cdi.org/russia/johnson/2008-56-39.cfm .

14 This discussion is based on the monopoly structure of the natural gas market in Russia. Of course, production of natural gas is not a natural monopoly and it would therefore be desirable to have additional producers. We discuss below that if alternative producers of natural gas were given access to the gas pipelines, there would be economic gains as well as environmental benefits. Nothing in the argument developed in this paper implies that the current structure of Russia's gas market is efficient.

export sales.[15] We have explained above that there is not a world price of natural gas for Russia and it must determine its export price independently of its domestic price. In Russia's domestic market, the opportunity costs then correspond to the long run marginal costs of natural gas. In 2001, this implied that it was necessary for Russia to raise the domestic price of natural gas to achieve this economically efficient price; otherwise the capital stock will deteriorate and supplies will not be forthcoming over time. Many market economies, in fact, regulate the maximum price of monopolies such as gas and electricity distribution to achieve this pricing objective.[16] The analysis summarised in Figure 7.8 suggests that, in 2001, Russia should have allowed Gazprom to raise its domestic prices of natural gas from about USD 15 to USD 20 per TCM to the full long run marginal costs (about USD 35 to USD 40 per TCM). This would have resulted in benefits to Russia of about USD 1.24 billion per year.

By 2007, natural gas prices in Russia had increased to between USD 64 and USD 72 per TCM.[17] Although there is no updated estimate of LRMC, it has surely increased considerably due to inflation and the substantial rise in steel costs above the rate of inflation, coupled with the weaker dollar. It would appear, however, that with the substantial increase in the price of natural gas to producers in Russia, prices are much closer to LRMC in 2007. Moreover, the Government of Russia has announced plans to increase the price of natural gas for industrial users to international levels, less transportation costs and export taxes. In early 2008, prices on exports to Europe were about USD 378 per TCM. With transportation costs of about USD 35 per TCM and export taxes at 30%, to implement this plan today, prices in Russia would have to rise to about USD 225 per TCM. Russian Government forecasts of domestic natural gas prices in 2011, however, are that prices would rise to about USD 120 per TCM. Thus, to implement this plan, Russian domestic market prices would have to rise dramatically higher than what is planned. Moreover, such high domestic prices would be very inefficient. High prices would induce very significant reductions in Russian demand, to the point where the value to Russian consumers would be considerably greater than the long run marginal costs of production. This would imply substantial monopoly profits for Gazprom on domestic sales. Russia fought a bitter battle at the WTO and won the right to have dual pricing of natural gas. However, except for the 30% export tax difference, Russian current plans call for a unification of natural gas prices for its industrial users.

Efficient Prices from the Perspective of the World

Given that Europeans lose more dollars than Russia gains from dual pricing, a natural question is whether there is a co-operative solution that makes both Europe and Russia better off. A co-operative solution would involve Russia selling gas to Europe at LRMC plus transportation costs and Russia receiving compensation in return. European compensation need not be tied directly to gas prices. But for such an arrangement to be in Russia's interest, the compensation would have to be substantial, valued by Russia at not less than USD 5 to USD 7.5 billion per year. Alternatively, one can pose the question non-co-operatively: can Gazprom develop a pricing strategy that would allow it to increase its profits? Monopolists often employ "two-part tariffs" as a method to extract the maximum profits. If European buyers were offered gas at a lower per unit usage price, but had to pay a fee to access the gas each year, this would be, in effect, a two part tariff. For Gazprom, the optimal two part tariff requires pricing gas at LRMC plus transportation costs, and charging an access fee equal to the entire value of the gas to European consumers above LRMC plus transportation costs (the entire consumers' surplus). In principle, Gazprom's profits could increase by not only the USD 2.5 billion in inefficiency losses from prices exceeding marginal costs in Europe, but by an additional USD 4.8 billion due the additional value it can

15 Given a domestic monopoly, unified pricing would call for a tax to prevent monopoly profits.

16 See, Scherer (1980, chapter 18) and Carlton and Perloff (2000, chapter 20).

17 Estimates based on Rosstat and Ministry of Economy data.

extract from consumers with high demand (the triangle DD'J in the figure). Gazprom's failure to maximise short run profits through optimum two-part tariffs likely reflects its perceived risk of losing profits to substitutes. By identifying the stakes – who gains and who loses – we hope that we will inform the debate on this important policy issue.

VI. Principal WTO Accession Commitments of Russia

Non-Agricultural Market Access (NAMA)

Overall Tariffs. Russia agreed to reduce its bound MFN tariffs to about 8% on average. As discussed above, Russia's MFN tariffs were about 12.1% on a simple average basis or 14% on a trade weighted basis in 2005, where we have taken into account the *ad valorem* equivalents of Russia's specific tariffs. We find that ignoring the specific tariffs results in a reduction in the calculated average tariff to about 11%. Independent of whether the Working Party calculated the ad valorem equivalents of the Russian specific tariffs, an average Russian tariff of the 8% implies a decline.

Civil Aircraft and Capital Goods and Equipment. One of the more contentious areas of tariff negotiation was civil aircraft. Tariffs on wide body aircraft will be reduced from 20% to 7.5% in the four years following accession. Russia has agreed to substantial tariff reductions in construction, agricultural and scientific equipment, as well as medical devices. Tariffs in these sectors will average 5%.

Services Commitments

Some of the most important and internally controversial commitments by Russia are in the area of services.

Insurance. Russia will significantly increase its commitments to multinational insurance providers. It will allow 100% foreign ownership of non-life insurance companies upon accession to the WTO. Russian prohibition of foreign participation in mandatory insurance lines as well as Russian restraints on the number of licenses granted to foreign life insurance firms will be phased out five years after the date of accession. Russia had restrained the amount of foreign investment in the sector to about 15% of total investment; but as part of its accession commitments, Russia agreed to increase this limit to 50%.

The Russian banking and insurance sectors see themselves as very vulnerable to much more powerful and efficient multinational providers of financial services. As such they were strong opponents of commitments in these sectors. The insurance sector was very concerned by the level of commitments made by their government in the rush to get an agreement prior to the G-8 conference in Saint Petersburg in late spring 2006. The experience of China, where similar fears were expressed by insurance interests, is instructive and suggests that these fears are exaggerated. Prior to 2001, China had a very closed insurance market. As part of its WTO accession commitments, China agreed to gradually remove restrictions on foreign investors in insurance and to fully open its insurance markets by January 2005 (except foreign companies could hold a maximum of 50% in the life insurance market). As expected, the results have been extremely positive for consumers of insurance services in China. In addition, wages of skilled workers in the insurance sector have risen, and even domestic insurance companies have grown, and, due to better access to foreign capital as foreign investors, nearly all have sought and obtained local partners (for details and references see Tarr, 2007).

Banking and Securities. Russia has agreed to bind most existing market access arrangements and to offer some additional liberalisation. These commitments include: allowing 100% foreign ownership of banks and other non-insurance financial institutions; allowing cross border provision of numerous services including asset management services, credit cards and other types of payments; allowing foreign

investment companies to own and trade the full range of securities available in Russia, including state securities and bullion, and to participate in financing the privatisation of state owned enterprises. In addition, Russian restraints on the share of the sector captured by foreign banks will increase from about 15% of total investment to 50%.

In banking, opposition galvanised around the branch banking issue. Russia was willing to allow subsidiaries of international banks. Subsidiaries must be registered as Russian entities, have their own capital and are subject to supervision by the Russian central bank. Branches, however, do not have a separate legal status or capital apart from their foreign parent bank. In general, entry into banking services in a country is easier when branches are permitted and the US Treasury has been attempting to assure branch banking is permitted in all countries admitted to the WTO. The Russian central bank maintained that it could not regulate or supervise branches adequately and that depositors would therefore be at risk.

The counterargument to the view of the Russian central bank is that theory suggests and experience has shown that multinational banks have more of their reputation on the line with a branch, and this will provide greater incentive to avoid default. Moreover, to the extent that the costs of entry through branches are smaller, the number of multinationals present will be larger with branches. Then the host country has the advantage of a larger amount of FDI if it allows branches. This is the greatest advantage of allowing branch banking, but it was also the greatest concern of the central bank of Russia – since it implies greater potential adjustment costs for Russian banks.

Of the 150 countries in the World Bank database on "Banking Regulation and Supervision" for 2003,[18] branch banking was prohibited in only 18. The 18 countries prohibiting branch banking were: Russia, Kazakhstan, Azerbaijan, Belarus and the Ukraine from the CIS, plus Bolivia, Botswana, Columbia, Costa Rica, Macedonia, Malaysia, Mexico, Nigeria, Papa New Guinea, Philippines, Serbia and Montenegro, Trinidad and Tobago and Zimbabwe. The remaining 132 countries, including all OECD and EU (25) countries, allow branch banking.

It seemed that the Chinese approach offered a reasonable compromise. China allows branches, but it imposes a large minimum asset requirement on the parent bank.[19] The *de facto* consequence of this is that China only allows rather large multinational banks to enter. This both protects incumbent Chinese banks against many new entrants, and also means that the foreign entrants are likely to be relatively safe and in need of little supervision or regulation.

President Putin has said that branch banking was a deal breaker for Russian WTO accession. Based on its bilateral agreement with the US, Russia succeeded in avoiding a commitment on branch banking, becoming the only non-LDC acceding country to avoid such a commitment.[20] Like many items in accession negotiations, succeeding in avoiding a commitment is a pyrrhic victory as Russia will lose the benefits from greater foreign direct investment. Nonetheless, multinational banks, operating as subsidiaries have greater market access and national treatment rights under the bilateral US-Russia agreement and Russia should benefit from greater involvement of multinational banks in Russia over time.

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18 See http://www.worldbank.org/research/projects/bank_regulation.htm. Rows 31, 32 and 42 provide data on branch banking.

19 This minimum asset requirement would have to be scheduled in the GATS commitments in order to avoid disputes with members.

20 Russia agrees to reopen discussions on this issue upon consideration of membership in the OECD.

Telecommunications. As part of its bilateral agreement with the European Union, Russia agreed to terminate the monopoly of Rostelekom on fixed line long distance telephone services. In the agreement with the US, Russia committed to allow 100% foreign owned telecommunications companies to operate in any telecommunications sector. Russia also agreed to implement the WTO Basic Telecommunications Reference Paper, which among other reforms will require Russia to establish an independent regulator and provide for transparency and interconnection obligations. Presently the Ministry of Communications is responsible for managing any state assets as well as performing regulatory functions such as interconnection and licensing. Conflicts of interest are more likely when the same government entity that manages the state assets is also responsible for the regulatory functions, and it is likely that a commitment to an independent regulator and other key reforms in the sector would not have been achieved without international pressure.

Business Services. Russia will ensure market access and national treatment for a wide variety of professions, including lawyers, architects, accountants, engineers, health care professionals, advertising, marketing and management specialists. Foreign companies will be permitted to operate as 100% foreign owned entities.

Distribution Services. Russia will allow 100% foreign owned companies to engage in wholesale, retail and franchise sectors, as well as express delivery services upon accession to the WTO. This includes distribution of pharmaceuticals, with minimal limitations.

Agriculture Issues

Agricultural issues have been among the most contentious in Russia's WTO accession negotiations. The most difficult unresolved issue is agricultural subsidies. Russia, however, has made considerable commitments in market access as well as sanitary and phyto-sanitary (SPS) negotiations. For beef, pork and poultry exports, the disputes with the US were among the most significant. (In early 2008, Russia was still discussing further commitments on SPS with the informal multilateral Working Party that are discussed below.) The bilateral agreement with the US details the following commitments.

Market Access. Russia agreed to bind its tariffs on all agricultural products. In many cases this entailed tariff cuts from present levels. See the United States Trade Representative (2006) (USTR) fact sheet for details.

Non-Tariff Barriers. Imports of poultry, beef and pork products from the US have been especially controversial. Instead of joint inspection of facilities, Russia agreed to allow the US Department of Agriculture-Food Safety and Inspection Service to inspect and certify new facilities or facilities that need to remedy a deficiency. Regarding beef, Russia and the US agreed to timely joint inspections of all facilities that will export to Russia. Once a joint inspection has been completed, the inspection process applying to poultry and pork exporters will apply.

Russia will allow the freezing of pork to limit the risk of trichinae which will mitigate the impact on sales. Previously, Russia only allowed this for intermediate pork sales. The Russian regulatory regime in modern biotechnology products has been unpredictable. For example, product registrations and approvals in the area of feeds were halted in 2004 when work began on a new permanent regulatory system. Russia also agreed to maintain an interim approval and registration system for modern biotechnology products (until a permanent one could be established) that is science based, transparent and consistent with the WTO Agreement.

VII. Are there Excessive Demands on Russia due to Political Considerations?

Claims that demands on Russia are either political or excessive by the standards of other countries that have acceded to the WTO are widespread, however, they are largely unfounded. The evidence reveals that, aside from a couple of well-publicised cases (such as unified gas pricing) where unusual demands were placed on Russia,[21] such demands are typical of the WTO accession process in the past ten years. Since 1998, the process of acceding to the WTO has been a difficult one in which all acceding countries have been asked to take on very significant commitments to foreign exporters and investors. In comparison with the commitments of these countries, the commitments demanded of Russia do not appear excessive.

Goods

In goods, Russia has agreed to bind its tariffs at an average tariff level of 8%, after an adjustment period (USTR, 2006). This is a slightly higher average bound tariff on goods than most countries that have acceded to the WTO since 1998 (see WTO, 2005), especially compared with other Transition countries. The average tariffs for other acceding countries are: Saudi Arabia, 10.5%; Former Yugoslavian Republic of Macedonia, 6.2%; Armenia, 7.5%; Chinese Taipei, 4.8%; China, 9.1%; Moldova, 6.0%; Croatia, 5.5%; Oman, 11.6%; Albania, 6.6%; Georgia, 6.5%; Jordan, 15.2%; Estonia, 7.3%; Latvia, 9.4%; Kyrgyz Republic, 6.7%.[22] Thus, by the standards of countries that have acceded to the WTO in the last eight years that are not "Least Developing Countries," Russia appears to have acceded with bound tariffs slightly higher than average, *i.e.* no excessive demands from the Working Party here.

Services

In the area of services, no simple measure like an average tariff is available. But an examination of the table of commitments of the countries that have acceded to the WTO since 1998 (WTO, 2005, Table 7.5) shows that that all of them have assumed a rather high and comprehensive level of commitments in terms of sectors included. On a qualitative basis, the more detailed discussion above on banking and insurance does not suggest an above average level of commitments in these important sectors. On the contrary, Russia has been able to avoid a commitment to branches of banks, unlike almost all of these countries.

Agriculture

Although trade-distorting subsidies (subsidies that are dependent on exports or production) are constrained by the WTO, the WTO allows without any constraints publicly funded subsidies to agriculture that are not trade-distorting. These types of subsidies are known as "Green Box" subsidies. Green Box subsidies include a wide range of publicly funded measures including research and development, pest control, general and specialist training, extension and advisory services, inspection services for health and sanitary reasons, marketing and promotion services, infrastructure services, including electricity, roads and environmental expenditures, targeted support to low income population through food stamps or subsidised prices, direct payments to producers to support income provided it has minimal trade-distorting features, crop insurance subsidies for natural disasters, adjustment assistance

21 One unusual demand on Russia was the pressure to unify its domestic and export price of natural gas. This demand, which occupied negotiators for considerable time and was eventually dropped by the European Union, would have imposed a very high cost on Russia (see Tarr and Thompson, 2005).

22 Two of the "Least Developed Nations" acceded with relatively high bound tariffs: Cambodia, 17.7%; and Nepal, 23.7%. But the WTO accords a preferential status to developing countries.

through producer retirement programs and indirect income support not related to prices. The world-wide trend is to move agricultural support away from trade-distorting subsidies toward Green Box measures. In part, this is because it is generally recognised that trade-distorting subsidies are a highly inefficient way of helping agricultural producers compared with Green Box measures. And Green Box measures are more effective at creating a competitive agricultural sector in the long run.

Nonetheless, incumbent members of the WTO, like the European Union, Canada, the United States and Norway, have a base period for trade-distorting agricultural subsidies that allows considerable trade-distorting subsidies. The precedent among acceding countries, however, is that the three year period prior to accession forms the base period for permitted trade-distorting subsidies, and trade-distorting subsidies are negotiated down from that base. Although it is good for the Russian economy, the problem for Russian WTO accession negotiators is that in recent years Russia has had a rather low level of trade-distorting agricultural subsidies; but Russia would like to retain the right to use these subsidies in agriculture in the future. This issue was not resolved during the bilateral phase of the negotiations and will be one of the most contentious in the multilateral phase. Other countries, like Kazakhstan, who have a similar negotiating position, are waiting to see if Russia is successful in its negotiations. If Russia is able to obtain the right to provide trade-distorting subsidies in agriculture on a new basis among acceding countries, these other countries will demand parallel treatment. In any event, it is difficult to argue that Russia is being treated more harshly than other countries that have acceded, since it is asking for a departure from precedent.

VIII. Russian WTO Accession and the Jackson-Vanik Amendment

The Jackson-Vanik amendment of the US requires an annual review of Russian emigration policies in order for the US to grant MFN status to Russia (and other former communist countries). This is a significant irritant to Russia. At present there is no commercial pressure in the US to remove Jackson-Vanik. Once Russia becomes a WTO member, however, this will change, and there will be pressure on the US from its own exporters and investors to remove Jackson-Vanik. Consequently, the US will almost certainly remove Jackson-Vanik after Russian WTO accession.

The WTO requires that permanent MFN status be granted to all members. Thus, the provisions of Jackson-Vanik are inconsistent with MFN treatment required by the WTO. The US has two options once Russia becomes a member of the WTO: (1) eliminate Jackson-Vanik; or (2) invoke the "non-application principle" of the WTO. For newly acceding countries, a member of the WTO can opt out of WTO commitments with respect to the newly acceding country if it invokes the "non-application" principle. If the US were to invoke the non-application principle against Russia, this means that the US would refuse to honour its WTO obligations to Russia. But non-application is reciprocal. So the US would not have any assurance that its exporters or investors would be treated in Russia according to Russia's WTO commitments.

In practice, the US has dropped Jackson-Vanik on all countries that have acceded to the WTO with one exception. In the cases of Albania, Bulgaria Cambodia, Estonia, Latvia and Lithuania, Jackson-Vanik was repealed prior to accession. In the cases of Mongolia, Armenia, Georgia, Kyrgyzstan, it was repealed after accession, so the non-application principle was invoked, but eventually removed within a year or two. (In the case of Georgia, non-application was never invoked since Jackson-Vanik was removed soon after accession.) Only in the case of Moldova does Jackson-Vanik still apply to a country that acceded to the WTO. In the case of the Ukraine, Jackson-Vanik was removed in 2006.

Former US Trade Representative Rob Portman testified before Congress in 2006 that the US will have to lift Jackson-Vanik against Russia, the Ukraine and Kazakhstan in order for the US exporters and investors to gain the advantages of the commitments these countries are making at the WTO.

IX. Remaining Issues

Often the most difficult issues remain at the end of the accession negotiations. Although Russia has resolved some of the most contentious (such as gas pricing and branch banking where Russia achieved its objectives in the negotiations), several difficult issues remain.

Georgia – The Customs Posts issue with Russia

The negotiations and political situation between Russia and Georgia were highly volatile at the time of writing. Abkhazia and South Ossetia are two breakaway regions from Georgia with *de facto* governments independent of the central government of Georgia. These regions border Russia. Georgia has repeatedly called for the removal of a Russian-led peacekeeping mission in Abkhazia. In the context of the WTO, Georgia considers the customs posts between these regions and Russia illegal and has asked Russia to close them. Russia had, until early 2008, steadfastly refused to discuss the customs post issue as part of its WTO negotiations. Russia has banned the import of wines, mineral water and plant based products from Georgia, which appears to many Georgian officials as retaliation for the pressure Georgia had placed on Russia in the WTO accession negotiations. Georgia, which had signed its bilateral agreement on Russian WTO Accession in 2004, then withdrew its support for Russia's WTO accession. Moreover, Georgia has objected to the agenda of the multilateral meetings and thereby blocked any official meetings of the Working Party on Russian WTO accession. In 2008, in order to work around this problem, the Working Party on Russian WTO accession met "informally." But in order for Russia to become a member of the WTO, the final report of the Working Party will have to be submitted to the General Council of the WTO and Georgia can block this submission. Thus, consensus is required and Georgia has a blocking vote on Russian WTO accession.

A major breakthrough occurred, however, when in February 2008, Russia agreed for the first time to discuss the border posts issue in the context of its WTO accession. At the same time, Georgian President Mikhail Saakashvili expressed hope for a "fresh start" in relations with Russia and suggested that Georgia may withdraw its objections to Russia joining the World Trade Organisation. In early April, Russia announced the resumption of sea and air travel and postal communications between the countries. It looked like the Georgia customs posts issue in the Russia WTO accession negotiations might be tractable after all.

The situation between Russia and Georgia, however, took a negative turn in April 2008. While not officially recognising the *de facto* governments of the breakaway republics of Abkhazia and South Ossetia, on 16 April President Putin indicated that the Russian Federation will officially interact with them. Some experts see the action as an effort by Russia to frustrate Georgia's efforts to accede to NATO in advance of NATO's expected reconsideration of a "Membership Action Plan" for Georgia at its December 2008 meeting. President Saakashvili, describing himself as "astonished and anxious about the provocative nature of Russia's move," asked Russia to "revise all those decisions that breach Georgia's sovereignty and territorial integrity."

Agriculture

Russia failed in the bilateral discussions to achieve its objective of defining 1992-1994 as the base period for trade-distorting agricultural subsidies. Russia now hopes that it will be able to negotiate a dollar amount that it would be allowed to subsidise. This is likely to be a very difficult negotiation as

there are other countries, like Kazakhstan, which would like similar departures from precedent. If the Working Party allows Russia a larger trade-distorting subsidy amount, it will have a more difficult time negotiating previous limits with subsequent applicants for WTO membership. Australia and New Zealand are likely to resist a change in precedent that would allow an increase in the trade-distorting subsidies. Partly in anticipation of this negotiation problem, Russia has been increasing its agricultural subsidies.

In the spring of 2008, Russia promised to submit an agricultural text for consideration to the informal multilateral Working Party. Russia submitted texts on sanitary and phytosanitary measures (SPS) and technical barriers to trade (TBT) for consideration. With respect to the SPS text, trading partners were pressing Russia for commitments on transparency, resident inspectors and use of international standards specifically with regard to pesticide use. On TBT, the final gaps related to the timetable by which Russia will change its rules to conform with international rules, and what rules will apply to the transition.

Intellectual Property

One of the more problematic areas in the negotiations for Russia has been Russia's obligations under the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). Although the Working Party has sought improvement in the laws, enforcement has been a real issue. US private industry sources complained that Russia was not cracking down on pirated copies of goods, including software, music, films and pharmaceuticals. As part of its bilateral agreement with the US, Russia signed a "side letter" in which it agreed to take several steps to strengthen enforcement of its intellectual property regime.

In early 2008, significant progress was made. An informal meeting of the Working Party approved a working party report chapter laying out Russia's obligations under the TRIPS Agreement. Russia passed a new Civil Code that came into force on 1 January 2008. The EU and the US had made demands that Russia address deficiencies in this code. Russia agreed to take on obligations to address the deficiencies and in particular makes very specific commitments to implement the TRIPS agreement fully, address member's concerns about the Civil Code and strengthen enforcement.

Timber Export Taxes[23]

In an effort to develop its wood products industry, Russia is implementing a progressive increase in export taxes on raw timber. On 24 March 2006, Russian export taxes were increased by EUR 1.5 to EUR 4 per cubic metre or 6.5%, whichever is greater. On 1 July 2007, they were increased to the greater of EUR 10 per cubic metre or 20%. On 1 April 2008, timber export taxes were increased to the maximum of EUR 15 per cubic metre or 25%.[24] Plans call for export taxes to be increased on 1 January 2009 to the greater of EUR 50 per cubic metre or 80%.

Finnish and Swedish wood sector and government representatives have strongly objected to the export tax increases, which some suggest will result in a prohibitive increase in export prices. On their behalf, the EU has addressed this issue in the context of the accession negotiations. On 1 April 2008, a spokesman for the EU stated that the EU regrets the decision by the Russian Federation to raise export duties for timber. He said that this issue figures prominently in the ongoing negotiations on Russia's WTO accession and that the decision to go ahead with the increase in export duties will not make the

23 Russia's commitments regarding state trading enterprises is another important outstanding issue.

24 *International Herald Tribune*, 1 April 2008.

situation easier.[25] President Putin has expressed support for the timber taxes as a means of developing the wood sector of Russia, without a desire to harm the Finnish or the Swedish wood processing industries.

X. When Will Russia Achieve Membership?

Although consensus on Russia's obligations under the TRIPS Agreement is one of the major issues on the table, many of the most difficult issues arise at the end of the process, and thus some of the most difficult compromises are necessary. Some observers (Aslund, 2007) are suggesting that isolationist interests in Russia have gained more influence and thus Russia is having second thoughts about an open economy model of economic development. If correct, this would make it very difficult then to come to a final agreement. On 14 February 2007, US Trade Representative Susan Schwab told the Senate Finance Committee that "Russia is not moving ahead with the kind of WTO commitments that it would need, at this point, to become a full-fledged member of the WTO." Regarding the multilateral talks, she added they "are not proceeding as well or as quickly as I think Russia had hoped."

Russian leaders have set a goal of accession to the WTO by the end of 2008. The issues discussed above, and the stiffening political will on many sides, suggest, however, that 2008 is overly optimistic for Russian accession. At the same time, it is difficult to believe that a country as important as Russia will not become a member of the WTO. I am optimistic, therefore, that the West and Russia will eventually come to an agreement. And once Russia has an agreement with the West, Russia and Georgia will also resolve their dispute.

25 http://ec.europa.eu/trade/issues/bilateral/countries/russia/pr010408_en.htm

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Annex – Tables and Figures

Table 7.1. Sectors, Tariff Rates, Export Tax Rates, Barriers to FDI in Services Sectors and Estimated Improved Market Access (*ad valorem* in % by sector)

Sector and Type of Sector	Tariff rates	Export tax rates	Change in world market price	Equivalent % barriers to FDI	
				Base Year	Post-WTO Accession
Perfectly Competitive Goods					
Electric industry	2.6	0	0		
Oil extraction	0	7.9	0		
Oil processing	4.5	4.6	0		
Gas	5	18.8	0		
Coalmining	2.2	0	0		
Other fuel industries	5	2.6	0		
Textiles and Apparel	16.8	4.1	0.5		
Agriculture and forestry	8.4	0.6	0		
Other goods-producing sectors	14.6	0	0.5		
Imperfectly Competitive Goods					
Ferrous metallurgy	5.9	0.4	1.5		
Non-ferrous metallurgy	8.5	5.3	1.5		
Chemical and oil-chemical industry	7.5	1.6	1.5		
Mechanical engineering and metal-working	10.7	0	0		
Timber, woodworking, pulp and paper	13.5	6.9	0		
Construction materials industry	12	1.6	0		
Food industry	14.1	3.1	0.5		
Other industries	12.4	0	0.5		
Business Services with FDI					
Telecommunications				33	0
Science and science servicing (market)				33	0
Financial services				36	0
Railway transportation				33	0
Truck transportation				33	0
Pipelines transportation				33	0
Maritime transportation				95	0.8
Air transportation				90	0.75
Other transportation				33	0
Perfectly Competitive Services with no distortions: Post; Trade; Public Services, culture and arts.					

Source: Shepotylo and Tarr (forthcoming) for tariff rates; Kimura et al. (2004a,b,c) for barriers to FDI; Rosstat for export tax rates; authors' estimates for change in world market prices.

Table 7.2. List of Russian Regional Markets and Oblasts

Russian regional "markets" (markets are aggregates of oblasts defined below)		
msc	Moscow	(msk,mos)
stp	Saint-Petersburg	(len,spb)
tmn	Tumenskaya	(tum,kha,yam)
vgd	Northwest	(vol,klg,nov,psk)
nor	North	(kpa,nen,krl,kom,arh,mur)
cen	Central	(bel,bry,vla,vor,iva,kal,kos,krs,lip,orl,rya,smo,tam,tve,tul,yar)
sou	South	(sar,ady,dag,ing,kab,klr,kar,sev,kdk,sta,ast,vlg,ros)
url	Urals	(mar,mor,tat,udm,chv,kir,niz,pen,ulo,ore,sam,bas,per,krg,sve,chl)
sib	Siberia	(alr,bur,tyv,hak,alt,irk,kem,nvs,tom,oms,eve,tai,ust,kra,sah,kam,mag,kor,chu)
far	Far East	(agi,chi,hab,amu,sao,pri,eao)

Oblasts (plus Republics, Territories, Federal Cities, Autonomous Regions, Autonomous Districts)

1	ady	Adygeya, The Republic of	46	mar	Mari El, The Republic of
2	agi	Aginsky Buryatsky Autonomous District	47	mor	Mordovia, The Republic of
3	alt	Altaisky krai	48	msk	Moscow city
4	alr	Altay Republic	49	mos	Moskovskaya
5	amu	Amurskaya	50	mur	Murmanskaya
6	arh	Arkhangelskaya	51	nen	Nenetsky Autonomous District
7	ast	Astrakhanskaya	52	niz	Nizhegorodskaya
8	bas	Bashkortostan, The Republic of	53	sev	North Osetia, The Republic of
9	bel	Belgorodskaya	54	nov	Novgorodskaya
10	bry	Bryanskaya	55	nvs	Novosibirskaya
11	bur	Buryatia, The Republic of	56	oms	Omskaya
12	chr	Chechnya (sou), The Republic of */	57	ore	Orenburgskaya
13	chl	Chelyabinskaya	58	orl	Orlovskaya
14	chi	Chitinskaya	59	pen	Penzenskaya
15	chu	Chukotsky Autonomous District	60	per	Permskaya
16	chv	Chuvashia, The Republic of	61	pri	Primorsky krai
17	dag	Dagestan, The Republic of	62	psk	Pskovskaya
18	eve	Evenkiysky Autonomous District	63	ros	Rostovskaya
19	ing	Ingushetia, The Republic of	64	rya	Ryazanskaya
20	irk	Irkutskaya	65	spb	Saint Petersburg City
21	iva	Ivanovskaya	66	sah	Sakha, The Republic of
22	eao	Jewish Autonomous Region	67	sao	Sakhalinskaya
23	kab	Kabardino Balkaria, The Republic of	68	sam	Samarskaya
24	klg	Kaliningradskaya	69	sar	Saratovskaya
25	kal	Kaluzhskaya	70	smo	Smolenskaya
26	klr	Kalymykia, The Republic of	71	sta	Stavropolsky krai
27	kam	Kamchatskaya	72	sve	Sverdlovskaya
28	kar	Karachaevo Cherkessia, The Republic of	73	tai	Taimyrsky (Dolgano-Nenetsky) Autonomous District
29	krl	Karelia, The Republic of	74	tam	Tambovskaya
30	kem	Kemerovskaya	75	tat	Tatarstan, The Republic of
31	hab	Khabarovsky krai	76	tom	Tomskaya
32	hak	Khakasia, The Republic of	77	tul	Tulskaya
33	kha	Khanty-Mansiysky Autonomous District	78	tum	Tumenskaya
34	kir	Kirovskaya	79	tve	Tverskaya
35	kom	Komi, The Republic of	80	tyv	Tyva, The Republic of
36	kpa	Komi-Permyatsky Autonomous District	81	udm	Udmurtia, The Republic of
37	kor	Koryaksky Autonomous District	82	ulo	Ulyanovskaya
38	kos	Kostromskaya	83	ust	Ust-ordynsky Buryatsky Autonomous District
39	kdk	Krasnodarsky krai	84	vla	Vladimirskaya
40	kra	Krasnoyarsky krai	85	vlg	Volgogradskaya
41	krg	Kurganskaya	86	vol	Vologodskaya
42	krs	Kurskaya	87	vor	Voronezhskaya
43	len	Leningradskaya	88	yam	Yamalo-Nenetsky Autonomous District
44	lip	Lipetskaya	89	yar	Yaroslavskaya
45	mag	Maganskaya			

Table 7.3. Impact of WTO Accession on Regional Markets (% change from base year)

	Overall average	Moscow	St. Peters.	Tumen	North-west	North	Central	South	Urals	Siberia	Far East
Aggregate welfare											
Welfare (EV as % of consumption)	7.8	7.0	10.6	13.8	11.2	9.8	7.6	8.3	6.2	7.6	9.7
Welfare (EV as % of GDP)	4.3	4.7	5.7	3.1	6.2	4.7	4.2	4.7	3.3	4.2	5.2
Aggregate trade											
Regional exports (% change)	1.9	2.6	2.1	1.8	2.1	2.2	2.2	1.7	1.6	1.6	2.4
Real exchange rate (% change)	2.5	2.6	3.4	2.7	2.9	2.7	2.8	2.8	1.9	1.9	3.0
International exports (% change)	9.4	13.3	19.1	2.8	17.3	7.7	23.0	10.9	10.8	8.0	11.1
Return to primary factors (% change)											
Unskilled labour	4.1	4.7	6.6	4.2	6.1	5.5	3.8	4.9	2.5	4.1	6.2
Skilled labour	4.2	3.5	7.4	3.8	7.2	5.7	5.3	5.1	2.9	4.4	6.9
National capital	4.0	4.2	4.9	4.2	4.4	4.2	4.4	4.3	3.4	3.4	4.6
Regional mobile capital	6.5	6.6	10.2	5.4	10.2	7.6	6.9	6.5	5.5	6.1	8.0
Crude oil resources	4.9			5.6	4.1	5.3		5.4	2.9	2.8	5.9
Natural gas resources	1.8			2.9	-17.2	-9.1		-5.0	-9.9	-12.3	-9.1
Coal resources	10.8					14.1	13.7	13.6	10.6	9.8	14.2
Specific capital in domestic firms	-24.7	-32.3	-26.4	-47.5	-23.7	-27.4	-19.7	-26.3	-18.6	-21.0	-30.4
Specific capital in multinational firms	101.4	60.4	45.6	228.1	79.2	148.3	116.6	130.6	144.1	165.2	118.0
Factor adjustments											
Unskilled labour (% changing sectors)	2.3	2.1	3.2	1.5	4.2	2.1	2.6	1.7	2.3	2.1	2.8
Skilled labour (% changing sector)	2.5	2.6	3.9	1.9	4.1	2.5	2.9	2.0	2.4	2.4	3.2

Source: Authors' calculations.

Table 7.4. Russian MFN Applied Tariff rates [(a)]

	Tariff	Obs.	Mean		Standard Deviation		Minimum rate	Maximum rate
			Simple	Trade weighted	Simple	Trade weighted		
2001	Actual MFN tariff rate	11 076	11.7	11.4	10.8	9.5	0	518
	Ad valorem rate only (b)		10.9	10.5	6	6.5	0	100
2002	Actual MFN tariff rate	11 148	12.2	13.3	13.7	14.9	0	483
	Ad valorem rate only		10.8	11.2	6	8	0	100
2003	Actual MFN tariff rate	11 161	12.8	14.3	18.7	18	0	1270
	Ad valorem rate only		10.9	10.3	6.9	6.8	0	100
2004	Actual MFN tariff rate	11 218	12.4	14.1	13.3	17	0	293
	Ad valorem rate only		10.9	11.1	6.9	7.3	0	100
2005	Actual MFN tariff rate	11 365	12.1	14	12.7	15.2	0	470
	Ad valorem rate only		10.8	11.2	7	7.8	0	100

a) Table 7.1 presents summary statistics at the ten digit level

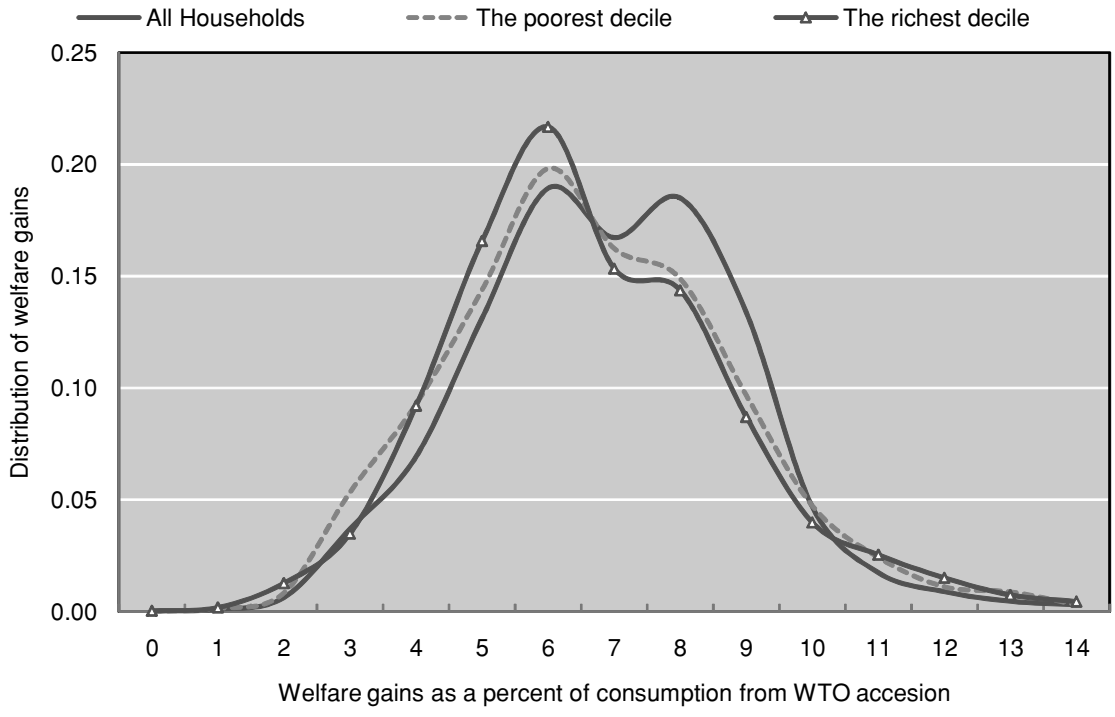
b) The *ad valorem* rate only calculations ignore specific tariffs, *i.e,* assume that specific tariffs are zero.

Source: Authors' calculations.

Figure 7.1. Welfare effects of WTO accession by Region of Russia as a percentage of Regional GDP



Figure 7.2. Distributions of estimated welfare gains from Russian WTO accession for the entire sample, the poorest decile, and the reichest decile



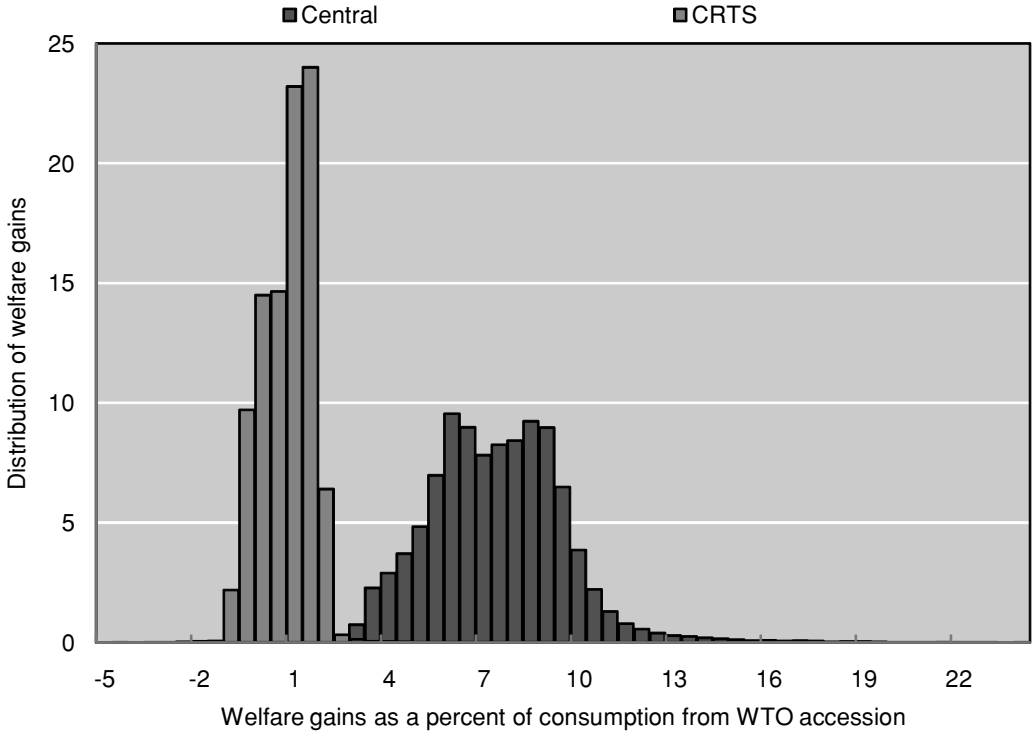
Note: Observations in a range from 0% to 15% are shown.

Deciles are constructed to be representative of 10% of Russian population based on the weights of the Household Budget Survey.

Source: Authors' calculations.

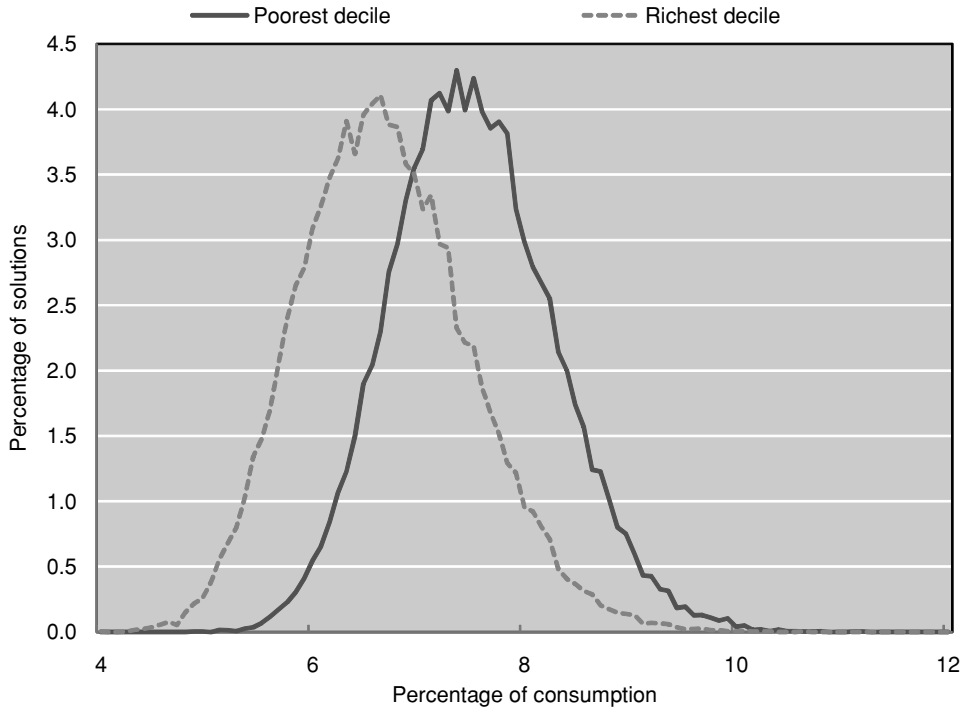
Figure 7.3. Distributions of estimated welfare gains from Russian WTO accession

Central and CRTS models comparison. 55 098 households sampled



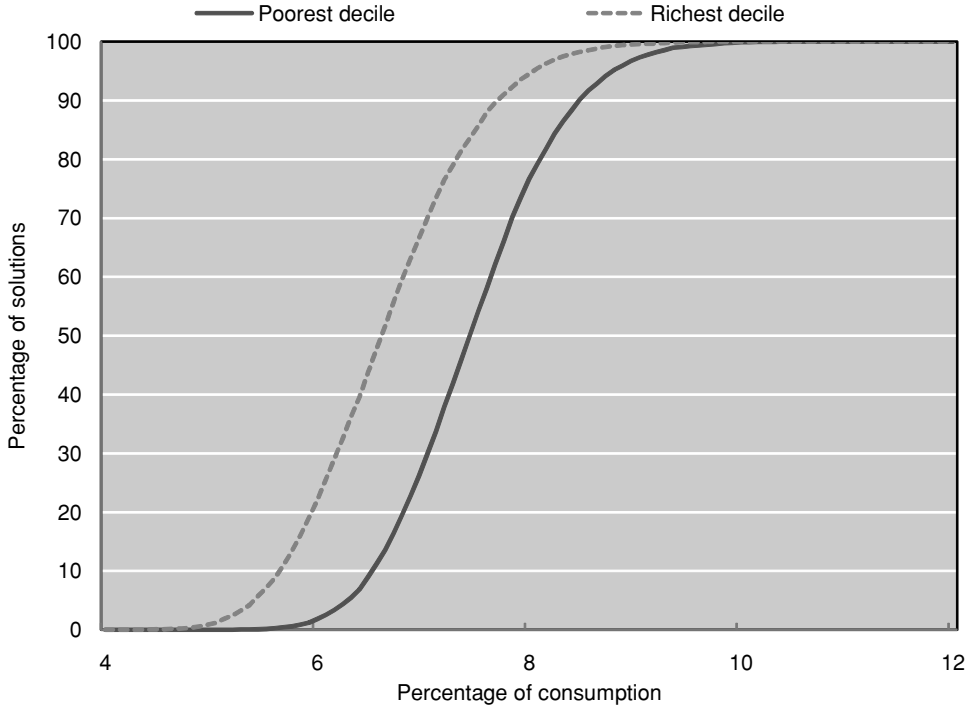
Source: Authors' calculations.

Figure 7.4. Distribution of welfare results



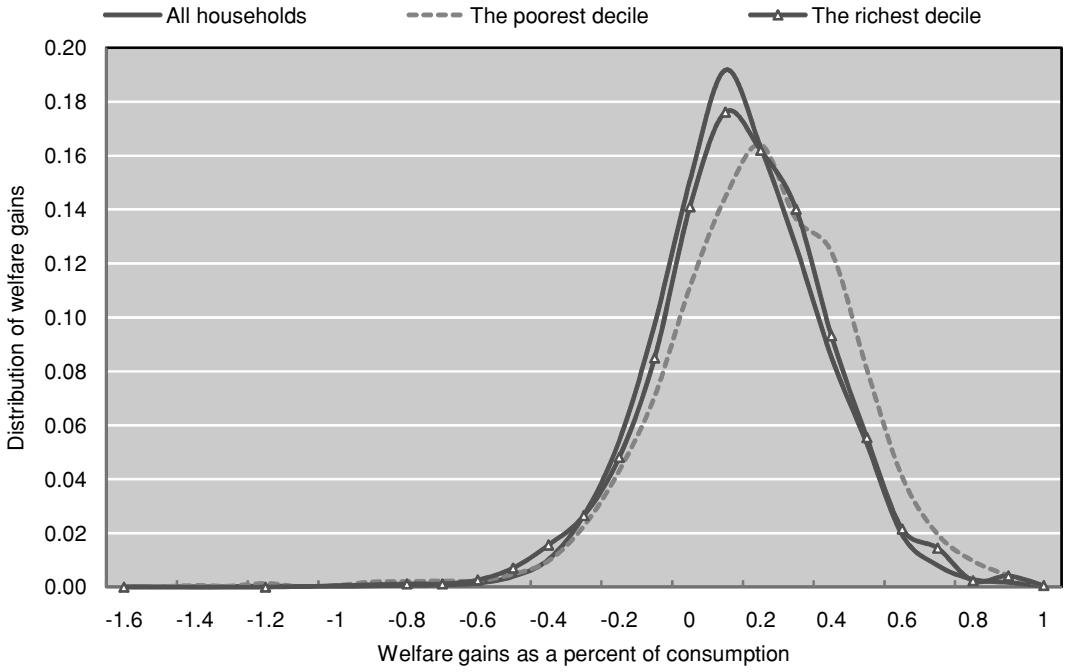
95% confidence intervals (assuming a normal distribution): poor (6.0,9.1), rich (5.1,8.3).
99% confidence intervals (assuming a normal distribution): poor (5.6,9.5), rich (4.6,8.8).

Cumulative distribution of welfare results (all households)



Source: Authors' calculations.

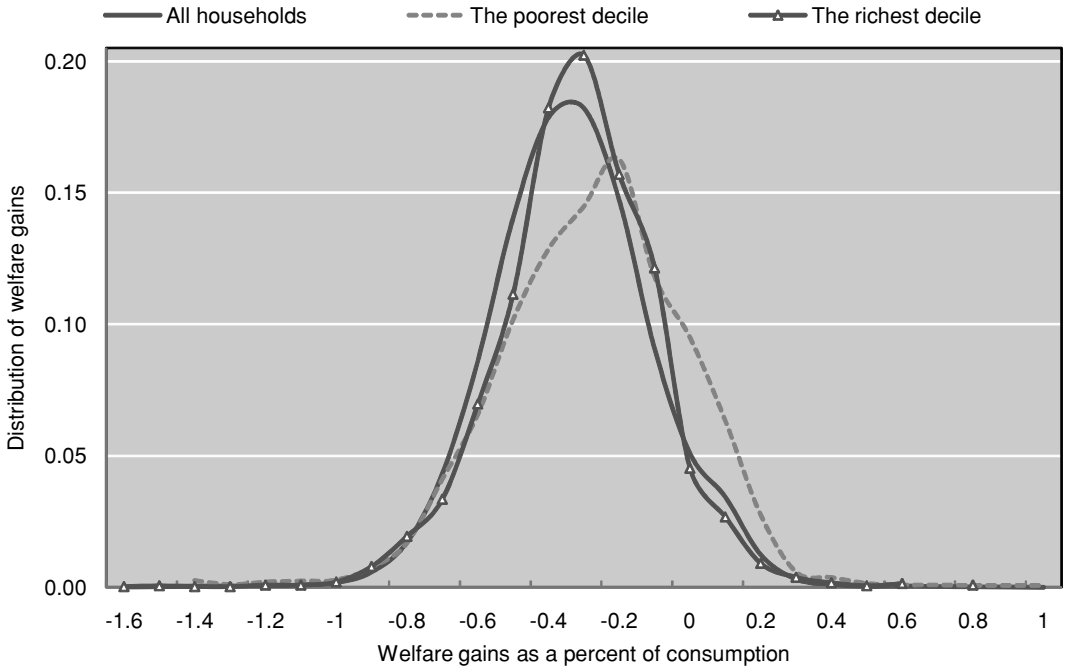
Figure 7.5. Distributions of estimated welfare gains for Russian households from rest of world free trade for the entire sample, the poorest decile and the richest decile



Note: Graph truncated in a range from -1.6 to 1

Source: Authors' calculations.

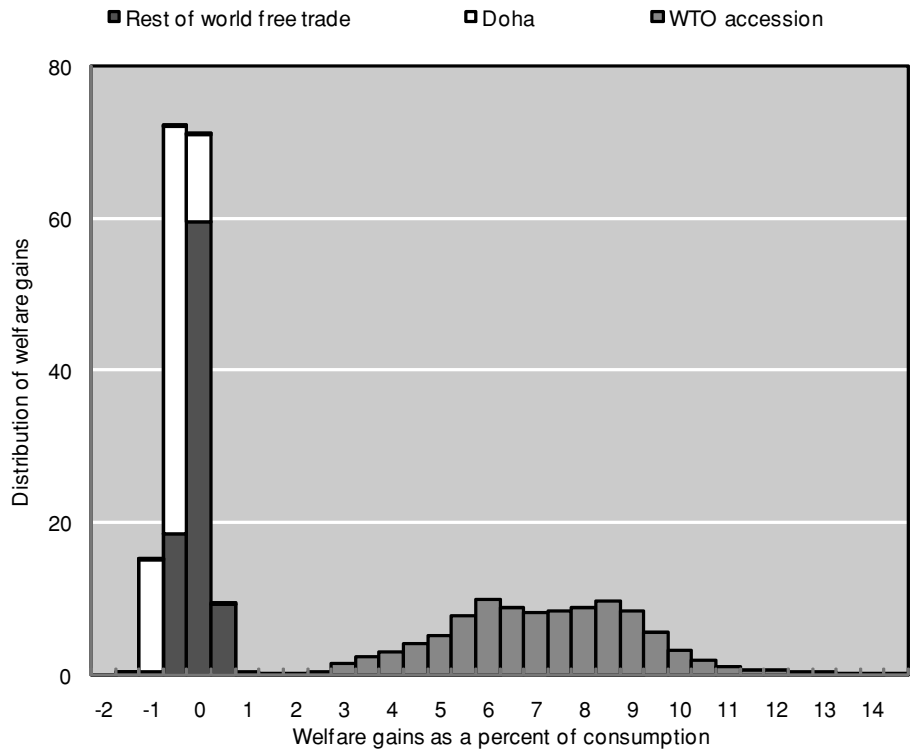
Figure 7.6. Distributions of estimated welfare gains for Russian households from Doha for the entire sample, the poorest decile, and the richest decile



Note: Graph truncated in a range from -1.6 to 1

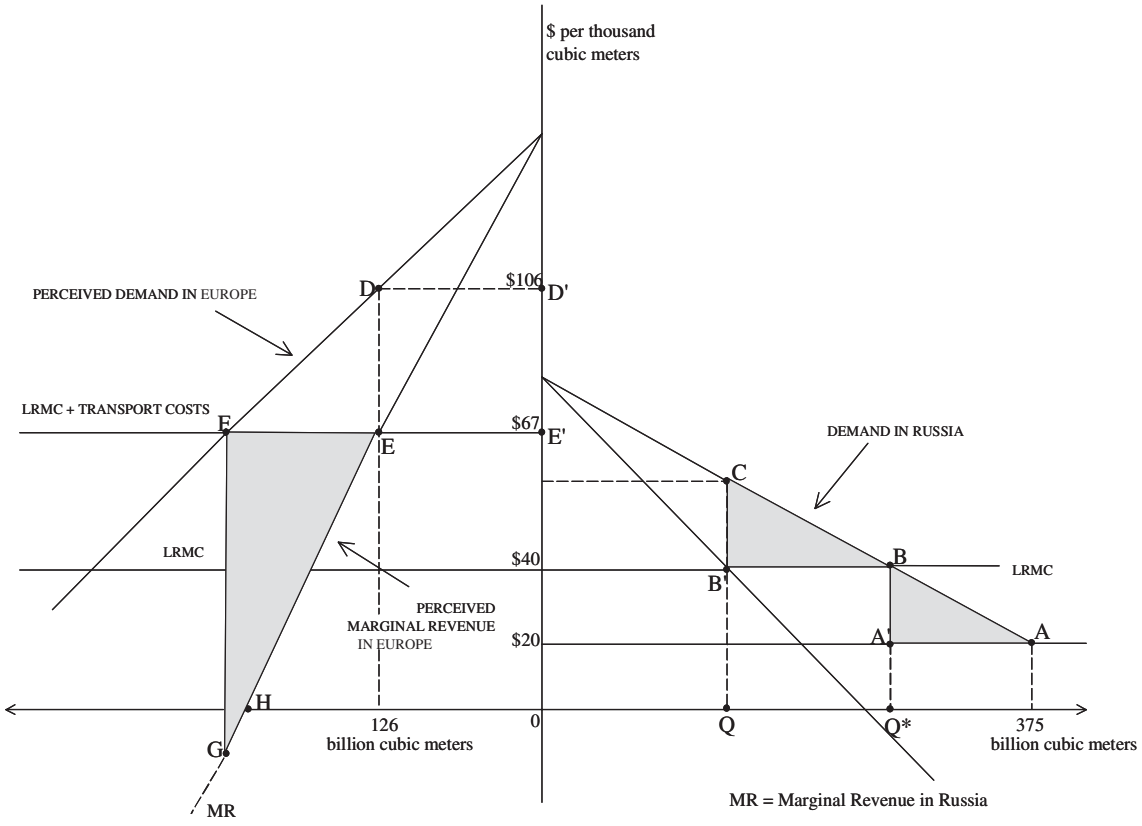
Source: Authors' calculations.

Figure 7.7. Distributions of estimated welfare gains: WTO accession, Doha and rest of the world free trade model results compared. 55 098 households sampled



Source: Authors' calculations.

Figure 7.8. Optimal Pricing of Russian Natural Gas in Europe and in Russia



Chapter 8

India

by

Przemyslaw Kowalski, Nora Dihel and Martina Garcia

1. Introduction

India gained independence in 1947. From that year until the early 1990s, successive governments adopted inward-oriented development strategies with the state assuming a dominant role in the economy via state planning. Market forces were not permitted to play a major role in resource allocation. In the wake of a 1991 balance-of-payments crisis, India set in train a series of stabilisation-cum-structural adjustment measures with far-reaching effects. Their central objective was to reintegrate the Indian economy with the world economy by reducing barriers to trade and investment, and deregulation of a highly bureaucratised economy. The promotion of FDI was also seen as a way of reducing the country's dependence on debt-creating capital inflows, while at the same time renovating Indian industry's archaic technologies and easing its entry into international markets.

Licensing requirements have been eliminated on capital and intermediate goods imports and the average MFN applied tariff has come down from 82% in 1990 to 15% in 2007 marking the most remarkable reduction of tariff protection across the BRIICS countries. Real export growth rates of goods and services in 2006 and 2007 registered very healthy levels: 8.6% and 9.7%, albeit down from an average annual rate of 14% during the period 1995-2005. Dynamic growth of exports led to a doubling of India's share in world exports of goods and services, from 0.5% in 1991 to close to 1.7% in 2007. On the import side, India imported 11.4% more goods in 2006 than in the previous year, and another 13% in 2007, slightly more than the average growth rate in the period 1995-2005 (11.3%). Consequently, India's trade openness (ratio of imports plus exports to GDP) has more than doubled since 1991, from 16.5% to 45% in 2007.

Despite the spectacular reduction of trade barriers India's trade regime and regulatory environment remain comparatively restrictive. In 2008, according to World Bank indicators, India ranked 122 out of 181 countries in terms of the ease of doing business.[1] While India ranked appreciably above the median for protecting investors and access to credit, it had particularly low rankings with respect to enforcing contracts, paying taxes, and dealing with construction permits. Some tariff and non-tariff restrictions remain to shelter domestic industries from competition, notably restrictions on consumer goods imports and reservations for small-scale enterprises in certain sectors. On paper, India's national investment regime now compares favourably with those of many Southeast Asian countries, though investors still complain about bureaucratic obstruction and cumbersome regulations, notably at the state level. Progress has been slow on state enterprise reform, bankruptcy laws and the reform of India's labour laws, which impose social welfare obligations even on private firms comparable to those shouldered by China's state enterprises, and which also make workforce reductions next to impossible for firms with more than 100 workers. India's fiscal deficit and government debt remain high, as do investment demands — notably to expand and upgrade the infrastructure. While the government has made progress in attracting private

[1] The ranking is from 1 (high, *i.e.* most favourable business environment) to 181 (low, *i.e.* least favourable). See, World Bank (2007), *Doing Business* database, available at: http://www.doingbusiness.org/economyrankings//.

financing for infrastructure development, some widely publicised setbacks have affected this strategy in the last few years.

Despite the unfinished reform agenda, India's GDP growth has accelerated to more than 9% over the past three years, up from an average of 5.8% *per annum* during the period 1991-2004. In line with good growth, per capita incomes more than doubled during the period 1990-2007 and poverty declined from 46% in 1986 to 36% in 2000. Nonetheless, poverty remains a serious problem.

India's recent economic dynamism has led many to compare it with China and to expect a similar dramatic insertion in world markets. While India and China share many characteristics, including a seemingly infinite supply of labour, and an agriculture-dominated economy, India's development path thus far has been considerably different from China's; indeed, it is also very different from the paths followed in earlier decades by Japan, Korea and the other Asian tigers.

Firstly, the recent growth in India has been led by services rather than manufacturing activities. India has emerged as a global player in some services sectors such as information technology and business process outsourcing as well as pharmaceuticals, while its manufacturing sector continues to suffer from low productivity. The share of high-technology manufactured goods in India's total exports has barely changed since 1996 and remains under 5%, as compared to 30% for China. In 2007, India's share of world merchandise exports was a mere 1.5%, as compared to 2.7% for services.

Secondly, in contrast to most other Asian economies, almost two-thirds of India's people continue to depend on agriculture for a living. Current agricultural practices are neither economically nor environmentally sustainable; price support and large input subsidies, reinforced by high import tariffs have limited trade opportunities (OECD, 2005) and hampered productivity growth which remains amongst the lowest in the world.[2]

Thirdly, and despite impressive past and on-going reforms, India remains relatively closed to trade as compared to other emerging countries, including China. It still has the highest tariff and most dispersed tariffs of all the BRIICS and this relative insulation from world markets is reflected in India's trade and investment performance.

FDI inflows have grown rapidly though they remain small compared with other BRIICS. While FDI inflows have almost tripled since 2005 and India attracted USD 23 billion in 2007, this way only around a quarter of the inflows into China (USD 84 billion). Similarly, India is still not as present in the OECD markets as China is. Its share in the EU import market (its largest destination market) in 2006 was 0.7%, practically unchanged from its levels in the 1990s. In contrast, China's share in these markets EU import market has more than quadrupled (from 1.3% in 1992 to 5.7% in 2006). Similar trends characterise the contrasting experiences of India and China in the US market.

What will it take for India to move from good growth to rapid sustained growth and realise its potential? Part of the answer lies in spurring productivity which is adversely affected by the low levels of education and health, but also by the low level of openness of the Indian economy. India's regulatory framework is both complicated and inefficient, impeding business processes and discouraging FDI with restrictive tariff structures and complex regulatory procedures. Greater integration in world markets would provide greater incentives for productivity-raising investment and innovation across the economy.

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2 See OECD (2005) for a comprehensive analysis of India's agricultural policies, constraints and achievements.

Trade reforms do not operate in a vacuum. They will need to be supplemented with other measures including reforming the restrictive labour and bankruptcy laws, and public health and education services. Moreover, India's weak infrastructure has stunted the competitive potential of Indian production. From unreliable energy, insufficient water supply to poor train and road conditions, infrastructure deficiencies have produced high transaction costs across the sectors (OECD, 2007c).

The reminder of this chapter is organised as follows: Section 2 presents a quick overview of India's economy fundamentals and general trends in trade performance. Section 3 explores in more detail the structure and performance of India's trade and in particular its exports. The experiences of three specific sectors, the automotive, pharmaceutical and service sectors, are further investigated in this section with the aim of drawing lessons for current Indian trade policy. Trade policy and its impact on the economy are discussed in Section 4. Section 5 provides a discussion of determinants of productivity changes across India's economy. Finally, conclusions and possible further research avenues are developed in Section 6.

2. India's economic growth and trade

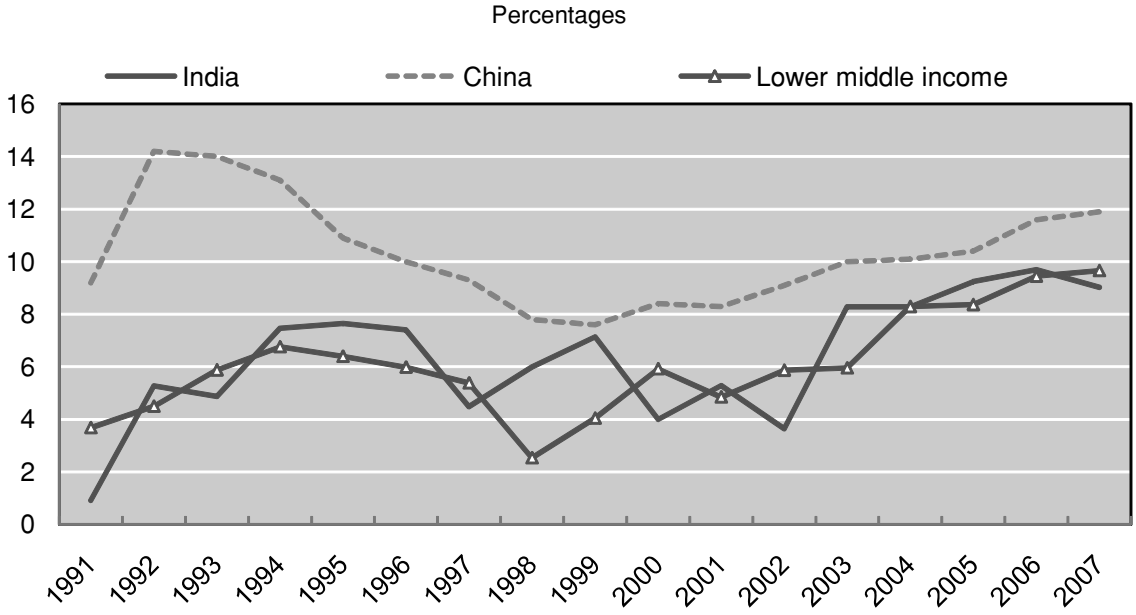
2.1 Growth performance

With 1.1 billion people, India's population is second only to China's. India's economy contributes close to 2% to world GDP and around 1% to world exports of goods and services. India's GDP growth rates have outperformed those of other lower and middle income countries for the most part of the last 15 years (Figure 8.1). India's performance was less spectacular than China's with an approximate rate of growth of 6% annually (China's average growth rate was close to 10%) for the most part of the last 15 years. [3] At the same time India's population has grown faster, thus denying India any significant catch up with other emerging economies on the GDP per capita front. Although India's per capita GDP has more than doubled between 1990 and 2007 (average annual growth rate of 4.6%), this pales in comparison to China's 8.6% *per annum* during the last two decades. However, more recent data show that growth has been particularly strong since 2003, averaging over 7.4%; despite the recent increase in international petroleum prices, real GDP growth in 2006 was 9.7% and 8.7% in 2007 (OECD, 2008).

Available data show that India's growth and reforms have contributed to the reduction in poverty with the poverty headcount ratio falling from 46% of the population in 1987 to 36% in 2000. Still, poverty in India is a much deeper problem than in other BRIICS. Corresponding available poverty headcount indicators are: 17% for China in 2001, 2% for the Russian Federation in 2002, and 8% in Brazil in 2003.

[3] In reality the difference in growth rates between the two countries may be smaller. Heston (2007), for example, points out that, according to recent purchasing power studies, officially reported national growth rates may overstate China's actual growth, which is not so much the case in India.

Figure 8.1. India's GDP Growth



Source: World Development Indicators.

A striking feature of India's growth performance over the past decade has been the strength of its services sector despite the absence of an integrated services policy. In both China and India the share of agriculture in GDP has been declining but its place has been taken primarily by manufacturing in China and by services in India. As a result in 2007 services accounted for 53% of India's GDP (the largest contributor to GDP) compared to 41% in China.[4] This makes India's economy structure unusual given its level of economic development. The relatively small industry generating less than 30% of GDP is in line with many OECD countries. Similarly, India's services sector is rather large for its level of development standing at around 53% in 2007. Indeed, the strength of its services sector has been a striking feature of India's growth especially in the context of a lack of an integrated services policy. Throughout the 1970s the services growth path was basically flat. The trend shifted upwards in the 1980s, registering around 6% growth *per annum*, and accelerated in the 1990s, when it averaged almost 13% *per annum*. India's agricultural sector is also relatively large (around 18% of GDP compared with 12% for China).[5] The weight of the agricultural sector can give the impression that India has gone through a slow restructuring of its economy. In fact, as Figure 8.2 suggests, structural change has been rapid or at least faster than has been the case in China and the average lower-middle income countries. However, contrary to China and other emerging markets, India's manufacturing sector has failed to develop.

This is also reflected in the recent trade developments. India quite clearly has not been able to match China's conquest of the world's goods markets, even though recently more dynamism has been observed in certain segments of the Indian manufacturing sector (Lehman Brothers, 2007). Yet, for some

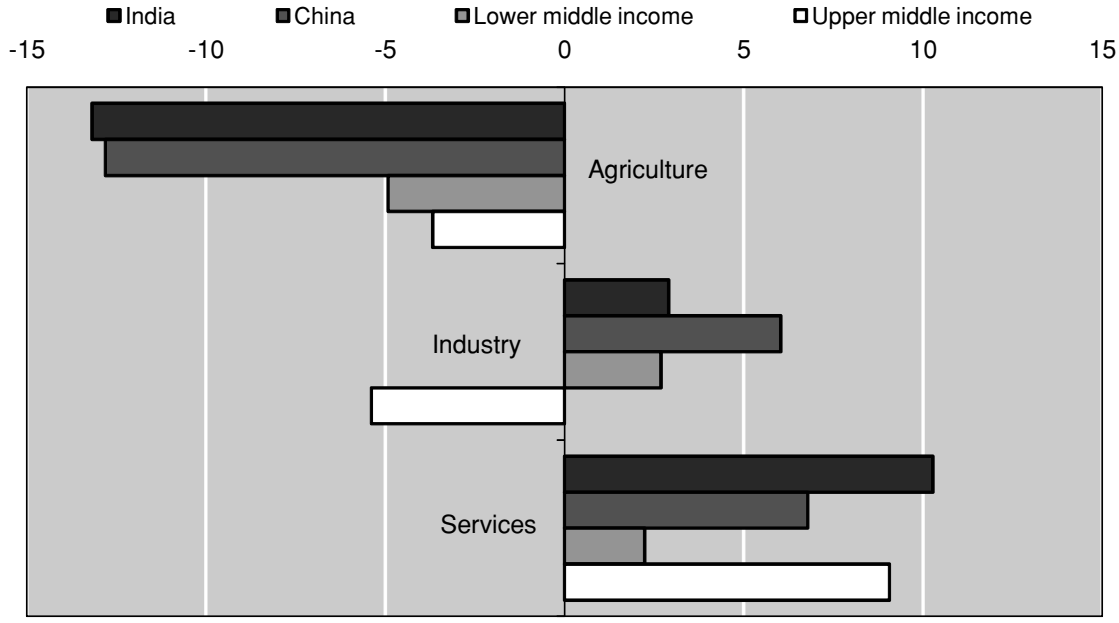
4 Heston (2007) points out that international price comparisons suggest that in both China and India capital goods for example are relatively expensive as compared to prices of consumption and that capital stocks estimated in local currencies probably overestimate the contribution of fixed capital formation and capital-intensive activities to growth. These discrepancies may also be reflected in sector shares and structural composition of recent growth in both countries, likely overestimating the contribution to output of manufacturing.

5 The agriculture's share for China refers to 2006.

time now, the developments in India's services sector have generated trade flows that are more comparable to those of China in absolute terms and are much higher than in China if we account for the economy size. Evidence is also mounting that the product composition of these two economies' trade is quite different and that, for the moment, the two enormous economies are not competing directly in the world markets (Dimaranan *et al.,* 2007).

Figure 8.2. Structural changes of the Indian Economy

A. Percentage points change in sectoral share of value-added, 1991-2006



Source: WDI.

B. Indian labour market

	Millions		Rates	
	1999/2000	2004/2005	1999/2000	2004/2005
Population (15-64 years)	613	679	100	100
Labour Force	406	467	66.2	68.8
Total employment	397	457	64.8	67.3
Regular wage employment	55	66	9.0	9.7
Organised sector employment	28	29	4.6	4.3
Public sector	*19*	*19*	*3.1*	*2.8*
Private sector	*9*	*12*	*1.5*	*1.8*

Source: Economic Planning Commission based of NSS five-years survey rounds and population estimates. Data for 2004/05 are estimates from the 2007 OECD Employment Outlook.

The structural change in employment is much harder to assess. The Indian labour market is characterised by extremely high rates of informality—people with regular contracts account for only about 15% of total employment (OECD, 2007c), and suffers from poor data quality. Statistics on the formal sector account for around 66 million jobs in 2004/2005 of which over 19 million are in the public

sector; this is compared with a population of 1.1 billion and a labour force estimated at 467 million.[6] Employment surveys available from the Reserve Bank of India indicate that the male rural population engaged in the primary sector fell from 75% in 1991 to 65% in 2004. Changes in rural female employment were much smaller. Interestingly, the survey also reveals that employment growth in the tertiary sector in urban areas has been accounted for by women with the male urban workforce in services decreasing by 0.8%.

Virmani (2006) estimated the employment share of the manufacturing sector at around 11% of the labour force for the last decade and argues that the service sector has absorbed the bulk of the agricultural labourers that have lost their jobs (estimated at 5% of the labour force from 1993-1994 to 1999-2000). At the same time, the agricultural sector seems to shed labour slowly. For example, Hari (2002) highlights that the shift in the sectoral composition of GDP in the late 1980s and 1990s was not accompanied by an equivalent shift in the workforce from the traditional sectors to the secondary and tertiary sectors of the economy and estimates that around 60% of the workers continue to depend on agriculture.

Over the past decade, labour market outcomes have improved in India, with net employment rising for the economy as a whole. According to OECD (2007c), the biggest employment gains occurred in manufacturing and services; however, the increases have taken place in the least productive, unorganised sectors, while employment in the organised sector is shrinking (possibly due to strict labour market regulations).

2.2 General trends in trade performance

Since 1991, India has transformed itself from one of the most closed large economies of the world to a relatively more open one, with trade as a percentage of GDP reaching 47% in 2006 and 46% in 2007 (Table 8.1). [7] In recent history only China has experienced a faster transition.[8] The average annual real growth rate of India's exports of goods and services for the 1995-2007 period was 12% - well above the world average growth of 7%.

Table 8.1. Total trade as a percentage of GDP

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
%	16	17	19	20	20	23	22	23	24	25	27	26	30	31	40	43	47	46

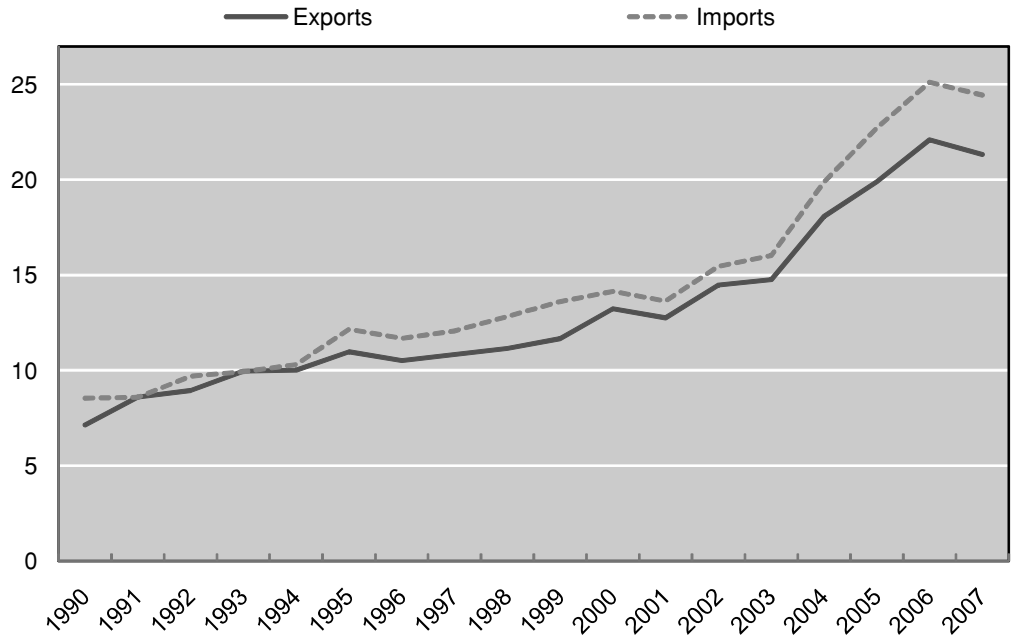
Source: World Development Indicators.

6 Data for 2004/2005 are estimates from OECD (2008).

7 Measured as a sum of exports and imports.

8 Kowalski (2008) estimates that both for China and India a simple export to GDP ratio statistic overestimates the actual contribution of exports to GDP. For China the simple ratio of exports to GDP is four times larger than the estimated export value added to GDP ratio (36% in 2005 compared to 8% in 1996). For India the simple ratio is 3.25 times larger (13% in 2005 compared to 4% in 1996).

Figure 8.3. India, Share of exports and imports of goods and services in GDP, 1990-2005



Source: World Development Indicators.

As foreshadowed earlier, the strength of the services provided an impetus to, and now plays an important role in, India's overall trade. The country has close to doubled its share in world services trade between 2003 and 2007, from 1.25% of world exports to 2.7%. By contrast, the share of the goods trade has increased from the low 0.8% in 2003 and only to 1.05% in 2007 (Table 8.2). Notwithstanding this positive evolution, the figures remain low when compared to China which accounts today for 8.7% of world's goods trade and 3.4% of world's services exports. Nevertheless, this can be explained to a large extent by the fact that economic reforms started in China 13 years prior to reforms in India. Bussiere and Mehl (2008), for example, demonstrate that the current ratios of exports of goods and services relative to GDP in India mimic those observed in China in the second half of 1990s.

Table 8.2. Share of India's goods and services in world total

Merchandise

	1995	2000	2005	2006	2007
Merchandise exports	0.6	0.7	1.0	1.0	1.1
Merchandise imports	0.8	0.8	1.3	1.4	1.4
Services exports	0.5	1.1	2.2	2.7	2.7
Services imports	0.8	1.2	2.0	2.4	2.4

Source: WTI (2008).

As discussed above, the shares of manufacturing in both the value added and total exports are lower in India as compared with China, for example, but this is not necessarily because the manufacturing sector is internationally uncompetitive but because it has an unusually small share in the domestic economy. In fact, according to Gaullier *et al*. (2005), up to 54.4% of manufacturing value-added was exported in 2004. Nevertheless, despite its is relative abundance in skilled labour

and capital, India's manufacturing exports are highly concentrated in low-technology goods and the share of high-technology manufactured goods in its total exports has barely changed since the mid-1990s and remains under 5%, as compared to 30% for China (see Figure 8.6 and Table 8.8). The structure of merchandise imports has for some years now remained concentrated in fuels, gems and mining products, also indicating certain deficiencies in the sector.

Indeed, India's current merchandise export structure remains heavily skewed towards petrol products, jewellery, furniture, chemical products and textiles and wearing apparel, a structure that resembles to a certain extent the structure of China's exports at the beginning of the 1990s (Kowalski 2008). Superficially, the structure of India's exports seems a little more concentrated in 2005 than in 1996 but this is largely driven by the emergence of exports of petroleum oils. In general, it is not easy to classify the direction of changes in the structure of top India's exports. On the one hand a few more sophisticated products such as motor vehicle parts made it to the top 25 products in 2005. On the other hand several traditional manufacturing products such as gems and jewellery, wearing apparel and certain food products that already dominated India's exports in 1996 have yet gained in importance in 2006. This suggests that India has not integrated into the global production networks of high technology products to the extent China did (for comparison with China see Kowalski, 2008).

Table 8.3. Changing structure of India's trade: 25 top exports and their share in total exports

Product Name	1996 Value	1996 Share	Product Name	2005 Value	2005 Share
Diamonds non-industrial nex excluding	4 028 039	9	Petroleum oils, etc. (excl. crude)	11 439 920	9
Semi-milled or whooly milled rice	891 755	2	Diamonds non-industrial nex excluding	11 214 411	8
Oil-cake and other solid residues	769 332	2	Non-agglomerated iron ores and…	3 519 748	2
Men's or boy's shirts of cotton	748 712	2	Art. of jewellery and pts thereof	3 357 736	2
Frozen shrimps and prawns	725 340	2	Other organic compounds, nes	1 690 186	1
Combed single cotton yarn , with>=8	557 561	1	Other medicaments of mixed or unmixed	1 424 499	1
Women's or girls' blouses, shirts,	526 754	1	Semi-milled or whooly milled rice	1 364 245	1
Art. of jewellery and pts thereof	517 244	1	T-shirts, singlets and other vests,	1 107 091	1
Petroleum oils, etc. (excl. crude)	482 013	1	Flat rolled prod, i/nas, plated or	1 059 096	1
Non-agglomerated iron ores and..	428 364	1	Women's or girls' blouses, shirts,	1 018 038	1
Articles of apparel of leather	424 351	1	Oil-cake and other solid residues	968 327	1
Cotton, not carded or combed	413 215	1	Frozen shrimps and prawns	853 041	1
Cashew nuts, fresh or dried	362 095	1	Furnishing articles, nes, of cotton	800 439	1
Furnishing articles, nes, of cotton	353 989	1	Motor vehicle parts nex	780 573	1
Coffee, not roasted or decaffeinate	307 810	1	Men's or boys' shirts of cotton	688 108	0
Uncombed single cotton yarn, with	304 175	1	Copper cathodes and sections	677 377	0
Other medicaments of mixed or unmixed	303 013	1	Cotton, not carded or combed	639 447	0
T-shirts, singlets and other vests,	284 767	1	Skirts and divided skirts of cotton	619 769	0
Uppers and parts thereof(excl. sti	218 913	0	Cashew nuts, fresh or dried	586 046	0
Men's or boys' shirts of cotton, kn	216 426	0	Frozen boneless bovine meat	559 829	0
Pile floor coverings	216 382	0	Made up articles (incl. dress patte	517 458	0
Frozen Fish, nes	205 101	0	Insecticies, put up for retail sale	496 891	0
Dresses of cotton	194 191	0	Automobiles with reciprocating pist	485 405	0
Insecticies, put up for retail sale	185 512	0	Flat rild prod, i/nas, in coil, hr.	455 084	0
New pneumatic tyres, of rubber of	185 445	0	p-Xylene	440 296	0
Total	**13 850 499**	**30**	**Total**	**46 763 060**	**31**

Source: COMTRADE, authors' calculations

While for most countries trade in services accounts for around 20% of their total, in India trade in services has increased proportionally faster than trade in merchandise and represents now close to 37% of total trade both for exports and imports. For a sector once considered to be nontradable, this is an important increase, particularly given that there were no important changes to the broad structure of world trade (see Table 8.4). Moreover, the country is not only a big and growing exporter of services; its services imports are also more dynamic than the world average.

Table 8.4. Services share of total exports, World and India (%)

	1995	2000	2005	2006	2007
India	17.8	27.8	35.3	37.9	36.7
World	27.1	27.3	28.2	26.7	23.7

Source: WTI (2008)

Table 8.5 compares trade growth in India other BRIICS and selected regions and country groupings over the last fourteen years. India's services exports grew by over 19% which is significantly higher than the averages for the world, OECD and most developing regions. India's merchandise trade grew by almost 11%, a rate that is higher than that for the world but less than other developing countries and particularly China with 21% growth rate. The picture for imports is similar with India distinguished by a much higher growth rate in services than in merchandise imports.

Table 8.5. Real trade growth rates in trade (average 1995-2007) - selected countries and regions

% change

	Exports		Imports	
	Merchandise	Services	Merchandise	Services
Brazil	8.1	12.3	9.4	9.7
China	21.4	11.4	16.7	12.5
India	10.5	18.6	10.0	15.1
Indonesia	5.2	12.2	5.9	7.3
Russian Federation	9.4	11.2	17.6	9.8
South Africa	4.3	8.0	7.4	6.9
EAP	11.3	8.0	9.1	9.2
ECA	19.2	19.0	18.6	16.2
LAC	8.2	10.0	8.3	6.0
MNA	5.8	28.3	6.0	6.6
SAS	9.8	6.0	8.5	6.2
SSA	13.3	9.5	10.8	8.1
HI OECD	6.0	7.6	6.8	6.3
HI non-OECD	6.7	8.7	6.7	6.4
World	11.0	11.8	8.8	8.5
Low income	13.6	12.3	11.6	9.4
Lower mid income	9.9	10.1	8.7	8.4
Upper mid income	13.5	17.8	13.6	9.5
High income	6.1	7.8	6.8	6.3
Mid income	11.4	13.3	10.7	8.8

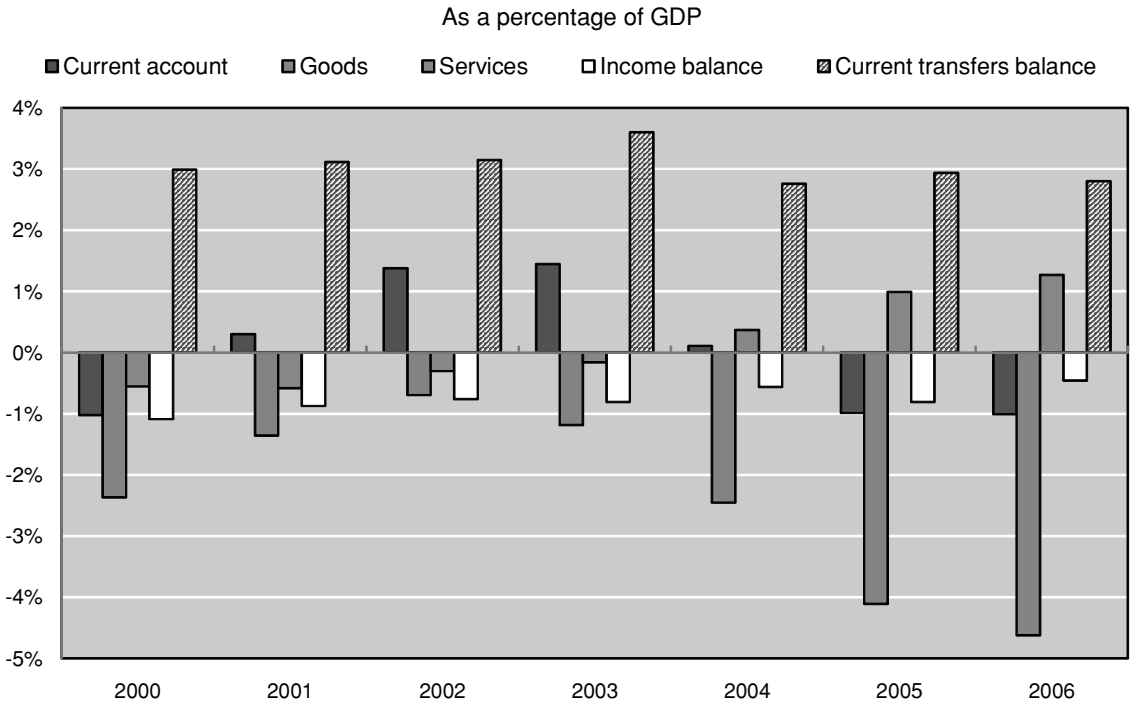
Source: WTI (2008).

While exports have outperformed imports in terms of growth rates, this has been insufficient to significantly dent India's trade deficit, particularly in merchandise trade. This is illustrated by the evolution of the structure of India's current account (Figure 8.4) which shows a deepening negative balance on trade in goods (form -2.4% of GDP in 2000 to -4.6% of GDP in 2006) and a gradually improving balance on services trade (form -0.6% of GDP in 2000 to 1.3% in 2006) - broadly speaking a reverse of the situation in China (see Kowalski, 2008). A distinctive feature of India's current account is the large and consistently positive current transfers balance, driven mainly by remittances.

The deteriorating balance on goods trade reflects deepening deficits in trade of capital and intermediate goods (and raw materials to some extent) which apparently cannot be adequately satisfied

by the Indian manufacturing sector. Balance on consumer goods was actually positive and growing over the period 2003-2006. The deficit in services trade has also been a constant feature since the 1990s, but it shows a clear decreasing trend since 1995 driven by increased exports in several services sectors, for example, computer services.[9] In fact, this seems to reflect a long-standing process of deepening India's competitiveness in the services sector as reflected by the evolution of revealed comparative advantage indices presented in Table 8.6.

Figure 8.4. India's current account structure



Source: IMF IFS.

Table 8.6. Revealed comparative advantage indices in services in selected countries

	1994	1997	2001[a]	2004[b]
India	0.941	1.032	1.394	1.427
China	0.687	0.602	0.557	0.48
Brazil	0.493	0.514	0.691	0.582
Russia	0.547	0.708	0.506	0.503

a) 2000 for India.

b) 2003 for India.

Source: IMF BOP (2006).

9 According to IMF BOP data the services trade deficit has decreased from USD 4 billion in 1995 to around USD 2.3 billion in 2003.

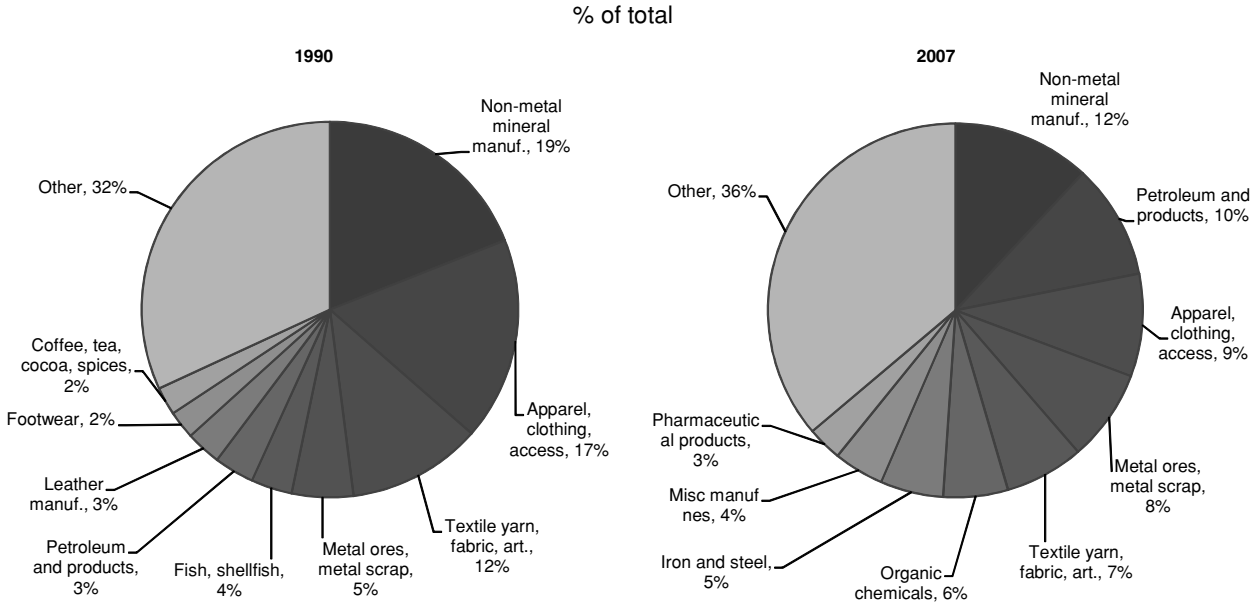
3. India's exports, structure and performance

3.1 Composition of trade

Figure 8.5 depicts India's key 3-digit SITC goods exports categories in 1990 and 2007. A number of structural changes are noticeable. First, India's 2007 exports are more diversified across 3 digit SITC categories than they were in 1990. Non-metal mineral manufactures category, while still representing 12% of total merchandise exports in 2007, are down from 19% in 1990. India has also considerably reduced its export share and composition of textiles and clothing products, as a result, among other factors, of the phase of the ATC in 2005, which would bring India's export structure closer to its true comparative advantage. The share of apparel and clothing accessories is down from 17% in 1990 to 9% in 2007 and textile products are down from 12% to 7%. Footwear dropped off the top 10 export product list as did fish/shellfish and coffee/tea/cocoa/spices products.

Petroleum and petroleum products have considerably gained in importance and now account for close to 10% of merchandise exports. In 2006, they have overtaken the jewellery and gemstones to become the top export product. This was due to the rapid development of domestic refining capacity. In 1996, for example, India imported both crude and refined petrol (around 2/3 crude and 1/3 refined) and exported only negligible quantities. In 2005 its imports of crude petrol have more than tripled (in quantity), its imports of refined petrol have considerably declined, and refined petrol has become a key export. It is yet unclear whether this export boom is sustainable or whether it was due to an incipient excess domestic refining capacity. India's government foresaw adding 86 million tonnes in refining capacity starting in 2007 with state-owned companies adding around 70% to the total. The surge in export value is also due to the currently high oil prices which accentuate the trend, and to the country's main oil sector company's (*Reliance Petrochemicals)* difficulties in selling to the domestic market and competing with the subsidised sales by the state-owned companies.

Figure 8.5. India key exports 1990 and 2007



Source: UN COMTRADE.

Gems and jewellery are together with petroleum products on the top of the exported products list (Table 8.3) and, as with petroleum products, the jewellery sector is also characterised by its dependence on imported raw materials. India, and in particular Mumbai, is specialised in diamond cutting and polishing. Its net trade balance in pearls and precious stones remains positive, but has slowly declined in the last 10 years, from around a third of exports in 1996 to less than a quarter in 2005. This is an erosion in the domestic value added of the Indian diamond processing industry.

Since 1990 India has also expanded exports of industrial products such as organic chemicals, iron and steel as well as pharmaceuticals. Manufacturing of these products and selling them in world markets does require an application of existing technologies at the least and in some cases reflects actual innovation. This is a sign and that, albeit, not as quickly as China, India is moving towards higher technology products.

Yet, a more detailed analysis of India's revealed comparative advantage (RCA) indices and growth rates confirms the still very traditional profile of the country's merchandise trade. Table 8.7 reports RCA indices for the main 2 digit HS chapters with a value of one or greater indicating a revealed comparative advantage. Most of the products reported in the table are in the primary and labour intensive sectors. During the last 10 years, India has developed a comparative advantage in only chemical and metal manufacturing. In fact, in high-technology sectors such as *Office, accounting and computing machinery* (30) and *Radio, television and communication equipment* (32), RCA indices have deteriorated significantly.

This deterioration is also visible in the statistics summarising the skill content of India's export mix. The first is based on the skill intensity classification developed by UNCTAD.[10] The categories included in this classification represent over 97% of India's total exports for the years concerned. Figure 8.6 shows the different categories in 1996 and 2005. Despite the rapid growth in trade flows, India has not managed to develop a high-technology export sector and its export mix in terms of skills requirements remains surprisingly stable.

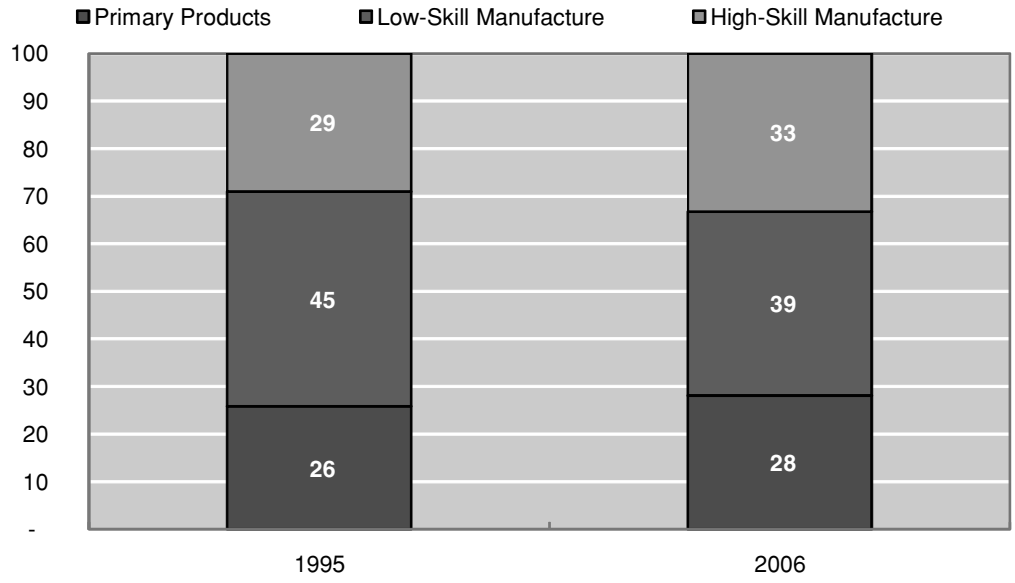
[10] Source: UNCTAD, The Least developed Countries Report 2002, New York and Geneva 2002. The original categories are supplemented with the category of primary.

Table 8.7. Revealed comparative advantage indices and growth rates

	1996	2006	Annual average growth rate
01 - Agriculture, hunting and related service activities	2.16	1.94	-1.08
02 - Forestry, logging and related service activities	2.97	3.26	0.93
05 - Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing	1.19	1.16	-0.29
10 - Mining of coal and lignite; extraction of peat	0.17	0.14	-1.87
11 - Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction excluding surveying	0.00	0.01	109.36
13 - Mining of metal ores	3.96	7.18	6.14
14 - Other mining and quarrying	1.50	1.86	2.14
15 - Manufacture of food products and beverages	2.04	1.24	-4.81
16 - Manufacture of tobacco products	0.20	0.38	6.97
17 - Manufacture of textiles	4.47	3.55	-2.29
18 - Manufacture of wearing apparel; dressing and dyeing of fur	4.29	3.74	-1.37
19 - Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear	2.25	2.02	-1.09
20 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	0.10	0.11	0.59
21 - Manufacture of paper and paper products	0.13	0.22	5.57
22 - Publishing, printing and reproduction of recorded media	0.69	0.78	1.11
23 - Manufacture of coke, refined petroleum products and nuclear fuel	1.93	2.92	4.22
24 - Manufacture of chemicals and chemical products	0.89	1.00	1.19
25 - Manufacture of rubber and plastics products	0.77	0.71	-0.78
26 - Manufacture of other non-metallic mineral products	0.80	1.03	2.49
27 - Manufacture of basic metals	0.72	1.28	5.91
28 - Manufacture of fabricated metal products, except machinery and equipment	0.95	1.20	2.39
29 - Manufacture of machinery and equipment n.e.c.	0.21	0.37	5.57
30 - Manufacture of office, accounting and computing machinery	0.17	0.09	-5.57
31 - Manufacture of electrical machinery and apparatus n.e.c.	0.26	0.39	4.05
32 - Manufacture of radio, television and communication equipment and apparatus	0.11	0.07	-5.07
33 - Manufacture of medical, precision and optical instruments, watches and clocks	0.13	0.19	4.42
34 - Manufacture of motor vehicles, trailers and semi-trailers	0.21	0.29	3.14
35 - Manufacture of other transport equipment	0.28	0.42	4.33
36 - Manufacture of furniture; manufacturing n.e.c.	4.81	5.42	1.21
40 - Electricity, gas, steam and hot water supply	0.03	0.06	8.91

Source: UN COMTRADE.

Figure 8.6. Evolution of India's export mix according to skill intensity (1996 and 2006)



Source: UN COMTRADE.

Another classification developed by the Hamburg Institute of International Economics (HWWA) based on the ISIC-classification permits to break down individual manufacturing sectors according to the intensity with which they use technology. This approach reveals even more stark results: the share of high-technology manufactured goods (such as Pharmaceuticals, Radio and telecommunication equipment, Office and computer equipment) in India's total exports has barely changed since 1996 and remains under 5%. Even the share of medium-technology products which include the whole of the chemical sector and motor vehicles has increased by less than five percentage points and stood at 19% in 2005. Table 8.8 refers to the World Development Indicators classification which provides higher estimates (since the figures are in percentage of manufactured exports and not total exports) but a similar trend and comparable data with Brazil and China.

Table 8.8. High Technology exports

	2000	2002	2006
Brazil	19	17	12
China	19	23	30
India[a]	5	5	5

a) 2005 data for India

Source: WDI.

The services sector presents a different picture. A process of export reorientation is clearly underway and a significant shift has taken place towards more advanced, in some cases high-skill intensive, services. Moreover, new services, such as computer and selected professional services, have emerged in India's exports to a greater extent than in other (developing and BRIICS) countries. Services trade data are released with greater delays than data for merchandise trade and analysis in this paper is based on data that stops in 2004. A closer look at the sectoral composition of services trade in Table 8.9 reveals *Other services* being the top export category during the period 1994-2004. *Computer and information services* have experienced the largest increases, while transport and travel services registered

a considerable drop between 1994 and 2003. In 1994 three types of services (*Travel*, *Transportation*, and *Other business services*) accounted for almost 100% of all services exports; in 2000 they represented 57% and in 2003 only 42%. The most spectacular evolution was recorded by *Computer and information services* whose share in India's services exports almost doubled between 2000 and 2003 to reach almost half of India's services exports.

However, the structure of services imports has remained considerably more stable, which means that development of India's services sector is rather oriented towards exports, not domestic markets. Other services (*Other business services*, *Communication* and *Construction*) as well as travel services seem to be the most dynamic categories. *Transport* imports experienced a steady decline in India's total imports: from more than 50% of total services imports in 1994 to 36% in 2003. While imports of insurance, financial and construction services are relatively important, the three main import categories – transportation, travel and other business services - accounted for 82% of Indian services imports in 2003 (compared to 92% in 1994).

A more detailed analysis of India's services export performance based on selected trade indicators such as sectoral RCA and intra-industry trade (IIT[11]) indicators is presented in Tables 8.10 and 8.11. The analysis confirms that India has a strong comparative advantage in *Computer and communication services*. *Travel, Financial* and *Communication services* feature high levels of intra-industry trade, indicating India's integration into the global service supply chain. Interestingly, trade in *Computer services* in India seem to be entirely an inter-industry phenomenon.

Further exploration of these two indices coupled with information on the RCA indices of trade partners could provide information on India's sectoral level complementarities with the rest of the world. For example, a high level of intra-industry trade in communications and financial services could foretell a high trade potential with developed countries specialised in those sectors. On the other hand, the high intra-industry trade of travel services could indicate higher south-south trade potential, given that many developing countries exhibit high RCA indices in travel services.

The services trade data reported so far refer mainly to services traded internationally by the first and second mode of supply. Only a limited extent of trade via the movement of natural persons (part of computer and information services, of other business services, and of personal, cultural and recreational services) and via commercial presence (part of construction services) was included. However, trade in services often takes place in different ways to trade in goods and such data ignore most Mode 4 – temporary movement of natural persons and Mode 3 – commercial presence.[12]

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11 For that purpose, the most widely used measure of intra-industry trade, the Grubel-Lloyd (GL) index, was employed. The GL index is defined as: $GL_{ij} = 1 - \left| (X_{ij}-M_{ij}) / (X_{ij}+M_{ij}) \right|$; where X_{ij} are exports of a service *i* by country *j* and M_{ij} are imports of a service *i* by country *j*. A GL index that approaches zero implies low levels of intra-industry trade while a GL index that approaches 1 suggests high levels of intra-industry trade.

12 The four-part typology of international services transactions adopted in the GATS encompasses: (1) *Cross border supply* (Mode 1) of a service from one jurisdiction to another; (2) *Consumption abroad* (Mode 2) requires the presence of consumers in the supplier's country of residence; (3) *Commercial presence* (Mode 3), in which case a service supplier establishes a foreign based corporation, joint venture, partnership, or other establishment in the consumer's country of residence, to supply services to persons in the host country; (4) *Presence of natural persons* (Mode 4), which involves an individual, functioning alone or in the employ of a service provider, temporarily travelling abroad to deliver a service in the consumer's country of residence. Individuals who are seeking access to the employment market of another country on a permanent basis or for citizenship or residency purposes are not included in this category.

Labour-related statistics such as compensation of employees[13] and workers' remittances[14] presented in Table 12 show that on net, India is a recipient of labour income (compensation of employees and worker remittances) from (mainly) developed countries, and that total value of mode 4 exports is almost equal to the value of mode 1 and mode 2 exports. Finally, it is worth noting that labour related flows have grown at a fast rate of over 18% between 1999 and 2003 (as compared with services exports whose rate of growth stood at 12% during the same period).[15]

Table 8.9. India: Composition of Services Trade

USD millions and percentages

	1990	1994	2000	2001	2002	2003
B. SERVICES	**-1 465**	**-2 162**	**-2 503**	**-2 763**	**-1 563**	**-2 313**
Total credit	**4 625**	**6 038**	**16 684**	**17 337**	**19 478**	**23 397**
Transportation services, credit	20.7	28.4	11.9	11.8	12.7	13.1
Travel, credit	33.7	37.6	20.7	18.4	15.9	16.6
Other services, credit	45.6	34.0	67.4	69.7	71.4	70.3
Communications			*3.6*	*6.4*	*4.0*	*4.6*
Construction			*3.0*	*0.4*	*1.2*	*1.2*
Insurance	*2.7*	*2.4*	*1.5*	*1.6*	*1.7*	*1.7*
Financial			*1.7*	*1.8*	*3.1*	*1.7*
Computer and information			*28.3*	*42.7*	*45.6*	*48.6*
Royalties and licence fees	*0.0*	*0.0*	*0.5*	*0.2*	*0.1*	*0.1*
Other business services	*42.5*	*31.5*	*24.9*	*13.5*	*13.9*	*11.1*
Government, n.i.e.	*0.3*	*0.1*	*3.9*	*3.1*	*1.8*	*1.3*
Total debit	**6 090**	**8 200**	**19 187**	**20 099**	**21 041**	**25 710**
Transportation services, debit	56.1	55.7	45.4	42.3	40.5	36.4
Travel, debit	6.5	9.4	14.0	15.0	14.2	13.7
Other services, debit	37.4	35.0	40.6	42.8	45.3	50.0
Communications			*0.5*	*1.3*	*4.8*	*2.4*
Construction			*0.7*	*2.3*	*2.9*	*4.7*
Insurance	*5.6*	*6.0*	*4.2*	*4.0*	*4.2*	*4.5*
Financial			*6.7*	*8.9*	*6.8*	*1.9*
Computer and information			*3.0*	*4.5*	*4.3*	*2.6*
Royalties and licence fees	*1.2*	*1.1*	*1.5*	*1.6*	*1.6*	*1.6*
Other business services	*28.2*	*25.8*	*22.5*	*18.6*	*19.4*	*31.5*
Government, n.i.e.	*2.4*	*2.1*	*1.5*	*1.5*	*1.2*	*0.8*

Source: IMF BOP (2006).

13 *Compensation of employees* includes wages, salaries and other compensation received by individuals working abroad for less than one year. Their expenditure is recorded under the *travel* component. The categorisation assumes that these workers retain residence in their home country. It does not distinguish between compensation of persons working in service-producing activities and those working in other industries. This measure tends to underestimate trade through the movement of persons as it covers only persons employed by employers resident in the host economy.

14 *Workers remittances* are transfers from workers who stay abroad for one year or longer, and who, from a balance of payment perspective, are assumed to have changed their residence. It refers to the residual of income earned in the host economy by migrants after allowance for expenditure and savings. As no definition of temporary exists, including all workers may lead to an overestimation of Mode 4-related exports.

15 It is acknowledged that BOP statistics are very imperfect proxies of services trade via mode 4. Therefore, additional information collected from FATS statistics (number of foreign employees in foreign affiliates) and migration statistics need to be consulted for more complete analyses of trade in services via the temporary presence of natural persons.

Table 8.10. Revealed comparative advantages indices- Selected services sectors

	1994	2000	2001	2002	2003
Communication services		2.74	4.52	2.96	3.49
Computer and info services		15.22	20.07	20.09	19.91
Construction services		2.55	0.30	0.95	0.97
Financial services		0.42	0.46	0.89	0.51
Insurance services	1.08	1.35	1.27	0.92	0.91
Other business services	1.22	1.79	0.91	0.91	0.74
Royalties and license fees	0.00	0.15	0.07	0.03	0.03
Transportation	1.09	0.86	0.85	0.91	0.98
Travel	1.07	1.10	0.98	0.84	0.94

Source: IMF BOP (2006)

Table 8.11. Intra-industry trade indices- Selected services sectors

	1995	2000	2001	2002	2003
Communication services		0.30	0.39	0.87	0.73
Computer and info services		0.22	0.22	0.18	0.11
Construction services		0.40	0.24	0.56	0.38
Financial services		0.36	0.29	0.59	0.89
Insurance services	0.47	0.48	0.52	0.54	0.52
Other business services	0.88	0.98	0.77	0.80	0.49
Royalties and license fees	0.03	0.45	0.21	0.11	0.11
Transportation	0.50	0.37	0.39	0.45	0.49
Travel	0.56	0.87	0.97	0.98	0.95

Source: IMF BOP (2006).

Table 8.12. Labour-related flows, India, 1999-2003

	1999	2000	2001	2002	2003
Net	11088	12404	13534	14567	20719
Exports	11124	12890	14285	15754	21727
% of services exports	*76.67*	*77.26*	*82.4*	*80.88*	*92.86*
Imports	36	486	751	1187	1008
% of services imports	*0.21*	*2.53*	*3.74*	*5.64*	*3.92*

Source: IMF BOP (2006).

Commercial presence (Mode 3) often represents the most important mode of supply in services trade. Given the absence of Foreign Affiliates Trade in Services (FATS) statistics for India, FDI statistics (flows and stocks) can be used as imperfect proxies for trade via commercial presence. Data from UNCTAD and the Indian Secretariat for Industrial Assistance indicate that India's inward FDI have dramatically increased since 1991. More recent data also show that annual FDI inflows grew from USD 7.6 billion in 2005, to USD 19.6 billion and 22.9 billion in, respectively, 2006 and 2007 (UNCTAD, 2008).

FDI inflows into India have been shifting increasingly away from manufacturing towards the services sectors. The share of services sector in total FDI inflows rose from 5% in 1990 to more than 50% during the post reform period (1991-2005). However, the inflow of services FDI has been biased towards a few sectors such as transport and financial services. Between 1991 and 2005, the top six recipients of FDI have been electrical equipment (14.5), transportation industry (11%), telecom (11%), power and oil

refinery (10%) and services sector (8.45%).[16] A similar concentration can observed as far as FDI outflows are concerned. The share of services in total FDI outflows increased to around 45% in the period 1999-2003. Non-financial services constitute around 36% and retail trade approximately 5% of total FDI outflows.

3.2 A dynamic analysis of export performance

The preceding analysis of India's trade performance has revealed that despite high growth rates of total goods exports, there has been no major shifts in manufacturing towards high-skills or high-technology goods. In contrast to goods, the analysis of the composition of services trade does reveal considerable change in the export structure but some of the RCA indices of key sectors such as *Insurance*, *Construction* or *Other business services* are declining, raising concerns about the prospects for their future development.

We employ a "quadrant" or "matrix" analysis to further examine India's export performance and identify the sectors with a potential for expanding trade flows. Figures 8.7 (goods) and 8.8 (services) show India's exports by main product group according to a methodology developed by the ITC to assess export performance.[17] The matrix is divided into four quadrants. The horizontal axis indicates the evolution of India's share in world trade for each product category measured as the compound annual growth rate of India's share in the world market of that particular sector. The vertical axis indicates average world trade growth for each product category and it is measured as the compound annual growth rate of world imports. The size of the balloon represents the weight of the sector in India's export basket.

This type of analysis can indicate which export sectors have registered a dynamic, stagnant or declining performance in the last four years although additional analysis would be needed to draw any firm policy implications. They are best interpreted as indicators allowing identification of sectors that in the past seized the opportunities offered by the world markets and those that failed to do so. This may be a starting point for identifying sectoral or country-wide policies or policy reforms to help these underperforming sectors.

Sectors in the top right-hand corner are considered 'champions', where India recently gained market share and world trade growth was strongest. These are sectors of significant trade gains since both Indian exports and world imports exhibit strong growth. Sectors in the bottom left-hand corner are 'sluggish' sectors, subject to a declining or stationary world demand and where India is losing market share. Having such sectors can in fact be a natural phenomenon, especially in an economy undergoing a major structural change. If the trends in world trade are to be sustained, these sectors are likely to provide only limited trade growth and diversification away from them is not necessarily a worrying trend. Sectors positioned in the bottom right-hand are referred to as 'achievers in adversity' or 'winners in declining markets'. Existence of such sectors can also be a healthy phenomenon (*e.g.* when India realises its comparative advantage or is aiming to capture economies of scale or gains from clustering in certain sectors that happen to lose their shares in world trade) as long as it is not an implication of policy distortions (e.g. a result of discriminatory policies in India that favour a certain sector or a result of policies in third countries that limit the world growth of trade in this sector). For example, in scale-intensive or cluster-type sectors, where India already holds a strong market share in world trade

16 Monthly Reports by the Indian Secretariat for Industrial Assistance.

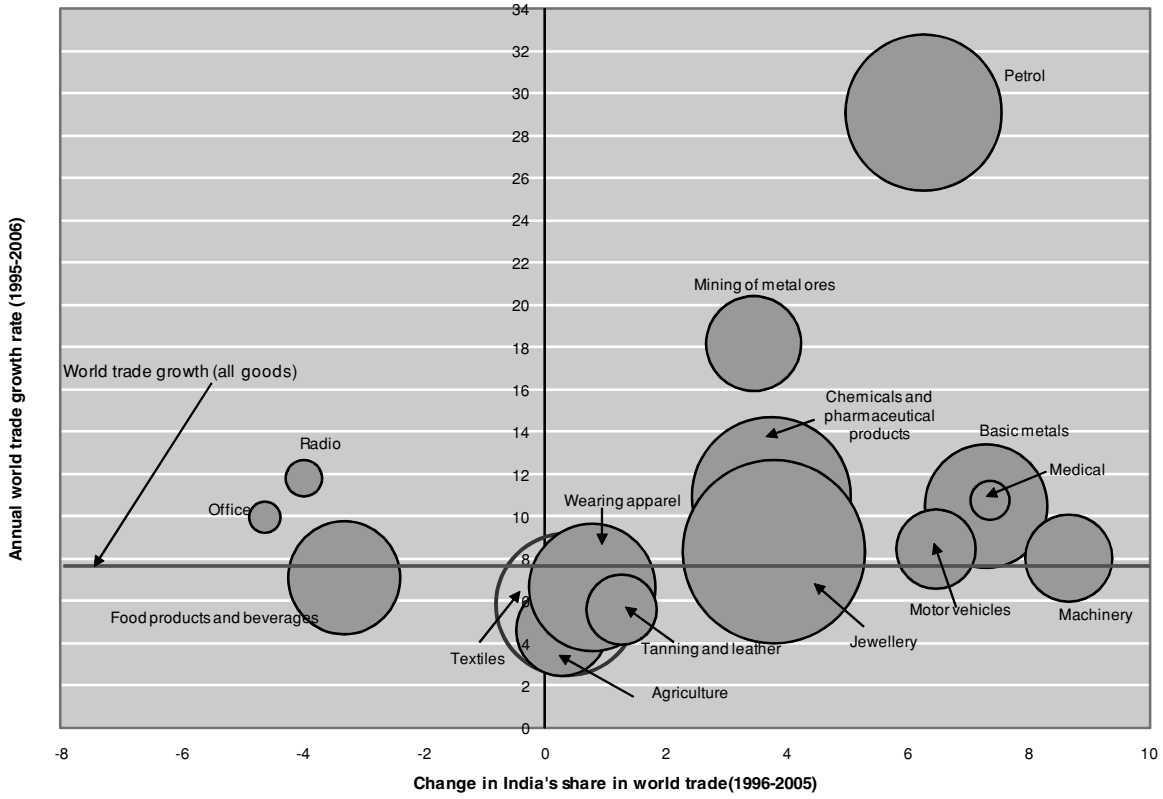
17 This "matrix" or "quadrant" approach is employed by the International Trade Center (UNCTAD/WTO) in its quantitative analysis of international trade and is inspired by firms' portfolio models, such as the Boston Consulting Group matrix. See ITC, "Explanatory Notes for Product Champions". Results for services should be interpreted with care given the statistical deficiencies in this area.

such as in jewellery, there might be opportunities to further specialise in the sector and gain additional market shares. Sectors in the top left hand quadrant referred to as 'underachievers' or 'losers in growth markets' are perhaps most interesting from the policy point of view to the extent that specific policy reforms might exist that could alleviate the hurdles to their growth.[18]

The dynamic export performance matrix for merchandise trade (Figure 8.7) shows that with the exception of *Radio and telecommunications, office and computer equipment*, and *Food products,* India's exports have performed very well, increasing their market share in the most dynamic categories and maintaining it in less dynamic sectors such as *Textiles, Leather and Apparel*. The performance of the two best performing sectors *Petrol products and Mining* is promising though it should be borne in mind that the two sectors tend to be capital-intensive and are unlikely to provide much employment. On the other hand, the increase in the market shares of the *Machinery and equipment,* which is likely a reflection of India relative capital abundance and availability of highly skilled engineers, might provide more outlets for job seekers leaving rural areas.

It is beyond the scope of this chapter but it would be interesting to further explore the sectors losing market shares and particularly whether scale-intensity might explain India's failure to develop the *Radio and Telecommunications*, *Office and computer equipment* sectors. Regulatory issues, lack of competition and inefficient logistics and distribution services are good candidates to explain the poor performance of these sectors as well as the *Food and beverages* sector.

Figure 8.7. India's export performance: merchandise trade, 1996-2005



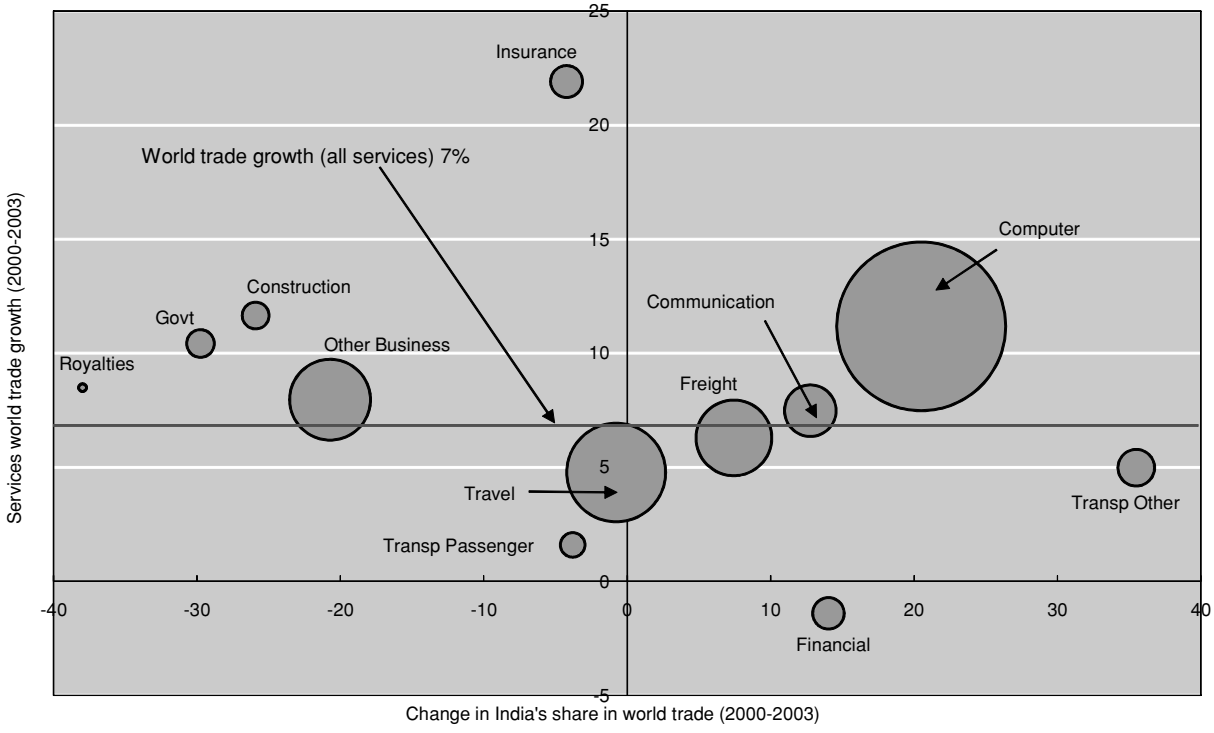
Source: UN COMTRADE.

18 It is also possible that, as a result of a transition to a more market-based economy, India is losing revealed comparative advantage in these sectors and gaining it in other sectors, which would not be of concern.

As already discussed, for some time now, India has followed a route to economic development that is distinct from these of China or South Korea. While these Asian countries focused on exports and manufacturing, India concentrated on its domestic services economy and grew more slowly with an emphasis on services. However, the growth pattern in the service sector in terms of its share in trade and FDI is not uniform across sectors. The dynamic export performance matrix for services confirms the stunning trade performance of *Computer services* where both world demand and India's performance are growing strong (see Figure 8.8).). It is worth mentioning that India is the only BRIICS country to have developed such a strong performance in IT services. For example, while *Computer services* have registered positive growth rates in China, their share in the country's total services exports are low and are eclipsed by other business services and travel. Interestingly, both China and Russia seem to have better prospects in developing their service exports than India whose notable service trade success appears to rely heavily on IT services.

Indeed, while as in merchandise trade, there are no important sectors in the bottom left corner, the position of *Other business services* (*e.g.* professional services such as accountancy, legal etc.) *Royalties* and *Insurance* where India is losing market share despite the dynamism of world markets indicates that the success of *Computer services* might not be so readily duplicable in other services. A possible reason for this evolution could be the absence of a coherent services strategy. While India's success is acknowledged in a narrow field of sectors, such as IT services, the development of other services sectors (as well as that of the economy as a whole) is held back by adverse factors such as external constraints in terms of high barriers to trade, as well as domestic constraints in terms of regulatory barriers. Consequently, the pace of reforms and their impact lacks uniformity across sectors. However, care needs to be taken in interpreting this analysis given that services trade data are less robust than merchandise trade statistics.

Figure 8.8. India's export performance: service trade, 2000-2003



Source: IMF BOP.

3.3 Bilateral trade relations

OECD markets are a very important destination for India's exports although this dependency has been decreasing gradually in the 2000s. In 2003 and 2007 OECD accounted for, respectively, for 49 and 43% of India's merchandise exports. The EU and the US remain the top destinations with 21% and 14% of the export bill but both of them have seen their shares of Indian exports reduced quite significantly in recent years (Table 8.13). A similar trend can be identified in terms of India's services trade with OECD countries; the OECD countries' group share in India's services exports decreased from approximately 33% in 1999 to about 26% in 2003. This reflects increases in the shares of exports to low and middle income countries. In particular, a clear tendency is visible of increasing export integration with other dynamic Asian economies such as China (from 4.6% of export share in 2003 to 6.5% in 2007) or Singapore (from 3.3% to 4.4%).

These trends can be expected to continue since bilateral trade with these countries is still smaller than would be expected on the basis of India's and their importance in the world trade. Integration with China, for example, was very weak until recently with a trade intensity index[19] less than 1 (see Table 8.14). In this context, however, it is surprising to see persistently low trade intensity indices and falling trade shares of India's exports to the EU, the US and other OECD countries. This may be reflecting the already highlighted relatively low technology (and presumably quality) content of India's exports and thus the forced reliance on the South markets as well as barriers to imports of certain products, such as leather, textiles and garments, for example, in which India may have comparative advantage and on which the OECD countries maintain relatively high tariffs.

However, apart from the aforementioned phenomenal rise of exports to Singapore, which were heavily influenced by exports of refined petroleum, there are few signs that India is fully integrating into the South- and/or South-East Asia trading hub. Its October 2003 trade agreement with Thailand has failed to significantly lift bilateral trade and the South-Asia Free Trade Agreement (SAFTA)[20] has yet to deliver any significant market opening. In October 2006, the EU-India Summit agreed to start negotiations on a broad-based trade and investment agreement with a view to enhance economic co-operation and promote bilateral trade. However, at the time of writing these negotiations still have not been concluded.

19 The trade intensity index (T) is used to determine whether the value of trade between two countries is greater or smaller than would be expected on the basis of their importance in world trade. It is defined as the share of one country's exports going to a partner divided by the share of world exports going to the partner. It is calculated as: $T_{ij} = (x_{ij}/X_{it})/ (x_{wj}/X_{wt})$; where x_{ij} and x_{wj} are the values of country i's exports and of world exports to country j and where X_{it} and X_{wt} are country i's total exports and total world exports respectively. An index of more (less) than one indicates a bilateral trade flow that is larger (smaller) than expected given the partner country's importance in world trade.

20 South-Asia Free Trade Agreement formed in 2004 by India, Bhutan, Bangladesh, Maldives, Nepal, Pakistan and Sri Lanka as a successor to SAPTA (South-Asia Preferential Trade Agreement).

Table 8.13. Top 15 export and import partners of India in 2003 and 2007, merchandise trade

Panel A. Bilateral trade flows

2003				2007			
Gross Exports		Gross Imports		Gross Exports		Gross Imports	
World trade value (USD mln)	63 035	World trade value (USD mln)	77 201	World trade value (USD mln)	145 898	World trade value (USD mln)	218 645
World	100.0	World	100	World	100.0	World	100.0
EU25	22.7	Unspecified	26.6	EU25	21.5	EU25	21.5
United States	18.0	EU25	19.2	United States	13.8	China	6.5
United Arab Emirates	8.0	United States	6.4	United Arab Emirates	9.9	Saudi Arabia	2.2
Hong Kong, China	5.1	China	5.2	China	6.5	United States	13.8
United Kingdom	4.7	Belgium	5.1	Singapore	4.4	United Arab Emirates	9.9
China	4.6	Switzerland	4.2	United Kingdom	4.3	Switzerland	0.4
Germany	4.0	United Kingdom	4.1	Hong Kong, China	4.0	Iran, Islamic Rep.	1.3
Singapore	3.3	Germany	3.7	Germany	3.2	Germany	3.2
Belgium	2.8	Korea, Rep.	3.6	Netherlands	3.0	Australia	0.7
Bangladesh	2.7	Japan	3.4	Belgium	2.8	Nigeria	0.7
Italy	2.7	Australia	3.4	Italy	2.6	Singapore	4.4
Japan	2.7	Indonesia	2.7	Japan	2.2	Kuwait	0.4
Sri Lanka	2.1	Singapore	2.7	Saudi Arabia	2.2	Japan	2.2
France	2.0	United Arab Emirates	2.6	Sri Lanka	1.8	Malaysia	1.3
Netherlands	2.0	Malaysia	2.6	Korea, Rep.	1.7	Iraq	0.1
All high-income	65.4	All high-income	50.1	All high-income	61.0	All high-income	61.0
OECD	48.6	OECD	41.8	OECD	42.7	OECD	37.8
Low and middle income	33.4	Low and middle income	22.4	Low and middle income	37.8	Low and middle income	42.7
Least Developed Countries	6.6	Least Developed Countries	1.9	Least Developed Countries	5.9	Least Developed Countries	5.9

Panel B. Bilateral trade balances

2003				2007			
Largest positive balance (USD mln)		Largest negative balance (USD mln)		Largest positive balance (USD mln)		Largest negative balance (USD mln)	
World	-14 166	World	-14 166	World	-72 747	World	-72 747
United States	6 401	Switzerland	-2 825	United States	5 927	China	-15 084
United Arab Emirates	3 004	Belgium	-2 145	Hong Kong, China	3 024	Saudi Arabia	-13 349
Hong Kong, China	1 747	Australia	-2 040	United Arab Emirates	2 744	Switzerland	-10 067
Bangladesh	1 643	Korea, Rep.	-2 040	Netherlands	2 600	Iran, Islamic Rep.	-7 320
Sri Lanka	1 111	South Africa	-1 344	Sri Lanka	2 153	Australia	-6 598
Netherlands	744	Malaysia	-1 140	Bangladesh	1 830	Nigeria	-6 025
Spain	735	China	-1 086	United Kingdom	1 492	Kuwait	-5 880
Italy	650	Indonesia	-983	Pakistan	1 298	Iraq	-5 246
Iran, Islamic Rep.	643	Japan	-947	Kenya	1 227	Germany	-4 058
Turkey	484	EU25	-531	Spain	1 212	Malaysia	-3 875
Nigeria	484	Sweden	-473	Vietnam	1 088	Korea, Rep.	-2 975
Saudi Arabia	381	Argentina	-431	Mauritius	1 033	Indonesia	-2 962
Nepal	379	Germany	-370	Brazil	1 022	Japan	-2 569
Vietnam	368	Myanmar	-316	Nepal	767	Russian Federation	-1 760
Egypt, Arab Rep.	266	Russian Federation	-236	Syrian Arab Republic	650	Chile	-1 657
All high-income	2 580	All high-income	2 580	All high-income	-21 588	All high-income	-21 588
OECD	-1 628	OECD	-1 628	OECD	-18 927	OECD	-18 927
Low and middle income	3 751	Low and middle income	3 751	Low and middle income	-49 992	Low and middle income	-49 992
Least Developed Countries	2 727	Least Developed Countries	2 727	Least Developed Countries	2 445	Least Developed Countries	2 445

Source: UN COMTRADE.

Table 8.14. Merchandise trade intensities- selected partners

	2000	2001	2002	2003	2004	2005
TII India/Singapore	0.91	1.13	1.44	1.78	2.73	2.93
TII India/Thailande	1.20	..	1.31	1.26	1.16	0.98
TII India/China	0.51	0.53	0.78	0.81	1.17	1.10
TII India/US	1.03	0.98	1.07	1.00	1.08	1.08
TII India/EU25	0.63	0.58	0.57	0.55	0.60	0.63

Source: UN COMTRADE.

An alternative way to assess India's trade performance is to focus the analysis on its bilateral trade relations and examine whether the market share of Indian exports in key partner countries import profiles and their evolution across time reflect its trading potential. Indeed, India has very small market shares in

most partner countries, and only the rates of growth of these shares signal a dynamic expansion of India's trade.

In the period 2000-2006[21] India has managed to increase shares in most of its destination markets, though they remain rather small in most countries, with exception of the LDC grouping (Table 8.15). This means that India's merchandise exports have been able to compete effectively in industrialised markets. In particular, the fact that India's market share is increasing in a variety of markets, including OECD markets such as the US where the key India exports remains textile, allays, at least partially, concerns about the potential push from China's expansion into further primary product specialisation The stagnant market share in Japan is, however, most likely due to competition with China, which has experienced phenomenal export success in these countries; i.e. China's share of Japan imports evolved from 5.2% in 1990 to 20.5% in 2006. The fact that shares in OECD markets are below India's world market share and that India's world market share is below India's share in the world GDP suggests that there is further potential for gaining markets and that the observed trends are likely to continue in the near future.

Table 8.15. India's and China's shares in key markets (%)

	India		China	
	2000	2006	2000	2006
World	0.7	1.0	6.4	10.6
High-income	0.7	1.0	7.4	11.4
Low and middle income	0.8	1.1	3.1	8.4
Least Developed Countries	6.2	4.8	6.7	9.2
OECD	0.6	0.8	5.5	9.8
Canada	0.3	0.5	3.2	8.7
Germany	0.4	0.6	3.4	6.8
EU25	0.5	0.7	3.0	5.7
France	0.4	0.6	3.2	5.7
United Kingdom	0.8	0.9	3.9	6.1
Italy	0.6	0.8	2.7	5.1
Japan	0.7	0.7	14.5	20.5
United States	0.9	1.2	8.6	15.9
Brazil	0.5	1.6	2.2	8.7
India	0.0	0.0	3.0	9.4
Indonesia	1.6	2.3	6.0	10.9
China	0.6	1.3	3.2	9.3
South Africa	0.9	2.4	3.7	10.0

Source: UN COMTRADE.

Unfortunately, information on services trade is sparser than for merchandise trade. In terms of partner country data, there is a dearth of disaggregated and internationally comparable statistics on the direction of international services trade in general. However, the IMF BOP statistics and the OECD database on trade in services by partner country (BOP statistics) for cross-border services can help with identifying the essential features of India's services trade with the OECD countries as far as cross-border trade (mode 1 in the GATS nomenclature) and consumption abroad (mode 2) are concerned (Table 8.16). The trade intensity index measures the extent of trade that takes place between two countries or groups of countries and compares this with the expected flows based on the partner countries' importance in world

[21] 2006 is the most recent year for which there are reliable data on India's bilateral trade in the Comtrade database.

trade. For most OECD economies, their trade intensity with India is less than what might be expected given the importance of the OECD markets in total world trade. Except for the US and the UK, where the index is more than or approaching one, India's services trade with OECD countries could be much greater. The trade intensity indices computed for the sample period feature low and sometimes decreasing values. These findings are further supported by the low shares that India holds in OECD country services exports and imports, suggesting that there is substantial scope for strengthening India's trade in services with these countries.

Table 8.16. Trade intensity indices between India and selected trading partners

	2000	2001	2002	2003
UK	0.79	0.99	0.87	0.80
US	0.77	0.72	0.67	0.70
Australia	0.66	0.57	0.57	0.56
Denmark	0.23	0.45	0.41	0.40
Finland	0.00	0.00	0.00	0.30
France	0.34	0.28	0.16	0.26
Japan	0.32	0.28	0.25	0.22
Germany	0.20	0.22	0.24	0.21
Italy	0.41	0.35	0.19	0.19
Belgium			0.16	0.15
Canada	0.14	0.18	0.14	0.14
Greece	0.06	0.06	0.11	0.14
Austria	0.10	0.08	0.07	0.10
Portugal	0.16	0.15	0.09	0.09
Sweden	0.15	0.18	0.22	0.07

Source: TISP (2006) and IMF BOP (2006).

To complement the above analysis, we measure the degree of services trade similarity[22] between India's exports to and imports from selected (OECD and non-OECD) countries (see Table 8.17). The similarity index gives information about the potential for direct trade between countries by assessing the degree of complementarity between the structure of exports and imports of the analysed countries. However, it does not measure the extent to which the countries take advantage of that potential. This

$$TS_{ij} = \frac{\sum_{s=1}^{n}\left(X_{is} \times M_{js}\right)}{\sqrt{\sum_{s=1}^{n} X_{is}^{2} \times \sum_{s=1}^{n} M_{js}^{2}}}$$

22 The measure is defined as ; where Xis represent exports of service s by country i and Mjs represent imports of service s by country j. The index varies between zero (no similarity or correspondence and consequently, no trade potential) and one (perfect similarity and significant trade potential). There is potential for trade when (0<TSij<1), with trade possibilities increasing as the value of TSij gets closer to 1. TS is an ordinal measure ranking items within a given collection from highest to lowest without measuring their magnitudes. To facilitate the analysis, we will use the following standard rule of thumb: TS values of 0.8 to 1.00 indicate very high similarity and significant trade potential, values of 0.6 to 0.8 indicate high similarity and high but lower trade potential than in the previous case, values between 0.4 and 0.6 indicate moderate similarity and moderate trade potential, values between 0.2 and 0.4 indicate low similarity and low trade potential, and values between 0.0 and 0.2 indicate little if any similarity and no trade potential at all. It was developed by Allen (1959) and was first used for calculating similarity of trade flows by Linemann (1966). A more recent application (in the area of manufacturing) is Beers (1991).

index is based on India's total services exports to all destinations.[23] There are two noticeable results in Table 8.17. First, India tends to have a moderate trade potential with most OECD countries. However, India's trade potential with most partner countries shows a decreasing trend. That means that the structure of India's service exports is not adapting to the structure of its OECD partners' imports. This could partly explain the low trade intensities presented above in Table 8.16.

Table 8.17. Services trade similarity indices between India and selected partners, 2001-2003

	2001	2002	2003
Netherlands	0.52	0.49	..
Finland	..	..	0.50
Belgium	..	0.53	0.49
Germany	0.57	0.52	0.49
Canada	0.53	0.50	0.47
Spain	0.54	0.52	0.46
Sweden	0.54	0.49	0.46
Japan	0.52	0.48	0.45
United Kingdom	0.51	0.46	0.44
Italy	0.51	0.47	0.43
United States	0.49	0.43	0.40
Norway	0.43	0.42	0.39
Austria	0.46	0.42	0.38
Korea	0.43	0.42	0.38
Iceland	..	0.34	0.34
Ireland	0.33	0.32	0.25
Greece	0.35	0.26	0.24
Brazil	0.60	0.59	0.51
China	0.49	0.47	0.44
Russia	0.52	0.45	0.41
Philippines	0.49	0.43	0.40
Mauritius	0.50	0.45	0.39
Malaysia	0.45	0.39	0.37

.. : not available.

Source: IMF BOP (2006).

Indeed, India's service exports have achieved marginal gains in market shares in most OECD markets (Table 8.19). Only in the United States and United Kingdom do more than 1% of these countries' service imports originate in India. Moreover, the annual growth rate of India's service exports share has been modest and in some cases, as for some countries in the EU15, negative. At the same time, no data is available for separate non-OECD countries with the exception of Hong Kong, China that reports to the OECD database but it is realistic to envisage that India has been gaining market share in developing countries services imports. In 1999, 67% of India's services exports went to non-OECD countries, with this share increasing to an estimated 74% in 2003.

[23] Results should be interpreted with care because as opposed to goods trade where data is available at a high level of disaggregation, services data is available for a limited number of sectors/ subsectors

Table 8.19. Evolution of India's services exports in key destination markets

As a share of individual countries' services imports

	2000	2006	Annual growth rate
United States	0.85	1.94	14.7
United Kingdom	1.01	1.56	7.5
Hong Kong, China	0.43	1.16	18.2
Denmark	0.58	0.89	7.4
Australia	0.65	0.88	5.1
France	0.39	0.65	8.7
Austria	0.12	0.48	25.8
Netherlands	0.21	0.46	13.8
Sweden	0.16	0.38	15.7
Italy	0.45	0.37	-3.3
Japan	0.36	0.30	-3.0
Portugal	0.17	0.14	-3.5
Czech Republic	0.06	0.12	13.6

Source: OECD TISP (2006)

As foreshadowed earlier the IMF BOP statistics do not cover trade in services via temporary movement of natural persons, the mode that is rather important judging by the importance of remittances in India's balance of payments. This gap can be filled by the GMig2 database assembled by the Centre for Global Trade Analysis (GTAP), in collaboration with the Development Research Centre on Migration, Globalisation and Poverty, Sussex University, the UK Department for International Development and the World Bank.[24] There is a small discrepancy in terms of the amount of total remittances (USD 17.41 million in the GMig2 database as opposed to USD 14.2 million reported in the IMF BOP database). According to the GMig2 database approximately 95% of India's total remittances come from the top ten remittance sources listed in Table 8.20. Half of total remittances received by India are sent by Indian expatriates in the US, representing almost 2% of India's GDP. Interestingly, the pattern of remittance flows remains almost unchanged in terms of total remittances and remittances received from skilled labour only. The US, a group of countries in the Middle East, the UK, Canada, Germany and Australia are the major sources of remittances for expatriate Indians.

The top ten source economies investing in India since the 1991 reforms are listed in Table 8.21. Mauritius has been the largest investor in India accounting for 27.5% of India's total FDI received during the analysed period. This is apparently due to a particularly advantageous bilateral investment treaty which had to be renegotiated to avoid round-tripping investment flows. Other major sources are the United States, the United Kingdom, and the Netherlands.

[24] The database is a bilateral matrix of the home and host regions of the World's 176.6 million international migrants and the development of the GMig2 model and database. The GMig2 Data Base contains data on bilateral migrant labour and wages by skill and bilateral remittance flows. See Walmsley *et al.* (2005) for more information on the GMig2 database

Table 8.20. Top ten regions sending remittances and remittances from skilled labour only to India, estimates for 2001

	Total remittances going to India from each region-%of total remittances sent to India	Remittances from skilled workers going to india from each region-%of total remittances sent to India
USA	45.56	22.86
Rest of Middle East	18.88	8.43
UK	13.36	4.56
Canada	6.82	4.00
Germany	3.20	1.58
Australia	2.25	1.71
Hong Kong, China	1.52	0.96
Singapore	1.23	0.51
Bangladesh	1.04	0.84
Rest of South Asia	0.97	0.72
Top 10 total	94.83	46.17

Source: Amer and Walmsley (2006) Notes: * Rest of Middle East includes: Bahrain, Iran, Islamic Republic of, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestinian Territory, Occupied, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates, Yemen and Rest of South Asia includes: Brunei Darussalam, Cambodia, Lao People's Democratic Republic, Myanmar, Timor Leste.

Table 8.21. Top 10 sources of FDI inflows in India

From August 1991 to December 2004

	Total (US$ Million)
Mauritius	9000.80
U.S.A.	4440.68
Netherlands	1867.83
Japan	1891.32
U.K.	1692.45
Germany	1255.57
France	743.69
Korea (South)	682.98
Singapore	641.02
Switzerland	530.60

Source: UNCTAD WIR

4. Trade policy and developments

The year 2005 marked India's tenth anniversary as a member of the WTO and more than fifteen years of sustained reductions in trade protection. Indeed, customs duties on imports have been declining since the end of 1980s both as a percentage of the value of imports and as a percentage of GDP and total government revenue. Quantitative restrictions on imports of agricultural products have been phased out in 2001. Services trade barriers have also come down and contributed to the expansion of a new dynamic services sector.

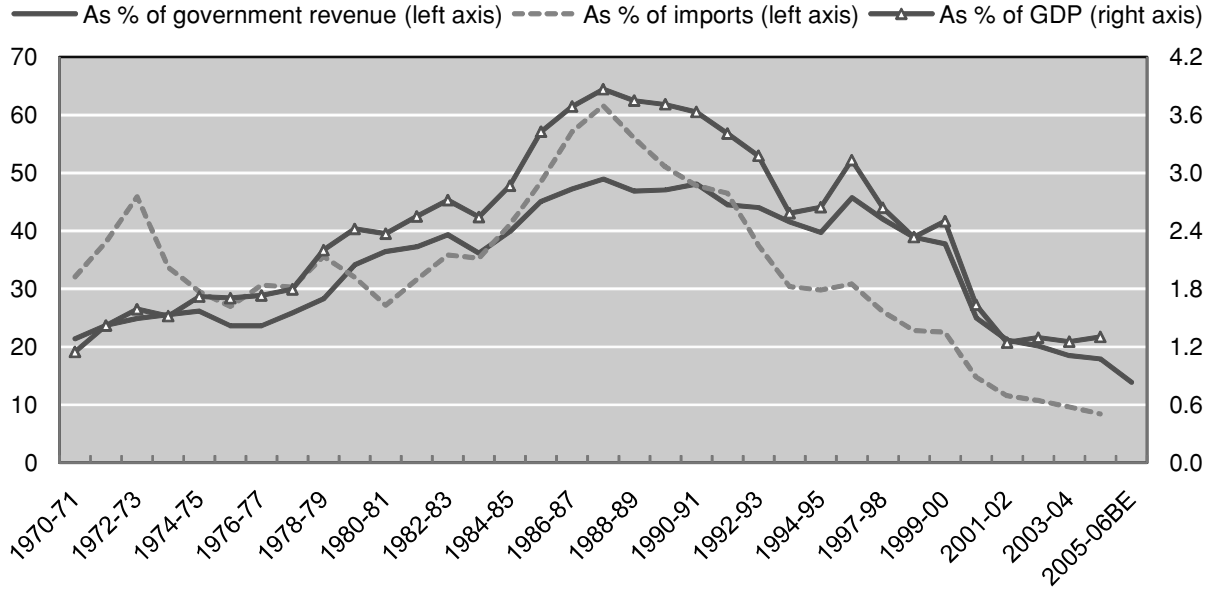
However, the remaining protection in both goods and services sectors is still high compared to other BRIICS. First, this means that intermediate inputs and capital goods remain more expensive for Indian producers compared to producers in other emerging markets. Second, the remaining trade barriers

combine with the domestic red tape restricting new entry and competition to keep India's competitiveness at low levels, particularly in agriculture and manufacturing sectors. As a result, pro-competitive effects in the tradable sector–the main driver of growth in most transition countries —are absent. Third, consumers face higher prices.

4.1 Barriers affecting merchandise trade

The extent of India's tariff liberalisation is well illustrated by the fall in customs duties collected expressed as a percentage of the value of imports (from more than 60% in 1990 to around 10% currently). Furthermore, the share of customs duties in government revenue has fallen from close to 50% in 1990 to around 15% currently, Figure 8.9. The decreasing reliance on trade taxes reflects continuing commitment to trade liberalisation but also the shifting of revenue collection from tariffs to more efficient ways of collecting taxes by broadening the tax base and movements to a value added tax.

Figure 8.9 India's customs revenue



Source: Reserve Bank of India and authors' calculations. Data for 2005-2006 RBI estimate.

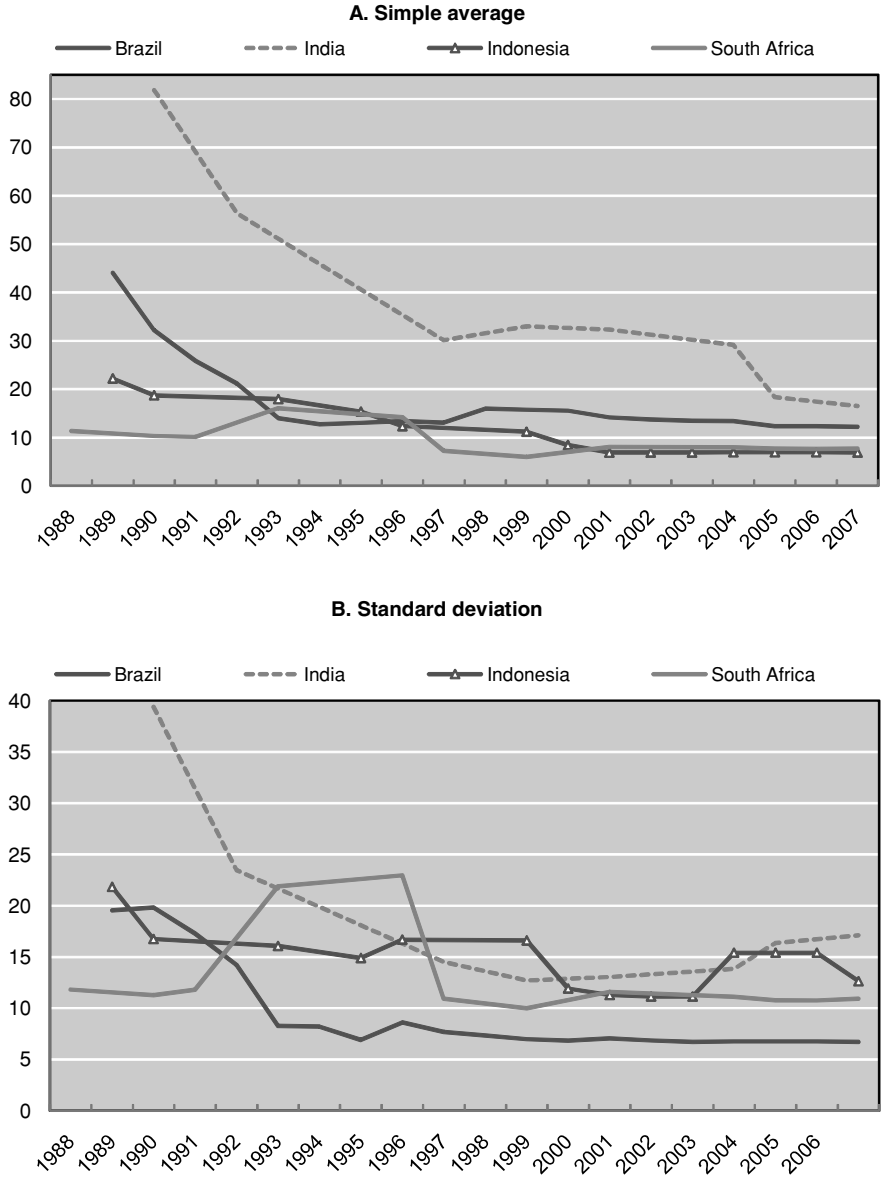
Tariff reductions seem to have been implemented across the board generating market access improvements but also entailing the added benefit of reducing tariff dispersion, and thus economic distortions and complexity, Table 8.19. Over the period 1990-2007, for which we have consistent data, the proportional tariff reductions on imports of manufacturing merchandise have gone much deeper than corresponding cuts in the agricultural sector. In fact, for agriculture products the reduction calculated on the basis of trade-weighted average tariffs is negative, with tariffs actually increasing by 24% over the period while that for manufacturing is a reduction of 83%; indicating a very impressive liberalisation effort.

Table 8.22. India's tariff structure

	Agricultural products			*Non Agricultural products*			*Maximum Tariff*
	Simple mean tariff	Weighted mean tariff	Std dev	Simple mean tariff	Weighted mean tariff	Std dev	
1990	73.1	50.3	71.6	79.2	49.6	42.2	355.0
2001	38.9	48.2	33.2	30.4	24.7	8.6	210.0
2004	39.1	60.7	35.6	27.7	21.0	7.5	182.0
2005	37.9	50.2	38.7	14.6	11.9	6.4	182.0
2007	39.1	62.2	38.9	12.5	8.6	5.9	182.0

Source: UN TRAINS.

Figure 8.10. Simple average tariffs in the BRIICS



Source: UN TRAINS.

Tariff peaks for non-agricultural products have continued falling from 30% in 2003 to 12.5% in 2006, tariffs peaks on agricultural products have remained unchanged. By focusing tariff reduction on tariff peaks, India has been narrowing protection differentials between raw materials, capital goods and consumer goods (Table 8.23).

Table 8.23. Simple average tariffs by production stage

	1997	2001	2005	2007
Raw materials	20.05	30.57	24.80	24.49
Capital goods	24.68	26.67	14.15	12.11
Intermediate goods	30.24	32.70	17.36	15.16
Consumer goods	36.91	35.93	19.60	17.88

Source: UN TRAINS.

These statistics point to an unparalleled across the BRIICS liberalisation effort, especially in manufacturing. Yet, it has to be remembered that at the beginning of reforms India's tariffs were amongst the highest in the world and that the current trade-weighted average tariffs of close to 62% in agriculture and 9% in manufacturing imply considerable wedges between domestic and world prices, and act as an indirect taxes on exports through imports. This puts Indian producers that rely on imported inputs at a competitive disadvantage, and keeps less efficient technology and producers in the domestic market. The lowered but still high tariff barriers are consistent with the low dynamics of the industrial sector observed in Figure 2 and persistent concentration of employment in the agricultural sector despite its decreasing contribution to India's GDP.

Statistics presented in Tables 8.24 and 8.25 are even more revealing and show that the overwhelming majority (from 72-100%) of India's imports are not imported for domestic consumption but, rather, are used as intermediate inputs by the domestic manufacturing and services sectors. Table 8.24 presents the 10 top India's imports and shows that over 60% of India's imports on average face applied tariffs higher than 10% and bound tariffs of around 30%. Within a number of these product categories the maximum tariffs are as high as 100% and there are a number of national and international tariff peaks.

Taking the example of imports of machinery and equipment, the simple average tariff of almost 15% in its entirety is a production cost increasing measure - 99% of imports machinery and equipment imports are used as intermediate inputs in production. Another example is 10% tariff on imports of crude oil - the biggest India's import (26% of the total). 100% of these imports are an intermediate input into the production of the petroleum products a part of which are successfully exported (9% in 2003). Other similar examples include inputs into the production of the chemical, rubber and plastic products and services sectors such as construction, transport and electricity generation. All in all, moderate to high tariffs hurt mostly domestic firms that rely on imported inputs in an alarming majority of cases.

Table 8.24. Top 10 India's imports

	Value of imports	% of total imports	Simple Average		Weighted Average		Standard Deviation	Maximum Rate	Domestic Peaks	International Peaks
			Applied	Bound	Applied	Bound				
OIL - Oil	39 101 473	26.36	10.00		10.00		0.00	10	0	0
OME - Machinery and equipment n.e.c.	16 895 653	11.39	14.57	31.19	13.77	27.07	2.46	15	0	0
CRP - Chemical, rubber, plastic products	15 427 099	10.40	15.38	42.72	14.43	37.59	4.62	100	4	127
NFM - Metals n.e.c.	14 129 823	9.53	14.68	39.39	15.00	39.65	1.47	15	0	0
ELE - Electronic equipment	11 071 414	7.46	7.55	9.86	2.00	0.91	7.47	15	0	0
OMN - Minerals n.e.c.	8 650 334	5.83	12.04	36.28	12.91	38.86	4.39	15	0	0
OTN - Transport equipment n.e.c.	8 130 431	5.48	20.21	29.96	7.71	8.45	30.05	100	20	20
P_C - Petroleum, coal products	7 101 582	4.79	13.61	25.00	13.90	25.00	1.64	15	0	0
I_S - Ferrous metals	6 150 379	4.15	18.90	39.59	19.45	39.94	2.08	20	0	511
COA - Coal	3 380 848	2.28	21.67	31.25	15.00	25.00	12.57	55	0	1

Source: UN TRAINS.

Table 8.25. Disposition of top 10 India's imports

Product Name	Disposition of imported goods (%)		Main importing sector	% of imports	Disposition of ouput of main importing sector	
	production	consumption			domestic	exports
OIL - Oil	100	0	P_C - Petroleum, coal products	100	94	6
OME - Machinery and equipmen	99	1	CDGS-Investment in capital good	42	100	0
CRP - Chemical, rubber, plastic	90	10	CRP - Chemical, rubber, plastic p	56	87	13
NFM - Metals n.e.c.	100	0	OME - Machinery and equipment	30	89	11
ELE - Electronic equipment	86	14	CDGS-Investment in capital good	80	100	0
OMN - Minerals n.e.c.	100	0	CNS-construction	66	100	0
OTN - Transport equipment n.e.c	96	4	CDGS-Investment in capital good	73	100	0
P_C - Petroleum, coal products	72	28	OTP-transport nec	41	96	3
I_S - Ferrous metals	100	0	I_S - Ferrous metals	48	93	7
COA - Coal	88	12	ELY- electricity	68	100	0

Source: UN TRAINS and GTAP database.

4.2 Duty Exemption Schemes

In an effort to offset the high taxation of intermediate products and barriers to services trade, India has opted to maintain and cultivate an extremely complex system of duty exemption schemes, special investment and establishment rules and special economic zones (SEZs) that provide incentives particularly to exporting firms. There are 134 duty exemption Acts in place covering all type of activities from restaurants to agriculture, handlooms, leather and footwear or gems and jewellery. The majority of special focus initiatives involve some type of duty-free exemption in general between 2.5% and 5% of the FOB value of exports. For sectors dominated by very small players, specific instruments are in place to channel duty-free imports through trade associations. Other schemes such as the export promotion capital goods scheme (EPCG), offer a 5% duty for imports of capital goods subject to an export obligation equivalent to eight times the duty saved over a period of eight years. Agri-export zones grant duty-free imports of capital goods. In the last few years, each financial bill has added to the number of special focus initiatives and other promotional measures undermining parallel efforts to simplify export procedures such as efforts to launch an automated electronic environment for all exports.

The extensive and complex duty exemption schemes mean that it is difficult to know which tariffs really apply in India. They create an impression that the protection levels may not be very high. As reported earlier, there is a significant gap between average tariffs and customs revenue as a percentage of imports but no publicly available information was found detailing customs revenue per import category; data which would permit the identification of areas and products for which most duty exemptions apply. Nevertheless, Table 8.21 clearly indicates that most of the output of the main importers of intermediate products is directed towards domestic market, not exports. It is therefore quite likely that duty exemptions may not solve the problem of taxation of intermediate inputs.

There are no signs that the system will be simplified in the near future but it appears that the Indian government is planning to alleviate the burden on domestic industry (see next section). Indeed, in 2006 the Trade Minister Kamal Nath announced two new schemes *Focus Products* and *Focus markets* aimed at providing a thrust to employment generation, particularly in semi-urban and rural areas. The objective of the *Focus Products* scheme is to promote exports of labour intensive industrial products by allowing a duty credit facility at 2.5% of the FOB value of exports on 50% of the export turnover of notified products such as value added fish and leather products, stationery items, fireworks, sports goods, handlooms, and handicraft items. The *Focus Markets* scheme aims at promoting exports to specified markets and allows duty credit facility at 2.5% of the FOB value of exports of all products to the notified countries.

4.4 Barriers to services trade

Various reports dealing with India's services sectors highlight particular problems related to market access in financial, telecommunication and distribution services. The OECD Secretariat assessed barriers in banking, insurance, telecom (fixed and mobile), and distribution service and liberalisation effects in many countries, including India.[25] Using alternative weighting methods and econometric specifications that improved on existing literature (that take account of barriers affecting each mode of services supply and additional sector-specific regulatory variables) the analysis concluded that as compared with both developing countries and the OECD India is quite restrictive in banking, insurance, mobile telecom, and distribution.[26]

The results show that barriers remain high despite significant liberalisation steps which far exceed India's GATS commitments. The trade restrictiveness indices (TRIs) are well above the OECD average and most of the selected emerging economies. Moreover, most of these services sectors have been in the public domain for a long time and they suffer not only from high barriers to trade, but also from domestic constraints in terms of burdensome regulatory measures and state monopolies. These services consequently suffer from inefficiencies and low growth.

Finally, it is worth emphasising the intimate links across services and other sectors of the economy. Services are important intermediate inputs in the production of most industries and an inefficient services sector can be costly for the Indian economy as a whole. Similarly, barriers to growth of industrial sector may impede the growth of the services sector. The high protection of services inputs reinforces the taxing effect of non-services inputs hurting domestic production of goods and services producing firms.

Banking sector

Despite the reforms of the financial sector that were initiated in 1992[27], India is still confronted with a number of challenges in this sector. The sector remains heavily regulated and state ownership is still pervasive; banks display a risk-averse behaviour and their assets are highly concentrated in the public sector institutions. India ranks among the countries that have a banking sector restrictiveness index standing above the average mostly because of restrictiveness on Modes 1 and 3 of services trade. In Mode 1, there are restrictions on both cross border borrowing and cross-border deposits. With respect to Mode 3, the foreign equity–related restriction has to be underlined since it is the principal factor that contributes to the high level of the TRI. The calculation of the index took into account the 2004

25 See OECD (2007a) "Modal Estimates of Services Barriers", OECD Trade Working Paper No. 51.

26 The OECD (2007a) attempted to include a large number of measures that can impede trade in services via various modes of supply. It is important to note that, at this stage, the study considers a combination of formal and actual barriers. A country can have regulatory measures in place which restrict trade, but these may not be applied in practice. Moreover, even if restrictions are applied, their effect depends on how they are applied in practice. Given these caveats, the proposed lists of restrictions and the results should be treated with caution. Where possible, this analysis indicates how results may change if the practical application on regulatory measures is taken into account.

27 The first phase was initiated in 1992. It focused on the implementation of prudential norms pertaining to capital adequacy and income recognition, the liberalisation of the interest rate regime and the introduction of competition by allowing more liberal entry of foreign banks and permitting the establishment of new private banks. The second phase, during the period 1997-2005, has focused on reducing fiscal pressures on the financial system, improving the state of the banking system and improving the overall regulatory framework for credit and risk management and investor protection. The third phase was laid down in the new road map of the RBI (March 2005) and essentially focused on foreign entry. Source: Prasad, A. and S. Gosh (2005), "Competition in Indian Banking", IMF Working Paper WP/05/141, Washington DC, IMF

restriction of 74% (an increase from the former limit of 49%) to foreign participation that were to be identified by the Reserve Bank of India (RBI) for restructuring even though the RBI did not specify subsequently any criteria for identifying banks in need of restructuring, nor did it identify such banks in the Roadmap for Presence of Foreign Banks in India and the Guidelines on Ownership and Governance in Private Banks, issued in February 2005.[28] Moreover, the RBI indicated that direct investment by individual foreign institutions in Indian banks would have to be reduced to 10%, and the aggregate limit for all foreign institutional investment would be capped at 24%; this limit can be raised with the approval of the board and the shareholders.[29] The report of the "Mission Economique"[30] in India also highlighted that in practice a foreign participation for more than 5% is problematic. Thus, the banking TRI for India could be even higher if account was taken of the practical application of regulatory measures.

Other restrictions include: complicated and costly licensing procedures (the granting of licenses to foreign banks is subject to a cap of 12 licenses per year for both new entrants and existing banks and there are several additional administrative requirements to be fulfilled[31]); restrictions on the form of commercial presence (only branches[32] are allowed); restrictions on the business of banks (in India, banks are allowed to provide securities services, real estate lending, foreign currency lending but are not permitted to supply insurance services[33]); and restrictions on raising funds by banks. The process of screening and approval also represents a significant obstacle. In terms of Mode 4 barriers, there are restrictions on the participation in the board of directors (2/3 of the bank's management board must be of Indian nationality) and restrictions on short and longer term stays of specialists.

Insurance sector

India's high restrictiveness index in insurance services can be explained mainly by foreign equity limits (26%[34]), restrictions on the form of commercial presence (subsidiaries are not allowed; foreign insurers and brokers cannot establish unless via a joint venture with an approved partner with a minimum 74% local shareholding[35]), complicated and costly licensing procedures (there is a legal form of

28 WTO (2007) states that the Indian authorities have indicated that ownership and governance of banks specified in the Banking Regulation Act 1949 are supplemented by regulatory prescription issued by the RBI from time to time.

29 WTO (2007).

30 http://www.missioneco.org/Inde/documents_new.asp?V=7_PDF_122413

31 There is a proposition from the Commerce Ministry to allow foreign banks to open a maximum of 100 branches in a year. (Source: Sectoral snippets: India industry information issue 1 August 2006, KPMG India.)

32 The RBI treats branches of foreign banks as if they were local subsidiaries, insisting that they must carry enough capital to cover their business in the country.

33 As a more recent development the Insurance Regulatory and Development Authority (IRDA) Amendment Bill that makes it possible for banks to sign up with state owned and private insurance companies to sell their products needs to be mentioned.

34 The Government's move to increase the foreign equity cap to 49% from the existing limit of 26% has run into opposition from the Left parties and attempts are on-going to convince them to support an amendment Bill in Parliament to raise the cap. Simultaneously, the Government is considering a proposal to allow 100% foreign equity in special category of insurance companies, like those in the business of health or weather insurance and for all agriculture-related activities, including agro-processing. (Source: "Government studying fresh reforms package: in the Hindu Business Line 24 May 2006). An amendment to increase the restriction to 49% is currently under consideration by the Government. (WTO, 2007).

35 Ss.2, 7A(b), Insurance Act 1938, as amended by the Insurance (amendment) Act of 2002.

discrimination for insurance and reinsurance; licensing of "an association of underwriters" is not permitted) as well as restrictions on the business scope of insurance companies. Furthermore, the cross-border restrictions[36] as well as the Mode 4 related barriers (restrictions on the board of directors as well as on short and longer term stays of specialists) need to be signalled.[37]

The insurance sector is no longer a state monopoly, but continues to be dominated by state owned enterprises and is still heavily regulated. However, it seems that foreign equity limitations are less restrictive than those for banks, giving insurance companies an edge in growing their businesses. Private domestic and foreign financial-services firms are slowly gaining market share by providing consumer financing, consumer leasing, investment banking, underwriting, portfolio management, venture capital and foreign exchange advice all through a mixture of both state-owned and private entities. The size of the market presents immense opportunities to new players with only 20% of the country's insurable population currently insured.[38] More information on regulatory developments in the Indian insurance industry is provided in Dihel and Kowalski (2008).

Telecommunication (fixed and mobile)

The Indian trade restrictiveness index in both fixed and mobile telecommunication is well above the OECD average and most of the selected emerging economies. India's telecom sector is characterised by significant entry controls (limits on foreign ownership[39]) and relatively complicated licensing and screening and approval procedures. Since its establishment, the Telecom Regulatory Authority of India (TRAI) has undertaken, besides a number of initiatives pertaining to tariffs, interconnection charge and revenue sharing, several waves of licensing, implementing license conditions and fees (even for application).[40] The license conditions were defined on the rule of operations and have important implications for competition. The main license conditions relate to roll-out obligations, revenue share and universal service obligations. Furthermore, there are significant restrictions related to leased line or network provision and connections of leased lines and private networks to the Public Switched Telecom Network (PSTN). Internet telephony became legal in 2002 but several obstacles restrict progress in this area. Only Internet Service Providers (ISPs) are allowed to offer Internet telephony within their service

36 Cross border trade and consumption abroad for MAT, except for freight insurance is prohibited, where goods in transit to and from India may be insured with foreign insurers; reinsurance can be taken out with foreign reinsurers to the extent of the residential uncovered risk after obligatory or statutory placements has been made domestically with Indian insurance companies. Article 3 (1) IRDA (General Insurance-Reinsurance) Regulations, 2000).

37 In addition, WTO (2007) mentions the high minimum capital requirement as significant entry barriers (the minimum capital required to set up an insurance company is RS 1 billion, while the requirement for a reinsurance company is RS 2 billion.

38 WTO (2007) notes that in 2005, the penetration ratio as a percentage of GDP was low (2.53% for life insurance and 0.62% for general insurance).

39 The national telecommunications policy allows foreign participation in the provision of basic, including cellular and value-added telecommunications services. The limit is 49% for basic and cellular services, ISP with or without gateways. This can be extended to 74% with prior approval from FIPB (Foreign Investment Promotion Board), except for ISP with gateways where foreign investments can up to 100% (Investing in India Report). That does exceed India's commitment under the GATS which is 25%." (Source: World Bank (2004), "Sustaining India's services revolution"). The extension of this limit can be explained by the difficulty to raise the amounts of money needed to finance the new networks.

40 For example, in terms of licensing conditions, the Unified Access Services (UAS) licence regime was introduced in 2003 allowing an operator to provide any type of service permitted in the licence and no longer obliging him to apply for separate licence for each type of service provided. WTO (2007).

areas and restrictions apply on who can offer IP telephony for PC to PC VoIP, PC to Phone VoIP and Phone to Phone.

India has taken positive steps towards liberalising the telecommunications market and introducing private investment and competition in these services. The sector has evolved from a government monopoly to a reasonably competitive structure with significant private participation. The ITU country profile of 2005 confirms the full competition in domestic, international and long line distance services. As a result, the telecom industry has grown rapidly since 2002. WTO (2007) notes that the number of subscribers (for both fixed and mobile telephones) has increased from approximately 45 million in 2002 to more than 183 million in 2006, with an average annual growth rate of 35%. The main driver of this growth is mobile telephony where the number of subscribers increased from 13 million in 2002 to 143 million in 2006. A crucial step in the liberalisation of telecoms in India was the separation of the incumbent service provider from the policy maker. India continues to modernise its regulatory framework, with a draft "convergence bill which is pending parliamentary consideration. The bill will consolidate authority over telecommunications, the Internet, and broadcasting in a single, super regulator. Also, as a result of increased competition, there was a significant reduction in tariffs (from USD 0.67 per minute in 2002 to USD 0.02 per minute in 2006 for domestic calls).

However concerns remain as regards (i) the interconnection charges that new entrants must pay, (ii) the government's weak multilateral commitments in basic telecommunications (India's commitments at the WTO in 1998 were significantly lower than its actual policy regime), and (iii) the apparent bias of telecommunications policy towards government-owned service providers. Indeed some private carriers are concerned about the neutrality and fairness of government policy. The Indian government retains a significant ownership stake and interest in the financial health of the dominant telecommunications firms, all of which formerly enjoyed monopoly status in their areas of operation. The government holds a 26% position in the international carrier, Videsh Sanchar Nigam Limited (VSNL), a 56% position in Mahangar Telephone Nigam Limited (MTNL), which primarily serves the Delhi and Bombay metro areas, and a 100% position in Bharat Sanchar Nigam Limited (BSNL), which provides domestic services throughout the rest of India. The government has indicated it will privatise MTNL and BSNL in the future but has not established a timetable. At this stage, it still dominates fixed line telephony accounting for more than 92% of the market in 2006.

Distribution

The high restrictiveness index in the distribution sector is determined mainly by the foreign equity limitations (51% in single brand retailing). In January 2006 the government approved new FDI norms for the retail sector and allowed up to 51% FDI in single-brand retailing. However, the decision to allow FDI in the multi-product retail chain stores has been delayed and remains a politically sensitive issue. Proposals for establishing commercial presence in wholesale trade, retail trade and franchising services are examined by the Foreign Investment Promotion Board (FIPB) on a case-by-case basis. FDI inflows related to commission agents' services are examined and approved by the Reserve Bank of India (RBI).

Although FDI in retailing in not allowed, *per se*, foreign retailers can operate in India through: (i) joint ventures, where the Indian partner is an export house (such as Total Health Care); (ii) franchising/local manufacturing/sourcing from small-scale sector (for example, Concorde, McDonald's) ; and cash and carry operations (for example, Giant in Hyderabad). [41]

41 *Source*: Government studying fresh reforms package in the Hindu Business Line 24/05/2006.

In addition, India has restrictions on import licenses for numerous goods that act as a virtual ban on imports. Some commodity imports such as petroleum products (although canalisation of crude oil was eliminated in April 2002), some pharmaceuticals, a number of chemical products and bulk grains (wheat, rice, and maize) must be channelled through public sector companies. Finally, India also has a highly distorted real estate market with pro-tenant laws and zoning laws. Zoning laws also vary from state to state.

4.5 Other impediments to commercial activity

India's success is acknowledged in a narrow field of sectors, such as IT services, but the development of other sectors is held back by persisting trade and regulatory barriers. Our analysis reveals that in a number of other services sectors moderate liberalisation steps have been taken but restrictive policies still remain. In almost all analysed sectors, India has the most restrictive regime among the BRIC economies.

In addition, a number of studies point out adverse factors that impede merchandise and services trade and slow down the development the economy as a whole:

- Poor infrastructure: One of the key hurdles to Indian productivity growth has been a lack of infrastructure support from the government. In 2006/2007 fiscal year, physical infrastructure spending was USD 500 billion in India (5% of GDP) of which the Central and State governments financed about two thirds. In China this ratio is estimated at around 15%. It is estimated that poor and poorly used infrastructure cuts India's growth rate by about 1 to 1.5 percentage points a year[42] and without change the desired double-digit growth seems highly unlikely.
- Low educational standards: as with China, India is confronted with skill problems due to low educational standards but, as opposed to China, India will have increasing working population for another generation.
- Corruption: the best example is the "Licence Permit Raj" which refers to the elaborate licences, regulations and the accompanying red tape that were required to set up business in India between 1947 and 1990. The Licence Raj was accorded on a selective basis to selected companies. The Licence Raj is considered to have been dismantled in 1990 and there are signs that the costs of doing business in India are going down. For example, in 2008 India obtained better scores than China on starting a business and dealing with construction permits indicators of World Bank's Doing Business ranking. Nevertheless, even within these areas it still faces some significant challenges. For example, the cost for a start-up at more than 70% of per capita GNI is much greater than in China (8% of per capita GNI).[43] Furthermore, the costs of trading across borders remain much higher than in China. The enforcement of contracts does not even compare to China's. Finally, labour regulations are inflexible, as reflected by the rigidity of the employment index that is much higher than in China or other South Asian economies (Table 8.26).

India should look into improving its regulatory framework in order to be able to (i) realise its potential in services, especially in know-how intensive services, (ii) achieve a more uniform development of services sectors which generate higher employment and (iii) reduce the taxing effect on the economy as a whole. Poor infrastructure is particularly constraining. Furthermore, to India has to address its

42 Analysis – India's politics block much-needed economic reform, Reuters 2006

43 This information can be accessed at www.doingbusiness.org

education shortages in order to avoid further skill mismatches and take advantage of its favourable demographic conditions.

Table 8.26. Doing Business – selected indicators, 2008

		India	China	South Asia	OECD
Overall indicator		120	90	..	..
Starting a Business	Procedures (number)	13	13	7.4	5.8
	Time (days)	33	35	32.5	13.4
	Cost (% of income per capita)	74.6	8.4	31.9	4.9
	Min. capital (% of income per capita)	0	190.2	0.6	19.7
Dealing with Construction Permits	Procedures (number)	20	37	16.1	15.4
	Time (days)	224	336	244.6	161.5
	Cost (% of income per capita)	466.9	840.2	2340.9	56.7
Employing Workers	Difficulty of Hiring Index	0	11	22.2	25.7
	Rigidity of Hours Index	20	20	15	42.2
	Difficulty of Firing Index	70	40	41.3	26.3
	Rigidity of Employment Index	30	24	26.2	31.4
	Firing costs (weeks of wages)	56	91	66	25.8
Registering Property	Procedures (number)	6	4	6.4	4.7
	Time (days)	62	29	106	30.3
	Cost (% of property value)	7.7	3.6	5.9	4.5
Getting Credit	Legal Rights Index	8	4	4.8	6.8
	Credit Information Index	4	4	2.1	4.8
	Public registry coverage (% adults)	0	49.2	0.7	8.4
	Private bureau coverage (% adults)	10.8	0	2.6	58.4
Protecting Investors	Disclosure Index	7	10	4.3	5.9
	Director Liability Index	4	1	4.3	5
	Shareholder Suits Index	7	4	6.4	6.6
	Investor Protection Index	6	5	5	5.8
Paying Taxes	Payments (number)	60	35	31.5	13.4
	Time (hours)	271	872	293.3	210.5
	Profit tax (%)	..	..	18.1	17.5
	Labor tax and contributions (%)	..	..	7.5	24.4
	Other taxes (%)	..	..	14.7	3.4
	Total tax rate (% profit)	74	81.2	40.4	45.3
Trading Across Borders	Documents for export (number)	8	7	8.5	4.5
	Time for export (days)	18	21	33	10.7
	Cost to export (US$ per container)	820	390	1339.1	1069.1
	Documents for import (number)	9	6	9	5.1
	Time for import (days)	21	24	32.5	11.4
	Cost to import (US$ per container)	910	430	1487.3	1132.7
Enforcing Contracts	Procedures (number)	46	35	43.5	30.8
	Time (days)	1,420	406	1052.9	462.7
	Cost (% of debt)	39.6	11.1	27.2	18.9
Closing a Business	Time (years)	10	1.7	5	1.7
	Cost (% of estate)	9	22	6.5	8.4
	Recovery rate (cents on the dollar)	11.6	35.9	19.9	68.6

Source: The World Bank (2008) Doing Business Comparing Regulations –http://www.doingbusiness.org/

4.6 India's special economic zones (SEZ)

A somewhat controversial aspect of India's trade policy are the Special Economic Zones (SEZ) first introduced by the Government in 2000 with the view of attracting inward FDI, fostering private-public partnerships for infrastructure development and accelerating export growth. India is proud of being one of the very first countries in Asia to recognize the potential benefits and introduce Export processing Zones, with Asia's first EPZ set in Kandla in 1965. Since then the concept of special

economic zones (SEZ)[44] has gained noticeable worldwide significance as a policy means of achieving openness and economic growth.

India's SEZs were introduced formally with the 2000 Special Economic Zones Policy which aimed to attract investors through an internationally competitive and hassle-free environment for exports, and a number of very significant fiscal incentives and concessions (see Box 1). India's SEZs are also often located in places with easier access to motorways and ports. As with the previous duty-free enclaves dedicated to 100% export oriented units (EOU), SEZs are exempted from all direct and indirect taxes, licences for importing capital goods and raw materials as well as licenses for manufacture of items reserved for the Small Scale Industry (SSI) sector (see Box 8.1). Moreover, 100% FDI and repatriation of profits are allowed in the zone.

Box 8.1. List of incentives offered to India's SEZs developers and units in SEZs

Incentives and facilities available to SEZ developers:

- Exemption from customs/excise duties for development of SEZs for authorized operations approved by the Board of Approval
- Income Tax exemption on income derived from the business of development of the SEZ in a block of 10 years in 15 years
- Exemption from minimum alternate tax
- Exemption from dividend distribution tax
- Exemption from Central Sales Tax (CST)
- Exemption from Service Tax

Incentives and facilities available to the units in SEZs:

- Duty free import/domestic procurement of goods for development, operation and maintenance of SEZ units
- 100% Income Tax exemption on export income for SEZ units for first 5 years, 50% for next 5 years thereafter and 50% of the ploughed back export profit for next 5 years
- Exemption from minimum alternate tax
- External commercial borrowing by SEZ units up to US $ 500 million in a year without any maturity restriction through recognized banking channels
- Exemption from Central Sales Tax
- Exemption from Service Tax
- Single window clearance for Central and State level approvals
- Exemption from State sales tax and other levies as extended by the respective State Governments

Source: Ministry of Commerce and Industry, www.sezindia.nic.in

In 2005 the Indian Government reaffirmed its commitment to SEZ policy with the *2005 SEZ Act* which extended the benefits to units that are not any longer 100% export oriented but just a net foreign exchange earner. Sales in the *Domestic Tariff Area* by SEZ units are, however, officially subject to

[44] The term SEZ is used interchangeably with Export Processing Zones (EPZ), Free Trade Zones (FTZ), and Export Processing Factories (EPF) that refer to similar concepts with variation for policy directions and objectives.

payment of full custom duties. As part of the *2005 SEZ Act* some of the existing *Export Processing Zones* were converted into SEZs[45] and a number of new SEZs were established or approved for establishment across the country.

A key distinguishing feature of Indian SEZ policy is that the zones are proposed by the private sector or by State or Central Government in association with the private sector. Moreover, the private sector is also expected to develop infrastructure facilities in the existing SEZs. Indeed, perhaps the most notable trend over the past five years in India has been the growing number of privately owned, developed and operated zones. The key factor behind the rise of private zones seems to be a concession package which is more attractive to profit-oriented private players rather than *unmotivated* government players. The limited funding for new government zones development is also a likely factor. It is reported that the entry of the private sector into zone development has improved the range of facilities, services and amenities available within zones.

As of end of *September* 2008 India granted formal approval to 531 SEZs out of which 260 SEZs have been notified and are operational.[46] There are also additional 143 valid in principle approvals which are likely to become operational in the near future. Most of the currently functioning Indian SEZs are specialised in information technology and software (171 out of 260), engineering (13), pharmaceuticals (13) and, to a lesser extent, in apparel (10), multiple products (10), multiple services (5) or gems and jewellery (3). A high concentration of formal approvals and functional SEZs is observed in the south and west of India and in particular in states of Maharashtra (19% of operational SEZs), Andhra Pradesh (18%), Tamil Nadu (12%) or Karnataka, Gujarat and Haryana (each approximately 9%).

Investment in place in the SEZs operational in 2008 amounted to approximately 733 billion rupees, exceeding earlier Government's targets, and the employment exceeded 100 000 workers. Around a quarter of SEZs' investment in 2005 was reported to be FDI. According to data provided by the Ministry of Commerce and Industry exports from SEZs have been growing at much higher rates than total economy exports, especially in fiscal years 2006-2007 and 2007-2008 (Table 8.27) . Consequently the share of SEZs export in total exports have more than doubled from less than 5% in 2003-2004 to more than 10% in 2007-2008. Yet, the cited 100 000 employment figure must be seen as rather small as compared to India's labour force of close to 440 million.[47]

45 Kandla and Surat (Gujarat), Cochin (Kerala), Santa Cruz (Mumbai-Maharashtra), Falta (West Bengal), Madras (Tamil Nadu), Visakhapatnam (Andhra Pradesh) and Noida (Uttar Pradesh) into a Special Economic Zones

46 Each proposed zone must be first approved by the Board of Approval which is a central body and has 19 official members including the Secretary, Department of Commerce, representatives from other ministries and a floating state government representative. The Central Government notifies the area of an SEZ and in such notified SEZs operational units can be set up. All further approvals (e.g. of additional units) are then approved at the zone level by the Approval Committee consisting of the Development Commissioner (head of the zone), Customs Authorities and representatives of respective State Government. (see www.sezindia.nic.in or Mitra, 2008).

47 The labour force figure refers to 2006.

Table 8.27. Special Economic Zones Exports (2004-2008)

	SEZs Exports Value (Rs. Crore)	Growth Rate (over previous year)	Total economy Exports (Rs. Crore)	Growth Rate (over previous year)	SEZs exports share in total exports (%)
2003-2004	13 854	39%	293 367	15%	4.7
2004-2005	18 314	32%	375 340	28%	4.9
2005-2006	22 840	25%	456 418	22%	5.0
2006-2007	34 615	52%	571 779	25%	6.1
2007-2008 P	66 638	92%	640 172	12%	10.4

Note: P for provisional

Source: Ministry of Commerce and Industry and the Reserve Bank of India.

The export performance of the SEZs can be seen as quite impressive if these exports are additional to what would be exported without the SEZ policy in place. The latter, however, cannot be easily assumed. The positive assessment of the SEZ policy by the current government and the impressive current statistics ought to be interpreted in the broader context of potential unintended economic and social costs that such a policy may generate.

The Chinese experiment with SEZs has been widely projected as a success in terms of economic liberalization and export performance but there is no unanimity in the case of India. China began experimenting with export zones in the early eighties and developed its own model of special economic zones. It now has five special economic zones which include the entire Hainan province, three cities (Shenzhen, Zhuhai, and Shantou) in Guangdong province and a city (Xiamen) in Fujian Province (Wang and Wei, 2007). It also has a number of other smaller special zones classified as Economic and Technological Development Areas (ETDAs), Hi-Technology Industry Development Areas (HTIDA), and Export Processing Zones (EPZs). Initially in late 1970s and early 1980s these policy zone were considered as a "windows to the west" and foci of a new phase of industrialization in China (Wang and John, 1986). In an otherwise closed economy, they offered relatively developed infrastructure facilities provided exclusively by the government, a hassle free environment and a generally conducive policy framework. These zones are reported to have made a significant contribution to China's economic growth especially in the early stages of China's opening up. Indeed, as reported, by Wang and Wei (2007) the share of SEZs in total China's exports has fallen from around 10% in mid 1990s to below 5% in mid 2000s. Nevertheless, more recently the high tech zones (ETDAs and HTIDAs) have significantly increased they shares in China's exports (from 5.3% in 1995 to 15.4% in 2005) and were found to have significantly contributed to the raising sophistication of exports structures and their unit values (Wang and Wei, 2007).

India's experience with EPZs, predecessors of SEZs, actually predated that of China but the special zone policy has not been part of a coherent national strategy until April 2000. In this sense India is more than 20 years behind China in devising a fully fledged special economic zone policy. Also, given that most of India's SEZs have just begun operations, it is rather early to compare them with those of China and to fully assess their performance and viability. Yet, even at this stage a number of differences can be highlighted. For example, unlike in China and other East Asian emerging markets attracting foreign direct investment was not the primary goal for Indian EPZs. Their goal was rather to provide "relief to the domestic exporters from the regulatory regime" (Kundra, 2000). Chinese SEZs received a large amount of FDI which represented a high percentage of total zone investment and investments were made almost exclusively in manufacturing production most of which was exported. In the case of Indian SEZs, the FDI is small in both absolute and relative terms in comparison to China and much of the investment is reported to be in property development, hotels, and other accompanying service sectors.

Indeed the generosity that India's SEZs policy extends to investors and the structure of investment in the zones have been highly controversial with critics complaining about the forced expropriation of agricultural land and accusing state authorities and developers of speculating on land values. SEZ rules only require that 35% of a SEZ be devoted to productive activity. A developer can use the rest of the land to build apartments, hotels and commercial offices. Still, while the equity issues are important in the development of Indian SEZs and the government need to make sure that the price of land on which the SEZs are established reflect the market value, the concerns voiced by critics of the government policy about the impact on availability of agricultural land and food security do not seem to be well substantiated. The total area for the formally approved SEZs (67 772 hectares) as of September 2008 accounts for a mere 0.02% of total land and 0.4% of total India's agricultural land, of which about a third was already in possession of the State Governments or State Industrial Development Corporations or with private companies at the time of approval. Thus the SEZs policy does not seem to be a major threat to agricultural land market.[48] In fact, it is possible that Indian SEZs will not be as successful as China's export zones precisely because of their small size. For example, the most famous Chinese export zone, Shenzhen, covers 32 600 hectares. The average size of approved SEZs in India is only approximately 128 hectares, compared to zones of 40 000 hectares or more in China.[49]

More importantly, many, including the Indian Finance Ministry, have expressed doubts about the ability of SEZ to provide additionality in terms of production, planned investment and FDI, especially in the context of significant amount of expected foregone tax revenue. According to WTO (2007) the government revenue forgone because of tax and import duty rebates in export processing zones and special economic zones amounted to Rs 559 billion in fiscal year 2006-2007. The Finance Ministry initially estimated the loss in direct taxes, customs and excise duties at 930 billion rupees and later revised it upwards to Rs 1,026 billion for the four year period 2006-07 to 2009-2010 of which customs concessions are to amount to Rs 297 billion, excise Rs 104 billion and service tax Rs 88 billion. Overall, this amounts to a loss of revenue of Rs 256 billion *per annum*, a half of the actual amount for 2006-2007.

Even if, as the government estimates, the revenues forgone were to be halved in the years to come, they are rather high as compared with the 733 billion rupees investment the SEZs have so far attracted or the 666 billion rupees of provisionally estimated exports revenue in fiscal year 2007-2008. While a sophisticated economic assessment of this issue would have to entail a detailed and long-term analysis of fiscal incentives and their impact on value added, exports and employment, a back-of-an-envelope type calculation suggests that the value added generated annually by the SEZs may be rather close, if not lower, than the amount of tax revenue forgone (given that the share of costs of intermediate inputs in the final value of Indian products often substantially exceeds 50%).[50]

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48 In fact, an optional sale of land to industrial entrepreneurs at an attractive price can be a viable option for those who are willing to leave agriculture.

49 The minimum area for a "multi product" SEZ is 1 000 hectares, for a " product specific zone" it is 100 hectares and for IT, biotechnology and jewellery, just 10 hectares.

50 Apart from these systemic issues serious concerns about compliance with the SEZs policy have recently been raised by the Comptroller and Auditor General of India (CAG). In its performance audit-report on indirect taxes for Union Government presented to the parliament in March 2008 CAG reported that an audit of 370 SEZ units revealed the widespread malpractice of reporting domestic sales as exports earnings which resulted in an estimated loss of government revenue of Rs 20 billion. The loss was reported to result from incorrect self-reporting of import and export operations in order to qualify for the Net Foreign Exchange earner status required for membership of SEZs. This incident confirms the concerns about the effectiveness of the SEZ policy in delivering its objectives of boosting exports. It also exemplifies the potential for distortions and rent seeking behaviour in the economy.

Given these facts it would seem prudent for India's government to remain vigilant and continue to reassess the economic benefits and implementation of this policy. As the recent OECD (2007c) study emphasised, SEZs are always a suboptimal policy from an economic point of view. They can provide an interim solution to countries with poor business environments where bridging deficiencies at a national level is temporarily impossible. This may seem to be the case in India—a large, low income country with enormous population, poor infrastructure and fiscal problems - but it would not be rational to treat this as a sustainable, long-term solution that can substitute for reforms aimed at making business easier for everyone. Even as a temporary solution, the benefits are not guaranteed especially if the rents associated with operating within SEZs create perverse economic incentives. As Raghuram Rajan succinctly notes *"if you create perverse economic incentives and then rely on bureaucrats to stand in the way of business exploiting those incentives, the outcome would be little more investment than would otherwise have happened and a lot less revenue, but much richer bureaucrats"*.

5. Productivity in India and its relation to trade liberalisation

A number of studies have attempted to identify and analyse the various determinants of productivity change in India. For example, Bosworth and Collins (2007) highlight that India achieved its economy-wide growth with relatively *little emphasis on capital accumulation* and more emphasis on *substantial gains in TFP*. This contrasts with China's and other East Asian countries' experience where growth performance had its source in both the very high rate of capital accumulation and TFP gains. Bosworth and Collins (2007) find that TFP growth in India more than doubled from an average annual rate of 1.1% during 1978-93 to 2.3% during the period 1993-04. The improved TFP contributed 1.2 out of 2 percentage points increase in output between the period preceding the reforms of 1991 and the period 1993-2004.

However, according to the same authors, the increase in TFP and its contribution to output growth was not uniform across sectors. The most rapid improvement of TFP is registered in services with almost 4% annual growth between 1993 and 2004. By contrast, TFP growth remained modest in both agriculture and manufacturing (0.5% annual increase in TPF in agriculture and 1.1% in TPF in manufacturing over the same period). Other estimates suggest that TFP growth in manufacturing accelerated from less than 0.5% in the 90s to around 2.5% between 2000 and 2005.[51] The relative contribution of TFP to productivity growth also diverges across sectors. In services and agriculture, TFP growth has been the main driver of output growth. In manufacturing, capital accumulation seems to have been a more important determinant.

In terms of *employment changes* and their impact on output growth (reallocation effects), agriculture continues to employ a very large share of labour suggesting that the expansion of employment to manufacturing and services is below potential. In manufacturing, about half of the growth is attributable to employment increases, but labour productivity is low compared to other countries in the region. By contrast, labour productivity is high in services (Bosworth and Collins, 2007) which means that relatively large output increases are possible with small labour increments. These trends are consistent with the observed employment expansion for the economy as a whole where services-dominated dynamic growth was not accompanied by equally dynamic employment growth. Manufacturing also contributed to employment but most of this increase occurred in the informal sectors of the economy, where productivity and wages are generally much lower than in the formal organised sector (OECD, 2007c).

51 OECD (2007c).

Overall, Bosworth and Collins (2007) show that approximately one quarter of output growth is due to reallocation effects. By contrast, Sivadasan (2006) focuses on plant-level evidence and highlights the lack of resource reallocation across plants. He estimates that productivity changes within plants are up to twice as important as resource reallocation across plants. This could be ascribed to market exit difficulties, rigidities imposed by inflexible labour market regulations (low migration across states) and the high concentration of production in some industries (OECD, 2007c). Finally, Bosworth and Collins (2007) highlight the limited contribution of education to productivity growth.

With respect to *the direct impact of trade policy measures* on productivity changes, a number of studies provide evidence on the positive impact of trade liberalisation on TFP growth. For example, using two-digit industry level data for Indian states for the period 1988-2000, Mitra and Ural (2007) find that a one percentage point reduction in the annual average nominal rate of protection (NRP) can raise labour productivity by between 0.2 to 0.5% points in states with rigid labour market policies and 0.3 to 0.7% in states with flexible labour markets. This means that the 88 percentage points reduction in average NRP across all two-digit sectors between 1980 and 1991 could have led to a 60% increase in average labour productivity in flexible states and 45% increase in average labour productivity in states with rigid labour markets. Corresponding impacts on TFP were estimated at 0.25% and 0.4% and on employment 0.9 and 1.1%.

Employing plant level and structural data through the mid 1990s Sivadasan (2006) found that sectors which experienced FDI liberalisation recorded the highest productivity and output increases of 18-23%. Industries where tariff liberalisation occurred registered around 33% productivity gains, thus suggesting that some sectors and firms have started benefiting from reforms in the '90s. Yet, another study of firm-level panel data for 1989 to 2001 (Topalova, 2003) finds that a 10% decrease in tariffs results in a 0.5% increase in total factor productivity and that the gains seem to be captured by existing firms with exit rates of unproductive firms remaining at low levels.

Finally, OECD (2007c) notes that most studies suggest that trade liberalisation and FDI reforms lead to divergences between firms and accordingly that overall productivity would have increased more if less productive firms has exited the market.

A number of other distortions are thought to be damaging to the manufacturing sector. Small firms have been favoured by industrial leading to extensive fragmentation of production and lower productivity (see Box 8.2). Consequently, manufacturing has not keep up with performance in similar countries.

Furthermore, output trends across the manufacturing sectors are suggestive of labour market rigidities. In the post-reform era, output generated by labour-intensive manufacturing sectors actually declined and output produced by large-scale firms in capital-intensive industries rose sharply - a trend that is completely at odds with India's relative abundance of low cost labour. Thus, instead of reverting to a traditional pattern of specialisation in labour-intensive sectors, the Indian economy specialised in skill-intensive sectors in manufacturing and in services, shifting resources directly from agriculture to services.

In addition to this sectoral divergence, an uneven performance at the Indian states' level is also observable. Firms in states with best institutions are gaining while those in tightly regulated states are falling further behind (Kochhar *et al*., 2006; OECD, 2007c). For example, Product Market Regulation (PMR)[52] indicators for 21 states, OECD (2007c) finds that more liberal states (such as Delhi, Tamil

52 The PMR indicator is a standardised procedure used to evaluate product market regulations in OECD countries in three key areas: state control, barriers to entrepreneurship, and barriers to trade and investment. See OECD (2005) Product Market Regulation in OECD Countries: 1998 To 2003, ECO/WKP(2005)6 for more information on this topic.

Nadu, Kerala, Maharaashtra, Punjab and Karnataka), where the overall level of PMR regulation is below India's average (see Figure 14A), have higher labour productivity, attract more foreign investment, have a better infrastructure penetration and a larger share of employment in the private formal sector in comparison to the relatively more restrictive states (such as Bihar, Jharkhand, Orissa, Utar Pradesh, Chhattisgarth).

Box 8.2. Inconsistencies in Small Scale Industry Policy in India

India's SME sector called Small Scale Industry (SSI) is reported to produce a wide variety of 7 500 products, contribute 40% of the gross industrial value added, 45% of the total exports and be second largest employer after the agricultural sector (Indian Office of Development Commissioner). SSI sector mainly satisfies the market for mass consumption goods such as: leather goods, plastic and rubber goods, ready-made garments, stationery items, domestic utensils, toothpaste, safety matches, preserved foods and vegetables, furniture, paints and varnishes. More sophisticated items produced by this sector include some simple electronic equipment and electrical household appliances, optical lenses, drugs and pharmaceuticals or electric motors. The product groups in which SSI dominate exports include: sports goods, ready-made garments, woolen garments and knitwear, plastic products, processed food and leather products.

The prominent role of SMEs in India's economy and the special problems that these type of producers face internationally explains the special efforts that Indian authorities are making to support it. This is done through institutional support, provision of construction sites, training facilities, supply of machinery on hire-purchase terms, marketing and export assistance, financial incentives to set up facilities in economically depressed areas and consultancy and financial assistance for technological upgrading. In this respect India is not different from OECD countries where SME promotion is an important part of industrial and entrepreneurship policy, even though it is, by definition, discriminatory.

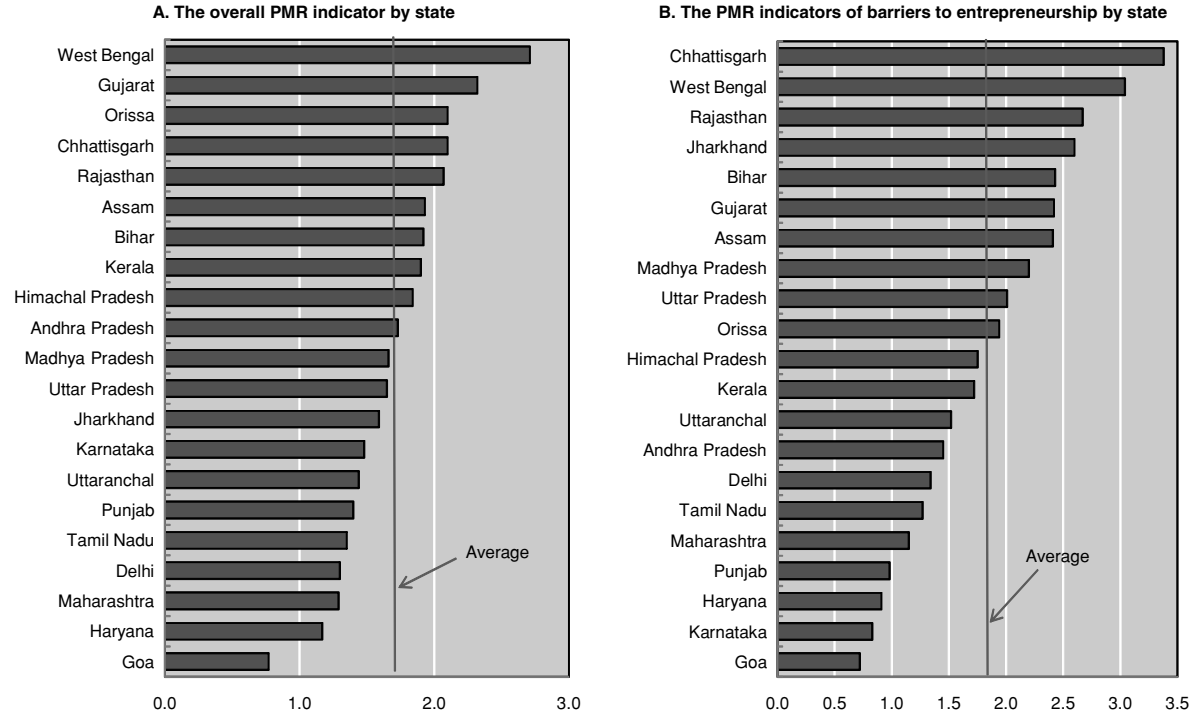
Yet, notwithstanding the positive role that the SME promotion can play, the reservation of manufacturing of a number of items for small scale firms curbs development of all types of firms in India, including SMEs. As a part of its SSI policy India has an evolving list of products that can only be produced by firms of rather rigorously specified characteristics. The definition of small scale firms has been changing over the years and once included both the fixed assets and employment limits but currently eligible firms are defined as those with assets in plant and machinery of less than Rs. 10 million. A locational criterion also seems to play a role in the licensing decisions with SSI activity being preferred in areas where "there is techno-economic justification for such an approach". Only such licensed small scale firms can currently produce some 114 items including indigenous items such as *pickles and chutneys* but also some more technologically advanced products such as, for example, *amplifiers for entertainment and public address system*. While restriction of production of the former type of products could be argued on traditional or cultural grounds the restriction of electrical and electronic equipment or chemical products is likely to constitute a straight jacket for Indian industry. Larger firms will not be able to enter the markets should they find production of such items profitable or will have to fragment their assets across several smaller firms. This does not only mean forgone scale economies but simply cutting off firms that could produce under constant economies of scale but in larger amount. Additionally, this policy affects firms' production techniques making them more labour intensive than they actually are.

For the SMEs this type of policy sets limits with respect to capital assets and, consequently, production size. For an SME that is at the limit of capital assets eligible for production of a SSI-restricted product is through employment expansion. Nevertheless, this is not efficient microeconomically since the marginal productivity of labour (an presumably the level of wages) declines and the marginal productivity of capital (the stock of which is restricted) raises calling for more investment which cannot happen. It is clear that microeconomically speaking restriction of capital can hardly be seen as employment-promoting policy.

In view of this discussion, the SSI product restriction policy in India stands in stark contrast with the objective of SME support which is, as stated by the Indian Office of Development Commissioner, to "encourage growth of small scale industries". The SSI product restriction policy cannot convincingly contribute to such an objective.

To a large extent, the differences in the PMR indicator across states are determined by differences in the degree of state control (that measures the degree of public ownership and the states involvement in business operation via command and control regulation and price controls) and barriers to entrepreneurship (that cover licensing procedures, administrative burdens on start ups, legal barriers to competition and antitrust exemptions). It is worth noting that the Indian leading states perform very well in some regulatory areas. The reforms in the past two decades seem to have successfully removed a number of formal legal barriers to market entry (such as licenses and permits to enter a particular sector) and the degree of regulatory and administrative opacity is quite low in the leading states. However, inefficiencies in terms of starting a new business and administrative burdens still remain in both leading and lagging states. Also, the degree of variation among states in terms of the overall entrepreneurship indicator (see Figure 8.11 B) further explains India's less favourable entry conditions and weaker performance than in other countries.

Figure 8.11. OECD PMR indicators by state



Source: OECD (2007c).

Nearly all states have seen a uniform shift towards services, but the share of public sector services is growing in the laggard states while the share of private sector services is growing in the fast-growing states.[53] Relating to our previous discussion, it is worth noting that even fast growing states have seen no change (or a negative change) in the share of manufacturing. Furthermore, where there was an increase it occurred in capital- and/or skill-intensive sectors. Picking up on this point, some analysts explain that the skill-based development in fast-growing states may impede development of labour-intensive sectors through increasing prices of skilled workers and further reductions in the profitability of unskilled-labour-intensive and tradable manufacturing.

53 Kochhar *et al.* (2006).

6. Conclusions

This chapter addressed the implications of India's trade and trade policy reform. After nearly five decades of inward-orientation and state-led development, India embarked in 1991 on a process of economic reform and progressive integration with the global economy in an effort to put its economy on a path of rapid and sustained growth. India's growth accelerated and has been particularly strong since 2003, averaging over 7.4% and up from an average of 3.8% per annum during the period 1991-2003. In line with good growth, per capita incomes more than doubled during the period 1990-2007 and poverty has declined.

India's recent economic dynamism has led many to compare it with China and to expect a similar dramatic insertion in world markets. However, India's development path thus far has been considerably different from China's, and it is also very different from the paths followed in earlier decades by Japan, Korea and the other Asian tigers.

Remarkably, the recent growth in India's trade has been led by services rather than manufacturing. Despite India's specialisation in skill- and capital intensive activities, its manufacturing trade is highly concentrated in low-technology goods and the share of high-technology manufactured goods in its total exports has barely changed since the mid-1990s, remaining under 5%, as compared to 30% for China. Services trade appears to have done much better and India has emerged as a global player in some services sectors such as information technology and business process outsourcing, as well as pharmaceuticals. Mode 4-related trade is also important, equalling over 90% of the value of cross-border services exports. While in the period 2000-2007 India managed to increase its shares in most partner countries' markets, these shares remain relatively small and are concentrated in a few low-technology products. In the services sector, too, India's cross-border services exports have achieved marginal gains in market shares in some OECD markets. In terms of Mode 4, half of total remittances received by India are sent by Indian expatriates in the US, representing almost 2% of India's GDP. FDI inflows have rapidly grown and shifted away from manufacturing towards services sectors, but remain negligible relative to what some other emerging economies received. In 2007, India attracted FDI at a rate amounting to 27% of the inflows into China, up from less than 10% in 2004.

Such a performance is due in no small part to the fact that, despite on-going reforms India remains a relatively closed economy both in absolute terms and relative to other developing countries, including China. Current protection levels on imports of both goods and services are still much higher when compared to other BRIICS. Intermediate inputs and capital goods remain expensive: the analysis shows that the overwhelming majority of India's imports (between 72 and 100%) are not imported for domestic consumption but, rather, are used as intermediate inputs by the domestic manufacturing and services sectors. The remaining trade barriers combine with domestic red tape, infrastructure bottlenecks and factor markets rigidities that restrict new entry and competition to keep India's competitiveness, particularly in agriculture and manufacturing, at relatively low levels. As a result, pro-competitive effects in the tradable sector - the main driver of growth in most emerging economies - are absent.

Indeed, the 2007 trade-weighted average tariffs of 62% in agriculture and close to 9% in manufacturing still imply a significant wedge between domestic and world prices, and act as an indirect tax on exports through imports. This puts many Indian producers that rely on imported inputs at a competitive disadvantage while shielding uncompetitive domestic producers from competition. In services, despite significant liberalisation steps, which in the sectors examined here far exceed India's GATS commitments, barriers remain high. Moreover, most of the services have for a long time been in the public domain and they suffer not only from high barriers to trade, but also from domestic constraints in terms of burdensome regulatory measures and state monopolies. At the same time, in an effort to offset the moderate to high taxation of intermediate products and barriers to services trade, India has opted to maintain and cultivate an extremely complex system of duty exemption schemes, special investment and

establishment rules and special economic zones (SEZs) that provide incentives particularly to exporting firms.

It is unclear whether export-related duty exemptions and preferential treatment of economic agents operating in the SEZs are the best way to promote economic efficiency and growth. While strong exports reflect the degree of an economy's competitiveness and the source of foreign exchange earnings, exporting firms do not operate in a vacuum, and discriminatory export-oriented policies may in some circumstances bring more harm than good. Maintaining moderately high import tariffs along with a system of export-oriented duty exemptions can be characterised as a system of "negative incentives" where a common denominator means costs of production that are higher than in other less protected emerging markets with the exception of those that are currently competitive or find the ways of using the SEZ system to their benefit. This is likely to have a negative impact on the Indian economy in general and perhaps even on exports since this activity is also carried out within an inefficient national economy. Indeed, as much as 75% of capital formation in the SEZs originates from domestic sources. This raises concerns about the policies in effect promoting exports through a dual system of taxing the national economy with inefficiencies and simultaneously promoting selective investments in exporting activities within SEZs.

Intuitively, an across-the-board import duty reduction can have more beneficial economy-wide and export effects than selective duty exemptions in export sectors. Indeed, an assessment of history, export performance, structure and fiscal implications as well as some recent compliance problems of Indian SEZs suggest that the net benefits generated annually by the SEZs may be rather small or even negative. It follows that India's government should remain vigilant and continue to reassess the economic benefits and implementation of this policy. As a recent OECD study emphasised, SEZs are always a suboptimal policy from an economic point of view. They can merely provide an interim solution to countries with poor business environments where bridging deficiencies at a national level is temporarily impossible. This may seem to be the case in India - a large, low income country with enormous population, poor infrastructure and fiscal problems - but it would be suboptimal to treat this as a sustainable, long-term solution that can substitute for reforms aimed at making business easier for everyone.

The analysis presented in this chapter clearly shows that India's pattern of specialisation is still affected by the pre-'90 policies; instead of reverting to a traditional pattern of specialisation in low skilled labour-intensive sectors, India continues to specialise in relatively skill-intensive activities reflecting the business difficulties faced by the manufacturing sector. While certain services perform well, their high reliance on skilled labour and capital can not address the Indian jobless growth problem.

It is thus evident that in order to realise its growth and trade potential, India needs to encourage the development of its manufacturing sector, with a particular emphasis—at this stage—on labour-intensive activities. Various dimensions of our analysis suggest that policy reforms would yield particular benefits by addressing the following inefficiencies:

1. small scale industry policies that prevent the realisation of economies of scale and productivity increases in the sector;
2. taxation of imported intermediate inputs and complexity of the import regime;
3. labour market rigidities that hinder inter-industry and interstate labour mobility and underpin misallocation of resources across industries and states;
4. infrastructure bottlenecks;
5. restrictive FDI policies; and
6. regulatory differences across states.

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Chapter 9

Indonesia

by

Margit Molnar and Molly Lesher

Introduction

The Asian Financial Crisis of 1997-98 interrupted Indonesia's robust economic growth and trade performance. Regaining its previous position, let alone expanding in world markets, now seems a challenge. Prior to the crisis, trade had long been an important driver of economic growth in Indonesia. On the demand side, net exports had been positively contributing to growth, while on the supply side, the expansion of production facilities for exports had boosted expansion of the entire economy. The crisis damaged structural relationships across the economy, and coupled with macroeconomic instability, firms were adversely affected, diminishing their ability to trade. Alongside these developments, several competitors emerged to conquer world markets, increasing the competitive pressure on Indonesian industries.

In this evolving global environment, it is crucial for Indonesia to identify strategies to remain competitive, including moving up the value chain, better exploiting comparative advantages and using production factors more efficiently. In a narrow sense, competitiveness refers to the price competitiveness of products in external markets, which in turn is largely determined by the costs of production, mark-ups and exchange rates. In the short term, price competitiveness can be enhanced by manipulating exchange rates or squeezing profit margins, but in the long term, it is the ability of the economy to efficiently employ factors of production that determines its competitiveness. The ability to be efficient is determined in part by the capacity of the economy to innovate, the smooth functioning of product, labour and financial markets, the quality of institutions and good governance.

As Indonesia recovered from the crisis, the economy underwent significant structural changes, and the role of trade policy evolved. It is clear that there is much scope to use trade to further enhance growth in Indonesia, and external competitiveness represents one of the major challenges for Indonesia to realise its trade potential. This paper analyses Indonesian trade policy following the 1997-98 Asian Financial Crisis, and identifies some key reforms needed to increase competitiveness and succeed in an increasingly globalised world. The paper first presents a broad snapshot of the Indonesian macroeconomy, followed by an analysis of the trade-related policies and select behind-the-border issues that impede competitiveness. In light of this trade policy environment, the next section discusses trade performance in recent years. The paper concludes with a brief summary of major findings.

Indonesia has largely recovered from the crisis, but challenges remain

Indonesia's recovery from the Asian Financial Crisis has continued in the face of several significant challenges, including the sharp depreciation of the rupiah in the wake of the crisis, a strong rise in global oil prices, increases in interest rates and inflation, and the debilitating 2004 tsunami. But it has yet to fully recover to pre-crisis levels of growth (Table 9.1), perhaps in part because of the severity of the crisis.

Table 9.1. Recent GDP growth has been strong, but is below pre-crisis levels (%)

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
7.2	7.0	6.5	6.5	7.5	8.2	7.8	4.7	-13.1	0.8	4.9	3.8	4.4	4.7	5.0	5.7	5.5	6.3

Source: IMF International Financial Statistics.

While the recovery in GDP growth has been continuous since 2000, it has not spread equally across sectors. In general, growth has been strongest in capital-intensive services sectors, with the labour-intensive primary and manufacturing sectors experiencing sluggish growth. In 2007, data from BPS (*Badan Pusat Statistik*, Statistics Indonesia) show that the primary sector accounted for the smallest share of GDP (22.5%), followed by manufacturing (27.4%) and services (50.1%). Slow growth in labour-intensive sectors has contributed to high unemployment, which at 10.3% in 2006 was more than double the 4.8% unemployment rate in 1997. Strong population growth has also hindered the ability of the economy to absorb new workers.[1]

Relatively strict labour market policies also appear to be at least partly to blame for high unemployment. The OECD recently extended its coverage of its index of the restrictiveness of employment protection legislation (EPL) to cover Indonesia (OECD, 2008).[2] The EPL index shows that Indonesia's overall score (3.3) is well above the OECD (2.1) and OECD emerging market (2.4) average, but below that of Portugal (4.2). Procedural inconveniences that limit the ability of firms to shed workers easily are the primary obstacles to a more flexible labour market.

In addition to unemployment, high oil prices represent another drag on the economy because the Indonesian government subsidises domestic fuel consumption (fuel subsidies were cut in May 2008, but still represent a heavy drain on government finances). High oil prices also contribute to inflation, which together with increases in global food prices has become a real worry for the Indonesian government. Data from BPS show that inflation ran at 6.6% in 2007, above Bank Indonesia's 4-6% target, with food and beverages showing the most marked increase (11.3%).

Post-crisis export performance has been disappointing…

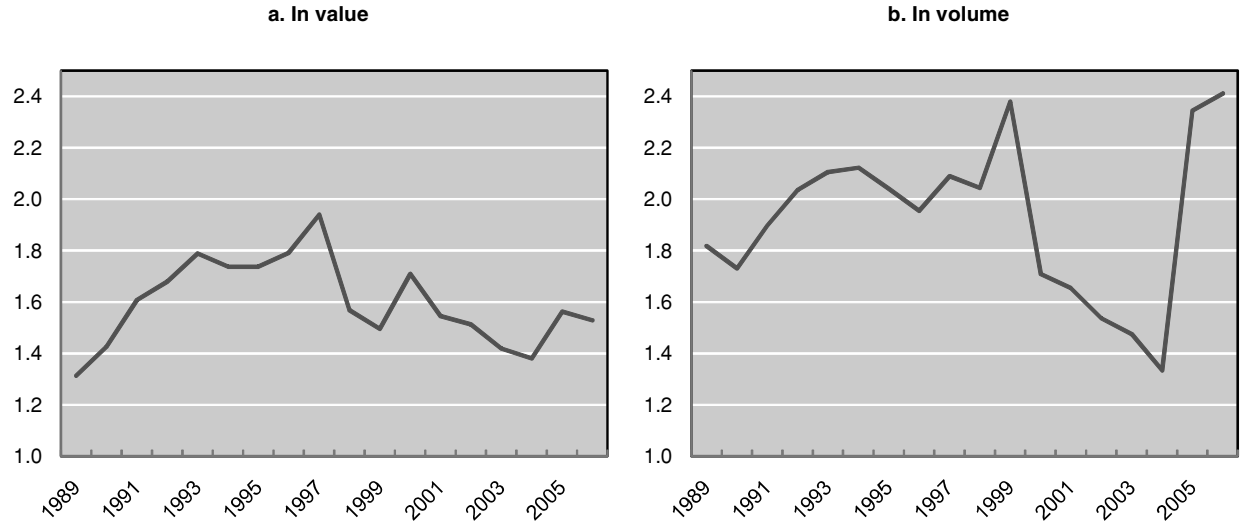
Indonesia's share in the world goods and services trade has not recovered to its pre-crisis level (Figure 9.1a). This is related to the sluggish growth in exports and imports following the crisis. Over the period 1994-2006, Indonesia's average annual growth rate of goods exports and imports was also below that of India, China, and other economies in the Association of Southeast Asian Nations (ASEAN), such as Singapore, Vietnam, and Thailand. In services, Indonesia ranks slightly higher in exports than imports, but growth rates clearly lag behind China's and India's, as well as many of its ASEAN neighbours.

1 The Indonesian government estimates that a growth rate of 6-7% is needed to accommodate new entrants in the labour market (WTO, 2007a).

2 The EPL methodology involves assessing employment protection across countries. The EPL index is on a 0-6 scale, with 0 indicating a minimal level of rigidity and 6 indicating the highest level of strictness. The figures quoted represent the average for regular employees (indefinite contracts) only. Data used to construct the indices are as of 2003 for all countries except Indonesia, which are as of 2007. Details on the methodology can be found in OECD (1999) and OECD (2004).

Figure 9.1. The trade share has not recovered but the volume share has surged recently, 1989-2005

Share of Indonesia's trade in goods and services in world trade (in %)



Source: *IMF International Financial Statistics.*

Trade as a share of GDP in Indonesia spiked markedly in 1998, the worst year of the crisis, resulting largely from the huge exchange rate depreciation and shrinking GDP. Since then, imports as a share of GDP have yet to return to pre-crisis levels (about 25% in 2007), while export shares have slightly exceeded pre-crisis levels, and in 2007 stood at about 29%. Indonesia's trade performance lags behind many of the other ASEAN economies, such as Malaysia, Vietnam, and Thailand, as well as Korea, which in 2007 were all above pre-crisis levels of trade as a share of GDP. Only the Philippines lags behind Indonesia, as neither export nor import shares have returned to pre-crisis levels.

Box 9.1. Indonesia and the Asian Financial Crisis (1997-1998)

With the collapse of the Thai baht in August 1997, investors began to reassess their tolerance for exchange rate risk in Asia, creating panic across the region. Indonesia was hit particularly hard. Austerity measures, inflation, very high interest rates, and a massive credit crunch brought the crisis from the financial sector to firms and households, causing investment to collapse and real wages and consumption to decline. In January 1998, the Indonesian rupiah was worth only 15% of its USD value only six months earlier, and by the end of the year, the rupiah had depreciated 50% in real terms, one of the largest currency devaluations in recent history (Blalock and Roy, 2007). Throughout 1998 – the worst year of the crisis – GDP contracted by 13%, investment fell by 45%, and poverty rose sharply.

Perhaps the most extraordinary characteristic of Indonesia's experience in the Asian Financial Crisis is the implosion of the banking sector. The corporate sector was saddled with debt, much of which turned bad as a result of the crisis, and firms had to renegotiate their debt financing or rationalise their operations to stay afloat (Molnar, 2003). This impacted banks, and by 1998 many were insolvent, leaving firms with little or no access to credit. Without a formal deposit insurance system, the government eventually had to provide a blanket guarantee of bank liabilities to avert the threat of a system-wide financial meltdown. This led to enormous losses on the order of 40-47% of GDP, almost all of which was paid for by government revenues (McLeod, 2004).

Box 9.1. Indonesia and the Asian Financial Crisis (1997-1998) (continued)

Indonesia's export performance during and immediately after the crisis has not been robust. For one, the international prices[3] of many of Indonesia's exports fell sharply in 1998 (on average, prices for primary products declined about 10%) and in 1999 (on average, international prices for manufactured products declined about 17%) (Brown and Magiera, 2000). Second, the combination of the appreciation of the rupiah after its dramatic depreciation in 1997 and inflation erased much of the competitive boost from the initial currency depreciation. And third, trade financing, the foundation on which the international trading system rests, was severely curtailed during the crisis.

Indonesia's trade performance, annual growth rates 1997-99 (in %)

	1997	1998	1999
Goods exports	12.2	-10.5	1.7
Goods imports	4.5	-30.9	-4.2
Services exports	5.2	-35.5	2.7
Services imports	9.7	-27.2	2.4

Source: IMF Balance of Payments Statistics.

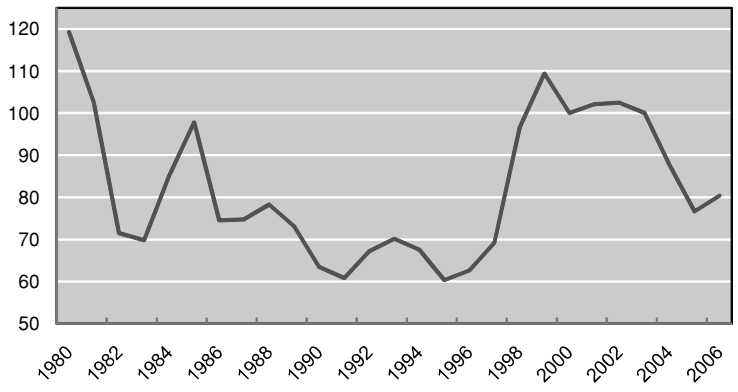
Because import and export contracts are forward looking, the crisis did not impact Indonesia's trade figures until 1998, when the growth rates of exports and imports of both goods and services declined significantly. Yet the overall figures mask large differences across sectors. In 1998, the primary sector suffered the most, with exports falling 10-11%. In 1999, however, it was the manufacturing sector that experienced significant declines of about 17% on average. In particular, consumer electronics, footwear and toy exporters were hit especially hard, whereas furniture, leather and travel goods exporters fared very well during and after the crisis. However, these areas of trade growth could not reverse the overall disappointing trend in trade performance since the crisis.

…amid declining terms of trade

Indonesia's shrinking share in world trade in goods and services masks some important trade price developments. A volume comparison suggests that shares are moving in more or less the same direction, but their movements are more volatile, Figure 9.1b. This volatility is attributable to Indonesia's terms of trade. Indonesia saw a very marked improvement in its terms of trade for goods during the pre- and crisis period, but since 1999, its terms of trade has been deteriorating, with the trough coming in 2005, Figure 9.2.

Figure 9.2. Terms of trade for goods have deteriorated for most of the post-crisis period

(Index 2000=100)



Source: *World Bank World Development Indicators*.

3 Brown and Magiera use a Laspeyres Index based on unit export values. They note that some of the underlying data used to construct the price indexes is unofficial, and thus the percent values quoted should not be interpreted strictly, but rather as an indication of the general trend in export prices during the crisis.

The deterioration in the merchandise terms of trade could be at least partly explained by the sharp rise in oil prices. Oil consumption has outstripped production in the 1990s and first half of the 2000s due in part to domestic fuel subsidies, which have resulted in fuel prices among the lowest in the world. Production has decreased as oil fields have matured and new investment has not been forthcoming.

Taken together, these data suggest that Indonesia's overall trade performance has not been as strong as many of its ASEAN and other Asian peers in the aftermath of the crisis. This could be in part due to the severity of the crisis in Indonesia, as well the structural problems that were either a direct result of the crisis or were exacerbated by policy responses made in its wake. In addition, in the years immediately preceding the crisis industrial policies to develop national champions resulted in excessive protection and hence decreased competitiveness of those industries. However, while overall trade performance has clearly been disappointing since the crisis, differences among sectors within the economy point to areas in which Indonesia can enhance its external competitiveness.

Important internal and external constraints have hindered Indonesia's ability to use trade as a tool to raise living standards. Some of these constraints are related to trade policies, while others bear directly on the costs associated with trading goods and services. The next section provides insight into the evolution of Indonesian trade policies focusing on post-crisis changes and other aspects of the trade policy environment that represent important barriers to realising Indonesia's trade potential.

Reforming the trade policy environment will improve trade performance

Trade liberalisation in Indonesia has progressed unevenly over time, often driven by world market developments. In the post-crisis era, deregulation has gathered momentum only recently. Several trade-facilitating measures have been announced as part of the policy package to improve the investment climate, which alongside infrastructure building and financial sector policy, represents one of the three major pillars of recent regulatory reforms.

The new investment law[4] provides more transparency regarding sectoral coverage, extends land use rights[5] and reduces administrative burdens. The new law also protects against expropriation except according to the due process of the law and attempts to more clearly separate the responsibilities of sub-national and national authorities, particularly with respect to their ability to impose trade taxes. Disparities in the treatment of foreign and domestic firms have also been narrowed.

In addition, as part of the rationalisation of trade-related procedures, a consolidation of ports handling international trade and the introduction of the single window for customs procedures are important measures aimed at accelerating the flow of goods. The number of ports handling exports and imports will be reduced from 141 to 25 to ensure more efficient clearing. The value-added tax is being revised to provide more room for VAT refunds on capital inputs used for export products. In addition, to stimulate trade through the movement of natural persons (*i.e.* Mode 4 trade), the government considers the placement and protection of migrant workers abroad a priority.[6] Developing bonded zones and fighting

4 The 2007 Investment Law, passed 29 March 2007, supersedes both the 1967 and 1968 Investment Laws.

5 Prior to the implementation of the new investment law, land titles were offered to foreign firms for relatively short durations (*e.g.* 20 years with the ability to extend for another equally short time period). Leases and extensions are now combined into periods of 95 years for agriculture and plantation investments; 80 years for construction on land purchased by the investor; and 70 years for the right to use land for any purpose.

6 The Ministry of Manpower and Transmigration recorded over 150 000 Indonesian workers abroad as of early 2008, mostly engaged in personal, construction and other services. About a third of these workers reside in Malaysia and another third in Saudi Arabia.

illegal trafficking (including increasing sanctions against smugglers) also feature prominently on the government's agenda.

Applied tariffs fall rapidly while newly erected non-tariff barriers proliferate

Indonesia has successfully liberalised tariffs, and now represents a relatively low-tariff country by developing-country standards. However, since 2001 new non-tariff barriers (NTBs) have emerged. This development may question the consistency of recent trade policy.

Average tariffs fall sharply but peaks remain

Indonesia's MFN applied tariffs have decreased sharply over the past decade and a half, with the simple average applied tariff falling by two-thirds between 1989 and 2006 (Figure 9.3 and Annex Table 9A.1) to 6.95%, a relatively low figure by both developing country and Southeast Asian standards. Notwithstanding the fall of the simple average applied tariff, its standard deviation has risen since 2004, indicating increased tariff dispersion and hence lower economic efficiency.[7] This increase in dispersion reflects an overall decrease in tariff rates combined with the maintenance of high rates on selected goods such as alcoholic beverages and motor vehicles. The tariff structure exhibits a number of tariff peaks.

The effective tariff rate of 1-2%[8] is well below the average MFN rate reflecting the lower Common Effective Preferential Tariff (CEPT) applied among the ASEAN countries. Averaging 2.7% in 2006, the CEPT ranged between 0-5%, resulting in duty-free imports of certain intermediate inputs in the ASEAN region.[9] The high percentage of bound tariff rates (93% in 2006) indicates predictability (WTO, 2007a). The fact that the overwhelming majority of tariffs are *ad valorem* makes the system more transparent than in many OECD countries. There are only a few non *ad valorem* tariffs, most notably those on rice and sugar.[10]

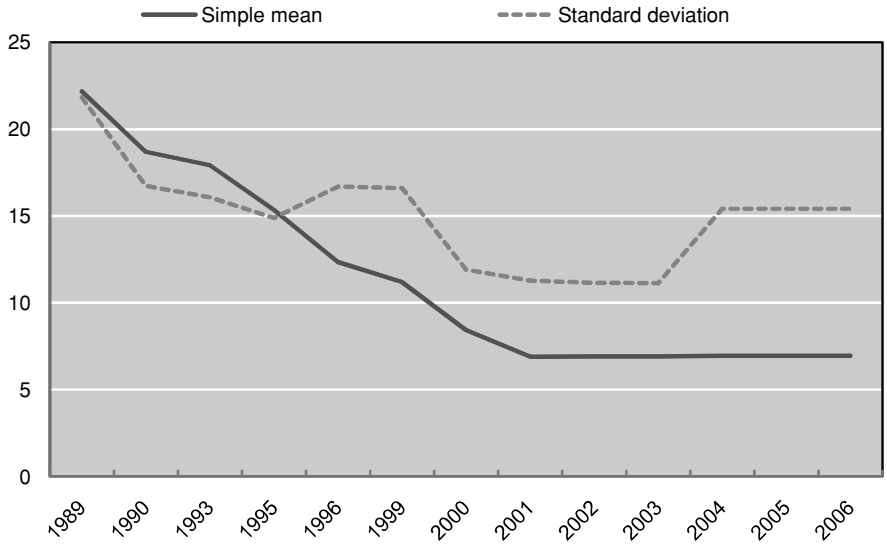
7 The tariff dispersion index calculated for 2006 is 6.81, a rather high figure compared to OECD countries, but not relative to other developing countries.

8 The effective tariff rate is calculated as the fraction of customs duties over import value. The reference year is 2005, the most recent year for which customs duty revenues are available.

9 There are no recent data readily available on the share of imports entering the country duty free, but a survey on Japanese companies (JETRO, 2007b) suggests that it may be much lower than in other countries in the region as almost half of Japanese companies operating in Indonesia do not make use of this facility.

10 Rice is subject to a tariff of Rp 450/kg and sugar to Rp 750/kg.

Figure 9.3. Indonesia's tariffs have fallen substantially but dispersion is widening



Source: *UN Trains*.

Indonesia's tariff structure cascades, which means that it exhibits higher rates for finished goods and lower rates for production inputs (Table 9.2). Under a cascading tariff structure, the resource allocation effects of the tariff structure on a given sector depend not only on the tariff rate applicable to that sector, but also on the tariffs on intermediate inputs used in that sector. This tariff structure is prevalent in most industries, but the degree of escalation is particularly apparent in the case of food, beverages and tobacco; textiles, garments and footwear; and wood and furniture, where tariffs on final goods are at least double the tariffs on inputs at the first stage of processing (WTO, 2007a).

Table 9.2. Tariffs are lower for inputs and higher for finished goods

	Capital goods	Consumer goods	Intermediate goods	Raw materials
1989	14.67	35.10	17.92	15.38
1990	14.12	29.05	14.17	14.91
1993	13.06	28.25	13.55	13.75
1995	10.78	24.39	11.85	10.96
1996	6.27	20.20	9.86	9.93
1999	5.90	18.58	8.72	8.72
2000	4.45	13.81	7.32	4.38
2001	3.67	10.99	6.02	4.24
2002	3.71	10.98	5.97	4.23
2003	3.70	10.96	5.98	4.23
2004	3.79	10.93	6.10	4.17
2005	3.79	10.93	6.10	4.17
2006	3.79	10.93	6.10	4.17

Source: UN Trains.

A medium-term tariff harmonisation programme was announced in 2004 that aims at moving toward a low and uniform tariff rate, a reduction in the number of tariff bands and the tariffication of most NTBs. The programme sets a tariff reduction schedule between 2004 and 2010. According to this schedule, 94% of tariff lines would have rates at or below 10% by 2010. The remaining 6% of tariff lines

are considered "sensitive products" and have an extended schedule to reduce the tariffs to 10% by 2020. A couple of years into the programme, it seems that the objectives will only partially be met.

These moves will certainly bring about efficiency gains related to lower costs of customs administration and increased transparency but they may adversely affect trade flows by shifting products from the zero tariff to the 5% tariff band. Given the low share of tariff revenue in total government revenue (4% in 2006) a reduction in all tariffs does not imply substantial revenue losses. Moreover, the reduction in the average tariff rate will reduce tariff dispersion only slightly, and the number of tariff bands will increase due to the creation of an 8% band.

Importantly, there is also a significant difference between bound and applied tariff rates in Indonesia. Since the 1990s, the spread between bound and applied tariffs has widened considerably, as tariff reduction programmes have focused primarily on applied rates. Indeed, in 2007 there was a 30 percentage point difference between the bound and applied simple average tariff rate. The difference between bound and applied rates is more pronounced for agriculture commodities than it is for manufacturing. Thus, the Indonesian government has considerable scope to swiftly increase tariff rates on particular products. Indeed, the government has recently made use of the tariff spread to raise import duties on key agriculture commodities.

Effective protection has substantially declined

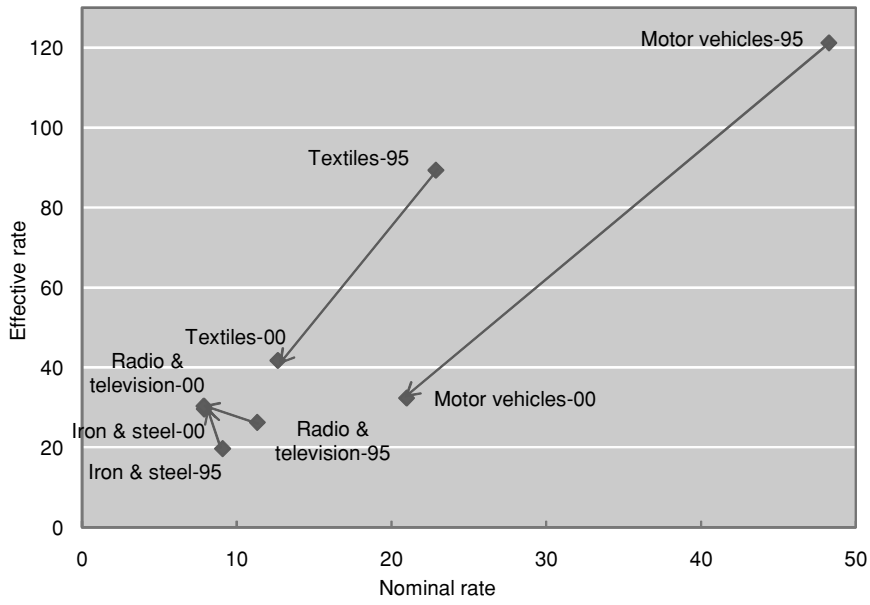
Effective protection[11] in Indonesia fell substantially between 1995 and 2000, Figure 9.4 and Annex Table 9A.2.

11 The effective rate of protection of industry *j* is computed by the following formula: $ERP_j = \frac{t_j - \sum \text{int}_{ij}\, t_i}{1 - \sum \text{int}_{ij}}$

Where *t* is the tariff rate, int_{ij} is the share of costs for inputs from industry *i* in the output of industry *j*. The effective rate of protection is calculated on some strong assumptions – such as the country is small in the world market (*i.e.* its supply curve for imports and demand curve for exports are infinitely elastic) and that all produced inputs are traded.

Figure 9.4. Effective protection varies considerably across sectors

Nominal and effective rates of protection, 1995 and 2000



Note: Textiles includes textiles, garments, leather and footwear (ISIC 17, 18 and 19); iron and steel is the sum of the sub-categories of ISIC 271 and 2731 under basic metals; radio and television also includes communication equipment (ISIC 32); and motor vehicles is category 34 under the ISIC Rev. 3 classification.

Source: Authors' calculations based on the *2007 OECD Input-Output Database*.

The overall reduction in ERP masks substantial differences across sectors. Sharp reductions in the effective protection are evident, for instance, in motor vehicles, textiles and garments. The motor vehicle sector used to be one of the selected industries under the national industrial programme. Hence, it was one of the most protected industries with an objective of developing a national car (called the Timor). Learning from this failed approach, the industry was swiftly liberalised. Effective protection increased in iron and steel industry and in the radio, television and communications equipment industry.

…though the number of non-tariff barriers has decreased, sectoral coverage remains high

The number of NTBs in Indonesia has been substantially reduced, from more than 1 000 in 1995 to around 350 in 2007 (Ministry of Trade, Indonesia). In 2007, NTBs in Indonesia covered 60 out of the 79 two-digit HS product categories (Table 9.3), greatly reducing the transparency of trade policies. A large number of NTBs in Indonesia concern agricultural products and chemicals, but there are also several important measures concerning electrical machinery and motor vehicles. Basri and Soesastro (2005) characterises the situation post-2001 as "creeping protectionism" when line ministries introduced a plethora of import licences. Some of these licences are so-called automatic licences (NPIK, *Nomor Pengeral Importir Khusus*), which are the most common and require only registration, while others aim at controlling the quantity imported (*e.g.* those for alcoholic beverages) or even restricting the importers to producers that use the commodity (*e.g.* salt) in their production process.

A lack of consistency and a single authority over trade policies has contributed to this proliferation of NTBs. While the Ministry of Finance sets tariffs, NTBs are under the authority of line ministries without consistent co-ordination or consideration given to their economy-wide impact. The increase in

NTBs following the 2001 'big bang' decentralisation is in sharp contrast to the government's commitment to reduce tariffs and may send contradictory signals to the outside world.

Table 9.3. Non-tariff measures are pernicious and wide-spread, 2007

		Number of NTMs
Quantity control measures	Licensing	69
	Prohibition	34
	Quota	4
Technical measures	Labeling	40
	Quality Standard.	38
	Technical Regulations	27
	Testing, inspection and quarantine requirements	8
	Marking	6
	Packaging	6
	Pre-shipment inspections	2
	Import License	1
	Other	5
Monopolistic measures	Single channel for imports-State trading administration	12
Para-tariff Measures	Additional taxes and charges	21
	Excise tax	7
Other	Automatic import licensing	70
	Prohibition for sensitive product category	2
	Import Control	1
Total		**353**
HS codes affected		**60**

Source: Authors' compilation based on data from the ASEAN Secretariat.

Trade-related structural weaknesses may hurt competitiveness

The major impediments to Indonesia's external competitiveness are of a structural nature. Estimates of the real effective exchange rate and other approaches, such as the macroeconomic balances and the external sustainability, suggest that while the rupiah may be slightly undervalued, overall the country's external competitiveness may be adequate, but the declining trend is worrisome (IMF, 2007). Structural impediments related to infrastructure bottlenecks, domestic trade barriers and restrictive product market regulation as well as stringent employment protection legislation and policy uncertainty are considered to be major factors that can potentially erode the competitiveness of Indonesian industries. Some of these practices, such as complex licensing procedures, have long existed in Indonesia, but have been aggravated by the 2001 decentralisation. Others have became apparent after the crisis, such as infrastructure bottlenecks, and are largely related to under spending during and after the crisis, or have emerged after the crisis as a result of new regulations, such as the increased protection of regular employees. This latter measure may in particular harm the competitiveness of industries, as it inhibits the employment of Indonesia's large pool of low-cost labour. Moreover, it contributes to high unemployment rates and informal activities.

Restrictions and uncertainty may deter foreign investment

Indonesia has endeavoured to create a favourable environment for foreign investment since the 1960s, although the environment has deteriorated from time to time. To exploit Indonesia's abundant natural resources, resource-seeking FDI flows to Indonesia have been relatively steady over the past decades. Japanese, Korean and other Asian firms, who constitute the majority of early entrants into manufacturing, often established production bases to serve the home market. Recently, however,

market-seeking FDI has gained importance. Indonesia's competitiveness has historically been driven in part by FDI. This is because multinational firms in Indonesia have generally been found to have higher productivity than domestic firms, and productivity increases have been transmitted to domestic firms via FDI-related productivity spillovers (Blomstrom and Sjoholm, 1999; Ramstetter and Takii, 2005).[12] Since the crisis, FDI has been particularly important given weak domestic investment.

While a major achievement of the new investment law is its streamlining of the investment process and increasing legal certainty, Indonesia's policies toward inward FDI remain restrictive by international standards (Table 9.4). Many businesses point out its overlap and contradiction with several existing laws. Overall, Indonesia's FDI restrictions appear to be more moderate than its peers' (India and China), but as one might expect, higher than in some OECD countries, such as Japan and Korea. Indonesia falls within the range of the OECD countries in some sectors, such as the distribution and financial services sectors, but it is four times as restrictive in others, such as hotel and restaurant services. Within Indonesia, business services is the most restricted sector analysed (0.45), and the distribution sector is the most open to FDI (0.08). Telecommunications services and transport services are also fairly restrictive in Indonesia, but this pattern also holds for Korea and China.

Table 9.4. FDI in Indonesia is more restricted than in the OECD, especially in some sectors

	Business service	Telecoms	Construction	Distribution	Finance	Hotels & Restaurant	Transport	Electricity	Manufacturing	Total
Japan	0.06	0.22	0.03	0.03	0.06	0.03	0.36	0.03	0.03	0.10
Korea	0.06	0.40	0.05	0.05	0.05	0.05	0.33	0.40	0.05	0.12
Indonesia	**0.45**	**0.35**	**0.28**	**0.08**	**0.18**	**0.28**	**0.38**	**0.18**	**0.18**	**0.26**
India	0.86	0.35	0.25	0.60	0.37	0.05	0.22	0.15	0.20	0.40
China	0.23	0.53	0.15	0.45	0.50	0.15	0.47	0.75	0.40	0.41
OECD average	0.15	0.18	0.07	0.07	0.15	0.07	0.29	0.32	0.07	0.14

Notes: Scores are on a 0-1 scale (0 represents completely open and 1 represents totally restrictive). Data cover regulations in Indonesia in 2007; data for all other countries presented are as of 2006.

Source: Reproduced from OECD (2008).

Relative remoteness from major markets is aggravated by insufficient transport links

Indonesia's sizeable geographical distance from the major centres of global economic activity is likely to cut into its competitive edge. The perception that distance drags on economic performance has been confirmed by a recent OECD study by Boulhol *et al.* (2008) (covering only OECD countries), which found that remoteness is likely to be associated with reduced economic performance. Geographical distance, however, can be "shortened" by establishing efficient transport links with major markets and domestic facilities to efficiently connect with them as well as by specialising in areas less sensitive to distance and by enhanced regional integration.

Trade costs related to inefficient transport links with major economic centres of the world constitute a drag on enhancing the competitiveness of Indonesian goods. Compared to other countries in the region, the maritime transport costs of a 20' container to Yokohama in Japan are substantially higher from Tanjung Priok in Indonesia, almost 50% higher than from Manila, 10% higher than from Singapore and 20% higher than from Malaysia (JETRO, 2007a). The costs that inefficient transport links impose are

12 The only major industry exceptions here are the apparel and footwear industries for which there are no statistically significant differences between the productivity of domestic and foreign firms (Ramstetter and Takii, 2005).

not only material costs but also manifest themselves in the form of extended transportation time. From Tanjung Priok, the closest port to Jakarta and one of Indonesia's major ports, it takes about 21 days for a ship to reach Europe or the west coast of the United States. Most ships heading for Europe or America travel via Singapore, which is about a 2-3 day trip from Tanjung Priok, but may be as long as 4-5 days if containers need to be reloaded onto another ship. Ships heading for Japan (Yokohama) often call at Shenzhen or Manila and the trip takes about 11 days, about 50% longer than from Malaysia, Singapore and Vietnam and about double the time from South China or the Philippines (JETRO, 2007a).

Infrastructure bottlenecks boost trade costs

In addition to inefficient international transport links, domestic infrastructure bottlenecks – primarily in the transportation and communications sectors – further boost trade costs. Port congestion, long clearing processes and high charges add to these costs. Congestion is partly due to port design and partly to long handling procedures. In Tanjung Priok, the proximity of the container depot to the port appears to contribute to congestion. In an attempt to rationalise the clearing process and handle exports and imports in a more efficient way, the government reduced the number of ports that are authorised to handle foreign trade from 141 to 25. This streamlining of foreign trade handling should make the process more transparent and efficient.

Distribution costs (including procurement, the intra-firm movement of goods and the distribution of manufactures) represent 14.1% of production costs. This is relatively high,[13] with terminal handling charges, trucking, documentation and service charges making up 90% of these costs. The largest single component is terminal handling charges, with a 48% share. In 2005, terminal charges were substantially reduced. The extent of the reduction was 37% for 20' containers and somewhat less for 40' containers. According to the Asia Shippers' Council, it helped to save tens of thousands of jobs in labour-intensive manufacturing industries where shipping costs are reducing comparative advantage the most. Nevertheless, terminal handling charges for 20'containers still remain high compared to those in Malaysia, Philippines, Singapore, Thailand or Vietnam.

Trucking costs, at 25% of distribution costs, are also high, especially in comparison with other countries in the region such as Malaysia or Thailand (JETRO, 2007a). A recently published survey on the per kilometre cost of moving goods by truck shows that it is 50% higher in Indonesia than the Asian average (Asia Foundation, 2008).[14] The largest component is not surprisingly fuel, but legal and illegal levies also make up a chunk roughly equal to the compensation of drivers. These levies comprise transit fees (46%), weigh stations fees (32%) and bribes to police and local groups for protection. At weigh stations, only overweight trucks are supposed to pay a fine (20% actually do), but given that the majority of trucks are overloaded, 84% of drivers pay bribes to avoid fines.

While the overall condition of trucks in Indonesia is poor, overloading and dilapidated roads also contribute to high trucking costs in Indonesia. A large proportion of trucks are imported second-hand and many of them are close to the end of their service life (of about 13 years, double that in some OECD countries), imposing considerable maintenance costs (Asia Foundation, 2008). Sizeable maintenance

13. For comparison, the same share is 8.4% in the United States and 4.9% in Japan (JETRO, 2007a).

14 The survey covers nine routes, from which four are in South Sulawesi province (Bulukumba-Makassar, Parepare-Makassar, Palopo-Parepare and Mamuju-Parepare), and one in North Sulawesi (Kotamobagu-Manado), Gorontalo (Marisa-Gorontalo), West Nusa Tengggara (Sumbawa Besar-Mataram), East Java (Malang-Surabaya) and North Sumatra (Rantau Parapat-Medan), each. A truck is defined as a vehicle with at least 6 wheels and the survey was conducted through questionnaires and interviews with drivers and shipping companies. About 27% of trucks were equipped with GPS and the data collected this way was entered into the RUCKS (Road User Costs Knowledge System) developed by the World Bank.

costs, coupled with poor quality roads, encourage overloading (which in turn implies lower speed). Weigh stations, designed to serve the public policy goals of road safety and the preservation of road quality by imposing fines on overloaded trucks, are governed by regulations of the Ministry of Transportation,[15] but are operated by provincial governments. Closer oversight by the Ministry of Transportation would be needed to stop the practice of abusing these facilities by sub-national governments. This could curb illegal fees and bribes and therefore reduce transportation costs. There is much less room for the reduction of regular operating costs as the trucking market appears to be competitive, albeit enjoying fuel subsidies. Curbing levies on truck transport would also provide room for the phasing out of fuel subsidies without triggering too much resistance by industry associations.[16]

In addition to increased infrastructure investment – ideally financed by the public and private sectors – infrastructure maintenance should also be secured. The Indonesian government has earmarked large increases in the 2008 budget for the Ministry of Public Works (38%) and the Ministry of Transport (60%), the two major agencies in charge of infrastructure development and maintenance. Recent regulations have paved the way for private-sector participation,[17] though the effect is not yet evident. Once public infrastructure spending rises well above the 2007 share of 3.4% of GDP (which is below the pre-crisis levels of 5-6%) and private sector investment picks up, it is necessary to ensure that these investments are well maintained. The maintenance of national and provincial roads seems less of an issue as it is financed by earmarked transfers, but that of district and city roads are covered by block transfers, which are based on population and are not related to the area. This limits lower-level governments' ability to maintain infrastructure (World Bank, 2006).

A recent regulation paves the way for private participation in the energy sector. The telecommunications sector is also undergoing liberalisation: the foreign equity holding limit of 75% has just been reduced to 49% and shares of the two major players, Indosat and Telkom, are being sold. As in other parts of the economy, the telecommunications sector is also undercapitalised in infrastructure.

…so do behind-the-border regulations

Domestic regulations, especially those related to product and labour markets, constitute an additional drag on the competitiveness of Indonesian industries. The PMR (product market regulation) index of the OECD indicates that overall product market regulation in Indonesia (2.1) is more restrictive than the average OECD country (1.5), including OECD emerging markets (2.0) (OECD, 2008).[18] The high score is mainly related to the scope and size of the public sector, both of which are well above most

15 In addition to checking weights by weigh stations, the Roadworthiness Test Centre – also governed by regulations of the Ministry of Transportation – half-yearly checks eight areas including the tires, lamps, brakes, engine, windows and emissions. Nevertheless, due to implementation problems related to understaffing and temporary replacement of defected parts to pass the test, many vehicles with defects remain in circulation.

16 In April 2008, the Organisation of Land Transportation Operators (Organda) rejected the government's plan to raise subsidised fuel prices by over 28% to bring them more in line with world oil prices (Jakarta Post, 30 April 2008). Nevertheless, the government implemented a substantial reduction of fuel subsidies shortly thereafter.

17 These regulations include the demonopolisation of toll roads in 2005 (GR No. 15/2005), the Road Law (No. 38/2004), which transfers the power to determine toll tariffs to the Minister of Transportation and the Railways Law (No. 23/2007), which stipulates that railways can be owned and operated by private entities. In addition, draft new laws on air, sea and land transportation have been submitted to parliament.

18 The index for Indonesia is calculated for 2007, while for OECD countries the most recent available update is for 2003.

OECD countries with the exceptions of France, Norway, Poland and Turkey. The major barriers to entrepreneurship appear to be legal barriers that restrict entry. It should be noted that the effective level of restrictions in Indonesia may be higher than the indicator suggests as implementation is a much more serious problem than in OECD countries.

Similar to the OECD PMR, the World Bank's Doing Business indicators highlight compliance difficulties in Indonesia. In 2007, Indonesia ranked 123 out of 178 economies in terms of the ease with which a company can do business in the country. Moreover, Indonesia does not compare favourably to its Asian neighbours; it ranks only above the Philippines (Annex Table 9A.5). This overall indicator suggests that there is scope for improving the business climate in Indonesia to boost its competitiveness.

While the overall indicator suggests important general trends, it is necessary to disaggregate the overall indicator to identify the specific areas of the Indonesian economy that are most burdensome for business. It appears that the costs associated with starting a business, importing and enforcing contracts are relatively high in Indonesia, as is the amount of time it takes to import (27 days). Indonesia also ranks last in three out of the four employment categories included in Annex Table 9A.5, echoing the OECD EPL indicator that suggests that restrictive labour regulations play a role in creating a more difficult environment for business.

Indeed, the high OECD EPL score is attributable mainly to the long notification period and procedural inconveniences, both of which are scored higher than in any OECD country. While the direct material costs of firing (such as severance pay or compensation) may not be high compared to OECD standards, it is the long and cumbersome procedures associated with notifying an underperforming employee that make firing costly and therefore deter firms to take in new people. This leads to inefficiencies related to low turnover in labour markets and long-term unemployment. Such stringent EPL regulations may erode competitiveness of low-skilled labour-intensive manufacturing industries such as garments, even though unit labour costs may be internationally competitive.

The complexity of business licensing practices constitutes a major barrier to firms' creation and performance and therefore to boosting long-term growth in Indonesia. Traditionally, to start a new company of limited liability, a deed of establishment from a notary, tax identification registration and approval from the Ministry of Justice are needed (Asia Foundation, 2007a and 2007b). After company formation, several permits related to the physical location of the company are needed. These include the business location, construction and nuisance permits.[19] Then sectoral licences such as trade licenses and industry licenses need to be obtained.[20] After all the above licenses are collected and the company is in operation, the business registration process follows.

Depending on the field of company activity, product-specific and activity-specific licences such as export licenses, licenses to produce commodities or engage in transportation, may also be needed. Since the large-scale decentralisation in 2001, firms must also obtain a wide range of licences needed to engage in basically any business activity from several different levels of government. The time spent on obtaining these licenses and their cost is well above the OECD average and peers like the Philippines or Thailand. High license costs contribute to informal business activity across the economy.

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19 In addition to these permits, for large firms with sizeable land requirements in mining, forestry, plantation and real estate as well as for firms in the telecommunications sectors, a permission-in-principle permit (which amounts to a land concession) is needed beforehand.

20 The trading license is an entry condition to trading activities and is often required to obtain bank loans and participate in government tenders. Industry licenses are also required for small and medium-size companies to be able to engage in industrial activities.

The experience with one-stop shops has been positive but will not bring about the desired efficiency gains without simplification of the licensing structure. By the end of 2007, more than half of the over 460 cities and districts had one-stop shops for business registration, but their performance varies across the country (Asia Foundation, 2007a and 2007b). The extension of one-stop shops for the whole country, as envisaged in a ministerial decree, will substantially reduce the costs of business licences. Given the complexity of licences, however, simplification is needed to realise further efficiency gains.

Interregional trade barriers represent another domestic regulatory barrier, and they became widespread in Indonesia following the 'big bang' decentralisation in 2001. Typically, interregional trade levies tend to be more widespread in remote regions, far away from central monitoring, in resource-rich regions and in poor regions to make up for revenue shortfalls. In an attempt to curb the application of such levies, a 'positive list' of permitted taxes and charges was issued for local governments in 2006. A lack of rigorous handling of the issue[21] has meant that cross-country commerce remains impeded.

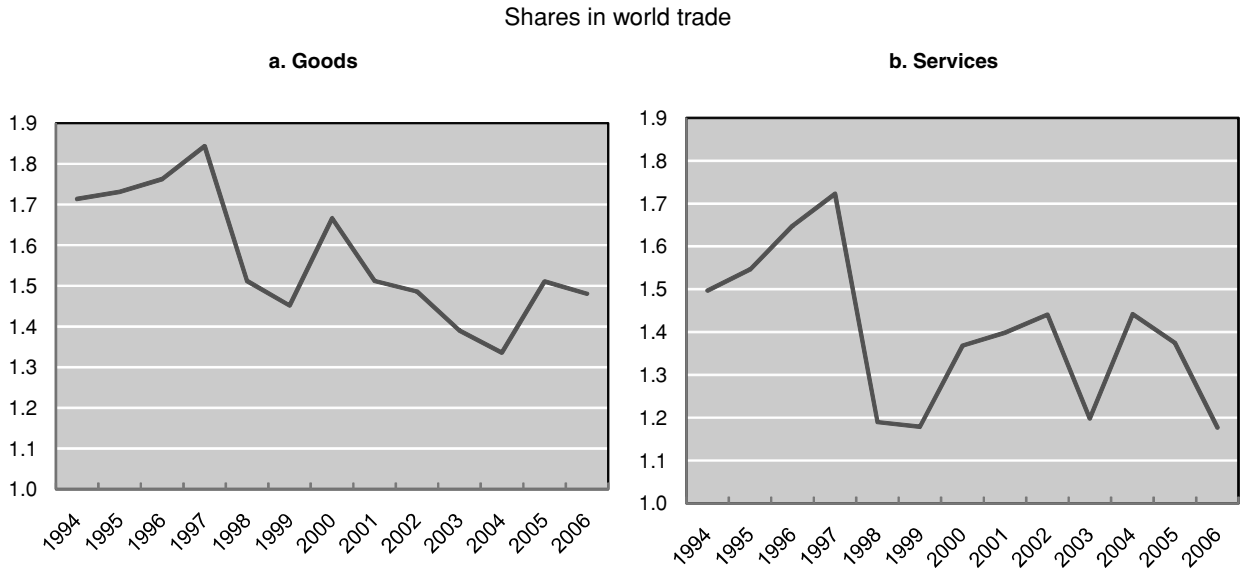
Trade performance has suffered from policy failures and incoherence

Trade policies have an important bearing on the formation of domestic prices and hence on the decision to produce or invest. Industries that are protected by tariffs, quantitative restrictions or subsidies do not face import competition, and therefore tend to orient their production toward the domestic market. Producing for a protected market, in turn, will reduce pressure to upgrade production or increase efficiency, resulting in a loss of competitiveness. The lack of coherence, both in the domestic (*i.e.* with other policies that determine competitiveness) and in the international dimension (*e.g.* consistency with foreign direct investment policies) may send the wrong signal about the government's commitment to trade reforms (Drysdale and Findlay, 2006).

Trade performance in Indonesia has not recovered to its pre-crisis levels, even though the economy is increasingly showing signs of full recovery. Trade seems to have decoupled from growth of the real economy and the major challenge is how to realise the country's trade potential. World market shares in both goods and services are lagging behind pre-crisis levels (Figure 9.5). Services trade performance has in particular been muted, registering a sharp drop in 2006, the most recent year available.

[21] The Ministry of Finance and the Ministry of Home Affairs undertake monitoring activities and recommend the abolition of illicit levies, but there has not been any record on the effect of such notifications (Bird *et al.*, 2007).

Figure 9.5. Goods and services trade performance has been subdued



Source: *IMF International Financial Statistics*.

Energy still dominates trade patterns

Indonesia's trade pattern in goods is dominated by energy (Figure 9.6). In 2006, energy-related products[22] accounted for 29% of exports and 37% of imports. Manufacturing also plays an important role in the pattern of goods trade. On the import side, for instance, machinery and equipment[23] is the second largest import category at 18.5% of total imports. And on the export side, textiles, leather and footwear[24] (11%) and processed foods, beverages and tobacco[25] (10%) represent important export sectors.

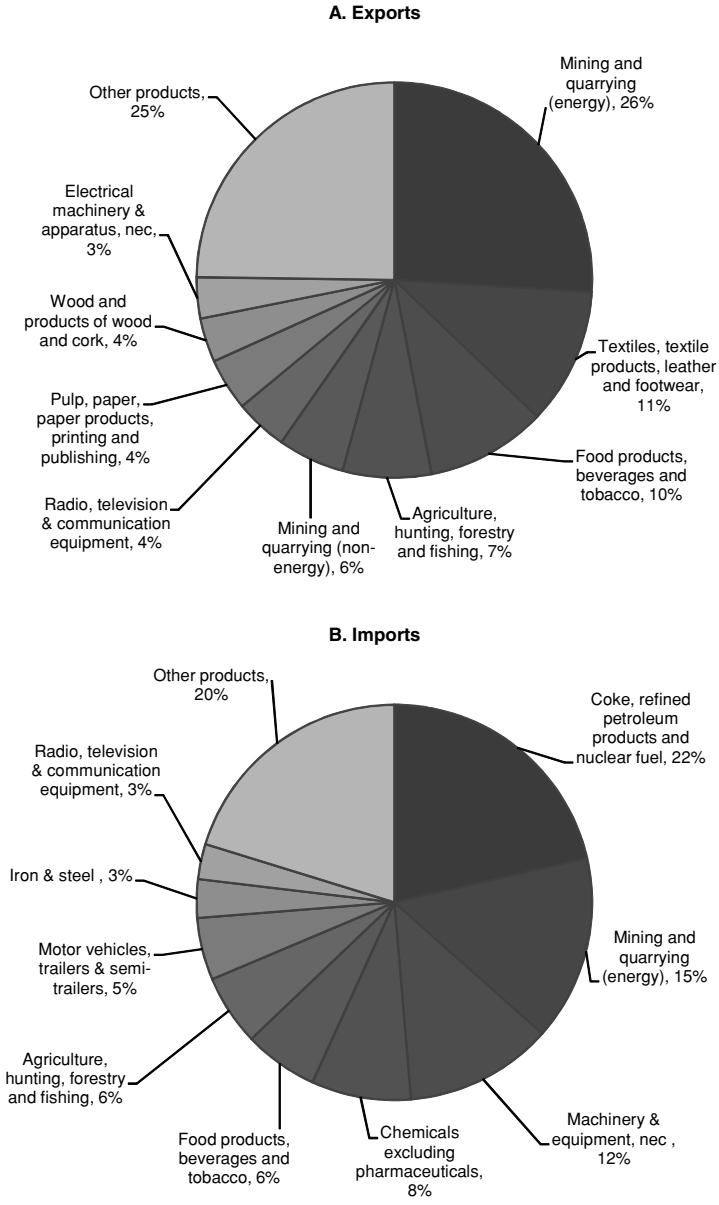
22 Energy-related products are defined as energy-related mining as well as coke, refined petroleum products and nuclear fuel quarrying (ISIC Rev. 3 codes 10, 11, 12, and 23).

23 Machinery and equipment is defined as machinery and equipment; office accounting and computing machinery; radio, television and communication equipment; and electrical machinery and apparatus (ISIC Rev. 3 codes 29, 30, 31 and 32).

24 Textiles, leather and footwear (ISIC Rev. 3 codes 17, 18, and 19).

25 Processed food, beverages and tobacco (ISIC Rev. 3 codes 15 and 16).

Figure 9.6. Indonesia's key exports and imports are energy related, 2006



Source: *UN Comtrade.*

At a more detailed level of disaggregation, the trade data underscore important changes that have occurred in the Indonesian economy over the past twelve years. The non-agriculture primary sector clearly dominated Indonesia's exports in 2007. In 1995, three out of the top ten exports were agriculture-related (shrimps and prawns, coffee and crude palm oil), whereas in 2007 only palm oil remained in the top ten (Table 9.5). Moreover, sports footwear fell out of the top ten ranking in 2007, leaving no manufacturing products not directly related to energy and non-energy-related mining (oil, coal, rubber, copper, nickel and tin).

Table 9.5. Top 10 goods exports are increasingly natural resource related, 1995 and 2007

In millions of USD and annual ranking

HS 6 digit code		1995	Ranking in 2007	HS 6 digit code		2007	Ranking in 1995
Total	**Total Trade**	**45 418**		**Total**	**Total Trade**	**114 101**	
270900	Petroleum oils and oils obtained. from bituminous minerals	5 146	1	270900	Petroleum oils and oils obtained. from bituminous minerals	9 226	1
441211	Plywood at least one outer ply tropical wood	2 684	15	270112	Bituminous coal, not agglomerated	5 151	7
400122	Technically specified natural rubber	1 821	3	400122	Technically specified natural rubber	4 296	3
260300	Copper ores and concentrates	1 537	4	260300	Copper ores and concentrates	4 213	4
640319	Sports footwear, with rubber, plastics or leather	1 001	16	151190	Palm oil, refined but not chemically modified	4 130	36
030613	Frozen shrimps and prawns	875	18	151110	Crude palm oil	3 739	9
270112	Bituminous coal, not agglomerated	867	2	750110	Nickel mattes	2 347	21
090111	Coffee, not roasted or decaffeinated	596	24	270119	Other coal, not agglomerated	1 497	60
151110	Crude palm oil	590	6	740311	Copper cathodes and sections of cathodes	1 153	2 612
441212	Plywood with >=1 outer ply of nonconiferous wood	418	2 149	800110	Tin not alloyed unwrought	1 011	22

Source: *UN Comtrade.*

While these broad trends in export values show important trade shifts, the relative ranking of particular products also points to interesting trends. The most dramatic change in exports of a particular product in the top 10 was copper cathodes,[26] which moved from the 2 612nd most exported product in 1995 to 9th in 2007, a change in ranking of 28 922%. Moving in the opposite direction, but equally as remarkable, was the move of plywood with one or more outer ply of nonconiferous wood, which moved from 10th place in 1995 to 2 149th place in 2007. Plywood with at least one ply of tropical wood also fell out of the top 10 in 2007 (it ranked 2nd in 1995).

Indonesia lags behind its peers in developing high-technology export sectors

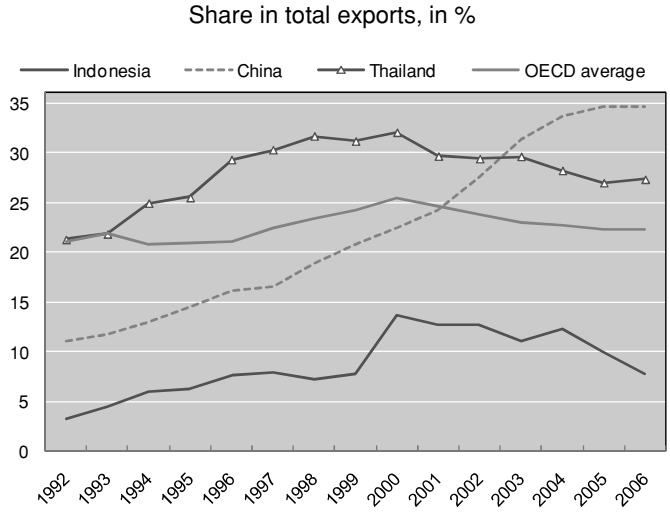
High technology sectors contribute to the economy by increasing the productivity of labour and capital, and they can play an important role in moving up the value chain. Figure 9.7 shows that while Indonesia experienced an increase in its high technology exports as a share of total goods exports in the 1990s, since then that share has steadily declined.

Indonesia's exports of high technology products have consistently lagged behind those of its ASEAN neighbours in the period analysed, as well as China's and Korea's. In 2006, Malaysia, Singapore, Thailand, China, and Korea all recorded stronger high technology export shares than Indonesia. Only India posted a share lower than Indonesia's (4.9% in 2006). However, Indonesia has also consistently exported a greater share of high technology exports than the average low- and middle-income Asian country.

It appears that foreign multinational enterprises export a large majority of the high technology exports from Malaysia, the Philippines, Singapore, Thailand and China in particular, which could explain in part why Indonesian policymakers have made improving the investment climate a priority (Seyoum, 2005). Indonesia's high technology sectors suffer from a lack of infrastructure support and a shortage of technical skills. Indeed, technology is often imported through joint ventures.

26 Copper cathodes are used in wire rods, billets, cakes or ingots for use in electrical wiring and brass products, among others.

Figure 9.7. High technology exports are lagging behind peers



Note: The high technology sector includes ISIC Rev. 3 codes 30, 32, 33, 353 and 2423 pursuant to the OECD high technology definition.
Source: UN Comtrade.

Comparative advantages are shifting

Measures of revealed comparative advantage (RCA),[27] which are useful in assessing export performance, suggest that the past two decades have brought about substantial shifts in the pattern of comparative advantages. In the past 10 years, RCA indexes have been increasing in the transport, metal and chemical goods sectors (Figure 9.8). In addition, between 1998 and 2007, Indonesia developed a comparative advantage in five goods sectors: chemicals, pharmaceuticals, electrical machinery, motor vehicles, and railroad and transport equipment. In 2007, the paper and printing sector registered the highest RCA index (2.1), followed by the building and repairing of ships sector (1.9) and the wood products sector (1.9) (Annex Table 9A.3).

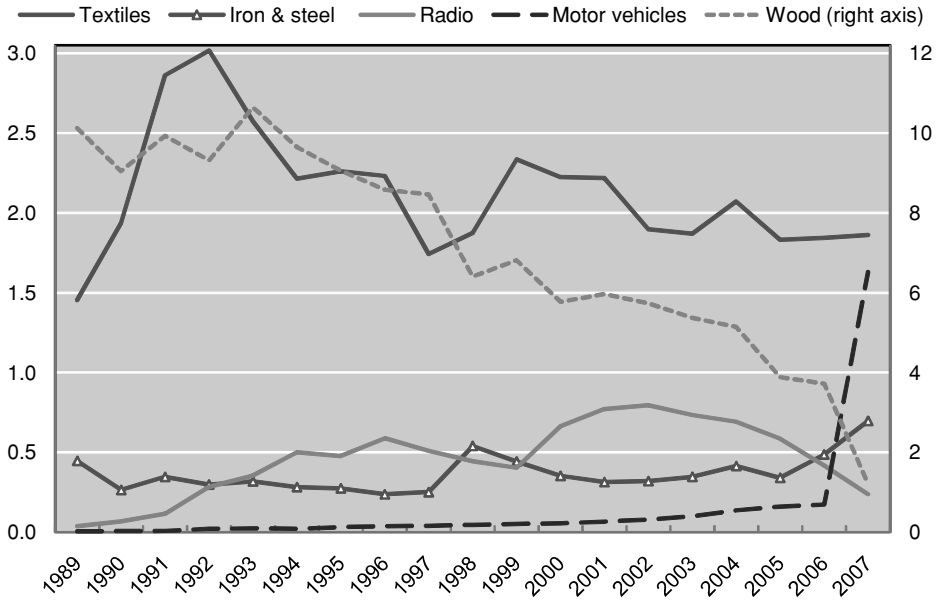
In the same ten-year period, Indonesia experienced decreasing RCA indexes in the primary, textile, energy-related, and high technology sectors. Moreover, from 1989 to 2007, RCA indexes fell dramatically in the energy-related mining and quarrying sectors (from 14.2 to 1.6) and the wood products sector (from 10.1 to 1.9), a shift related to structural reforms implemented in the mid-1980s. One of the most striking aspects of the RCA indexes presented is that values for high technology sectors[28] are all well below 1 with the exception of the pharmaceuticals sector (1.5, with average annual growth of 17.9% during the period 1998-2007). Average annual growth values in the last ten years are negative for the high technology equipment and machinery sectors but positive for the medical, precision and optical instruments sector, which posted a growth rate of about 8.7%.

27 The RCA index of country i for product j is calculated as: $RCA_{ij} = (x_{ij}/X_{it}) / (x_{wj}/X_{wt})$, where x_{ij} and x_{wj} are the values of country i's exports of product j and world exports of product j and where X_{it} and X_{wt} refer to the country's total exports and world total exports.

28 High technology sectors are defined as ISIC Rev. 3 codes 30, 32, 33, 2423 and 353.

Figure 9.8. Comparative advantages have been shifting

RCA indices for selected industries



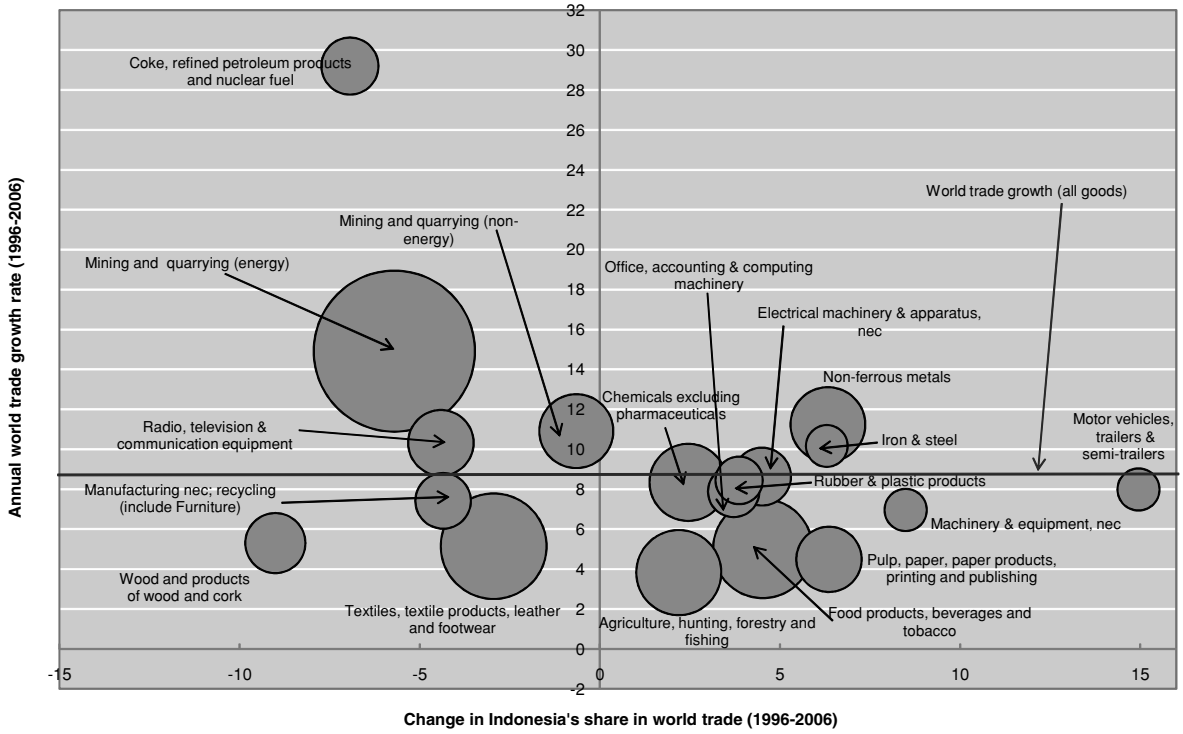
Note: Index value of above 1 indicates comparative advantage and below 1 comparative disadvantage.
Source: Authors' calculations based on UN Comtrade.

…with emerging patterns of superior performers and laggards

Dynamic analysis of export performance for goods using a quadrant approach[29] shows that iron and steel, as well as non-ferrous metal products, are firmly in the champions corner, suggesting that these sectors have been able to remain globally competitive in the world market over 1996-2006 (Figure 9.9). On the other hand, mining and quarrying, coke and refined petroleum products and radio, television and communication equipment rest in the underachievers area. This is particularly disappointing as the "bubbles" are relatively large, showing that trade in mining products in particular represents an important share of Indonesia's overall exports. This is in part reflective of the aging infrastructure in Indonesia in these energy-related sectors.

29 In this approach, the horizontal axis represents the change in Indonesia's world market share for a particular product, and the vertical axis represents world trade growth of that product. Using this methodology, the top right-hand quadrant represents products in which Indonesia is increasing its market share as world trade growth is rising ("champions"). The top left-hand quadrant shows growth products in which Indonesia is losing market share ("underachievers"), while the bottom left-hand quadrant characterises products in which world trade growth is declining in tandem with Indonesia's share in world trade ("losers"). Finally, the bottom right-hand quadrant represents products in which Indonesia's market share is increasing even while world trade growth is declining ("achievers in adversity").

Figure 9.9. Indonesia has been losing champions, 1996-2006



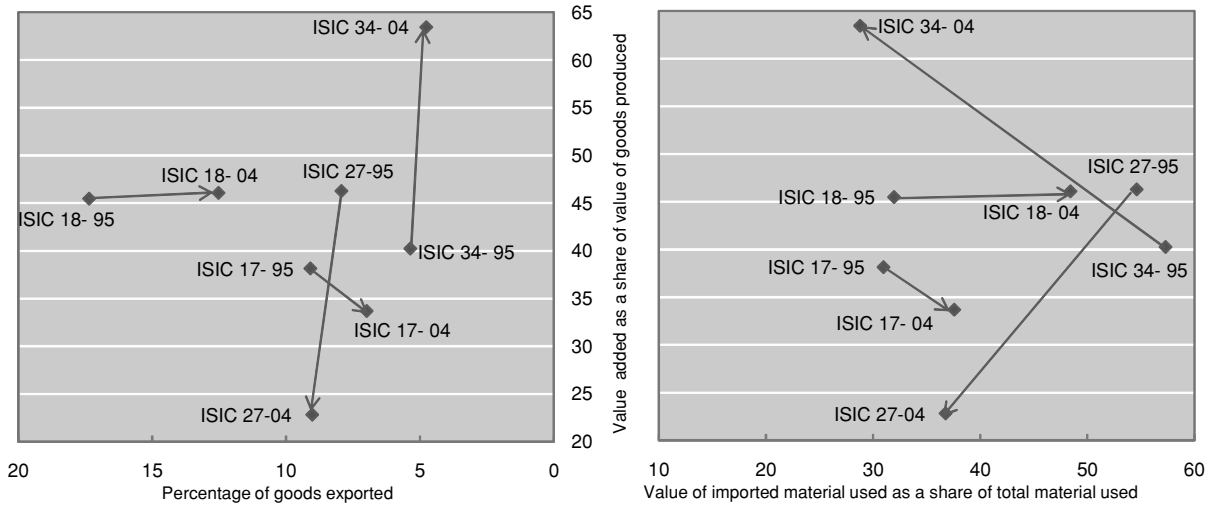
Source: UN Comtrade.

Several of the high technology sectors (chemicals and office, computing and accounting machinery) can be found clustered on the right-hand side of the figure very near the average world growth rate of all traded goods. Food, beverage and tobacco products, which represent one of the top export sectors, are found on the bottom right-hand side of the figure, suggesting that this is one sector that has gained world market share even as world trade in these products has declined. The paper and publishing, machinery and equipment, and primary sectors also fall into this area. The most undesirable corner of the figure is the bottom left-hand side, which presents sectors that are losing market share in declining sectors. Textiles, leather and footwear as well as wood products can be found here, suggesting that Indonesia may need to increase competitiveness in niche markets in these sectors to improve export performance.

The emergence of Indonesia's motor vehicle industry is one of the success stories related to rapid liberalisation. With a long record of policy failures related to infant industry protection, the sector is now showing increasing signs of competitiveness. It is still a small, but the fastest growing, export sector (Figure 9.9). Effective protection of the industry has fallen substantially between 1995 and 2000 (Figure 9.4) and an increasing share of inputs is sourced domestically, resulting in a domestic value-added share of nearly 64% in 2004, one of the highest (Figure 9.10). In addition, the increase in the domestic value-added share is the largest, from 40% in 1995. The motor vehicles industry is one of the few that has regained its pre-crisis level share of exports in production.

Figure 9.10. Changing patterns of value added, exports and imported intermediate inputs, 1994 and 2004

Selected industries (in %)



Note: ISIC Rev. 3 17 (textiles), 18 (garments), 27 (iron and steel) and 34 (motor vehicles).
Source: Authors' calculations based on the Indonesian manufacturing census.

Indonesian products that had successfully conquered world markets in the 1980s and early 1990s were crowded out of many markets during the crisis and have not regained their pre-crisis positions yet. The loss has been especially large in wood and wood products (almost 10% over the past 10 years) and in textiles, garments, leather and shoes (2-3% over 1997-2007), where Indonesia has traditionally had comparative advantage. The evolution of textile and garment exports is of particular interest in light of recent global changes in the sector (see Molnar and Kowalski, 2008). Exporters in this sector have adopted specialisation strategies (in terms of products and markets) and cut costs to maintain their positions, but these policies could not prevent losses in market shares and declines in revealed comparative advantages.

Indonesia seems to have strong positions in some products and markets, but in the long term it needs to further advance along the value chain and better exploit its endowments. The concentration in some product categories and the consolidation of markets have helped Indonesia to weather the phase out of the textile and garment quotas under Multifibre Arrangement (MFA) in 2005, for example. But to remain competitive, it cannot lag behind other exporters in upgrading its technologies in a variety of sectors. In the textile and garment sector, for instance, Indonesia's well-established vertically integrated industrial structure and abundant labour pool provide ample room to expand medium- to high-quality garment production.

Productivity developments differ across sectors, with faster growth in less protected ones

Recent productivity estimates suggest that rapid growth was experienced by the coke and refined petroleum/nuclear fuel industry, rubber products, radio and telecommunications equipment, motor vehicles, other transport equipment, printing, machinery and equipment, leather and paper industries between 2000-05 (Annex Table 9A.8). Productivity growth was flat in food and beverages, garments, chemicals and non-metallic minerals, while a drop is observed in textiles, basic metals, fabricated metals, wood, electronics and office machinery. These findings are robust to different specifications (for details of the estimation, see Molnar and Lesher, 2008), though the total factor productivity growth rates slightly

differ according to methodology owing to different estimated coefficients on the inputs of the production function.

Econometric analyses confirm that higher levels of productivity are associated with lower levels of protection and suggest that in general, smaller and foreign firms tend to be more productive (Molnar and Lesher, 2008). A large part of productivity is explained by previous period productivity, indicating high level of persistence. Less productive firms tend to have more rapid productivity growth and so do foreign, larger and less protected firms. Imports appear to boost productivity, while such effect by exports is not significant. This is in line with the self-selection hypothesis, where more productive producers "self-select" to become exporters and it is not export competition that drives productivity, but rather import competition. For this reason, further liberalisation of tariffs, in particular the reduction of still high effective protection in several industries may offer a scope for further productivity gain.

ASEAN and Asian economies are the most important trading partners

Asian, and in particular ASEAN, economies have become increasingly important export destinations. In 2006, nine (three) out of the top ten export destinations were Asian (ASEAN) economies: Japan (21%), Singapore (9%), China (9%), Korea (7%), Malaysia (4%), India (4%), Thailand (3%) and Australia (3%). This pattern has evolved in the past ten years, with a greater number of Asian economies entering the top ten, and the importance of certain countries outside of Asia, such as the Netherlands and the United States, declining.

Table 9.6. Top 10 destinations of goods exports of Indonesia in 1997 and 2007

In billions of USD

	1997	Ranking in 2007		2007	Ranking in 1997
Japan	12,485	1	Japan	23,633	1
United States	7,154	2	United States	11,644	2
Singapore	5,468	3	Singapore	10,502	3
Korea	3,462	5	China	9,676	5
China	2,229	4	Korea	7,583	4
Netherlands	1,842	10	Malaysia	5,096	11
Chinese Taipei	1,797	11	India	4,944	19
Hong Kong, China	1,785	15	Australia	3,395	9
Australia	1,517	8	Thailand	3,054	14
Germany	1,466	12	Netherlands	2,749	6

Source: UN Comtrade.

Exports to Japan, Indonesia's largest market, are concentrated in energy and mining products (such as oil, basic metals, coke, and coal). While these products have always been important export products to Japan, they have become more dominant in the last ten years, with manufactured wood and food and beverage goods losing importance. Almost across the board, metal-related exports have become more important for all of Indonesia's top 10 trading partners, while textiles and wood products have declined.

The origin of imports has changed considerably over the last ten years. Singapore has replaced Japan as the largest single origin of imports, with coke, chemicals, equipment and metals as the most important import products. Other ASEAN countries have become increasingly dominant. Thailand and Malaysia increased their shares of Indonesia's total import bill from 2% in 1997 to 6% and 9%, respectively, in 2007. China has also increased its share, moving from 4% to 11% in the ten-year period

analysed. With the exception of Australia, OECD countries such as Germany, the United Kingdom and the United States have lost import shares during this time. Across countries, imports of chemical products have declined, while imports of machinery and equipment have gained ground.

Table 9.7. Top 10 origins of goods imports of Indonesia in 1997 and 2007

In billions of USD

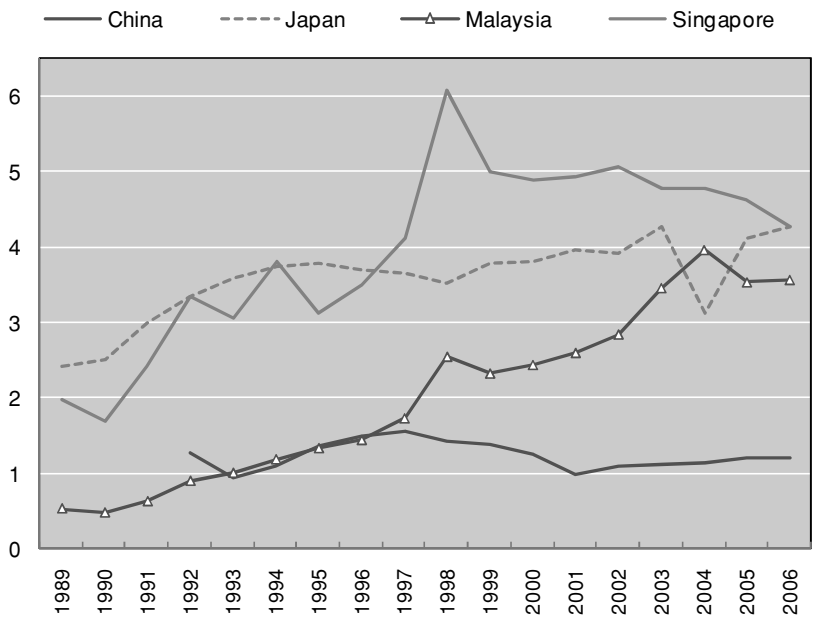
	1997	Ranking in 2007		2007	Ranking in 1997
Japan	8,252	3	Singapore	9,840	3
United States	5,444	5	China	8,558	8
Singapore	3,411	1	Japan	6,527	1
Germany	2,629	10	Malaysia	6,412	15
Australia	2,427	9	United States	4,797	2
Korea, Rep.	2,322	8	Thailand	4,287	14
Chinese Taipei	1,591	15	Saudi Arabia	3,373	18
China	1,518	2	Korea, Rep.	3,197	6
United Kingdom	1,084	23	Australia	3,004	5
France	1,019	17	Germany	1,982	4

Source: UN Comtrade.

An analysis of bilateral trade intensities, which assess trade share relative to average world trade share by partner[30] show that Japan and Singapore emerge as the partners with which Indonesia has the highest trade intensity in goods, and these intensities have steadily increased since 1990 (Figure 9.11). This is perhaps not surprising given that these are Indonesia's top two export destinations. Similarly, trade intensities with Thailand and Malaysia also increased significantly during the period studied. Trade intensity has not changed very much with the Euro zone and the United States, both of which represent partners with which Indonesia does not intensively trade. Trade intensity with China has slowly declined over the 1990s and into the millennium.

30 Figures greater than 1 indicate an "intense" trading relationship.

Figure 9.11. Merchandise trade intensities between Indonesia and select partners



Source: UN Comtrade.

Indonesia's sourcing is more concentrated in the ASEAN region (nearly 39% in 2006) than its export markets (over 18% in the same year). The ASEAN+3[31] framework is very important for Indonesia, representing over 57% of its export and over 68% of its import markets (as of 2006), making it the most "Asian" in terms of trade relations among ASEAN. In some sectors, this deep integration is even more apparent: Indonesia exports 82% of its IT-related parts and components to ASEAN+3 and sources over 90% of imports from the same region in this category. Even in oil, for instance, ASEAN+3 makes up over 73% of Indonesia's export and over 47% of its import market (International Trade and Investment Institute, Japan). These shares are likely to increase with the dismantling of trade barriers within ASEAN and with the strengthening integration in the larger East Asian region. Tanaka (2008) provides some measures of integration in the region and provides insights into integration in different markets.

In tandem with moving up the value chain, production is becoming increasingly technology intensive and therefore requires larger production scales. This leads to inevitable consolidation of production bases and relocations across the region. In the ASEAN division of labour, Indonesia is assigned the wood and related as well as the automotive industries (automobile and motorcycle parts and components etc.). As the dismantling of tariffs is being done by sector groups (*i.e.* fast track and normal), the streamlining of production networks by multinational enterprises may trigger a relocation of automobile and motorcycle parts and components producers as well as wood and furniture companies to Indonesia.

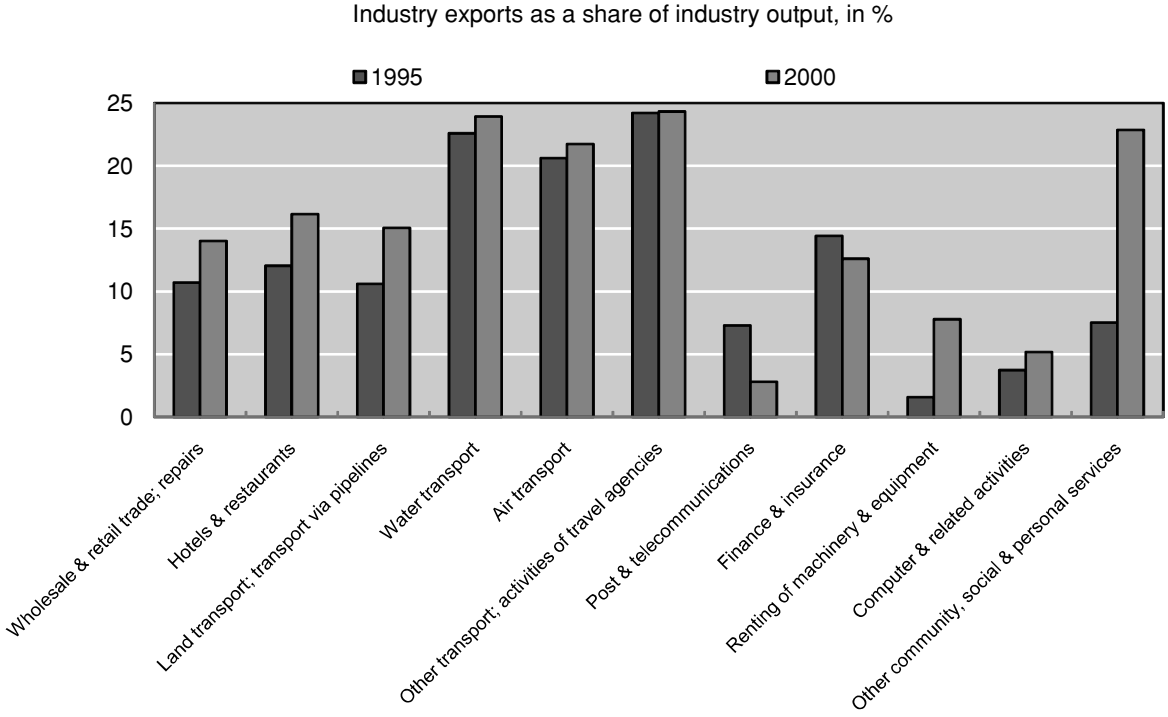
While services providers are exporting more, they are losing their share in total exports

Indonesia's recent growth has been driven primarily by a rise in domestic services industries. Indonesian services export shares both pre- and post-crisis suggest that except for financial, insurance, post and telecommunications services, those Indonesian services sectors that exported in 1995 increased

31 ASEAN+3 includes the ten ASEAN members, China, Japan and Korea.

their share of exports per unit of production in 2000 (Figure 9.12). The most dramatic increase in exports as a share of production can be seen in the other community, social and personal services sector, which increased from 7.5% to 22.9% in the five-year period. It is also interesting to note that the transport and travel services exports have the highest share of output compared to the other services sectors, underscoring the importance of tourism and transportation in the economy.

Figure 9.12. Most services industries export an increasing share of their output



Source: 2007 OECD Input-Output Database.

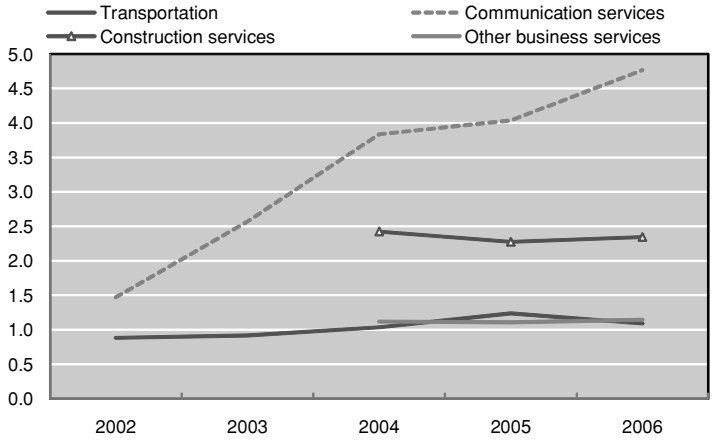
Using the same dataset to assess services exports as a share of total exports, it is clear that Indonesia exports much more agricultural and manufactured products than services. The services share of total exports was 18.4% in 2000, down from 26.1% in 1995. The share of primary product exports in total exports rose marginally from 23.2% in 1995 to 23.8% in 2000, whereas the share of manufactured exports in total exports rose strongly from 50.7% in 1995 to 57.8% in 2000. There were no particularly marked changes across sectors, as most sectors showed no change or a slight decline from 1995 to 2000.

Comparative advantage in communications services is on the rise

The RCA indexes for services show that communications services is by far the sector in which Indonesia has the highest comparative advantage (Figure 9.13 and Annex Table 9A.4). And not only is the actual index value high, but it has increased the most in the five-year period. The other two sectors that boast relatively high RCA indexes are the construction and government services sectors. However, while the index value for government services has grown stronger during the period, the RCA index for construction services has remained steady.

Figure 9.13. Some services industries record increasing comparative advantage

RCA indices, 2002-2006, available years



Source: IMF Balance of Payments Statistics.

The most remarkable decline in comparative advantage emerges in the travel services sector, although the index value still remains well above 1. The tsunami in 2004 and the bombings in tourist resorts in Bali in 2002 and 2005 likely played some role in the decline. Another declining sector is the computer and information services sector, which limits Indonesia's ability to realise the substantial benefits from access to a diverse set of business services. However, it is important to note that these data do not include Mode 3 services trade data (commercial presence), which can be an important mode of supply.

Among OECD countries, Japan, Australia and the United States top the list of Indonesia's services trading partners

Available (mirror) data from the OECD and some non-member economies32 on Indonesian exports and imports of services show that Japan is by far the most important services trade partner. Japan increased its share of Indonesia's total import bill from 29% in 2001 to 34% in 2006. Japan's share of Indonesia's total exports was even higher, but exhibits a modest downward trend (from 47% to 45%) during the period. In 2006, Australia was the second most important partner on the export side (12%) and the third most significant on the import side (12%), but these shares are a far cry from Japan's, and show a marked declining trend over the 6-year period. The United States represents another important partner, with a 14% share of the import bill and a 7% share of exports in 2006.

Other key trading partners include China and the United Kingdom, and to a lesser extent the Netherlands. Data show shares in the 8-10% range of Indonesia's total imports for China and the United Kingdom, and 7% for the Netherlands in 2006. Indonesia's export shares were generally smaller to these countries, but they still were more significant than other trading partners. In 2006, Germany also showed a

32 Mirror import data come from the UN's *Service Trade Statistics Database*. Countries that report include all OECD countries (except Canada, Finland, Iceland, Korea, Mexico, New Zealand, Norway, Portugal, Spain, Switzerland and Turkey) as well as China, Estonia, Russian Federation and Slovenia for the period 2000-2006. Germany and Luxembourg are also included in the mirror export data. The reference year is 2005.

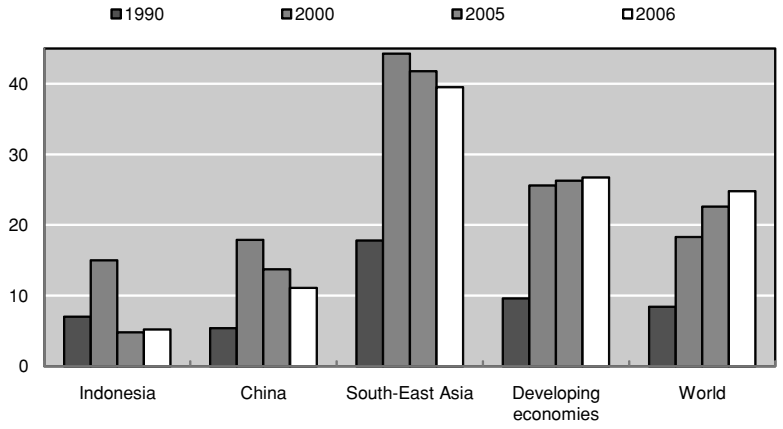
relatively strong import share at 5%, and France an important export share (7%). It is possible that import and export shares of services from other economies, particularly in Asia, have been rising, but data availability limits the possibility to test this hypothesis.

Moving closer to realising Indonesia's FDI potential

The extent of disinvestment in Indonesia, brought about by the crisis, is apparent (Figure 9.14). But more recently, there are signs that investors are once again returning to Indonesia. Data from the Indonesian Investment Co-ordination Board show an 80% increase in 2007 in investment approvals, which suggests that investment spending going forward may be robust. It appears that investment approvals for 2007 were concentrated in machinery-related sectors as well as those sectors with large multinationals, primarily from Japan.

Figure 9.14. Inward FDI stocks in Indonesia are low

As a percentage of GDP, select years



Source: World Investment Report 2007.

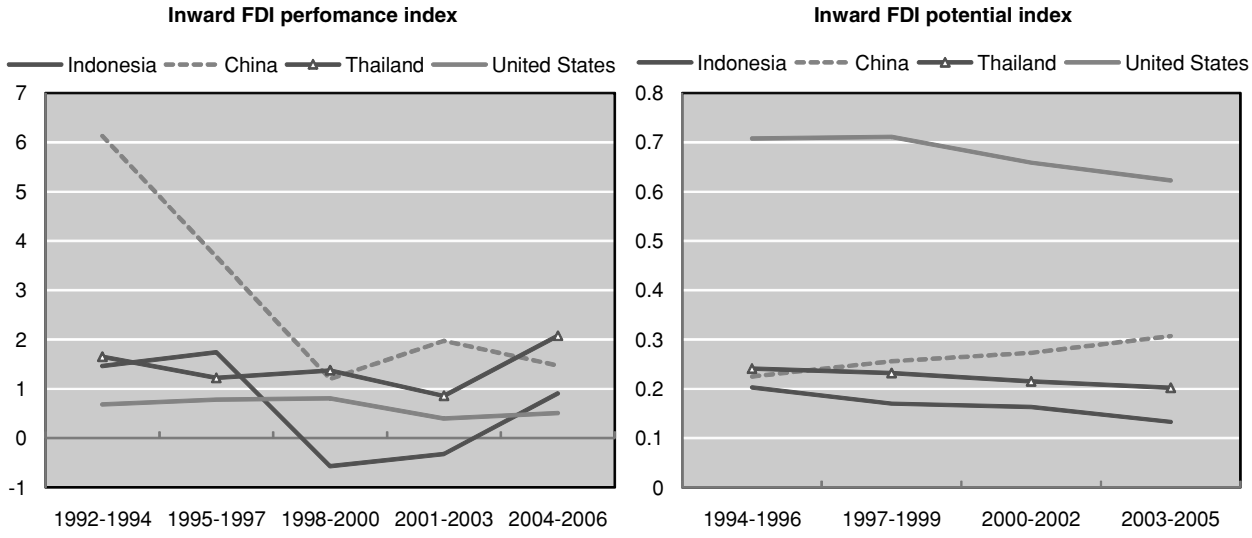
An indicator of FDI performance[33] from UNCTAD shows a similar trend (Figure 9.15). FDI performance suffered during the crisis, but has recently begun to rebound, although it remains below pre-crisis levels. Thailand, the other ASEAN country presented in Figure 9.15 also shows declines in the mid-1990s and early part of the millennium, but in 2006 it had well surpassed its index value in 2004. UNCTAD's FDI potential index,[34] which captures factors other than market size that affect the attractiveness of an economy to foreign investors, presents a more sombre picture of FDI prospects in

[33] The indicator ranks countries by the FDI they receive relative to their economic size, and it is calculated as each country´s share in global FDI inflows to its share in global GDP. Values above one indicate that a country receives more FDI than would be expected given its economic size, and a value below one suggests that it receives less than would be expected (a negative value indicates disinvestment).

[34] The index is a simple average of the values of 12 variables (normalised to yield a score between zero, for the lowest scoring country, to one, for the highest). The 12 indicators include: (1) GDP per capita, (2) the GDP growth rate over the previous 10 years, (3) the share of exports in GDP, (4) the average number of telephone lines per 1 000 inhabitants and mobile telephones per 1 000 inhabitants (5) commercial energy use per capita, (6) the share of R&D spending in GDP, (7) the share of tertiary students in the population, (8) country risk, (9) the world market share in exports of natural resources, (10) the world market share of imports of parts and components for automobiles and electronic products, (11) the world market share of exports of services, and (12) the share of world FDI inward stock. Details on these components can be found on the UNCTAD website: http://www.unctad.org, accessed 23 May 2008.

Indonesia. FDI potential in Indonesia, as well Thailand and the United States, has declined steadily since 1994. Only China has improved in its ranking consistently over the ten-year period.

Figure 9.15. Select FDI indicators suggest a recent rebound



Source: UNCTAD website, http://www.unctad.org, accessed 23 May 2008.

Using a firm-level dataset of Indonesian manufacturing firms over the period 1995-2005, a production function approach is used to test whether FDI spillovers exist in the Indonesian manufacturing sector (see Molnar and Lesher, 2008). Regression results indicate that foreign firms in the Indonesian manufacturing sector tend to be more productive than domestic firms. In addition, positive productivity-related spillover effects are found from foreign presence in upstream sectors (forward spillovers); in other words, the production of domestic manufacturing firms is positively correlated with contacts with (and learning from) foreign suppliers. These results suggest that there are important knock-on effects from foreign investment in the Indonesian manufacturing sector.

Foreign investment is a key component of domestic capital formation

Foreign investment, with a share of 6.4% in 2007, is roughly in line with that in 1997 (7.7%), the first year of the crisis. These figures suggest that there is considerable scope for foreign investment to play a more prominent role in the economy. Most FDI flows into manufacturing, in particular the chemical, pharmaceutical, and paper and printing industries, but there have been substantial inflows into the food, metal, machinery and electronics industries as well in recent years. In services, the biggest inflows were recorded in the transport and telecommunications sectors, largely as a result of the privatisation of incumbents in telecommunications. There have also been sizeable inflows into utilities, construction and real estate and business services.

Indonesia does not publish data on FDI stocks, but the total from the International Financial Statistics database and bilateral mirror data suggest that Japan, Singapore and the United States make up about two-thirds of FDI stocks in Indonesia. Canada, Germany, Netherlands and the UK had a combined share of 20% in 2005. Interestingly, the three major investors specialise in three different sectors: Japan's investments are mainly flowing to the manufacturing sector, making it the biggest foreign manufacturer in Indonesia. Over 95% of Singapore's investment is in services, in particular finance and telecommunications, while almost two-thirds of US investment is in mining. The US also made

substantial investments in chemicals, metals and other industries. For smaller countries, investment by sector is not disclosed due to confidentiality issues, except the UK, which seems to concentrate its investment in services, chemicals and food industries. Among services, Germany only invested in transportation, but the magnitudes are not disclosed. Data on activities of foreign affiliates are even scarcer, but sporadically available mirror data suggest that foreign enterprises have a share about 1-2% in total employment.

Box 9.2. Production base or attractive market?

Judging from trends in the activities of affiliates of multinational manufacturing enterprises from OECD countries, Indonesia seems to be used to a decreasing extent as a production base for exports to the parent's country and to an increasing extent MNEs sales are concentrated in the domestic or the larger ASEAN market.

Japanese affiliates show increasing "localisation" in sales and procurement.

The relatively high extent of "localisation" in terms of both the direction of sales and the procurement source is confirmed by a survey of Japanese manufacturing affiliates in the ASEAN region by the Japan External Trade Organisation (JETRO) (2007b). On the direction side of sales, Indonesia has the lowest share of affiliates with export ratios of at least 70% in the ASEAN region (32.4% in 2006), which is 2% lower than in 2005 and 23% lower than in 2002. The average export ratio of affiliates in Indonesia is 42.9%, the second lowest after Thailand (41.7%). Among those companies that specialise in production mainly for exports, most export mainly to Japan (16.7% of firms export 100% of their production to Japan) and other ASEAN markets (10.8% of companies export 100% of their production to other ASEAN countries), with the United States and Europe in third place (0.8% of companies export 100% of their production to the United States or Europe).

On the procurement side, the share of companies that purchase at least 70% of their materials locally is higher than in the Philippines, Singapore and Vietnam, but lower than in Thailand. This relatively high extent of "localisation" on the procurement side reflects the long-standing presence of Japanese companies in Indonesia, as well as clustering of Japanese and local companies. Indeed, 40.2% of materials are purchased from local companies and about the same share from local Japanese affiliates (30.1%) and local affiliates of companies from other countries (29.7%).

Another interesting finding that supports the above high degree of "localisation" by Japanese companies in Indonesia is the absence of an employment-reducing effect at home as a result of moving abroad. This finding is in strike contrast with those for all foreign affiliates and affiliates in Asia, in particular in China (Molnar *et al.* 2008), regardless of specification.*

Material input costs are high and duty-free imports are not fully utilised

Manufacturing production by affiliates in Indonesia is characterised by a relatively high share of material inputs in manufacturing costs. The JETRO survey also indicates that among ASEAN countries, Indonesia has the highest share of material costs at 50.4%, at least 10% higher than in other countries. Moreover, most Japanese affiliates in Indonesia plan to further increase the share of local procurement, but the immediate obstacles to this are the lack of observance of delivery dates and transportation and logistics infrastructure bottlenecks.

Affiliates operating in Indonesia tend to benefit from duty-free imports to a lesser extent than in most other ASEAN countries. 25.6% of Japanese affiliates reported no access to duty-free imports, the second highest share after Thailand at 27.5%. Most of these companies are in the iron and steel and ceramics and cement industries. Similarly, the share of those companies that import 100% of their inputs duty free at 17.3% is second lowest to Thailand (9.5%).

But manufacturing costs are competitive and expansion is envisaged in a number of industries.

When respondent affiliates that also have operations in China were asked to compare costs with those in China, surprisingly almost half of them replied that manufacturing costs are about the same (*i.e.* in the range of 90-110%). Moreover, almost 20% of companies reported lower than 90% of costs in China and none reported above 140%. This may suggest that the comparative disadvantages relative to China's lie more in other structural impediments than in high costs of production.

Box 9.2. Production base or attractive market? (continued)

Japanese affiliates view Indonesia as an optimal production base in the medium term (5-10 years) for automobile and motorcycle parts and components, chemicals and general machinery, followed by electronics and plastics. As part of the restructuring and streamlining of activities related to strengthening ASEAN integration, Japanese affiliates in the region see Indonesia as No. 1 destination for relocation, with most companies to be relocated from Thailand and Japan.

* Note: The method in Molnar *et al.* (2008) is applied with an extended dataset to include affiliates located in Indonesia and to cover the period of 1995-2004. The equations estimated take the basic form set out in [1] and [2] (augmented by additional lags of output and wage growth where possible):

$$\Delta \ln L_{i,t} = \alpha_0 + \alpha_1 \Delta \ln Y_{i,t} + \alpha_2 \Delta \ln RW_{i,t} + \alpha_3 \Delta \ln LF_i + \varepsilon_{i,t} \quad [1]$$

$$\Delta \ln L_{i,t} = \alpha_0 + \alpha_1 \Delta \ln Y_{i,t} + [\alpha_2 + \gamma(LF_{i,t-1} / L_{i,t-1})] \Delta \ln RW_{i,t} + \alpha_3 \Delta \ln LF_i + \varepsilon_{i,t} \quad [2]$$

Here, Li denotes domestic employment in industry *i*, Y and RW denote output and real wages respectively, and LF denotes employment in the foreign affiliates of home country parent companies. Industry fixed effects are included to pickup any otherwise excluded industry specific factors. The specification shown in [2] enables a test to be undertaken of whether a rising share of employment in foreign affiliates has any short-run effect on the response of employment to a change in wages ($\gamma \neq 0$). [1] and [2] were estimated using the OLS (ordinary least squares) and IV (instrumental variables) methods.

Conclusion

Indonesia's export performance has deteriorated due to the 1997-98 crisis, policies adopted in response to and following the crisis, and industrial policies excessively protecting selected national champions at the expense of competitiveness. The crisis had a devastating effect not only on the financial sector, but also on the real economy, breaking structural ties and prolonging the recovery process. The deep crisis was followed by profound reforms, some of which may have hurt the competitiveness of Indonesian industries. A case in point was the large-scale decentralisation in 2001 that has effectively erected barriers to inter-regional trade and has created an environment in which corruption has flourished. In addition, some policy excesses were observed before the crisis, favouring selected industries and cronies.

Largely as a result of trade policies and behind-the-border regulations, Indonesia's market shares in neither goods nor services have reached their pre-crisis levels. Energy still dominates trade patterns, both on the export and import side, and the share of high-technology exports is low. Patterns of revealed comparative advantages have also been shifting, as traditionally competitive industries, such as textiles, garments and wood are losing in world markets, while other industries such as chemicals and motor vehicles have emerged to compete effectively internationally. Trade integration with ASEAN countries and other countries in the region is deepening. Further, services trade performance has lagged, even though services make up about 50% of GDP, and recent data show that foreign direct investment may once again become a driver of gross capital formation and productivity growth.

The path to realising Indonesia's trade potential involves not just export prices, but a broader sense of competitiveness that includes the degree of flexibility of the economy. Important internal and external constraints have hindered Indonesia's competitiveness, some of which are associated with trade-related policies. While Indonesia has been a relatively low-tariff country by developing-country standards and overall effective protection has substantially fallen since the mid-1990s, these general trends mask several important developments. For instance, sharp reductions in effective protection are evident in motor vehicles and textiles and garments, but increases can be seen in iron, steel, radio, television and communications equipment. And since 2001, new non-tariff barriers have emerged, and creeping

protectionism has set in. A lack of consistency and a single authority over trade policies have contributed to the proliferation of NTBs.

Other constraints that have impeded competitiveness bear directly on the costs associated with trading goods and services. Infrastructure limitations, restrictions on foreign direct investment, and product and labour market regulations all contribute to sub-optimal trade performance in Indonesia. Further, the lack of coherence, both in the domestic (*i.e.* with other policies that determine competitiveness) and in the international (*e.g.* consistency with foreign direct investment policies) dimensions may send the wrong signal about the government's commitment to trade reforms.

Indonesia must continue to deepen regional integration and improve the investment climate to boost its attractiveness as a production base and encourage deeper integration into international production networks. By the same token, a more open and predictable environment for foreign investment would bring about potential spillovers of technology and management practices and would increase the competitive pressure on domestic firms, thereby creating efficiency gains. Maintaining the competitiveness of Indonesian industries in an evolving domestic and global environment is a key challenge for policymakers. A comprehensive approach, involving trade policy reform moving in tandem with the reform of other policy areas, is the key to boosting exports in the long run.

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Annex

Annex Table 9A.1. Indonesia's tariffs have fallen substantially

Selected characteristics of the tariff structure, 1989-2006 (in % and in numbers)

	Simple average	Weighted average	Std dev	Minimum	Maximum	Nbr of lines	Nbr domestic peaks	Nbr international peaks	Value of imports
1989	22.18	12.96	21.84	0	200	9 047	78	4 966	16 358 501
1990	18.70	13.32	16.74	0	200	9 255	77	4 930	21 834 557
1993	17.92	12.51	16.07	0	200	9 384	56	4 877	28 327 360
1995	15.34	10.89	14.89	0	200	9 373	68	4 051	40 628 408
1996	12.35	7.73	16.69	0	200	7 258	79	2 369	42 928 464
1999	11.19	6.05	16.61	0	200	7 219	90	2 206	24 003 079
2000	8.43	5.16	11.91	0	170	7 252	80	894	33 514 771
2001	6.89	4.31	11.28	0	170	7 285	113	259	30 962 109
2002	6.90	5.79	11.14	0	170	7 532	115	265	26 351 777
2003	6.90	5.22	11.13	0	170	7 532	112	257	48 845 459
2004	6.95	6.09	15.41	0	170	11 153	526	1 173	60 519 014
2005	6.95	6.07	15.41	0	170	11 153	526	1 173	70 147 344
2006	6.95	6.07	15.41	0	170	11 153	526	1 173	70 148 034

Source: UN Trains.

Annex Table 9A.2. The effective rates of protection indicate a falling trend

1995 and 2000

	Nominal		Effective	
	1995	2000	1995	2000
Food products, beverages and tobacco	18.5	10.2	77.9	35.2
Textiles, textile products, leather and footwear	22.9	12.7	89.3	41.7
Wood and products of wood and cork	16.7	8.6	71.1	26.4
Pulp, paper, paper products, printing and publishing	13.2	7.3	34.3	17.5
Coke, refined petroleum products and nuclear fuel	4.5	4.0	10.3	7.3
Chemicals excluding pharmaceuticals	5.9	4.8	13.4	12.6
Pharmaceuticals	9.3	6.7	29.0	17.4
Rubber & plastics products	23.8	16.2	141.8	73.5
Other non-metallic mineral products	18.2	6.9	53.9	16.6
Iron & steel	9.1	7.9	19.7	29.6
Non-ferrous metals	8.0	5.7	20.1	18.9
Fabricated metal products, except machinery & equipment	20.8	12.0	69.4	40.6
Machinery & equipment, nec	10.3	3.2	21.0	4.6
Office, accounting & computing machinery	17.8	3.7	52.6	8.3
Electrical machinery & apparatus, nec	14.5	8.4	41.2	24.3
Radio, television & communication equipment	11.3	7.9	26.2	30.3
Medical, precision & optical instruments	10.7	6.6	-11.0	17.4
Motor vehicles, trailers & semi-trailers	48.3	21.0	121.2	32.4
Building & repairing of ships & boats	2.8	1.6	4.1	0.6
Aircraft & spacecraft	0.7	0.0	-2.2	-0.7
Railroad equipment & transport equip n.e.c.	0.3	0.3	-0.2	-0.1
Manufacturing nec; recycling (include Furniture)	28.8	14.8	123.4	61.9
Totals[a]	14.1	7.0		
weighted by output			65.3	31.0
weighted by import			36.8	18.7
weighted by final consumption			72.1	33.6

a) Total for the industries shown in the table.

Source: Authors' calculations based on the 2007 OECD Input-Output Database.

Annex Table 9A.3. Revealed comparative advantage indexes for goods in Indonesia, select years

	1989	1994	1998	2002	2005	2006	2007	Annual average growth rate 1998-2007
1 Agriculture, hunting, forestry and fishing	2.74	2.08	2.38	1.79	2.23	2.83	1.64	-4.04
2 Mining and quarrying (energy)	14.22	6.19	5.79	3.77	2.92	2.89	1.63	-13.16
3 Mining and quarrying (non-energy)	1.54	2.91	3.69	3.74	3.50	4.00	1.61	-8.80
4 Food products, beverages and tobacco	1.16	1.14	1.28	1.56	1.82	1.91	1.25	-0.26
5 Textiles, textile products, leather and footwear	1.45	2.21	1.87	1.90	1.83	1.84	1.86	-0.07
6 Wood and products of wood and cork	10.12	9.65	6.40	5.73	3.89	3.72	1.21	-16.87
7 Pulp, paper, paper products, printing and publishing	0.26	0.52	1.73	1.84	1.70	1.88	2.13	2.39
8 Coke, refined petroleum products and nuclear fuel	1.31	1.02	1.01	0.23	0.71	0.70	0.36	-10.91
9 Chemicals excluding pharmaceuticals	0.34	0.41	0.80	0.70	0.68	0.70	1.01	2.64
10 Pharmaceuticals	0.17	0.23	0.33	0.21	0.15	0.14	1.46	17.85
11 Rubber & plastic products	0.23	0.37	0.45	0.75	0.85	0.85	0.80	6.55
12 Other non-metallic mineral products	0.88	0.54	0.56	1.02	0.88	0.87	0.99	6.50
13 Iron & steel	0.45	0.28	0.54	0.32	0.34	0.49	0.70	2.88
14 Non-ferrous metals	1.86	0.85	1.14	1.04	1.74	1.55	1.48	2.98
15 Fabricated metal products, except machinery & equipment	0.17	0.35	0.37	0.37	0.34	0.35	0.65	6.41
16 Machinery & equipment, nec	0.01	0.05	0.12	0.16	0.19	0.19	0.74	22.05
17 Office, accounting & computing machinery	0.00	0.15	0.33	0.70	0.68	0.50	0.18	-6.14
18 Electrical machinery & apparatus, nec	0.08	0.30	0.56	0.72	0.72	0.74	1.04	7.26
19 Radio, television & communication equipment	0.04	0.50	0.44	0.79	0.59	0.42	0.24	-6.63
20 Medical, precision & optical instruments	0.04	0.16	0.17	0.17	0.13	0.15	0.35	8.67
21 Motor vehicles, trailers & semi-trailers	0.00	0.02	0.05	0.08	0.16	0.17	1.63	48.68
22 Building & repairing of ships & boats	0.04	0.20	1.08	0.17	0.33	0.61	1.92	6.54
23 Aircraft & spacecraft	0.06	0.07	0.02	0.04	0.08	0.14	0.40	40.41
24 Railroad equipment & transport equip n.e.c.	0.12	1.02	0.75	0.70	0.63	0.67	1.32	6.59
25 Manufacturing nec; recycling (include Furniture)	0.58	1.54	1.77	1.24	1.10	1.03	1.07	-5.42

Note: The industry classification in ISIC Rev. 3 can be found in Annex Table A8.

Source: UN Comtrade.

Annex Table 9A.4. Revealed comparative advantages in services, Indonesia

	2002	2003	2004	2005	2006
Transportation	0.88	0.92	1.04	1.24	1.09
Travel	3.24	3.22	1.70	1.57	1.79
Communication services	1.47	2.57	3.84	4.04	4.77
Construction services	..	..	2.43	2.27	2.35
Insurance services	0.02	0.02	0.03	0.07	0.16
Financial services	..	..	0.49	0.53	0.27
Computer and information services	..	..	0.32	0.32	0.27
Royalties and license fees	..	..	0.43	0.48	0.03
Other business services	..	..	1.12	1.10	1.14
Personal, cultural and recreational	..	..	0.36	0.44	0.71
Government services nie	0.92	1.19	1.08	1.30	1.96

Source: IMF Balance of Payments Statistics.

Annex Table 9A.5. The business environment in select Asian economies, as of June 2007

Select indicators, with a low overall score indicating fewer restrictions

		China	India	Indonesia	Malaysia	Philippines	Thailand	Vietnam
Overall indicator		**83**	**120**	**123**	**24**	**133**	**15**	**91**
Starting a Business	Procedures (number)	13	**13**	12	9	15	8	11
	Time (days)	35	**33**	105	24	58	33	50
	Cost (% of income per capita)	8.4	**74.6**	80.0	18.1	26.8	5.6	20.0
Dealing with Licenses	Procedures (number)	37	**20**	19	25	21	11	13
	Time (days)	336	**224**	196	285	177	156	194
	Cost (% of income per capita)	840.2	**519.4**	286.8	10.0	75.9	10.7	373.6
Employing Workers	Difficulty of Hiring Index	11	**0**	72	0	56	33	0
	Difficulty of Firing Index	40	**70**	60	30	30	0	40
	Rigidity of Employment Index	24	**30**	44	10	35	18	27
	Nonwage labor cost (% of salary)	44	**17**	10	15	7	6	17
Registering Property	Procedures (number)	4	**6**	7	5	8	2	4
	Time (days)	29	**62**	42	144	33	2	67
	Cost (% of property value)	3.6	**7.7**	10.5	2.4	4.2	6.3	1.2
Trading Across Borders	Time for export (days)	21	**18**	21	18	17	17	24
	Cost to export (US$ per container)	390	**820**	667	432	800	615	669
	Time for import (days)	24	**21**	27	14	18	14	23
	Cost to import (US$ per container)	430	**910**	623	385	800	786	881
Enforcing Contracts	Procedures (number)	35	**46**	39	30	37	35	34
	Time (days)	406	**1 420**	570	600	842	479	295
	Cost (% of debt)	8.8	**39.6**	122.7	27.5	26.0	14.3	31.0
Closing a Business	Time (years)	1.7	**10**	5.5	2.3	5.7	2.7	5
	Cost (% of estate)	22	**9**	18	15	38	36	15
	Recovery rate (cents on the dollar)	35.9	**11.6**	12.6	38.3	4.2	41.8	18.0

Source: World Bank Doing Business Indicators.

Annex Table 9A.6. Merchandise trade intensities, select partners

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
TII Indonesia / China	..	..	1.25	0.92	1.07	1.36	1.49	1.55	1.41	1.36	1.23	0.96	1.08	1.11	1.13	1.19	1.20
TII Indonesia / EU25	0.31	0.45	0.43	0.46	0.37	0.35	0.38	0.39	0.39	0.36	0.37	0.36	0.36	0.33	0.35	0.31	0.30
TII Indonesia / India	0.13	0.19	0.21	0.33	0.91	1.07	1.36	1.65	1.84	2.08	2.24	2.16	2.34	2.72	2.77	2.26	2.08
TII Indonesia / Japan	2.50	2.99	3.34	3.57	3.73	3.77	3.70	3.66	3.50	3.77	3.80	3.96	3.92	4.27	3.11	4.12	4.26
TII Indonesia / Malaysia	0.46	0.61	0.89	0.99	1.17	1.32	1.43	1.72	2.54	2.31	2.43	2.59	2.83	3.45	3.96	3.53	3.56
TII Indonesia / Philippines	..	..	..	..	..	..	1.99	2.04	2.42	2.40	2.22	2.48	2.08	2.67	3.70	3.38	2.95
TII Indonesia / Singapore	1.68	2.40	3.32	3.04	3.79	3.12	3.49	4.10	6.06	4.99	4.88	4.92	5.04	4.77	4.77	4.61	4.25
TII Indonesia / Thailand	0.30	0.47	0.63	0.78	0.69	1.02	1.14	1.35	2.40	1.82	1.66	1.83	2.08	2.21	2.89	2.24	2.39
TII Indonesia / United States	..	0.45	0.58	0.67	0.79	0.85	0.83	0.79	0.80	0.73	0.68	0.70	0.69	0.68	0.79	0.67	0.67

Source: UN Comtrade.

Annex Table 9A.7. Select inward FDI indicators

	Inward FDI perfomance index					Inward FDI potential index			
	1992-1994	1995-1997	1998-2000	2001-2003	2004-2006	1994-1996	1997-1999	2000-2002	2003-2005
Indonesia	**1.466**	**1.742**	**-0.570**	**-0.324**	**0.908**	**0.203**	**0.170**	**0.163**	**0.133**
China	6.127	3.678	1.198	1.969	1.472	0.225	0.256	0.273	0.307
India	0.243	0.534	0.155	0.357	0.568	0.165	0.165	0.159	0.159
Japan	0.035	0.018	0.053	0.087	0.014	0.457	0.442	0.389	0.353
Malaysia	9.099	4.951	1.248	1.079	1.693	0.287	0.304	0.292	0.280
Philippines	2.482	1.375	0.641	0.675	0.747	0.197	0.210	0.212	0.178
Singapore	10.322	9.416	3.737	6.000	7.622	0.490	0.497	0.465	0.459
Thailand	1.649	1.220	1.375	0.858	2.075	0.241	0.232	0.215	0.202
United States	0.684	0.780	0.805	0.396	0.505	0.708	0.711	0.659	0.623
Vietnam	10.325	6.396	1.488	1.923	1.343	0.174	0.178	0.184	0.166

Source: UNCTAD website, http://www.unctad.org, accessed 23 May 2008.

Annex Table 9A.8. Sectoral estimates of total factor productivity growth 2000-2005

	OLS	Levinsohn-Petrin
Food and beverages	0.00	0.00
Textiles	-0.03	-0.04
Garments	0.00	0.01
Leather	0.03	0.05
Wood	-0.02	-0.04
Paper	0.01	0.02
Printing	0.02	0.00
Coke and petroleum products	0.09	5.03
Chemicals	0.01	-0.03
Rubber and plastics	0.05	0.26
Non-metallic minerals	0.00	0.00
Basic metals	-0.10	-1.03
Fabricated metals	-0.19	-0.26
Machinery and equipment	0.02	0.00
Office machinery	-0.18	-0.45
Electronics	-0.02	-0.39
Radio & telecommunications equipment	0.04	0.05
Motor vehicles	0.02	0.02
Other vehicles	0.01	0.01

Note: In the first column, estimates by OLS with fixed effects and in the second, estimates using the Levinsohn-Petrin methodology are shown. For the latter, the revenue approach was applied with intermediate inputs as proxy variable.

Source: Authors' estimation.

Annex Table 9A.9. Industry classification

ISIC Rev.3 code	Description
1+2+5	Agriculture, hunting, forestry and fishing
10+11+12	Mining and quarrying (energy)
13+14	Mining and quarrying (non-energy)
15+16	Food products, beverages and tobacco
17+18+19	Textiles, textile products, leather and footwear
20	Wood and products of wood and cork
21+22	Pulp, paper, paper products, printing and publishing
23	Coke, refined petroleum products and nuclear fuel
24 excluding 2423	Chemicals excluding pharmaceuticals
2423	Pharmaceuticals
25	Rubber and plastics products
26	Other non-metallic mineral products
271+2731	Iron & steel
272+2732	Non-ferrous metals
28	Fabricated metal products, execpt machinery and equipment
29	Machinery and equipment, nec
30	Office, accounting and computing machinery
31	Electrical machinery and apparatus, nec
32	Radio, television and communication equipment
33	Medical, precision and optical instruments
34	Motor vehicules, trailers and semi trailers
351	Building & repairing of ships and boats
353	Aircraft and spacecraft
352+359	Railroad equipment and transport equipment nec
36+37	Manufacturing nec; recycling (include furniture)
401	Production, collection and distributiono of electricity
402	Manufacture of gas; distribution of gaseous fuels through mains
403	Steam and hot water supply
41	Collection, purification and distribution of water
45	Construction
50+51+52	Wholesale and retail trade; repairs
55	Hotels and restaurants
60	Land transport; transport via pipelines
61	Water transport
62	Air transport
63	Supporting & auxiliary transport activities; activities of travel agencies
64	Post and telecommunications
65+66+67	Finance and insurance
70	Real estate activities
71	Renting of machinery and equipment
72	Computer and related activities
73	Research and development
74	Other business activities
75	Public administration and defence; compulsory social security
80	Education
85	Health and social work
90-93	Other community, social and personal services
95+99	Private households with employed persons & extra-territorial organisations & bodies

Source: Authors' compilation.

Chapter 10

China

by

Malory Greene, Charles Tsai and Ralph Lattimore

Introduction

One of the most telling ways to describe China's trade performance in recent decades is in terms of its integration into the global trade network, Figure 1.2. This truly spectacular trade performance has moved the economy from an isolationist position to the core of the trade network in the space of 30 years. What this means is that China is at the core of many global supply chains on a par with the G3 countries. That is, since 1978 China has chosen to become heavily dependent on the import supply of raw materials, parts and components and services from the rest of the world to meet the export demand for a wide range of final capital and consumer goods. In the words of the Growth Commission (2008), China is "fully exploiting the world economy" as one of its growth planks. In doing so China has stimulated the global demand for the export products and services of a very wide range of countries and it has provided very competitive products for consumers globally. In this way, China has been a prime mover is the dispersion of economic activity worldwide and has greatly contributed to the strong economic growth in the world as a whole in the recent past.

China's trade performance amongst the BRIICS has drawn the most attention in this volume because of its size and relative performance. Accordingly, The Introduction and Chapters 1, 2 and 4 of this volume devoted considerable space to various indicators of China's economic transformation and trade developments. These indicators, beginning with general statistics in Table 4.1, are not repeated here but are referenced where appropriate. Whereas the focus of the thematic chapters (1-5) was aggregate in nature, this chapter deals with selected microeconomic issues of trade performance and policy. As with the other country chapters, the perspective here is intended to be complementary to the comprehensive reviews of China's economic performance produced by the OECD, the World Bank, IMF and the WTO. Furthermore, this chapter also draws heavily on two recent OECD appraisals of China's trade performance and policy environment, Greene and Tsai (2008) and Greene, Dihel, Kowalski and Lippoldt (2006).

This chapter is organised as follows. The second section focuses briefly on the changing structure of China's economy as a prelude to examining China's trade performance in section 3. This is followed by an examination of the policy environment in China that appears to be influencing institutional development.

Growth and Poverty Alleviation

Over the 27 year period, 1979 – 2006, China's GDP grew at an average of 9.7% per year. At this rate of growth, GDP doubles every seven years. Per capita GDP grew by a factor of 12 from USD 148 in 1978 to USD 1 700 in 2005, WTO (2006). This remarkable accomplishment is not unique because 13 countries have achieved this feat in the last 60 years – it is remarkable, however, because only 13 countries have achieved it, introductory Chapter. It is also remarkable on at least two other counts. China is a very large country with a population of 1.3 billion people. Its size has been a growth stimulus in the sense that China has had a very large workforce to draw into higher productivity work. On the other hand its size has been a challenge in terms of the economic reorganisation and institutional change that has been required to achieve this growth record.

China's growth record is also remarkable for the impact it has had on poverty alleviation. The poverty alleviation dimension of the China transformation can be viewed from the fact that 46% of the Chinese population rose out of poverty between 1981 and 2003 where poverty is defined as living on less than USD 1 per day.

It was noted in the Introduction that over the last 30 years half the world's population, 3 billion people, have been drawn into high growth economies or high income countries. A sizable proportion of the people in this total are in China. In comparison with regional averages, China has sustained a remarkable reduction of poverty since the initiation of reforms in 1978. This accomplishment left China with a poverty rate below 17% by 2003, and makes China a key component of poverty alleviation in East Asia as a whole throughout this period, Table 10.1. The lead held by East Asia in terms of regional averages for poverty alleviation during the period 1981-2003 was underpinned by China. Notably, the South Asian region began the period with a poverty rate 10% lower than China and ended the period with a poverty rate 15% higher than China.

Table 10.1 Poverty reduction in China compared to regional averages

Percentage of population living in poverty

	1981	1984	1987	1990	1993	1996	1991	2003
East Asia and Pacific	56.65	38.77	28.04	29.54	24.89	15.91	15.30	14.33
East Europe and Central Asia	0.79	0.61	0.44	0.54	3.74	4.39	6.25	3.40
Latin America and the Caribbean	10.33	12.46	11.59	11.90	12.20	9.39	9.72	9.47
Middle East and North Africa	5.08	3.83	3.17	2.32	1.81	2.29	2.65	2.36
South Asia	51.51	46.77	45.04	41.26	40.06	38.86	34.07	33.66
Sub-Saharan Africa	41.36	46.02	46.61	44.28	43.77	45.86	47.71	48.37
China	62.40	41.01	28.45	32.98	28.36	17.37	17.77	16.64

Source: World Bank (2007).

Despite China's vigorous economic growth and the large percentage of population benefitting, areas of persistent poverty remain. Favourable comparisons to regional averages around the world and against other large developing and transition economies should not obscure declines in the rate of poverty alleviation over the recent years of reform. The sustained rates of economic growth in combination with the declining rates of poverty alleviation have resulted in rising income inequality, regional disparities, and the need to address them via continued economic reform. Table 10.2 reveals that the number of people lifted out of poverty was greatest in the early years of reform with nearly 200 000 individuals brought above the poverty line between 1981 and 1984 alone. Relatively minor dips in the years following this large initial gain have been punctuated by only two further spikes of over 100 000 individuals each. Rates of poverty alleviation since 1996 have not been as impressive, which results at least in part to the large declines in poverty already achieved.

Table 10.2. China and India - Millions of people lifted out of poverty by three-year period (1981-2001)

	1981 - 1984	1984 - 1987	1987 - 1990	1990 - 1993	1993 - 1996	1996 - 1999	1999 - 2001
China	195.0	116.8	-65.9	40.1	122.8	-11.3	11.1
India	8.9	3.7	12.5	-22.7	-19.5	40.0	-7.1

Source: World Bank (2007).

Similarly, efforts to narrow rural-urban income disparities recorded large gains in the early years of reform, but have also slowed significantly. Progress in narrowing the rural-urban divide is clearly illustrated by the fact that the rural poverty rate fell from 77% to 27% between 1981 in 2001. However, the rural-urban gap remains considerable when the latter figure is compared to the urban poverty rate of

0.33% recorded in 2001. Indeed, between 2003 and 2005, income inequality between rural and urban citizens declined by a mere 1%, WTO (2006).

Regional income disparities have grown throughout the reform period, and are accelerating, Table 10.3. Income *per capita* in the eastern region is rapidly outpacing that in the central and western regions. In terms of income gaps, the average income in the central region declined from 65% to 49% of that in the eastern region between 1980 and 2002. Similarly, income in the western region declined from 53% to 39% of that in the eastern region during the same period, WTO (2006). The regional element of the poverty reduction equation results from a variety of factors inhibiting the westward movement of trade and investment away from the coastal provinces. Such factors include poor land transportation infrastructure, underdeveloped regulatory infrastructure, inconsistent laws and regulations between the provinces (USFCS, 2006), arbitrary application of regulatory discretion due to less-well-trained civil servants in the inland provinces (OECD, 2005) and the persistence of regional protectionism, WTO (2006).

Table 10.3. Trends in regional income inequality relative to the Eastern Region

	1980	1990	2002
Eastern	1.00	1.00	1.00
Central	0.65	0.61	0.49
Western	0.53	0.52	0.39

Source: World Bank (2007).

Table 10.4. Origin of GDP, selected years

Percentages

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Agriculture	17.3	16.2	14.8	14.1	13.5	12.6	13.1	12.5	11.7
Industry	46.2	45.8	45.9	45.2	44.8	46.0	46.2	47.5	48.4
Services	36.5	38.0	39.3	40.7	41.7	41.5	40.7	39.9	39.9

Source: World Development Indicators.

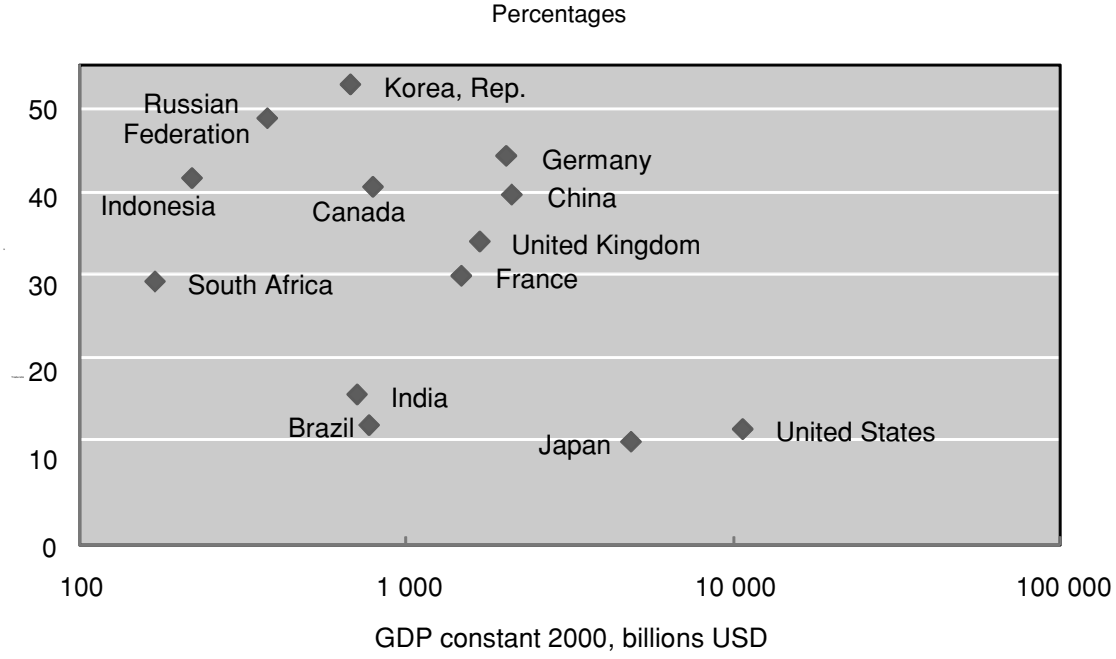
The Growth Commission (2008) has identified five ingredients for sustained, fast economic growth based on the policy options chosen by the 13 countries (including China) who averaged more than 7% growth over a 25 year period.

- They fully exploited the world economy.
- They maintained macroeconomic stability.
- They mustered high rates of savings and investment.
- They let markets allocate resources.
- They had committed, credible and capable governments.

China has been an outstanding member of this 13 country grouping and accordingly, the five ingredients listed above strongly characterise its growth strategy over the last 30 years. Trade openness in goods and services (the first ingredient) has been one of the distinguishing features of Chinese policy and this approach has been combined with the other four elements to achieve the efficiency and equity outcomes just referred to. The list above is also an important reminder that trade openness alone is not a sufficient condition for high growth but it is a necessary ingredient.

Deng Xiaoping signalled the approach China would take in its growth strategy when he said that economic development is like crossing a river and "feeling for the stones" – identifying the most binding constraint at a particular point in time and dealing to it. As markets inevitably change in this process, resources will have to move inter-sectorally. Resources will move out of sectors that are underperforming into sectors where marginal productivity is higher. These sectoral resource shifts are illustrated by the changes in the GDP shares of the major Chinese sectors in Table 10.4.

Figure 10.1. Trade ratios[a,b] in BRIICS countries and selected OECD countries, 2006[c]



a) Average of exports and imports of goods and services as a share of GDP constant 2000 USD

b) Logarithmic scale on the horizontal axis

c) 2005 for Canada, Japan and US

Source: World Development Indicators

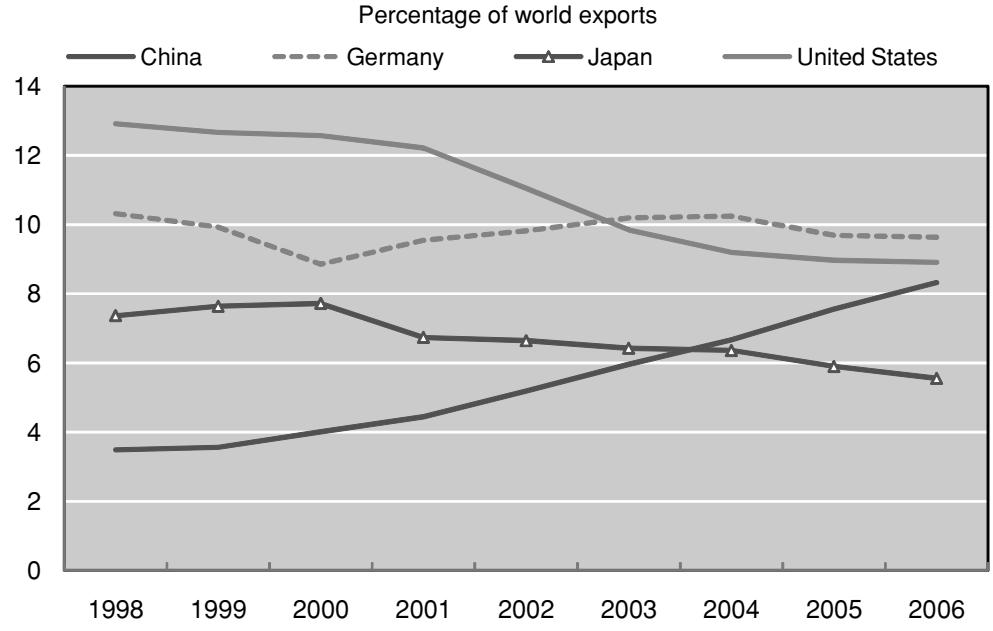
Since 1998, there has been a gradual reduction in the value-added share of the agricultural sector in China towards both the industrial sector and the service sector. Agriculture's share is now down to around 11% or 12% of GDP. Over this period from 1998, there has been, as we will see, a major trade reorientation towards exports of final electronics goods in line with the growth in world demand. Accordingly, the growth in the relative size of the industrial sector from 46 to 48% of GDP has been more important for trade than the growth in the service sector. This is a marked contrast to the case of India.

Trade Performance

China's exploitation of the world markets in goods and services has led to a relatively high ratio of exports and imports of goods and services to GDP, Figure 10.1. Given the size of the economy, the trade ratio is on a par with Germany and Canada, slightly above that of the United Kingdom and France and much higher than Brazil, India, Japan and the United States. This reflects China's factor endowments and its ensuing comparative advantages. China is relatively well endowed with unskilled labour. The labour force consists of people with many valuable work characteristics. Market forces have drawn this labour

force into high productivity segments of the manufacturing, primary sector and service activities built on mobilised domestic savings topped up with foreign direct investment.

Figure 10.2. Total world goods exports by country, 1998-2006



Source: UN ComTrade.

Trade in Goods

China's share of world exports has more than doubled since 1998, from less than 4% to just over 8% in 2006, Figure 10.2. Germany's share has remained constant at around 10% over the same period while the Japan and US shares have fallen over the period. The China growth strategy of allowing markets to decide what export products to produce enabled it to catch the wave of rapidly growing demand for electronics products over the last decade. It established itself as a key assembler of a wide range of these goods including computers, televisions, telephones and related products, Greene *et al*. (2006). The parts and components required to supply this and other low skill intensive manufacturing industries were largely imported. They were imported from a wide range of countries that themselves were part of long global supply chains, Athukorala (2007). The share of Korean exports destined for China, for example, rose from 2.1% in 1990 to 21.3% in 2006, Table 10.5. The share of exports from other component suppliers, US, EU15 and Indonesia all tripled over the same period.

Table 10.5. China's import market

Percentage of total exports of the countries

	1990	2000	2001	2002	2003	2004	2005	2006
Hong Kong, China	32.3	34.5	36.8	39.1	41.7	43.0	44.6	46.3
Korea	2.1	10.7	12.1	14.6	18.1	19.6	21.8	21.3
Japan	2.1	6.3	7.7	9.6	12.2	13.1	13.5	14.3
Australia	1.9	5.4	6.2	7.0	8.4	9.4	11.7	12.6
Indonesia	3.2	4.5	3.9	5.1	6.2	7.1	7.8	8.3
India	0.1	1.9	2.2	3.7	4.6	6.6	6.6	6.6
Brazil	1.2	2.0	3.3	4.2	6.2	5.6	5.8	6.1
Russian Federation	5.4	5.1	5.6	6.4	6.2	5.6	5.4	5.2
EU15	0.6	1.0	1.2	1.4	1.6	1.7	1.7	1.9
United States	1.5	2.1	2.6	3.2	3.9	4.2	4.6	5.3

Source: UN ComTrade.

Table 10.6. China's share in major export markets

Percentage of total imports

	1990	2000	2001	2002	2003	2004	2005	2006
Japan	5.1	14.5	16.6	18.3	19.7	20.7	21.0	20.5
US	4.0	8.6	9.3	11.1	12.5	13.8	15.0	15.9
Korea	2.1	8.0	9.4	11.4	12.3	13.2	14.8	15.7
Australia	2.7	7.8	8.8	10.1	11.0	12.7	13.7	14.5
EU 15	1.2	3.0	3.2	3.5	4.1	4.7	5.4	5.7
New Zealand	1.2	6.3	7.0	8.0	9.0	10.2	10.8	12.2
Canada	1.0	3.2	3.7	4.6	5.5	6.8	7.7	8.7
Russia*	1.6	2.8	3.9	5.2	5.8	6.3	7.4	9.4
Mexico	0.8	1.7	2.4	3.7	5.5	7.3	8.0	9.5
Turkey	1.1	2.4	2.2	2.7	3.8	4.6	5.9	6.9

Source: UN ComTrade.

The rising China import shares were matched by rising export shares to many of the same markets, Tables 10.5 and 10.6. For example, there was a fourfold increase in the share of Japan, EU15 and US imports from China from 1990 to 2006. The top 15 export products from China in 2006 included final goods and parts and components – the latter because China itself is not the final assembler of many consumer and capital goods, Table 10.7. In 2006, the largest export item was digital computers but the list includes other final goods – television receivers, radiotelephones and video recorders. The largest single import item in 2006 was integrated circuits – larger than even petroleum oil and iron ore (the two largest raw material imports), Table 10.8. These snapshots on China's trade in 2006 show its dependence on imported raw materials and electronic components and its dependence on export markets for final electronic goods in the rest of the world. This pattern points to its role as an assembly platform but the presence of very large export items consisting of electronic components also points to an intermediate role in global supply chains for electronic goods.

Table 10.7. China's top 6-digit exports

USD Billions

1996			2006		
Product	Value	Product_Name	Product	Value	Product_Name
	151.0	**Total Trade**		**968.9**	**Total Trade**
270900	2.8	Petroleum oil	847120	43.4	Digital ADP machines
847192	2.0	Input or output units	852520	35.8	Radiotelephones
640399	1.9	Footwear	847330	32.6	Parts, ADP machines
640299	1.8	Footwear, nes	847192	25.7	Input or output units
950390	1.7	Toys nes	852990	24.0	Television parts
847330	1.6	Parts, ADP machines	854211	18.4	Integrated circuits
420310	1.4	Leather apparel	901380	13.2	Optical devices
420212	1.4	Trunks, suit-cases	852810	12.8	Television receivers
852731	1.3	Radio broad receivers	847193	11.9	Storage units
392690	1.3	Articles of plastics, nes	852190	7.7	Video recorders
610910	1.1	T-shirts, singlets	853400	7.6	Printed circuits
847193	1.1	Storage units	271000	7.0	Petroleum oil
620342	1.1	Men's or boys' trousers	852110	7.0	Video recorders
860900	1.1	Cargo containers	847191	6.9	Digital process units
270112	0.9	Bituminous coal	850440	6.9	Static converters, nes

Source: UN ComTrade.

Table 10.8. China's top 6-digit imports

USD Billions

1996			2006		
Product	Value	Product_Name	Product	Value	Product_Name
	138.8	**Total Trade**		**791.5**	**Total Trade**
847989	3.5	Machines	854211	80.1	Integrated digital circuits
270901	3.4	Petroleum oil	270901	66.4	Petroleum oil
847330	1.9	Parts, ADP machines	901380	32.8	Optical devices
854219	1.6	Integrated circuits, nes	852990	19.3	Television parts
880240	1.4	Aircraft nes, over 15 tonnes	260111	18.9	Iron ore
852990	1.3	Television parts	847330	18.2	Parts, ADP machines
390110	1.3	Polyethylene	854219	16.9	Integrated circuits, nes
310210	1.2	Urea	271001	15.5	Petroleum oil
520101	1.2	Cotton, not carded	847193	13.3	Storage units
260111	1.1	Iron ore	880240	9.7	Aircraft nes, over 15 tonnes
852520	1.1	Radiotelephones	853401	8.7	Printed circuits
310530	1.1	Diammonium phosphate	854220	8.6	Hybrid integrated circuits
852290	1.1	Parts, recording apparatus	847989	8.1	Machines & mechanical appliances
540742	1.0	Dyed synthetic fabrics	120101	7.5	Soya beans
390330	1.0	Acryl.butadiene-styrene	291736	6.2	Terephthalic acid

Source: UN ComTrade.

The rapid changes possible in China's trade sector and changes it its comparative advantages are also illustrated by the data on top products in Tables 10.7 and 10.8. In 1996, the top export products included footwear, toys, leather goods, suitcases, T-shirts, trousers and containers. None of these items appear in 2006 – mainly replaced by electronics goods.

An alternative perspective on China's place in electronic supply chains can be gauged from the import/export balance of some of its most export competitive products. Table 10.9 gives the list of China's "Star" performing electronic products at the 4 digit level: where "Star" performing products are defined as those where the world market for the product is growing faster than average (2001-2006) and China's world market share was increasing over the same period.

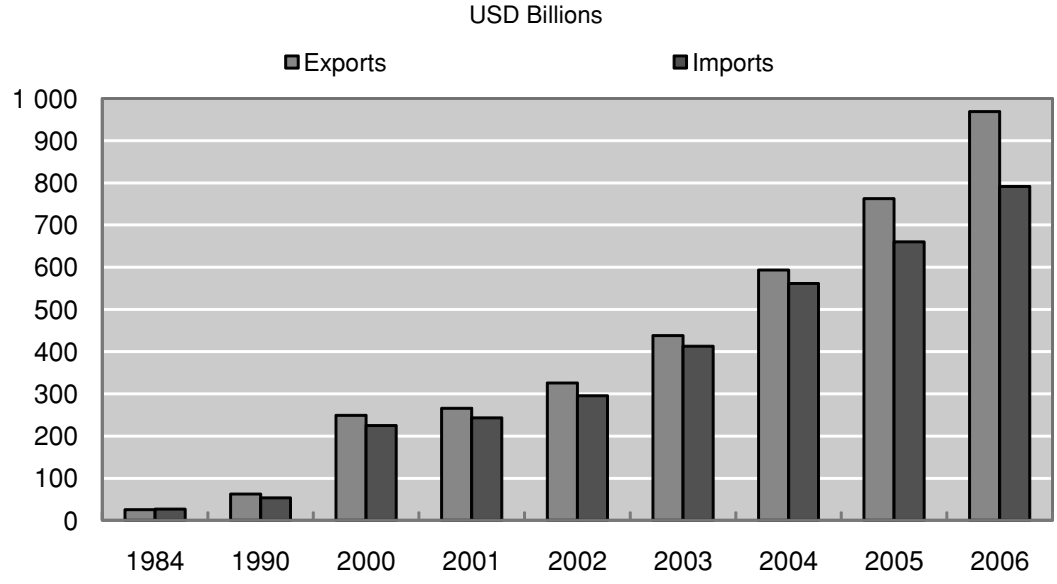
Table 10.9. China's Star Performers in Electrical and Electronic Equipment, 2006

HS4	Product	Export share % M. Exports	Imports/exports %
8525	Television cameras	4.6	14
8529	Television parts	2.6	78
8528	Television receivers	1.3	1
8534	Printed circuits	0.8	114
8544	Insulated wire	0.7	48
8541	Diodes, transistors	0.6	214
8519	Turntables	0.6	2
8539	Filament lamps	0.3	52
8543	Electrical mach. & appliances	0.2	119
8523	Tapes	0.2	133
8531	Bells, siren, alarms	0.2	31
8526	Radar apparatus	0.1	26
8502	Electric generators	0.1	77
8537	Boards and panels	0.1	241
8503	Parts, electrical equipment	0.1	137
8520	Mag tape recorders	0.1	16
8515	Laser/photon/plasma arc soldering	0	277
8514	Ind/lab furnaces	0	759
8530	Electric signalling equip.	0	517

Source: International Trade Centre, Geneva.

The import/export ratio in the final column of Table 10.9 indicates China's degree of self-sufficiency in the product. China was not self-sufficient in printed circuits (item 4) in 2006 – it was importing more printed circuits than it exported. This is true for a number of important electronics components – diodes and transistors, boards and panels, electrical equipment parts and lasers. On the other hand, China tends to be self-sufficient in final products – television cameras, television receivers, bells, radar apparatus and magnetic tape recorders. China exports more of these products than it imports. Two influences are at play here. Many of these final electronics goods have high income elasticities of demand and China does not have the market incentives and sometimes the technology to produce all the components required by its assembly plants.

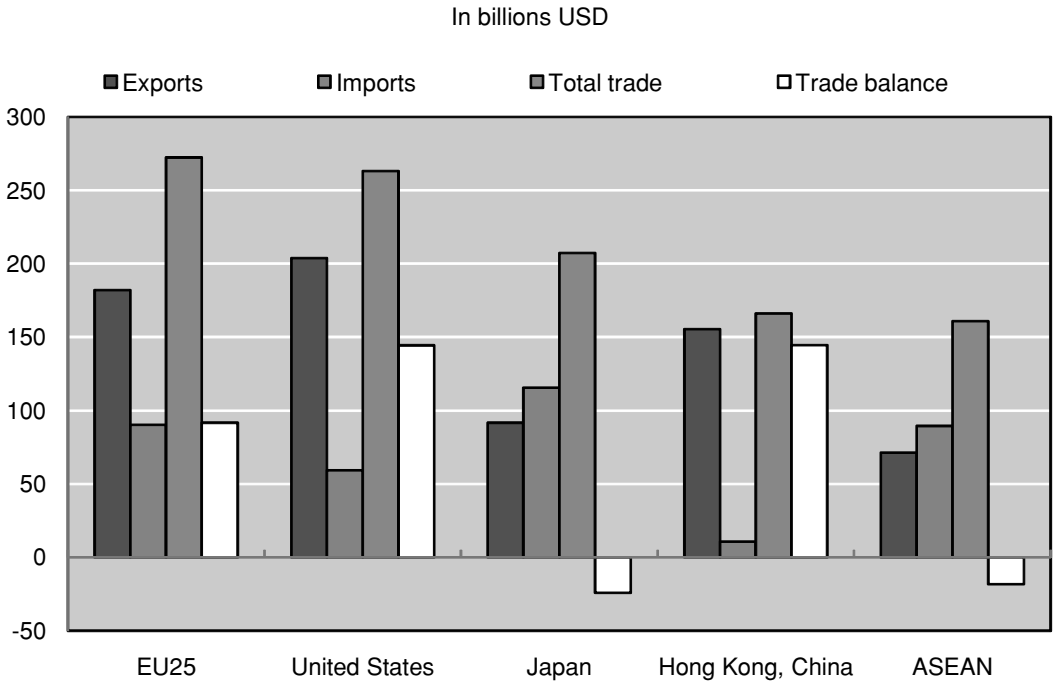
Figure 10.3. China: Trend in Foreign Trade, selected years



Source: UN ComTrade.

Part of China's efforts to ensure macroeconomic stability have included running current account surpluses and accumulating what are likely to be precautionary foreign exchange reserves. This has been very apparent since 2004, Figure 10.3. These reserves now stand at around USD 1.8 trillion. This current account position is one of a number of very large (relative to GDP) positive and negative current account positions in global financial markets in 2008. The global management of these large current account positions has become a high priority especially in the current credit crunch. Policy co-ordination in this area increasingly require participation by China – a side-effect of its successful growth and trade strategy.

Figure 10.4. China's top trading partners, 2006



Note: ASEAN corresponds to Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam.

Source: UN ComTrade.

China's overall trading patterns with its major trading partners are illustrated in Figure 10.4. China has a trade surplus with the EU25, Hong Kong, China and the US and a trade deficit with Japan and ASEAN. These balances reflect the two sets of factors discussed above: global demand patterns and the shape of supply chains (particularly in electronics goods) and global macroeconomic imbalances.

An overall assessment of China's relative trade performance in goods is given in Chapter 2. Its performance is summarised in Table 2.1. These gravity-type model results show that China, along with a number of other BRIICS countries, has dynamically deepened its trade links but it is not the best performer in the group when trade flows are adjusted for economic size. China's export performance is strongest as an exporter of capital goods. It is quite a strong as an exporter of consumption goods. Its importer performance is also strongest with respect to capital goods.

Table 10.10. China: Services Trade Composition

USD million and percentages

	1990	1994	2001	2007
SERVICES - Total trade	1 503	321	-5 933	-9 699
Services exports	5 855	16 620	33 334	122 206
Transportation services	46.2	18.5	13.9	25.6
Travel	29.7	44.1	53.4	30.5
Other services	24.1	37.4	32.7	43.9
Communications	*2.7*	*4.2*	*0.8*	*1.0*
Construction	..	..	*2.5*	*4.4*
Insurance	*3.9*	*10.2*	*0.7*	*0.7*
Financial	..	..	*0.3*	*0.2*
Computer and information	..	..	*1.4*	*3.6*
Royalties and licence fees	..	..	*0.3*	*0.3*
Other business services	*15.7*	*21.3*	*25.3*	*33.1*
Personal, cultural, and recreational	..	..	*0.1*	*0.3*
Government, n.i.e.	*1.8*	*1.6*	*1.3*	*0.5*
Services imports	4 352	16 299	39 267	130 111
Transportation services	74.6	46.8	28.8	33.3
Travel	10.8	18.6	35.4	22.9
Other services	14.6	34.6	35.7	43.9
Communications	*2.0*	*2.6*	*2.3*	*1.9*
Construction	..	..	*6.0*	*5.1*
Insurance	*14.8*	*33.3*	*19.3*	*18.7*
Financial	..	..	*0.5*	*1.0*
Computer and information	..	..	*2.5*	*3.9*
Royalties and licence fees	..	..	*13.8*	*14.4*
Other business services	*45.7*	*54.9*	*53.5*	*53.3*
Personal, cultural, and recreational	..	..	*0.4*	*0.3*
Government, n.i.e.	*37.5*	*9.2*	*1.7*	*1.5*

Source: IMF Balance of payments.

Trade in Services

As part of its WTO accession China made specific commitments in nine out of the 12 sectors contained in the classification list generally employed by WTO Members to schedule specific commitments under the GATS including: business services; communication services; construction and related engineering services; distribution services; educational services; environmental services; financial services; tourism and travel related services; and transport services, WTO (2002).

Trade in services was a key area in China's WTO negotiations for accession and resulted in commitments to substantially open a broad range of services sectors through the elimination of many existing limitations on market access. China agreed to eliminate by 31 December 2006 most restrictions on foreign entry and ownership, as well as most forms of discrimination against foreign firms. The quality of market openness, which accompanies these liberalisations, will ultimately depend on how transparent and automatic the licensing procedures in the liberalised sectors are applied.

An indication of how far the WTO moved China away from a command economy and towards an increasingly market economy can be found in its services commitments at the time of accession, which

included the eventual removal of restrictions on trading and domestic distribution for most products. China agreed to allow foreign services suppliers to engage in the retailing of all products by the end of 2003. By the end of 2004, all firms had the right to import and export all goods except those subject to state trading monopolies (such as oil or fertilisers). By the end of 2006, foreign firms were allowed to distribute virtually all goods within the domestic economy. Foreign financial institutions were permitted to provide services without client restrictions for foreign currency business upon accession, local currency services to Chinese companies by December 2003 and services to all Chinese clients by December 2006. In practice, the institutional and regulatory reforms that will enable China's to govern its services commitments, and those that will be necessary to make the liberalised services sectors accessible to foreign trade and investment, are still being implemented and improved.

In 1990 China was a net exporter of services with a services balance of around 25%. In 2007 China was a net importer of services with a 7% deficit, Table 10.10. Services exports have grown from USD 5.8 billion to USD 122.2 billion in nominal terms. Over this time period the largest increases in the shares of services exports are in Other Services, particularly Other Business Services. The share of exports of transport services has been reduced from 46% in 1990 to 25.6% in 2007. The share of travel services exports was roughly the same in 2007 as it was in 1990 but the share was much higher in the intervening period.

The share of transport services imports has declined even faster than exports and travel service imports have doubled since 1990. The share of Other Services imports have increased from 14.6% to 43.9%. The largest increase in the shares of Other Services imports are in royalties and license fees that are currently 14.4% of the total services imports of USD 130.1 billion.

Table 10.11. Share of China's Services Trade in World Total, selected years

Percentages

	1994	2001	2004	2005	2006
Exports	1.53	2.18	2.74	2.92	3.27
Imports	1.48	2.52	3.21	3.38	3.72
Total Services Trade	1.51	2.35	2.97	3.15	3.49

Source: IMF Balance of payments.

Trade in services represent around one seventh of trade in goods – much smaller than in specialist services exporters like India. Accordingly, China's world market shares in services (Table 10.11) are much lower than her goods trade share (around 8% in 2006). Nonetheless, China's services trade shares are rising for both exports and imports and have more than doubled since 1994.

The bulk of China's services exports are concentrated with its closest triangular trade links in goods – Hong Kong, China, Korea and Japan, Table 10.12. The major growth since 2000 has been service exports to Korea and Japan but there has been very significant percentage growth with France, Denmark, US, Spain and Finland. The origins of China's services imports show a similar pattern to exports, Table 10.13. Hong Kong, China, Korea and Japan are amongst the largest sources reflecting the importance of imports of parts and components from these countries and the synergies between trade in goods and trade in services. Australia is also in the top four sources reflecting its importance as a major source of raw materials, particularly iron ore and coal. As with services exports, Finland, France, Denmark and the US are important sources of services but Germany and Canada replace Italy and Spain in the top 10 import list.

Table 10.12. Top 10 Destinations of China's Services Exports

As a share of individual countries' total services imports

	2000	2001	2002	2003	2004	2005	2006
Hong Kong, China	30.86	30.71	30.06	28.56	27.20	26.94	26.57
Korea	6.91	7.39	9.60	9.32	9.93	10.89	11.01
Japan	3.57	3.63	4.00	4.38	4.95	5.96	5.24
Australia	2.31	2.34	2.72	2.63	2.93	3.02	2.61
France	0.46	0.51	0.48	0.79	2.01	2.25	1.93
Denmark	0.27	2.04	2.35	2.39	2.21	2.25	..
United States	1.47	1.65	1.79	1.58	1.99	2.11	2.12
Spain	0.99	0.96	1.02	1.09	1.19	1.50	1.65
Finland	0.21	0.21	0.62	0.99	1.71	1.46	2.13
Italy	0.92	0.89	1.46	0.68	0.96	1.13	1.15

Source: OECD Statistics on International Trade in Services by Partner Country Database.

Table 10.13. Top 10 Origins of China's Services Imports

As a share of individual countries' total services exports

	2000	2001	2002	2003	2004	2005	2006
Hong Kong, China	21.85	23.84	27.18	28.22	27.19	25.83	24.25
Korea	6.38	7.41	8.86	11.04	12.00	12.69	13.48
Australia	2.31	3.46	4.32	5.29	6.52	7.45	7.59
Japan	3.40	3.64	4.18	5.34	6.60	6.39	6.45
Finland	0.12	0.14	0.06	3.92	6.39	4.98	1.30
France	0.49	0.69	0.86	1.39	1.70	2.74	2.22
Denmark	2.25	2.70	2.72	2.76	2.78	2.61	..
United States	1.75	1.98	2.06	1.97	2.17	2.34	2.58
Germany (country of	0.85	1.10	1.38	1.42	1.66	1.84	..
Canada	1.24	1.33	1.31	1.32	1.42	1.46	..

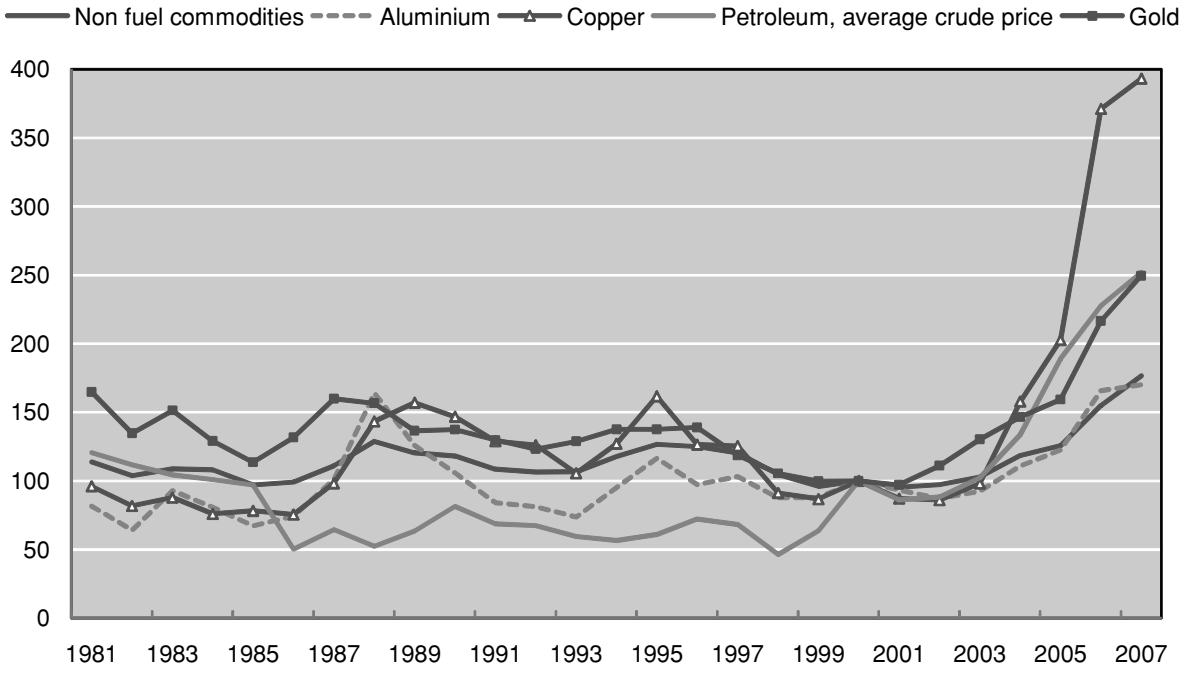
Source: OECD Statistics on International Trade in Services by Partner Country Database.

China's growing engagement in international trade has had a significant impact on relative prices.[1] When a large country like China supplies additional quantities of a product on world markets, it will cause the world price to fall. Likewise, when such a large country increases imports, it drives world prices up. China is a net importer of raw materials and a net exporter of manufactured goods. On the one hand, China's rapidly rising imports account for a large share of key commodities and has contributed to the recent strength in world commodity prices. On the other hand, fast rising Chinese exports of a wide and sophisticated range of final goods are driving down global prices. China may have exported deflation to other countries in recent years, Greene *et al.* (2006). This will have helped restrain inflationary pressures in countries importing Chinese goods. Furthermore, as China has carved out comparative advantages in a range of manufacturing goods, uncompetitive firms in competing exporting countries have been forced to adjust – to find new comparative advantages of their own.

[1] See also Box I.5 on globalisation and inflation in the *OECD Economic Outlook No. 79*, 2006.

Figure 10.5. World primary commodities prices

Index 2000=100



Source: IMF International Financial Statistics.

With rapid urbanisation, industrialisation and infrastructure construction, China is importing ever greater amounts of raw materials and primary products, pushing up world prices of key commodities, Figure 10.5. The recent upward movement in commodity prices has been driven by very strong demand in China but also in India and emerging supply constraints, Greene *et al.* (2006). There has been a concerted effort by the Chinese government to secure future sources of oil, natural gas, iron ore, aluminium, timber and other commodities in Australia, Russia and developing countries in Africa and Latin America.[2]

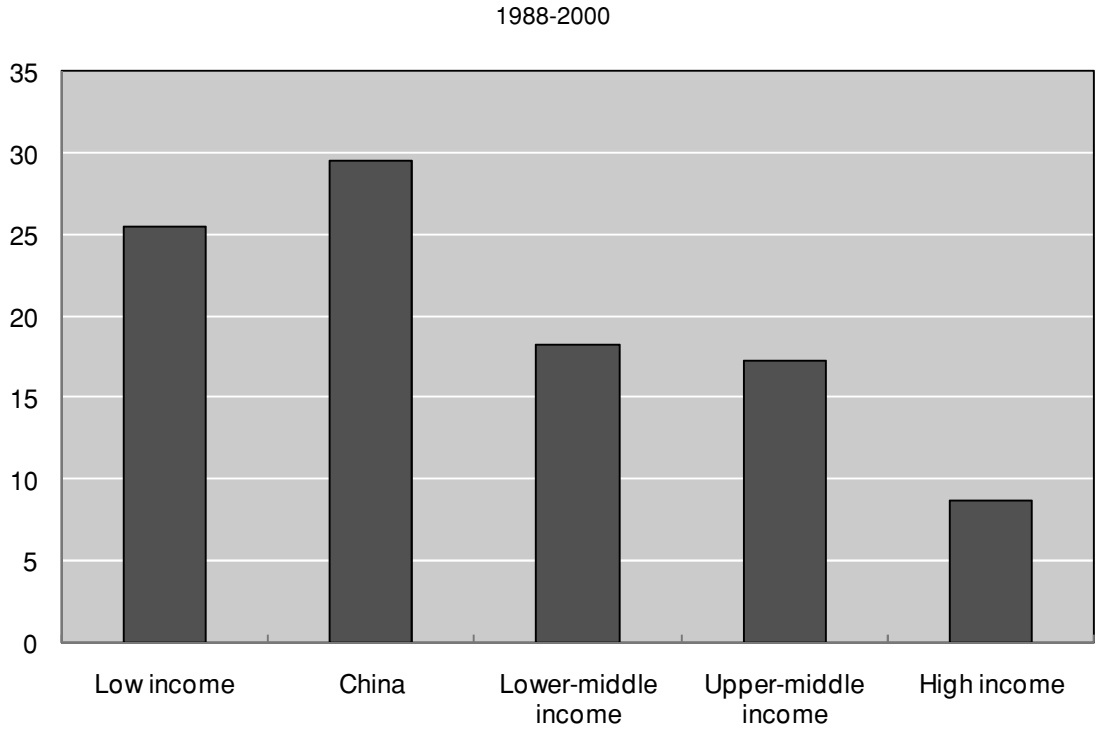
China is concerned about "overheating" and has launched a vast restructuring programme for its steel industry, Greene *et al.* (2006). Under the government plan, smaller steel plants are set to merge in order to raise efficiency levels and thus profitability. The Chinese government seems to want to limit the development of new additional capacity, having for some time relied on quality enhancement and product diversification, and it is currently closing down a large number of obsolete facilities. The Chinese government is concentrating its efforts on developing new product fabrication plants in order to step up its production of steel products with high value added.

However UNCTAD (2005b) notes that even with its soaring demand for resources, China is unlikely to bring about a permanent reversal in the declining trend of real commodity prices. In real terms, most commodity prices are still below their 1960-1985 average. The increase in Chinese demand for raw materials and primary commodities has both positive and negative effects on the world economy.

2 China is now the third largest importer after the US and EU of developing country exports. In 2003, Chinese imports increased by 81% from Latin America and 51% from Africa.

The increased demand is good for producers of such goods due to increased export volumes and world prices and the increase in prices has a negative effect globally on importers of raw materials and primary products.

Figure 10.6. Percentage of sectors with declining price trends in the EU, by country groupings

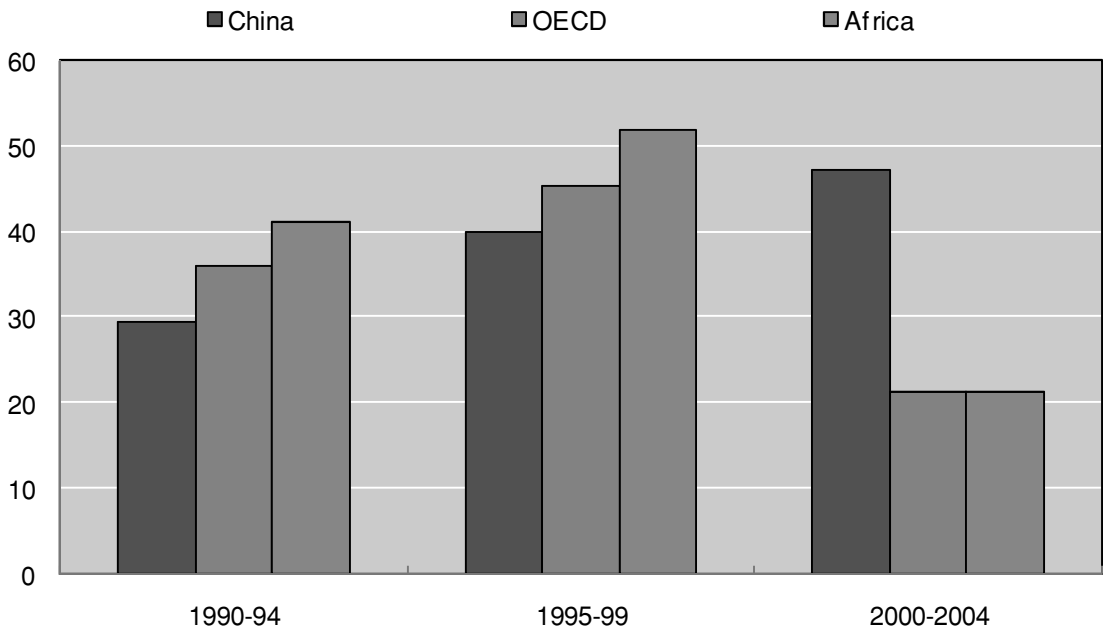


Source: Kaplinski (2005).

On the export side, the further lowering of trade barriers and rapid productivity growth in the Chinese manufacturing and electronics sector has led to a sudden surge of exports in various types of goods and consequently has pushed down their prices in the international market. Evidence shows that export prices of textile and clothing from developing countries have declined since the mid-1990s by more than 7%, Greene *et al.* (2006).There has been an even sharper decline in prices of electronic products, including computers and telecommunications equipment since the early 1990s.

Kaplinski (2005) tracked the extent to which prices of EU imports of products at the 8-digit HS level have fallen over the period 1988-2000 (the EU is large enough to use as a surrogate for the behaviour of global product prices). Figure 10.6 reports Kaplinski's findings: in almost one-third of the sectors, the price of Chinese-origin products fell. Kaplinski concluded that the greater China's participation in global product markets, the more likely prices fell.

Figure 10.7. Export sectors facing declining prices in the US



Source: OECD Foreign Trade Statistics.

To further demonstrate the effects of declining prices of China's exports, Figure 10.7 compares Chinese, OECD and African exports to the US over the past 15 years at the 6-digit HS level. From 1990 to 1994, 29% of Chinese exports to the US faced declining prices. This compares to 35% for the OECD area and 41% for Africa. From 1995 to 1999, the rates are higher by around 10% but follow the same pattern. However, there is a serious deviation from 2000 to 2004. Interestingly, both OECD's and Africa's percentage of exports face declining prices drops to 21% while China's continue to rise to 47%.

China has experienced a fall in prices of the goods it exports and a rise in prices of the goods it imports. The impact of the deterioration of the terms of trade increases with the relative importance of external trade to GDP. The key challenge for China will be how it continues to stimulate productivity to offset this tendency for its terms of trade to deteriorate.

Table 10.14. China: Simple and Trade-Weighted Statutory Tariffs, selected years

Percentages

	All Products		Agricultural products		Non-agricultural products	
	Simple	Weighted	Simple	Weighted	Simple	Weighted
1992	42.07	32.17	46.58	19.20	41.39	33.04
1996	23.70	19.76	35.61	57.46	21.55	17.08
1997	17.50	15.82	25.19	44.08	16.21	14.04
2001	15.88	14.11	24.47	54.30	14.45	12.61
2003	11.36	6.48	17.70	17.25	10.34	6.00
2004	10.51	5.96	16.52	22.76	9.55	5.15
2005	9.80	4.90	14.96	11.83	8.96	4.61
2006	9.82	4.39	15.72	16.10	8.86	3.94
2007	9.87	4.68	15.94	16.15	8.98	5.12

Source: UN TRAINS.

Since the early 1980s, China has recorded impressive results in economic growth, poverty alleviation and expansion of international trade and investment. During the next phase of reform, novel challenges will need to be addressed. Although the continuity of China's transition from command to market based economy is unlikely to be interrupted, the transition will increasingly be framed by an evolution from an industrial economy towards a service-oriented economy. In light of estimates that economic restructuring over the next decade will require the creation of over 100 million new jobs, the Chinese government is actively encouraging FIEs to participate in the next phase of SOE reforms (WTO, 2002) – as it has in other periods and sectors of the gradual domestic reform. Alongside the continuation of the poverty alleviation, which is growing more difficult as the remaining poor are increasingly concentrated in the less accessible western provinces, is the related challenge of managing the rising income inequality, which may eventually test the resilience of continued economic growth. The issue of environmental sustainability is now topical in public and official discourse (NDRC, 2007), and policies have already been put into place in this regard. China's success as a large exporting economy has itself created a new constellation of policy challenges.

Trade and Behind-the-Border Policy

In Chapter 4, Razeen Sally provides a concise summary of how China's trade policy has developed over the period since 1978. "China undertook enormous trade and FDI liberalisation before and after WTO accession in 2001. China's WTO commitments are very strong. They exceeded those of other developing countries by a wide margin. This holds for disciplines on border and non-border restrictions in goods and services. In addition, there are detailed commitments on transparency to make sure trade-related laws and regulations are implemented, backed up by administrative and judicial-review procedures to which individuals and firms are supposed to have recourse." The strength of these trade policy reform commitments is unsurprising given the stimulus that has occurred in trade and growth over the last 30 years.

The simple average tariff in China fell from 42.07% in 1992 to 9.87% in 2007, Table 10.14. This is a major achievement. However, it is still around double the tariff levels of high income countries. Liberalisation of services in China has further to go to reach OECD levels, Tables 4.3a to 4.3e.

Greene and Tsai (2008) explore the wide range of commitments China made on accession to the WTO. Most of these commitments relate to institutional reforms designed to maintain disciplines on market openness, to make administrative procedures more transparent and to enable appeal procedures. Selected areas discussed in Greene and Tsai (2008) on these issues are outlined below.

As part of China's 2001 WTO accession and its further integration into the multilateral trading system, the country committed to adopt more market based economic and trade policy reforms. In order to implement these reforms, China streamlined its bureaucracy and re-organised its major trade-related institutions. Although China's highest executive body – the State Council – has carried out five large-scale institutional reforms over the past 20 years, the 2003 reform put in place the necessary institutions for implementing a more market based policy agenda. In March 2003, the First Session of the 10th National People's Congress approved the State Council's Institutional Restructuring Plan. The Plan reduced the number of ministry-level departments from 29 to 28, created two new departments and restructured five old departments. As a result, several major agencies were formed, including MofCOM. Aiming to integrate China's domestic and foreign trade policy into one ministry, the former Ministry of Foreign Trade and Economic Co-operation and the State Economic and Trade Commission were dismantled and their work incorporated into the new MofCOM.

An iterative process of reforming economic policy and then the economic institutions, which carry them out, has come to be the hallmark of the gradualist approach to institutional reform in China. Current reforms indicate that China is increasingly orienting its domestic economy to facilitate continued integration with the global economy. China's institutional architecture has historically been characterised by the separation of regulatory institutions handling domestic versus international regulation, even in identical fields of regulation. China's recent institutional reforms, however, have merged institutions once divided by domestic and international work-streams, particularly when they had similar regulatory functions. The mergers that established the Administration for Quality Supervision Inspection and Quarantine (AQSIQ) in 2001 and MofCOM reflect this trend in consolidating economic agencies along functional lines. Such consolidation, along the lines followed by many OECD countries, should strengthen China's regulatory capacity to participate in the global economy.

As is the case in most economies, trade policies in China are oriented towards serving overall national economic objectives. Thus a review of national economic policy objectives is a useful first step in understanding how the development of foreign economic policy will be shaped as domestic economic reforms unfold. National economic policy objectives identified by Chinese economic policymakers as part of its 11th Five-Year Plan include:

- Reducing regional and urban-rural inequality;
- Increasing the efficiency of the economy by reducing natural resource consumption per unit of output;
- Limiting investment (including foreign) in highly polluting industries while supporting investments in cleaner industries;
- Increasing the level of value added in Chinese production;
- Continuing the reform of SOEs – including those related to services; and
- Addressing the large and growing economic imbalances between China and the rest of the world.

Although the underlying policies highlighted above are generally focused on domestic economic objectives, the sheer scale of China's economic relationship with the outside world means that policy regimes established to support domestic economic objectives would inevitably impact China's foreign trade and investment partners.

In its efforts to ensure transparency in terms of information dissemination, China has committed to publish and make readily available all laws, regulations and other measures concerning trade in goods and services. China has gone a step further than many WTO members in terms of its transparency commitments by establishing an enquiry point. The enquiry point is responsible for addressing requests for clarification of laws and regulations affecting trade and to providing all laws and regulations in Chinese as well as one official WTO language. Since 1987, China has drawn up more than 280 transparency related laws and regulations. Although not trade specific, the Chinese government recently made significant efforts to increase transparency by adopting its first nationwide government information disclosure system on 24 April 2007 – which took effect on 1 May 2008 – with the Regulations of the People's Republic of China on Open Government Information (OGI Regulations). The OGI Regulations put forward two ways of assessing government information. First is dissemination by government agencies, on their own initiative and second, disclosure in response to requests for information within 15-30 business days. Importantly, the OGI Regulations will apply not only to the central but also to the provincial, country and township levels of government. Its success, however, will depend on the quality by which the OGI Regulations are implemented and enforced.

The Legislation Law, which came into effect in July 2000, requires that all laws and regulations except those enacted by the National People's Congress (NPC) be published prior to their coming into force. This legal guarantee of transparency was an important step in the development of transparency in the area of publications. In 2002, the State Council issued the Notice on how to handle notification, enquiry and review after entry into WTO issued by the office of State Council. New laws and regulations of the People's Republic of China can be found on its official website in Chinese, www.gov.cn, and are often available in English, www.english.gov.cn. The General Office of the State Council has designated China Foreign Trade and Economic Co-operation Gazette (Gazette); issued by MofCOM as the publication dedicated to publishing all trade related laws and regulations. The State Council stipulated that the Gazette would appear on a regular basis and be readily available to individuals and enterprises. It is available on the Ministry's official website at: www.mofcom.gov.cn.

By March 2006, the State Council issued a notice directing all central, provincial and local government entities to send all trade related measures to MofCOM for publication in the Gazette. MofCOM has sought to make the Gazette a single source for trade and investment related regulations. However, research suggests that although most laws and regulations affecting trade and investment are published in some format, they are not always published in the Gazette. In April 2006 at the U.S.-China Joint Commission on Commerce and Trade (JCCT), the Chinese authorities agreed to publish all laws, regulations and other measures of all government ministries and agencies at all levels pertaining to or affecting trade in goods, services, IPR and the foreign exchange regime in the Gazette.

Indications are that within the past year, other ministries are increasingly publishing their laws and regulations in the Gazette. However, one source claims that many ministries still fail to publish their final policies and MofCOM has no administrative powers to enforce compliance. Even with the availability of information from other online sources (such as www.Chinaonline.com and www.sinolaw.com in English and www.sohu.com in Chinese), a consolidated and comprehensive journal is still needed.

Information on the General Administration of Customs in China can be found in the quarterly publication, China Customs published on the website: www.customs.gov.cn. Additional, information can also be found in the Chinese Statistical Yearbook published on the website: www.stats.gov.cn. Data on regulatory measures concerning foreign exchange is available at the website of State Administration of Foreign Exchange: www.safe.gov.cn, where an email address (safe-info@mail.safe.gov.cn) is provided to allow for more detailed inquiries.

A predictable policy environment and simplified procedures are perhaps the two fundamental components of transparency. In the OECD business survey, foreign firms from OECD member countries were asked questions on issues of transparency and predictability of laws and economic policies. Even with significant progress in improving transparency since WTO accession, the survey indicated there were still problems with up to date information on existing policies. More than 55% of the respondents indicated that medium to serious problems existed. When asked about information on changes in regulations, the results showed similarly that almost 59% of the foreign firms reported medium to serious problems.

As part of its commitments under the WTO, China agreed to establish an enquiry point to provide trade related information and authoritative replies on the interpretation of Chinese laws and regulations relating to trade. On 1 January 2002, the former Ministry of Foreign Trade and Economic Co-operation issued the Measures on China WTO notification and enquiry centre (Measures) to provide WTO members, enterprises, individuals and the public with information about the laws, regulations and other measures pertaining to or affecting trade. China's WTO Notification and Enquiry Centre was subsequently established as a bureau under the supervision of MofCOM to take charge of notification

and enquiry. The Measures require that replies to requests for information should generally be provided within 30 days. In exceptional cases, replies may be provided within 45 days with a prior notice of the delay and a written explanation of the reasons for the delay. The Measures also indicate that replies shall be complete and represent the authoritative view of the Chinese government.

China made a strong commitment to translating all laws, regulations and other measures concerning trade into at least one of the official WTO languages as part of its WTO accession commitments. Currently, 96% of Central Government institutions and most of the local governments have launched their respective official websites; however, the amount of information available on the websites varies significantly, particularly at the local level. An OECD study published in 2005 indicates that Chinese officials are well aware that their websites may be used from outside China. It found that 53.6% of Chinese government websites had English versions, 10.4% had Japanese versions and that 22.3% had traditional Chinese character versions that are used in Chinese Taipei and Hong Kong, China.

A second fundamental aspect of transparency refers to the openness of the regulation-making process, in particular, providing an opportunity for all stakeholders to participate in formal or informal consultations. Consultations and the equality of access to them have important effects on the quality and enforceability of regulations in general, on the efficiency of economic activities, and on the level of market openness.

The Chinese government is seeking to support the consultation process with pronouncements at higher political levels and experimentation in limited circumstances. In March 2006, Wu Bangguo, Chairman of the NPC's Standing Committee in his annual report to the Standing Committee of the 10th National People's Congress reinforced the need for public consultation. He stated that China would further promote democratic principles in its legislation by increasingly soliciting public opinion. "We will continue to publish draft laws, to solicit suggestions and to hold increased public hearings on bills which the public care about the most." One example has been the draft Law on Property Rights. Appearing in print media and the Internet on July 2005, the draft law received 6 515 suggestions in the first 16 days and had received a total of 10 000 comments by March 2006. A year later in March 2007, China's National People's Congress adopted the law which came into effect on 1 October 2007.

The text of the Legislation Law, which was adopted in March 2000, included procedural allowances for consultations that support transparency in the rulemaking process. Article 34 of the Legislation Law sets mandatory requirements for lawmakers to seek public comment and consultation as follows. "For a bill which has been put on the agenda of the session of the Standing Committee, the relevant special committee and the office of operation of the Standing Committee shall hear the opinions of the concerned constituents. In gathering opinions, various methods may be adopted, such as panel discussions, feasibility studies, meetings, hearings, etc."

Article 34 continues by requiring that the Standing Committee of the NPC shall distribute the draft law to the relevant agencies, organisations and experts for comments, and shall prepare a collection of the comments for submission to the Legislative Committee and the relevant special committees.

China has demonstrated an increased commitment to regulatory transparency. Recent studies notes that foreign businesses have had the opportunity to comment on the draft Labour Contract Law, the Anti-Monopoly Law as well as many industry-specific regulations. Although foreign enterprises are sometimes included among the "concerned constituents", they tend to be treated less favourably than domestic counterparts. The study further indicates that authorities often circulate drafts to academics, individuals and some of the affected companies, but often exclude foreign firms. Furthermore, summaries of provisions rather than the full drafts of the laws are sometimes released, little information

is provided on time frames for written comments or, if timeframes are included, they are much shorter than international standards.

There are examples where the government is trying to improve consultations with the relevant parties. The Provisional Regulation on Administrative Transparency (Provisional Regulation) applied by MofCOM is a useful example already operating within the Chinese regulatory system. The Provisional Regulation requires the ministry to release drafts of rules that may affect nongovernment interests for a minimum 10-day comment period and to take public comments into consideration when the draft regulations are finalised. The rules also describe the channels to be used to disseminate the drafts and the publication deadlines for each channel. The Provisional Regulation may be a case in which WTO accession has supported beneficial domestic regulatory reform as it is substantively related to the 2002 State Council Notice on how to handle the notification, enquiry and review work after entry into WTO issued by the office of State Council (Notice). The Notice mandated that a reasonable period of time should be granted to collect comments and suggestions after the publication and before the enforcement of the laws, administrative regulations and other measures involving or affecting trade (except those involving national security, the foreign exchange rate and monetary policies and those measures, the publication of which, would obstruct their enforcement).

The Ministry of Commerce has issued several key drafts for public comment, including the 2004 amended Foreign Trade Law. Mr. Shang Ming, the Director-General of the Treaty and Law Department of MofCOM, noted that the ministry solicited widely the opinions of domestic experts, scholars and institutions during the drafting process of the revised Foreign Trade Law. These included commercial branches of foreign organisations, economic representative institutions and FIEs in China. Many of the comments on the draft from foreign interests have been incorporated into the final law. In a similar example, the consultation process applied in the preparation of China's Anti-monopoly Law has been commended both for the transparency of the process, as drafts had been provided to relevant stakeholders including foreign ones throughout the process, and for the fact that the comments had been reflected in the subsequent drafts.

Important signs of the Chinese government's own efforts to review transparency can be found in a State Council report published in early 2006 which presented an evaluation of government websites. The findings of the study notably support the reform of transparency regulations in the direction of the Provisional Regulation applied by MofCOM. The study reported that by 2005, of the 76 agencies under the State Council, including ministries, public institutions, offices and administrations, 73 agencies had official websites. For local government, 28 out of the 31 provincial governments and 316 of 333 city governments had websites. The study further found that the websites provided facilities for public feedback through suggestions boxes, contact points for relevant officials and public opinion surveys.

The "Regulatory Reform and Management" chapter of the OECD publication Governance in China indicated that efforts have been made to strengthen the process of judicial review in China and improvement is likely to continue "incrementally". Hurdles to substantial improvements in the short run stem from a culture and history that leave China today with the interconnected difficulties of insufficiently qualified judges, pervasive corruption and significant limitations on judicial independence. As part of its WTO accession commitments, China agreed to establish "tribunals" in which appeals could be made regarding administrative decisions and interpretations of trade related laws and regulations, but no data on the operation of tribunals was available at the time this report was being prepared. The WTO Report of the Secretariat prepared for the Trade Policy Review conducted on China in 2006 indicated that in the case of appeals regarding administrative procedures, parties are able to make appeals to higher courts. Where an appeal has been made to the people's court of second instance, the decision is final.

Only in cases where the relevant procuratorate considers that the decision is in error is there a possibility for a retrial at the same level as in the previous case.

In the OECD business survey, several questions were asked regarding the legal rights of foreign firms to contest Chinese administrative decisions. When asked about access to appeal and arbitration, almost two-thirds of the surveyed firms noted that there were moderate to serious problems. The OECD foreign firms were asked questions about access to appeal and arbitration procedures, whether rules and proceedings were clear and transparent and if appeal and arbitration procedures were rapid and effective. Over 70% of surveyed firms indicated that problems existed with the manner in which rules and proceedings were conducted both in terms of uniformity and impartiality.

Transparency in the field of technical regulations and standards is important for firms facing diverging national product regulations. Transparency reduces uncertainty over applicable requirements and thereby facilitates access to domestic markets. Best practice in transparent regulatory regimes entails not only access to information, but transparency in the standards setting process. The area of standards development is one in which all stakeholders need to be able to contribute to the process. This is more likely to lead to the adoption of standards that are both effective in attaining regulatory objectives and are efficient in the manner that they do so. Significant efforts to restructure the standards related bodies in China have fostered more coherent institutional relationships and have contributed to transparency in the field of technical regulations and standards.

In 2001, China began to take steps to address problems associated with its multiplicity of standards setting and conformity assessment bodies. In April, the State Council merged the former State Administration for Entry-Exit Inspection and Quarantine (CIQ) and the State Quality and Technical Supervision Bureau (QTSB) into a new ministerial-level agency: the Administration for Quality Supervision Inspection and Quarantine (AQSIQ). The merger was designed to eliminate discriminatory treatment of imports and requirements for multiple testing. AQSIQ's administrative authority is broad. It manages China's standards and conformity assessment regulatory structure, enforces compliance with certification requirements, and conducts quality entry-exit inspections for commodities. AQSIQ reviews and approves China Compulsory Certification (CCC) product catalogue issued jointly with China Certification & Accreditation Administration (CNCA).

The significant efforts put into overhauling the standards regime have advanced institutional coherence and thus transparency. This process is ongoing. The consolidation of two former agencies to create AQSIQ in the standards area resembles the creation of the MofCOM from two previously autonomous organisations. AQSIQ must coordinate activities with a large number of agencies at different levels of government. This makes its operations much more complex.

Greene and Tsai (2008) have an extensive discussion on intellectual property rights (IPR) law in China. They conclude that China's IPR legal regime at the national level is largely in line with international standards, and that weaknesses in its enforcement stem from a generally incomplete regulatory infrastructure and an insufficient conviction by local regulators that protecting IPR is in the domestic and local economic interest.

Chinese officials are well aware that unnecessarily burdensome regulations stymie commerce and hold back economic growth. Their efforts at the national level to reduce red tape have, to date, been impressive. The State Council has already promulgated or amended 47 administrative regulations and retired 756 administrative regulations that were in place prior to 2000. Since WTO accession, 1 195 of 3 948 regulations requiring administrative approval were eliminated in an exercise spanning 65 departments. Late in 2006, China moved up 12 rankings to 19th place out of 61 economies in an

assessment of national competitiveness conducted by Switzerland-based International Institute of Management Development (IMD). The World Bank similarly ranks countries according to the ease of doing business based on regulations and their enforcement. Out of 175 countries tracked in 2007, China moved up 10 places to 83rd overall, Table 4.7. China is ahead of all its BRIICS peers except South Africa. China's ranking for the ease of trading across borders (42nd) is higher than its overall ranking and higher than all BRIICS countries except Indonesia (41st), Table 4.8.

Outside the multilateral trade sphere, China has developed a range of preferential trade agreements (PTA), Table 4.6e. China's PTAs are diverse in terms of their geography, architecture, level of completion and their underlying rationale. This complexity precludes indepth treatment on market openness within the context of this exercise. However, the more salient features of selected agreements are highlighted in the following discussion. China is part of ACFTA which is only a framework agreement, but appears to have ambitions towards deep integration based on the comprehensiveness of the issue areas detailed in the "framework agreement" for further development. Indeed, the ACFTA includes an unusual "early harvest" provision to eliminate tariffs on trade in unprocessed agricultural goods, which is a sector normally treated lightly in PTAs. Very few tariff lines within HS 1-8 have been excluded from the ACFTA and substantial increases in agricultural trade between its members have resulted. China's bilateral agreements include CEPA agreements with Hong Kong, China and Macao, China. They should have eliminated all tariffs on internal trade by 2006, comprise significant services liberalisation and have established elaborate institutional mechanisms. China signed a bilateral TEFA agreement with Australia which includes provisions on co-operation across a range of industries in which the partners have mutual interest. They notably contain a provision on co-operation to assist development in the central and western regions of China, which is a novel way to address domestic economic challenges via a bilateral agreement. China is currently negotiating an FTA with Australia, as TEFAs do not themselves contain substantial provisions on trade liberalisation. In April 2008, New Zealand and China signed a comprehensive bilateral PTA. Significantly, it is the first with an OECD country.

Conclusions

The overall picture of China and trade is a rather optimistic one. China's growth and trade performance represents a major economic transformation of the largest country in the world. An important part of its strategy has been to open up to world trading possibilities and make use of foreign direct investment as a supplement to its very large national savings. The ensuing production platform is efficient and surprisingly flexible in following changes in world product demand patterns. China has simultaneously made great strides in alleviating poverty in the country drawing hundreds of millions of people out of poverty over the period since 1978.

An important part of its trade strategy has involved gaining membership of the WTO and China has used this opportunity to cement institutional reform intentions across a broad spectrum of policy areas. China's accession to the WTO involved, what is probably, the most liberal commitment made to open trade by any country prior to 2001. These institutional reforms are a work in progress and given the size of the economy, they will remain so for a considerable period of time – it would be quite unrealistic to expect otherwise.

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Chapter 11

South Africa

by

Przemyslaw Kowalski, Ralph Lattimore and Novella Bottini

1. Introduction

South Africa has managed to dramatically reinsert its economy back into the world trade environment in the mid 1990s following a long period of internal political difficulties and international reactions to the apartheid regime. Since the early 1990s South African governments have faced major economic policy challenges to change the institutional structure of the economy and adapt the trade policy regime to the new agenda and structures.

South Africa's re-entry into the global trade architecture can be visualised quantitatively by a network index of the country's role in the architecture of world trade in goods (see Chapter 1 for details). The index measures the likelihood that South Africa is involved in a randomly selected trade chain in the network of 217 countries that comprise the dataset. An intuitive explanation of this centrality measure is as follows. Let us assume that a node (South Africa) sends a message to a target node (say, Japan). The message is transmitted initially to a neighbouring node and then the message follows links from that node, chosen randomly, and continues until it reaches the target node. The probabilities assigned to outgoing links are determined by the intensity of the relationship (value of trade), so that links representing higher trade value will be chosen with higher probability. A high index for South Africa means that the likelihood it is a part of any given trade chain present within the network is high and therefore it has access to a higher proportion of shorter links to send a 'message' to any other potential country in the world trade network. Furthermore, a high proportion of 'messages' sent by other countries to all other countries will go through South Africa. The index thus reflects the trade connectivity (value and number of bilateral trade relationships) of a country and its partners, and its partners' partners, encompassing the whole trade chain. In other words, it captures the influence of South Africa across the whole lengths of all trade chains. The centrality index is expressed in percent (ile) form – in other words ranked against the other 216 countries in the analysis (see Reyes, Garcia and Lattimore, 2008 for details).

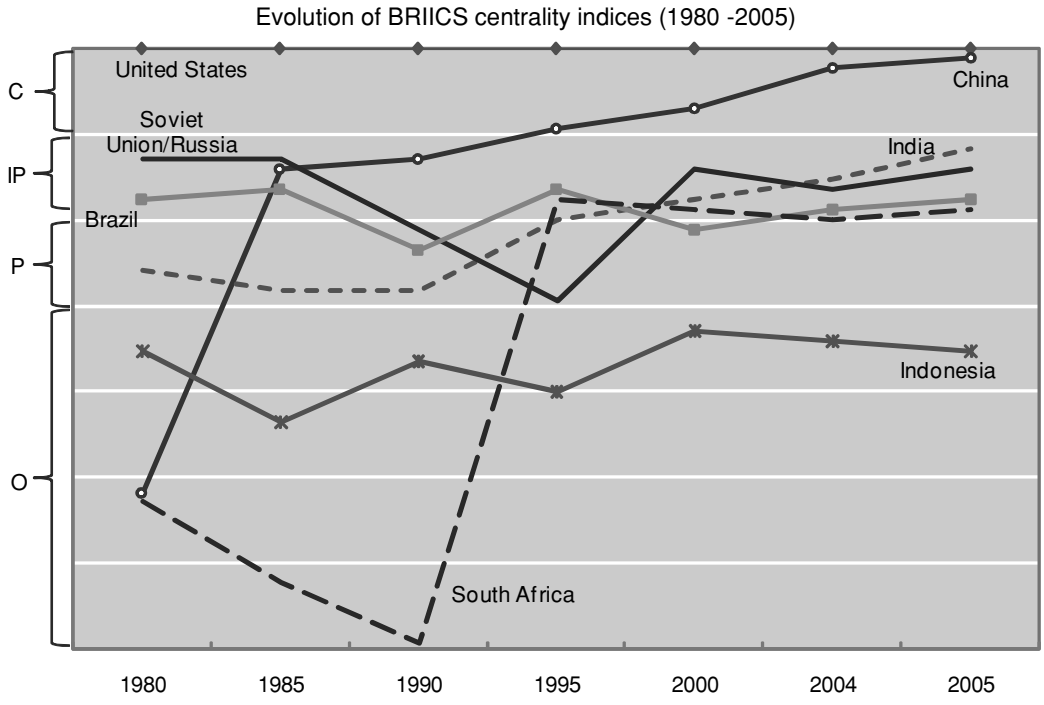
Figure 11.1 illustrates the relative importance of South Africa and some other larger emerging economies in the architecture of world trade via the country's degree of centrality in the world trade network in merchandise goods over the period 1980-2005. The decline in South Africa's trade centrality is clear during the 1980s as the trade embargoes took effect. The economy was deep in the "outer periphery" of the world network at this time (below the 85th percentile). Then from the early 1990s, the centrality index rose dramatically with the lifting of the trade sanctions, climbing into the inner periphery within five years (between the 90th and 95th percentiles). The trade economy has remained in this position ever since. Indeed, its centrality may have deteriorated slightly since 1995. This plateauing effect since 1995 contrasts with the performance of China, Russia and India whose indices continued to rise after 1995. China's performance has been outstanding and it is now a member of elite traders in the core of the network (above the 95th percentile). India too is approaching a core position.

Chapter 1 also shows this centrality index (and a number of other indices) for South Africa for four sub-groups of traded products – raw materials, intermediate goods, capital goods and consumer products. The network indices for these disaggregated products mirror the slight deterioration for total trade discussed above with some differences. The centrality index for raw materials falls from 1995 to 2000 and then again to 2005. This is somewhat surprising given South Africa's endowments in valuable

mineral resources. The index for intermediate goods trade also deteriorates from 1995 to 2000. However, it subsequently stabilises at this level. South Africa's centrality in global capital goods and consumer goods markets increases from 1995 to 2000 – again somewhat surprising given the strength of the minerals sector. However, even these later two categories have relatively low indices in 2005 which is consistent with the pattern for total goods trade.

This plateauing performance of South Africa in trade centrality terms could mean that there has been some stagnation in international market development relative to other countries. One can't be too emphatic about that, however, because the plateauing may result from a lesser need for South Africa to develop a higher range of trade links, given its pattern of comparative advantages, than China requires in its circumstances. Without further information we cannot distinguish between the two possibilities.

Figure 11.1. Striding towards the core of the trade network



Note: Core countries are defined as in or above the 95th percentile of the Random Walk. Between Centrality index, inner periphery 90-94th percentile, periphery countries 85-89th percentile and outer periphery countries below the 80th percentile.

Source: Chapter 1.

Nevertheless, several other indicators considered in the remainder of this report suggest that this may be related to the process of liberalisation that has largely stalled or backed up in recent years. The decline in average tariff and duties collected, for example, seems to have stopped or even have been reversed since 2000 as a result of increasing duties on consumer and, to a lesser extent, intermediate products and raw materials. There are some signs that this is related to slow progress in ongoing multilateral trade negotiations, growing number of preferential trading agreements and the emerging industrial policy strategy, which seems to call for maintaining relatively high effective rates of protection on certain sectors.

It might be tentatively concluded that South Africa's trade performance received a very strong initial boost relative to other countries following the removal of the trade sanctions but that the trade sector has not been able to keep up with developments in other countries since 1995 – especially in raw materials and intermediate goods.

The renewed openness to trade since the mid-1990s provided South Africa with an opportunity to gain from the world trading environment but it did not provide guarantees of gains from trade. The gains from trade arise from creating a competitive tradeable sector that responds to changes in world demand patterns and the world architecture of global supply chains.

Table 11.1. Selected economic and geographical indicators

	China	India	South Africa	Germany	Japan	US
Agricultural land (000' sq. km) in 2003	5 563	1 802	996	170	47	4 148
Arable land (hectares, mln) in 2003	143	160	15	12	4	174
Population, total (mln)	1 312	1 110	47	82	128	299
Birth rate, crude (per 1,000 people)	12	24	23	8	9	14
Death rate, crude (per 1,000 people)	7	8	21	10	9	8
GDP (current US$ bln)	2 645	912	255	2 897	4 368	13 164
GDP per capita, PPP (constant 2005 international $)	4 501	2 393	8 807	31 324	30 961	42 610
GINI index	47	37	58	28	n/a	41
Goods exports (BoP, current US$ bln)	970	124	64	1 131	616	1 027
Goods imports (BoP, current US$ bln)	752	167	70	934	535	1 861
Service exports (BoP, current US$ bln)	92	75	12	173	117	419
Service imports (BoP, current US$ bln)	101	64	14	215	136	343
Distance from Belgium (in km)	7 971	6 420	9 536	-	9 463	5 892
Distance from US (in km)	10 994	11 762	12 582	6 035	10 856	-
Distance from Japan (in km)	2 098	5 848	14 746	9 298	-	10 856

Source: WDI, CEPII and authors' calculations.

Over a longer historical perspective, South Africa has developed from its status as a colony based on its resource endowments in agricultural land and mineral resources. In this respect South Africa has endowment ratios in physical resources that have similarities with Canada, Russia, Brazil, the US and Australia. The current endowment of agricultural land is two hectares per head of population (Table 11.1). This is nearly 50% more than the US, five times the ratio in China and ten times that of Germany.[1] For this reason South Africa developed a comparative advantage in agriculture from earliest times. The relative importance of trade in agricultural products changed, however, with the discovery of South Africa's large endowments in precious stones and metals. These mineral endowments make South Africa more like Canada and Russia in terms of mineral deposits but with agricultural land more like Australia's climatic zone.

South Africa's endowments in particular mineral resources have provided a major starting platform in tradeables for over a century. There is a long literature that has been concerned with the long term growth prospects of natural resource based exporters. Recent empirical work in this area has been conducted by Lederman and Maloney (2007). They have surveyed a number of natural resource based exporters and conclude that "natural resources are neither curse nor destiny". A natural resource base certainly provides a platform for growth but the destiny of a resource rich country, in developmental

[1] South Africa's endowments in arable land are only half that of the US in per capita terms, Table 1.1. Accordingly, it is not surprising that South African agriculture has tended to concentrate arable land use in high valued crops like grapes, fruit and nuts and relatively less in broad acre crops (like cereals) where the US specializes. Non-arable agricultural land is then devoted to sheep and cattle farming in addition to wildlife tourism and conservation purposes.

terms, usually requires major parallel investments in human and physical capital. The composition of South Africa's trade reflects these developments in education, social services and research and development and the concomitant broadening in comparative advantages over many years. As outlined in the recent review of the South African economy (OECD, 2008), the major challenges facing South Africa are to improve investments in these areas of human capital and infrastructure in the new political environment.

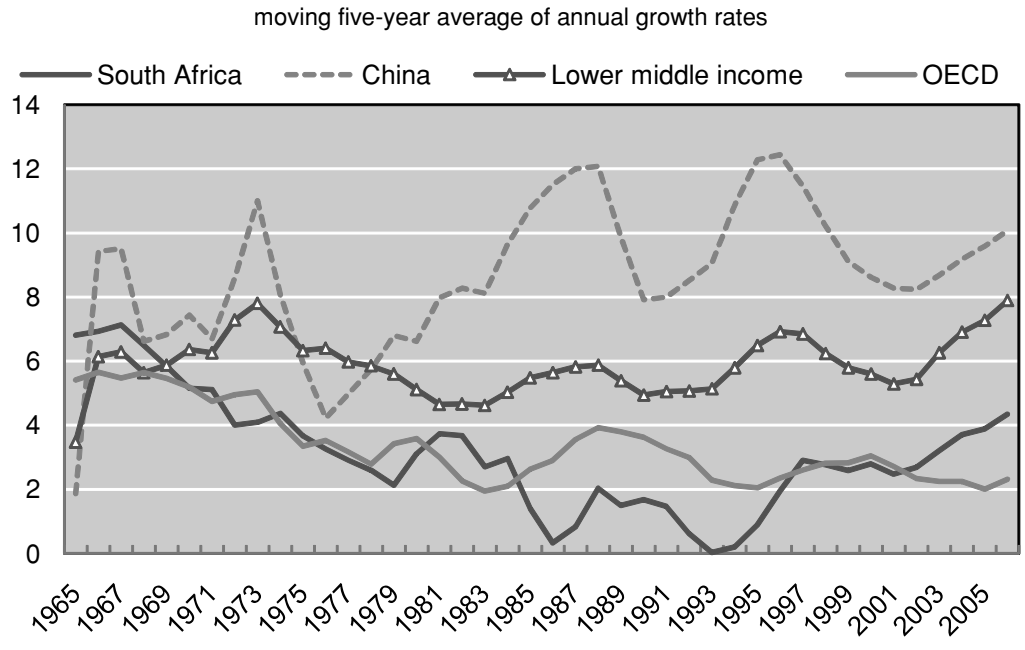
In the reminder of this report Section 2 deals with South Africa's recent economic growth in the context of its trade performance. Section 3 takes a closer look at the composition and performance of South Africa's exports at a product and sector level. Section 4 presents a discussion of the main historical and recent trade policy developments. Section 5 provides an econometric assessment of the impact of South Africa's trade liberalisation in period 1988-2003 on labour and total factor productivity across its industrial sectors.

2. South Africa's economic growth

2.1 GDP growth 1994-2002 and 2003-2007

With average annual real GDP growth of close to 5% since 2004, South Africa's economic performance has been distinguishably stronger than in the immediate post-apartheid period 1994-2003 (average real GDP growth of approximately 3% *per annum*, see Figure 11.2). Yet, the recent growth rates are not unprecedented in South Africa's history even if compared with the import substitution period of 1960s and 1970s. Most recently real GDP growth has reached 5.1% in 2007 and is estimated to have amounted to 4.2% in the first half of 2008, a growth rate at which income almost doubles over a 15 year period. The per capita income which is already high by BRIICS standards has also been increasing as was the total number of people in employment.

Figure 11.2. South Africa's GDP growth

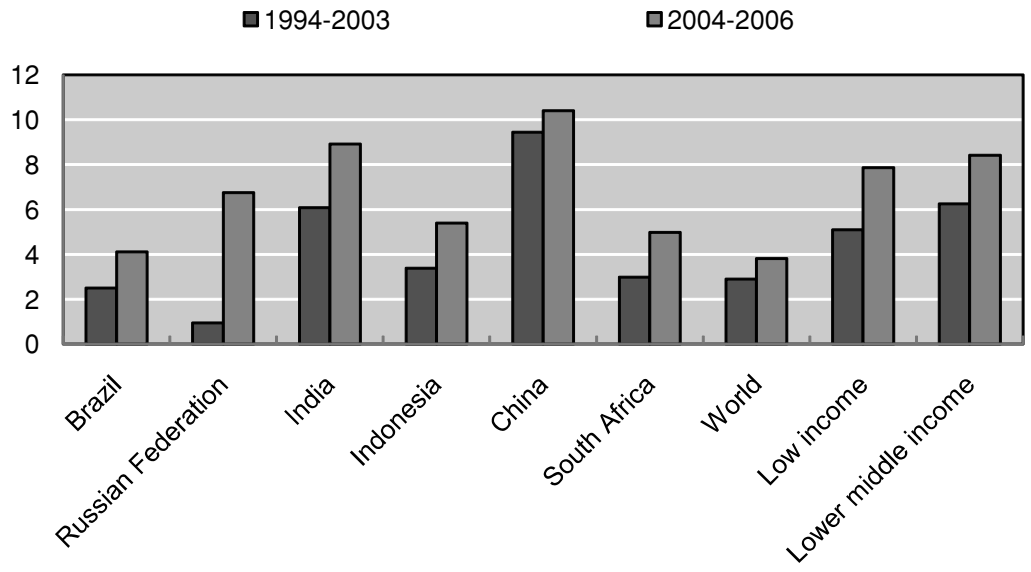


Source: WDI.

The employment rate has been lingering around a very low 42%-43% in the 1994-2006 period which meant that the growth was generated by less than half of the working age population. Such a low and persistent employment rate indicates that the benefits of recent growth have not been shared as widely as they might have been and that labour market performance represents one of the most essential and daunting challenges for South Africa.

South Africa's growth rates have been higher than the average growth rates for the OECD area and the world economy since 2000 but remain lower than those for the lower middle income countries, not to mention rapidly emerging economies such as China or other BRIICS countries (Brazil is an exception, Figure 11.3).

Figure 11.3. Average real GDP growth rates



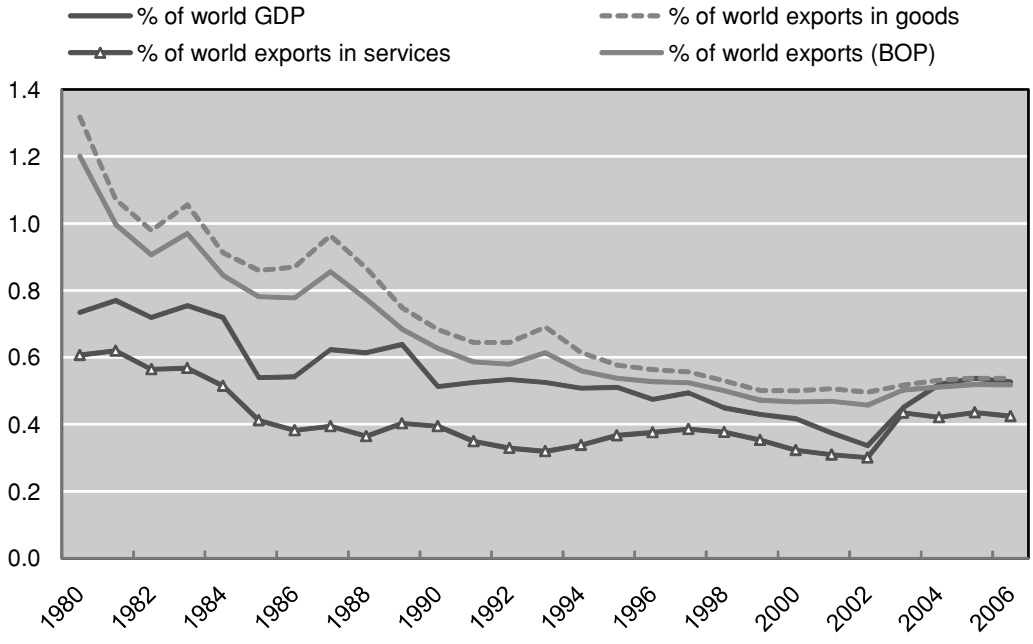
Source: WDI.

The expansion of South Africa's share of world GDP over the period 2003-2006, if sustained, could mark a break from a downward trend that has been observed since the beginning of 1980s. Interestingly, this coincided with an increase in South Africa's share of the value of world exports of goods and services, and services in particular (Figure 11.4). It is argued in OECD (2008) that the increase in South African share of world exports was more of a price effect and that the world market share in volume terms has continued to decrease through 2006. Indeed, South Africa's terms of trade improved considerably over the 2000-2007 period, Figure 11.5, and the prices of exports have been growing more dynamically than export volumes reflecting to a significant extent rising prices of platinum, gold and iron ore, Figure 11.6. Yet, the concurrent expansion of South Africa's share of world services exports signals that there may be more to the pick-up in South Africa's trade since 2003 than the rising precious metals prices.

With 66% of 2006 value added generated within the services sectors, 31% in industry and 3% in agriculture the structure of South Africa's economy resembles that of a developed economy more than any other of the BRIICS and is somewhere in between the structure of a typical high income and an upper middle income country, Figure 11.7. Indeed, since the end of the apartheid era the GDP shares of the agricultural and industrial sectors have decreased further from 5% to 3% and from 35% to 31%,

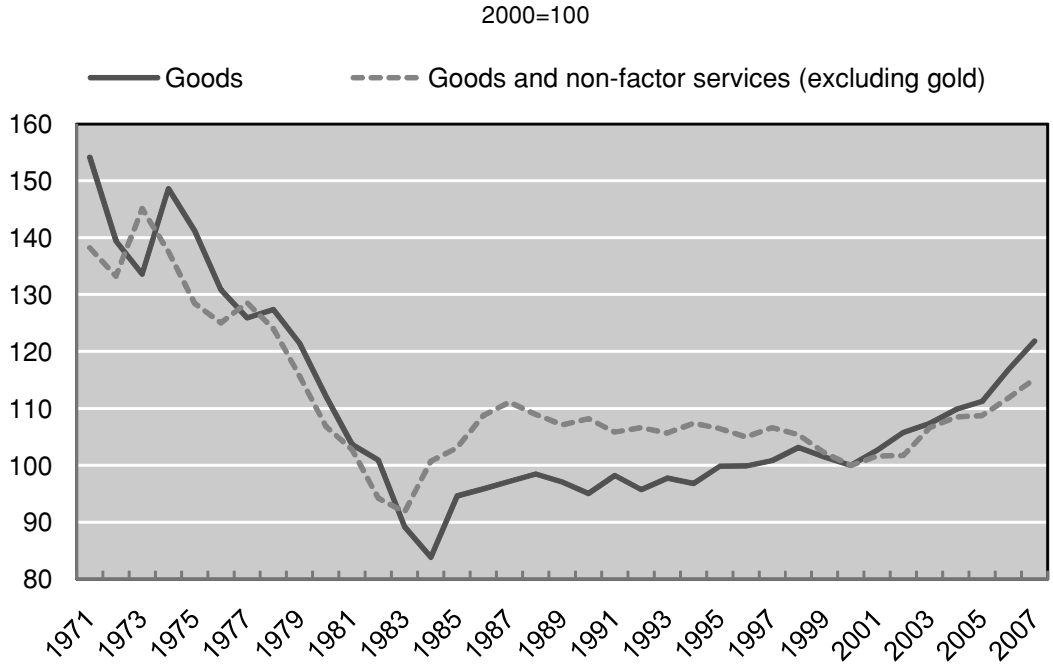
respectively. The share of services has increased from 60% to 66%, Figure 11.8. Annual growth rates of agricultural value added have been very volatile over the 1994-2006 period ranging from -11% to 20% and averaging -0.4% over the 1994-2006 period. With the exception of the 2000-2002 period the growth rates of services value added (4.3% average annual growth) have outstripped those of the industrial sector (2.4% average annual growth).

Figure 11.4. Share of goods and services in world trade



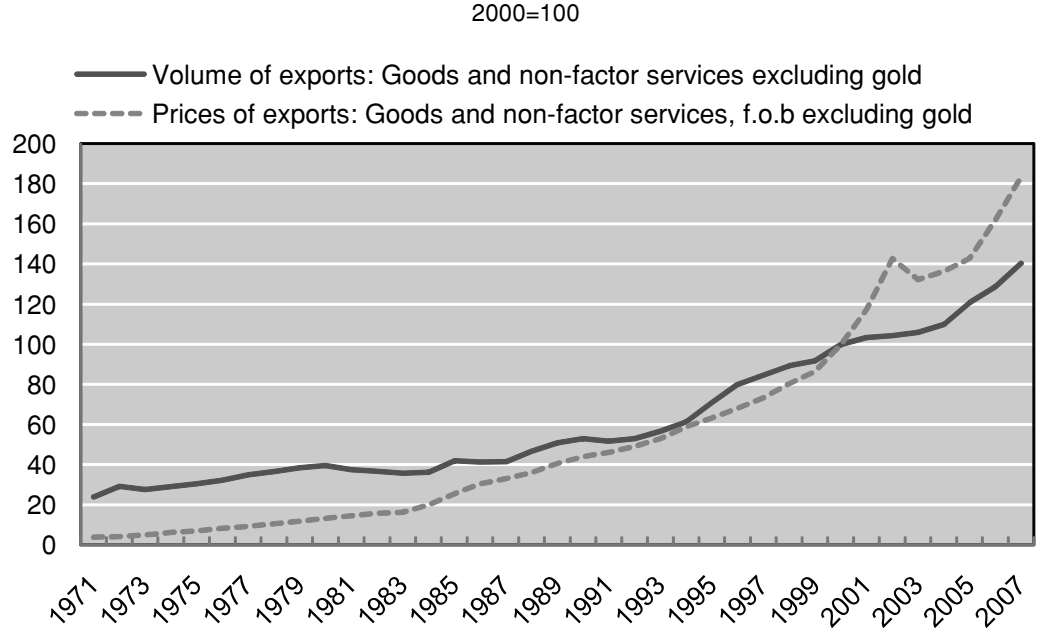
Source: WDI.

Figure 11.5. Terms of trade



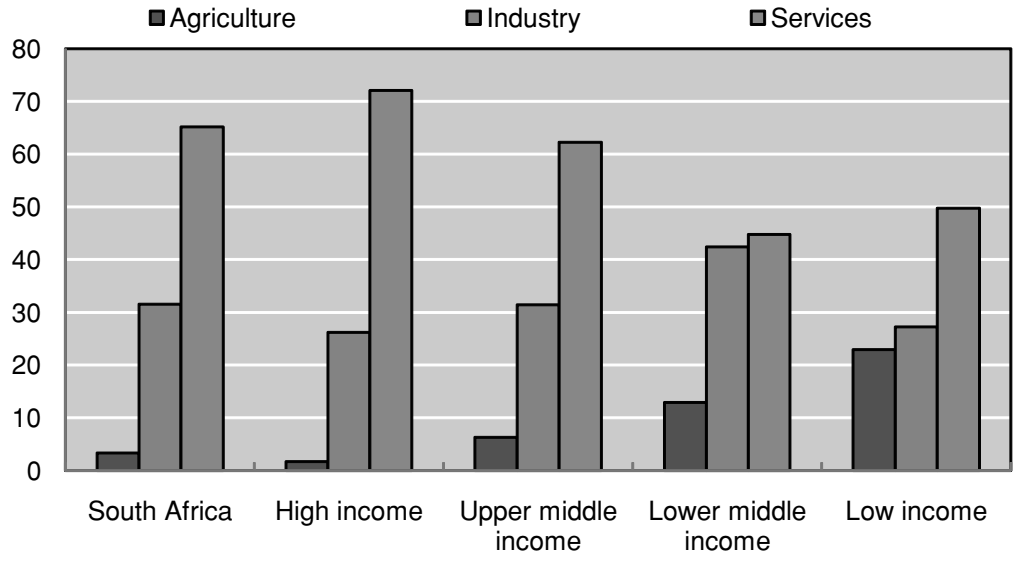
Source: WDI.

Figure 11.6. Volume and prices of exports of goods and non-factor services



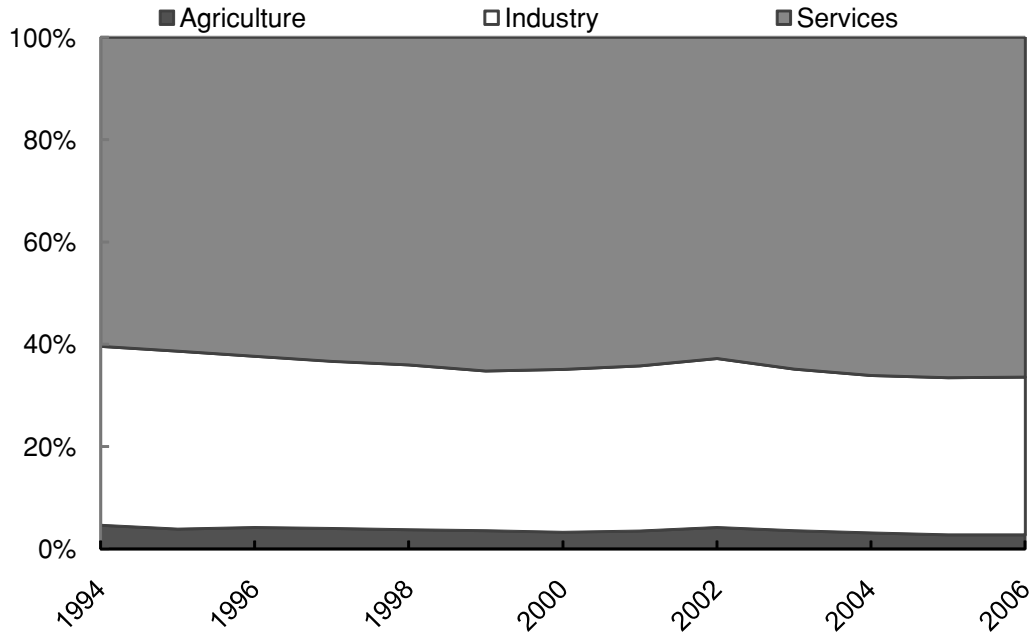
Source: SARB.

Figure 11.7. Average contribution to value added, by sector (% of GDP)



Source: WDI.

Figure 11.8. South Africa: contribution to value added in period 1994-2006



Source: WDI

Indeed, the composition of final output in Table 11.2 indicates that services accounted for the bulk of real output growth in the 1994-2007 period with the *Wholesale and retail trade* sector contributing approximately 20% of real growth in final output, *Communications* 14% and *Other services* 13%. Manufacturing as a whole contributed approximately 16%, mining 4% and the rest of the primary sector 3%. The highest average annual growth rates have been recorded in a number of mining and

manufacturing sectors such as *Other mining*, *Other non-metallic mineral products* and *Radio, TV, instruments, watches and clocks,* which nevertheless had low initial shares in South Africa's final output.

Industrial employment growth rate has picked up in 2004-2007 and averaged 2.1% for total industry. Again, the biggest increases have been generated by a number of services sectors such as *Wholesale and retail trade* and *Business services* which already account for high shares of employment and which enjoyed robust growth rates throughout the period. A number of manufacturing sectors have been consistently shedding labour over the period but typically their shares in industrial employment are already rather small.

2.2 General trends in trade performance, current account performance

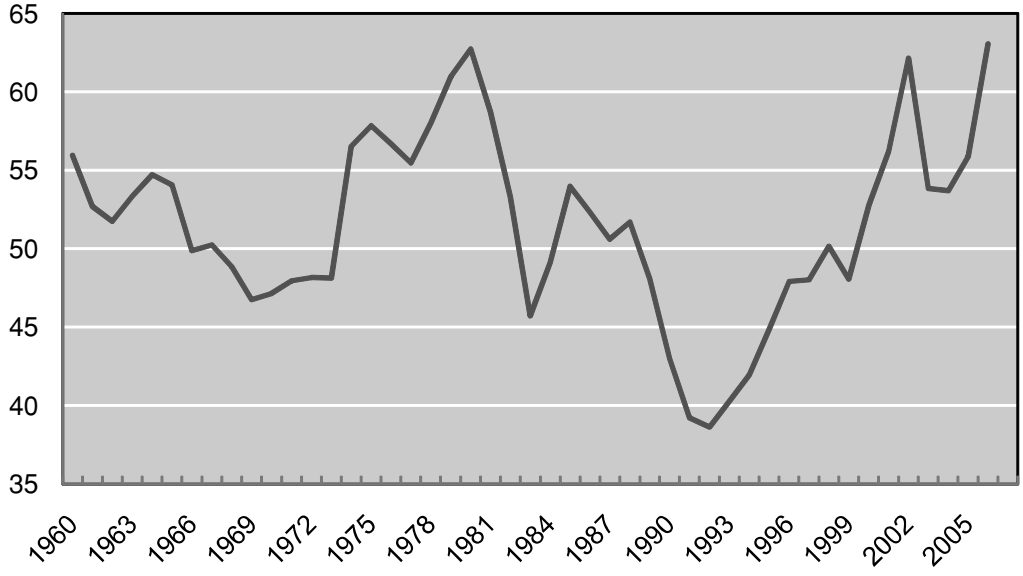
The ratio of trade in goods and services to GDP has risen from below 40% in 1993 to over 60% in 2006 indicating that the international exchange of goods and services has been an ever more important element of economic activity in South Africa in the post-apartheid era. Yet, by the same indicator, the current levels of openness are only comparable to levels recorded at the end of the 1970s, Figure 11.9. In other words political difficulties (and perhaps other factors) caused South Africa to turn inwards during the 1980s and early 1990s and they have only recently recovered their earlier degree of outward focus.

Table 11.2. Final output composition

	Average annual growth rate			Value in 2007 (mln R)	Share in total value of final output in 2007	Approximative contribution to growth 1994-2007
	1994-2007	2000-2007	2004-2007			
A11: Primary [1-2]	2.8	4.2	12.2	109 559	7%	3%
A1121: Coal mining [21]	6.8	4.7	9.7	20 603	1%	1%
A1122: Gold and uranium ore mining [23]	-6.6	-6.2	-8.7	39 918	1%	-3%
A1123: Other mining [22/24/25/29]	67.1	28.7	53.7	12 343	3%	5%
A1210: Food, beverages and tobacco [301-306]	2.7	3.6	3.5	170 760	8%	7%
A1211: Textiles, clothing and leather [311-317]	2.4	1.4	-1.7	19 612	1%	1%
A1212: Wood and paper; publishing and printing [321-326]	4.7	-8.8	-21.4	7 370	0%	0%
A1213: Petroleum products, chemicals, rubber and plastic [331-338]	4.7	-3.7	-15.0	40 189	1%	0%
A1214: Other non-metallic mineral products [341-342]	55.3	22.8	49.5	(5 267)	0%	4%
A1215: Metals, metal products, machinery and equipment [351-359]	0.2	-2.5	-8.4	85 945	2%	0%
A1216: Electrical machinery and apparatus [361-366]	14.5	2.9	3.5	8 332	1%	5%
A1217: Radio, TV, instruments, watches and clocks [371-376]	16.9	14.9	25.6	(15 168)	-1%	-5%
A1218: Transport equipment [381-387]	2.3	3.6	8.8	52 507	2%	1%
A1219: Furniture and other manufacturing [391-392]	3.7	3.8	2.9	46 395	3%	3%
A1221: Electricity, gas and steam [41]	4.6	2.5	1.8	24 660	1%	2%
A1222: Water supply [42]	5.8	6.3	9.0	4 381	0%	0%
A1231: Building construction [51]	4.6	8.6	11.9	82 392	4%	5%
A1232: Civil engineering and other construction [52-53]	6.6	9.8	15.6	66 449	3%	5%
A1311: Wholesale and retail trade [61-63]	5.2	6.9	10.2	220 501	14%	20%
A1312: Catering and accommodation services [64]	3.2	4.5	3.8	24 692	1%	2%
A1321: Transport and storage [71-74]	4.4	6.3	4.9	77 249	5%	7%
A1322: Communication [75]	13.0	10.1	8.7	48 108	3%	14%
A1331: Finance and insurance [81-82]	5.3	5.0	7.5	73 500	5%	8%
A1332: Business services [83-88]	3.1	3.9	4.8	161 936	7%	6%
A1341: Other services [93-96]	7.0	6.1	3.0	112 346	6%	13%
A1342: Other producers [98]	3.0	1.2	2.6	28 313	2%	2%
A1343: General government services [99]	2.5	4.7	5.3	394 430	19%	14%
Total	3.4	4.3	5.5	1 912 052	100%	100%

Note: except for value in 2007 based on final output values in constant 2000 prices.
Source: Quantec database, authors' calculation.

Figure 11.9. Trade as percentage of GDP



Source: WDI.

Trade reforms had already started to be implemented in the period preceding 1994. This was reflected in robust rates of export and import volumes growth in the 1988-1993 period, Table 11.3. Indeed in the first years of majority rule (1994-1999) the average growth rates of exports were actually slightly lower as compared to the preceding period while import volume growth rates picked up more quickly post 1994 and stayed above those of exports until very recently. Initially, average rates of import prices growth were higher than those for exports but this tendency has reversed more recently.

Table 11.3. Trade of goods and non-factor services (including gold)

Average annual growth rates

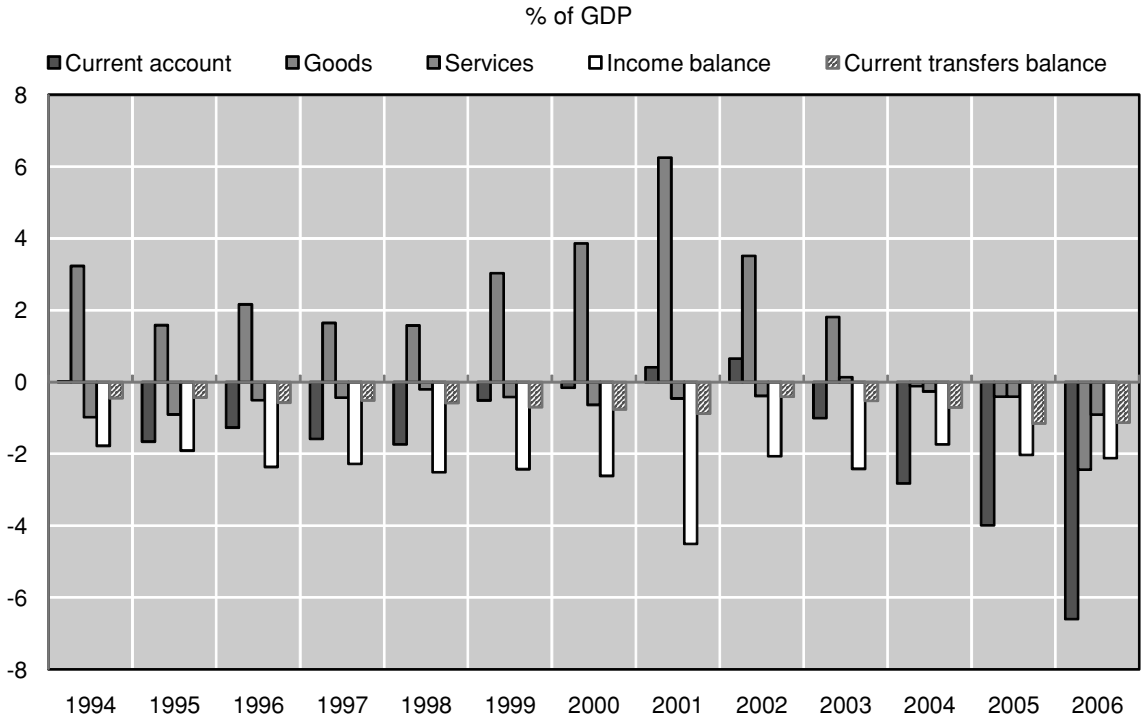
	Exports		Imports	
	Volume	Price	volume	Price
1971-1976	0.3	22.9	1.2	18.9
1977-1981	1.6	18.1	3.6	16.3
1982-1987	1.6	15.5	-3.5	13.3
1988-1993	4.0	6.2	4.3	9.2
1994-1999	3.8	8.2	6.7	9.1
2000-2007	5.6	10.5	9.1	8.7

Source: SARB.

These developments contributed to the worsening of South Africa's current account since 2003 which, up until then, was either in moderate surplus or an insignificant (below 2% of GDP) deficit, Figure 11.10. What drove these current account developments was a deteriorating balance on trade in goods which became negative in 2004 for the first time since the beginning of 1980s. Balances on services, income and current transfers have not undergone such significant changes although the balance on services in 2006 has reached its lowest position in the 1994-2006 period (-0.9% of GDP), Figure 11.10. As far as financing of these deficits is concerned, portfolio investment regained its position on the

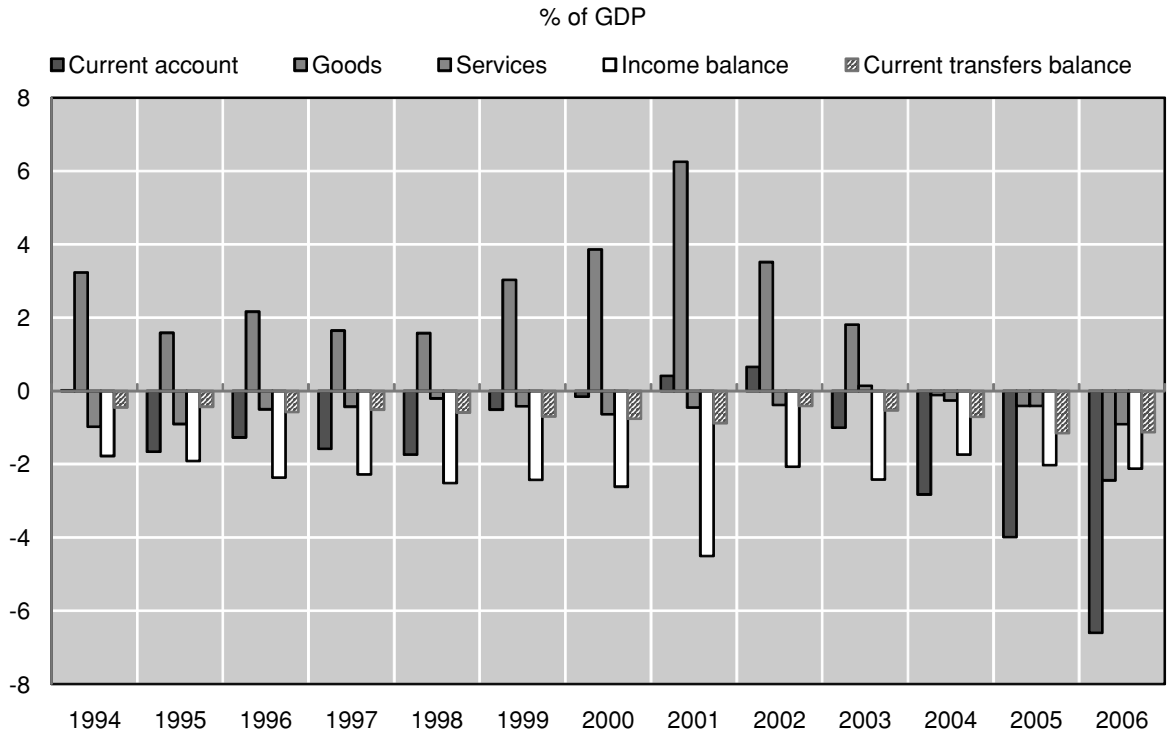
financial account reaching almost 8% of GDP in 2006 and outperforming the levels from before 2001, Figure 11.11. Worryingly, direct investment flows have been oscillating around the zero axis with no systematic tendency in one direction or the other.

Figure 11.10. Structure of current account



Source: International Financial Statistics, IMF; authors' calculations.

Figure 11.11. Structure of financial account



Source: International Financial Statistics, IMF; authors' calculations.

Table 11.4. Balance of payments items 1990-2006

% of GDP

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Current account	**1.37**	**1.15**	**1.62**	**2.24**	**0.02**	**-1.66**	**-1.27**	**-1.58**	**-1.74**	**-0.51**	**-0.16**	**0.41**	**0.65**	**-1.00**	**-2.83**	**-3.99**	**-6.60**
Goods	5.72	4.75	5.16	6.01	3.23	1.58	2.17	1.65	1.57	3.03	3.86	6.25	3.52	1.81	-0.11	-0.41	-2.44
Services	-0.29	-0.52	-0.82	-1.14	-0.98	-0.90	-0.50	-0.43	-0.21	-0.41	-0.64	-0.46	-0.38	0.13	-0.26	-0.41	-0.91
Income balance	-3.77	-2.65	-2.41	-2.12	-1.78	-1.91	-2.36	-2.28	-2.51	-2.43	-2.61	-4.50	-2.07	-2.42	-1.74	-2.02	-2.12
Current transfers balance	-0.28	-0.43	-0.30	-0.51	-0.45	-0.43	-0.57	-0.51	-0.59	-0.70	-0.76	-0.88	-0.41	-0.52	-0.71	-1.15	-1.13
Capital account	**-0.05**	**-0.03**	**-0.03**	**-0.05**	**-0.05**	**-0.03**	**-0.04**	**-0.14**	**-0.04**	**-0.05**	**-0.04**	**-0.04**	**-0.01**	**0.02**	**0.02**	**0.01**	**0.01**
Financial account	**-1.23**	**-1.30**	**-0.62**	**-0.24**	**0.36**	**2.25**	**3.13**	**2.51**	**3.15**	**0.94**	**-0.33**	**-1.39**	**-0.28**	**-0.85**	**0.54**	**2.80**	**4.39**
Direct investment	-0.09	0.04	-1.59	-0.22	-0.65	-0.83	-0.18	1.06	-0.86	-0.06	0.57	12.83	1.39	0.12	-0.24	2.31	-2.69
Portfolio investment	0.01	0.19	1.43	0.60	2.08	1.66	1.85	4.75	3.39	6.57	-1.53	-9.87	-0.31	0.38	2.58	1.97	7.84
Financial derivatives	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.08	-0.09	-0.12	0.00	0.00	0.00	0.00	0.00	0.00
Other investment	-1.13	-1.47	-0.26	-0.61	-0.80	2.03	0.11	-0.23	0.58	-4.03	1.14	-4.37	-1.61	-1.54	0.75	0.90	0.73
Reserve assets	-0.01	-0.06	-0.20	0.00	-0.27	-0.61	1.33	-3.10	-0.04	-1.45	-0.39	0.03	0.24	0.19	-2.55	-2.37	-1.49
Errors and omissions	**-0.09**	**0.17**	**-0.97**	**-1.95**	**-0.33**	**-0.57**	**-1.82**	**-0.80**	**-1.37**	**-0.38**	**0.53**	**1.02**	**-0.36**	**1.83**	**2.27**	**1.18**	**2.20**

Source: International Financial Statistics, IMF; authors' calculations.

Bearing in mind the intimate relationship between goods, services and financial flows in the balance of payments, it is not unusual for a transition or emerging economy to run a current account deficit in periods when it is importing capital needed for the restructuring of the economy. Yet, as pointed out in OECD (2008), while the recent levels of current account deficit are not extreme (current account deficit amounted to -7.3 of GDP in 2007 and is projected to deepen slightly in 2008), they may expose South Africa to the risk of financial crisis associated with a sudden drop of capital inflows. This may be even more so given the portfolio investment-dominated structure of the financial account and the current situation in the financial markets.

Indeed, the current financial market turmoil is likely to have a negative impact on international financial flows and thus can negatively impact the financing of South Africa's deepening current account deficits. Another aspect of the current global financial and economic turmoil is the worsening terms of trade for commodity producers, including South Africa. These recent unexpected events have added to already existing economic, social and political problems of the country. Thriving on cheap energy in the past, South Africa's economy has been recently suffering electricity shortages that manifested themselves with full force towards the end of 2007 and at the beginning of 2008. The government has devised a set of measures on both the supply and the demand side of the electricity market that can help in the long run (see OECD 2008) but most likely a combination of power shortages, restrictions on energy use and increasing energy prices is going to continue undermining the competitiveness of South Africa economy in the most immediate future. Inflation has been rising since early 2006 exceeding the South African Reserve Bank target of 3%-6% in April 2007 and reaching 13.6% in August 2008. Food and energy prices were the major contributors but inflation expectations have also risen.

These strictly economic concerns are additionally aggravated by a combination of social and political factors. Health, Nutrition and Population (HNP) statistics, for example, place South Africa below most of the corresponding upper middle income countries grouping averages in terms of nutrition, life expectancy and mortality.[2] The country also continues to have one of the world's highest crime rates, which is worsening the business and investment climate, and faces political instability in its immediate neighbourhood. Also, the recent unexpected resignation of President Thabo Mbeki and a part of his cabinet in September 2008 uncovered and perhaps exasperated the divisions within the African National Congress and contributed to political uncertainty. All these factors undermine somewhat the confidence with respect to South Africa's future growth and commercial performance.

3. South Africa's Exports: Structure and Performance

3.1 Composition and Destinations of Trade in Goods

As foreshadowed in the introduction, South Africa is relatively well endowed with agricultural land and high valued minerals like Australia, Canada and Brazil. The skill composition of its labour force is similar to many middle income countries. Accordingly, South Africa's trade is most similar to Australia, Canada and especially Brazil. Its trade is quite dissimilar to other African countries.

The major categories of South African exports and imports are presented in Table 11.5. Nominal merchandise exports rose 188% over the period 1995-2006 while merchandise imports rose 259% - faster than the growth in world trade. South African exports are concentrated in manufactured goods, particularly machinery and equipment items where the country is a net importer. The importance of South African net exports in diamonds and precious metal is not obvious in this Table given the degree of aggregation - it is included in manufactured goods and commodities n.e.s.

Food has represented a declining share of exports and South Africa has maintained a small net export position in food and beverage products over the period. South Africa is also a major exporter of mineral fuels but its net import position has grown steadily.

The export picture becomes clearer by drilling down into the product detail. The major South African merchandise export sectors are listed in Table 11.6. These 43 HS 2-digit sectors are those that produced more than USD 100 million in revenue in 2006. They represent 98% of total merchandise exports. The final column of Table 11.6 gives the import/export ratio for each the sector in 2006. South Africa is a net exporter of the product line when this ratio is less than 1.0 and a net importer of the

2 Health, Nutrition and Population (HNP) statistics, World Bank.

products when it is greater than 1.0. The major export sectors in 2003 were virtually the same as in 2006 and data for the earlier year are also presented in the table.

Not surprisingly, 21% of the nominal USD value of South African exports are concentrated in *pearls, precious stones and metals* (diamonds, gold and the platinum group), up from 17% in 2003. The trade ratio for this sector is 0.1 indicating that the country is a large net exporter of these products. Imports of these products are not zero though because firms find it profitable to aggregate supplies from other sources for further processing and trading requirements. This two-way intra-industry trade is typical of global supply chains where international trade in intermediate products (raw materials, parts and components) can be as important as trade in final consumer goods and capital goods.

Nineteen sectors produced more than 1% of South African exports in 2006. Six of these product lines are essentially primary products with five arising from the mining sector and one from the agricultural sector. The other 13 products are more highly processed (manufactured) goods although *Beverages and spirits* includes a major export in wine. The remaining manufactured export sectors are broadly based and include a number of highly elaborated manufactured products sectors from chapters 8 and 9 of the HS code.

South African export strengths can be viewed in this dataset (Table 11.6) by using a measure of the structural performance of an export sector. One such approach divides export products into four groupings according to two criteria: i) whether the world market for the product is growing faster or slower than average and ii) whether South Africa's world market share is growing or shrinking. A *star* product for South Africa is one in which the world market is growing faster than average and South Africa's market share is rising. Such products have obviously been performing very well. The polar extreme product type is called a *snail* and often will indicate a sector without solid future growth potential.

Table 11.5. South Africa: Composition of goods trade

Millions USD in bold and percentages

	1995	2002	2003	2004	2005	2006
Total goods	**54 971**	**49 276**	**66 179**	**87 867**	**102 024**	**122 355**
Total export	**28 226**	**23 064**	**31 636**	**40 264**	**46 991**	**53 170**
Food & live animals	6.4	8.3	7.6	6.6	6.5	5.5
Beverages and tobacco	1.3	2.1	2.1	2.0	1.8	1.5
Mineral fuel/lubricants	8.9	12.4	9.8	9.1	10.4	9.5
Animal/veg oil/fat/wax	0.2	0.1	0.1	0.1	0.1	0.1
Chemicals/products n.e.s	7.0	9.3	7.6	7.8	8.4	7.5
Manufactured goods	25.9	29.1	38.1	42.0	39.2	40.9
Machinery/transp equipmt	8.8	22.8	20.7	19.7	20.4	21.5
Miscellaneous manuf arts	3.4	5.2	4.8	4.1	3.4	2.9
Commodities nes	38.2	10.7	9.3	8.5	9.9	10.7
Total import	**26 745**	**26 212**	**34 543**	**47 603**	**55 033**	**69 185**
Food & live animals	4.6	3.5	3.4	3.4	3.2	3.1
Beverages and tobacco	0.6	0.6	0.7	0.7	0.6	0.6
Mineral fuel/lubricants	8.3	12.5	11.9	14.4	14.3	18.3
Animal/veg oil/fat/wax	1.2	0.8	0.8	0.8	0.6	0.6
Chemicals/products n.e.s	12.4	12.1	11.0	10.0	10.0	8.9
Manufactured goods	13.7	12.2	12.1	11.1	11.4	11.1
Machinery/transp equipmt	44.9	37.5	39.4	39.6	39.4	37.8
Miscellaneous manuf arts	8.0	8.5	8.2	8.3	9.0	8.9
Commodities nes	6.2	12.2	12.6	11.7	11.6	10.7

Source: UN ComTrade.

South African exports represent approximately 0.5% of world merchandise exports. Accordingly, the other two categories of products may also reflect potential. If world trade growth is below average but the country has a rising world market share, the product is called a *traditional* product in the table. Such products may represent niches for small and medium sized countries. The fourth type of product may be called an *emerging* product: the world market is growing faster than average but the country's world market share is declining. To have a declining world market share in a fast growing world market that China participates in strongly is not necessarily a bad omen for a country. This is the case of *Electrical and electronic equipment* (HS 85). This sector has been the basis of Chinese trade growth over the last decade and China's output and exports have grown at spectacular rates. It is a sector with high levels of intra-industry trade and long complex supply chains that provide a number of niches for other countries. So, while China is a major exporter of final goods from this sector, it is also a net importer of *Electrical and electronic equipment*. This sector is an emerging one for South Africa so while the country is a large net importer of this sector's products, the sector is showing some promise with over 2% of exports in these products in 2003 and 2006.

Pearls, precious stones and metals sector was a star performer for South Africa in both years. The star nature of this sector also indicates the strategic importance of South Africa to the world economy and probably explains why global trade links were able to recover so quickly in the early 1990s, as discussed earlier. However, there are risks associated with a country having a large resource-intensive export sector in the star category - so-called Dutch Disease events. That is, any volatility in real export prices in these products has a major effect on the positioning of tradeable sector resources - high product prices can quickly bid up the exchange rate, real wages expectations and the rental value of capital goods while mobilising large factor flows towards the sector. Low prices have the opposite effects. This can have destabilising effects on the rest of the tradable sector. The broad sectoral coverage of export sectors shown in Table 11.5 is some evidence that Dutch Disease effects are not obviously burdensome in South Africa.

Table 11.6. Major South African Export Sectors, 2003 and 2006

Chapter HS	Sector	Structural Performance 2003	Structural Performance 2006	Export 2003	Share % 2006	Trade Ratio M/X 2006
71	Pearls, precious stones and metals etc	star	star	17.0	21.0	0.1
72	Iron and steel	star	traditional	12.0	11.0	0.2
27	Mineral fuels	traditional	traditional	10.0	10.0	2.5
84	Boilers, machinery	emerging	emerging	8.0	9.0	2.4
87	Vehicles other than railway	emerging	emerging	10.0	9.0	1.5
26	Ores etc	snail	traditional	4.0	6.0	0.1
76	Aluminium	snail	star	3.0	4.0	0.1
85	Electrical, electronic equipment	emerging	emerging	2.4	2.3	6.5
8	Edible nuts, fruit	star	emerging	2.8	2.2	0.1
28	Inorganic chemicals	snail	traditional	1.8	2.0	0.9
29	Organic chemicals	star	emerging	1.6	1.8	1.2
73	Iron and steel	emerging	star	1.4	1.6	1.0
22	Beverages and spirits	star	snail	2.0	1.4	0.4
74	Copper, articles of	snail	star	0.5	1.2	0.4
88	Aircraft	emerging	emerging	0.3	1.1	1.4
39	Plastics	star	traditional	1.3	1.1	2.7
38	Misc. chemical products	traditional	emerging	1.0	1.1	1.4
48	Paper, paperboard	emerging	snail	1.5	1.0	1.4
94	Furniture, lighting, prefab buildings	emerging	snail	1.8	1.0	1.0
44	Wood, articles	emerging	snail	1.4	0.8	0.8
47	Wood pulp	emerging	snail	1.2	0.8	0.2
17	Sugars	snail	snail	0.8	0.8	0.2
3	Fish	emerging	snail	1.2	0.7	0.3
40	Rubber	star	traditional	0.9	0.6	2.3
20	Vegetables, fruit, nuts	star	snail	0.9	0.6	0.3
75	Nickel	star	star	0.3	0.6	1.8
90	Optical. photo, techical etc equipment	star	star	0.6	0.6	7.1
33	Essential oils, pefumes, cosmetics etc	traditional	snail	0.5	0.4	1.4
51	Wool, animal hair	emerging	emerging	0.6	0.4	0.1
68	Stone, plaster etc.	snail	star	0.3	0.4	0.9
86	Railways	traditional	traditional	0.5	0.4	0.7
24	Tobacco	na	emerging	na	0.4	0.6
41	Raw hides	snail	snail	0.5	0.4	0.5
25	Salt, sulphur etc.	snail	snail	0.5	0.3	0.8
31	Fertiliser	traditional	traditional	0.5	0.3	1.8
32	Tanning, dying	emerging	emerging	0.4	0.3	2.1
10	Cereals	snail	snail	0.5	0.3	2.2
81	Other base metals	na	star	na	0.3	0.4
30	Pharmaceuticals	na	traditional	na	0.2	11.0
21	Misc. edible products	na	emerging	na	0.2	1.5
49	Printed books	na	emerging	na	0.2	2.4
82	Tools, implements	emerging	snail	0.3	0.2	3.1
34	Soaps, waxes etc.	na	snail	na	0.2	1.4
	Share of total merchandise exports			94.3	98.2	

Column 2: names of sectors with import/export ratios less than one are shaded; Column 4: star and traditional sectors with growing country market shares in both 2003 and 2006 are shaded.

Source: International Trade Centre UNCTAD/WTO, Geneva.

The 2006 star performers are spread throughout this list of larger export sectors. Their contribution to employment can be gauged by comparing Table 11.6 with the capital/labour ratio given in the last column of Annex Table 5.1 The mineral and metal star performers (HS chapters 71, 76, 73, 74, 75, 68

and 91) have average or somewhat higher than average capital/labour ratios. Other mining and non-ferrous metals (aluminium, copper and nickel) are much more capital intensive than average. On the other hand, electronic and other equipment are very labour intensive in South Africa relative to the economy-wide average. There are 14 snail sectors in the list for 2006. These unpreferred sectors are not prevalent towards the top of the list – they tend to be clustered in the middle and at the bottom.

A number of the top 2-digit export sectors tend to involve capital intensive production. For example, six of the top 10 tend to have that characteristic (71, 72, 27, 26, 76 and 28). On the other hand, there are a number of emerging and traditional export sectors that can involve labour intensive operations.

Slightly over half of these larger export sectors have import/export ratios greater than one (the names of sectors with import/export ratios less than one are shaded). This provides some evidence of inter-industry trade in parts and components and accordingly, good South African interconnections into global supply chains. While international developments tend to promote globalisation, South Africa can further integrate itself into these supply chains efficiently but only if it can match the trade liberalisation efforts of other countries. On the one hand, the exportable sector has to be able to obtain parts, components and capital equipment at the lowest possible import price and it has to be able to export components and final goods of international quality at internationally competitive prices.

The structural status of these sectors in terms of the star/snail classification has changed between 2003 and 2006. One interesting dimension of these changes focuses on sectors where South Africa's world market share is increasing - regardless of the world market growth position. Star and traditional sectors involve growing country market shares and where this applies to both 2003 and 2006, the sector has been shaded in column 4 of Table 11.6. The first three sectors (71, 72 and 27) all fall into this category - South Africa's market share was growing in both periods. There are fourteen such sectors in the 43 sectors listed – their export performance has been very positive in recent years.

South Africa's top performing exporter sectors probably also include a number of sectors where South Africa's world market share is falling as mentioned above. Sectors 84, 87 and 85 fall into this group. Emerging markets have greatly expanded exports in these products recently and South Africa's falling world market shares may still represent good performance.

There are a number of sectors which have not performed well on these measures. *Beverages and spirits* (22) and *Vegetables, fruit and nuts* (20) are examples where the sector has moved from star status in 2003 to a snail in 2006 – South Africa's world market share has fallen (and world market growth has fallen below average). The first sector's performance may reflect recent over-supply problems in the world wine market. South Africa's export share in *Beverages and spirits* has fallen from 2% in 2003 to 1.4% in 2006.

An alternative measure of international competitive strength is revealed comparative advantage. [3] The revealed comparative indices are given in Kowalski *et al.* (2008) in Annex Table 3.1. As one would expect, South Africa had a revealed comparative advantage (RCA index greater than 1.0) in 2006 in the

[3] Revealed comparative advantage indices are defined as the ratio of a country's exports of a product to that country's total exports, divided by the ratio of world exports of the product to total world exports. The value of the index ranges from 0 (strong revealed comparative disadvantage) to a very large number. An index greater than (less than) 1.0 indicates a comparative advantage (disadvantage) in that product. RCA indices are very crude measures of true comparative advantage in some ways. RCA indices are not adjusted for a wide range of policy distortions that affect trade. The concept of true comparative advantage connotes a degree of competitiveness with no industry or trade policy intervention.

broad range of products towards the top of the major export sector list in Table 11.5. However, there are major differences to the order in which they appear in the RCA list and the top export list. This points to trade and industry policy distortions. For example, five agricultural and aquaculture HS2 sectors have a revealed comparative advantage (03, 08, 17, 20, 22 and 51) but they do not all appear in the major exporter list. South Africa has a revealed comparative advantage in a range of chemicals and forestry products (28, 31, 36 and 47). Again, unsurprisingly, the RCA indices are highest for mineral products (HS chapter 7).

South Africa also has a revealed comparative advantage in machinery and equipment items (86 and 87), although the indices are not high. These products are, however, towards the top of the major export list (Table 11.6). Furthermore, sectors 84 and 85 are amongst the top 10 exports and South Africa has a revealed comparative disadvantage in these products, though in the case of sector 86 the RCA index has been rising at 6.4% per year over the last decade. This is evidence that the two sectors are receiving industry protection, OECD (2008), which would bias the RCA index upwards. Likewise, the true comparative advantage index for the motor vehicle industry (HS87) is accordingly very likely to be less than 1.0 indicating a comparative disadvantage.

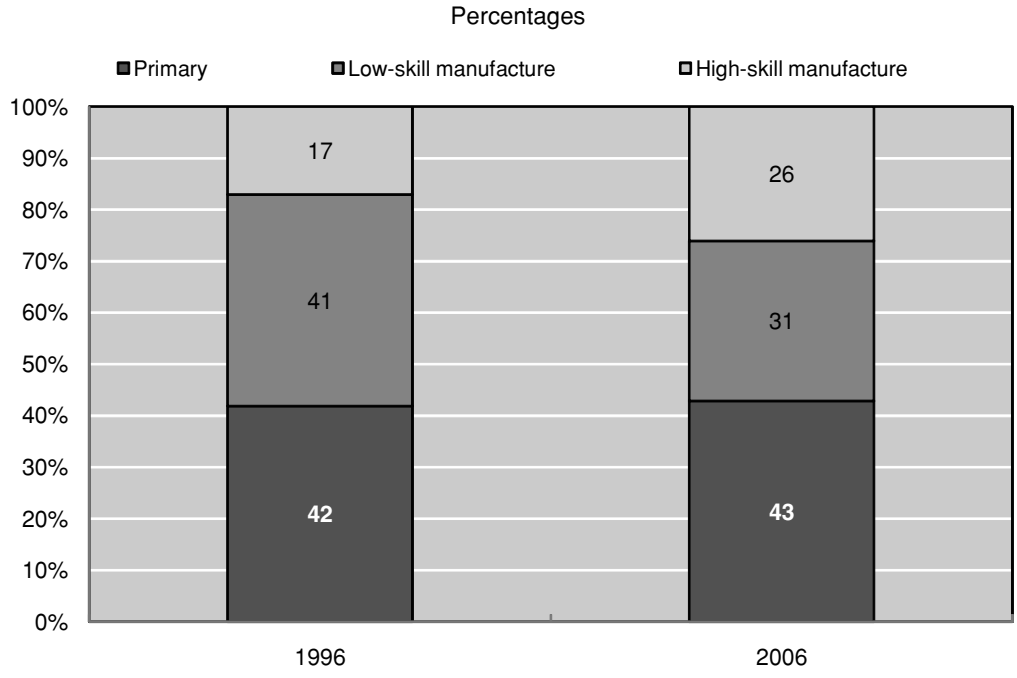
On the other hand, the situation for some agricultural products appears to be the reverse – there are fewer agricultural products in the major export list than one might expect from the RCA data. This suggests that industry and trade policy in South Africa is taxing the agricultural sector in some way. Anderson *et al*. (2007) confirm this conjecture. They estimate that the relative rate of agricultural to non-agricultural assistance was -5% over the period 2000-2005. That is, policy assistance to non-agricultural tradable sectors has increased relative to South African agricultural sectors. Furthermore, this implicit export tax on agricultural products has grown in recent years—from a relatively neutral position prior to 2000. In this environment resources will move from the agricultural sector to the non-agricultural sectors and exports originating in the non-agricultural sectors will tend to grow faster than from the agricultural sectors.

Most of the 2-digit sectors listed have RCA indices in 2006 that are less than 1.0 – indicating a comparative disadvantage (Kowalski *et al.,* 2008). From a low-skill employment perspective, the labour intensive chapter 5 and 6 products are less than 1.0, as is sector 85.

The RCA indices for many products have changed significantly over the period 1996-2006. The RCA index of chapter 86 has experienced a 11.1% annual decline while the index of chapter 87 has grown at 12.8% per year over the decade. The footwear, clothing and textile sectors have generally experienced rapid declines in revealed comparative advantage. These changes are part of the global changes in patterns of comparative advantage in recent decades. The changes are related in general to the rapid dispersion in economic activity globally and they require equally rapid adaptation on the part of firms and governments to select new competitive niches. Where countries have been able to do that, the RCA indices in particular sectors remain high but the component or product composition changes.

Figure 11.12 provides a picture of the evolution of South African goods exports by skill intensity. The notable feature of this figure is the decline in the proportion of low-skill manufactures in the mix since 1996. If this decline is an accurate depiction of a rising skill intensity in the export mix then it shows a lack of congruence with the low-skill endowment of the workforce as a whole and the slow progress in raising skill levels over the last decade, OECD (2008). However, some caution is required in interpreting this data as the classification system may not be fine enough to truly represent South African export production systems.

Figure 11.12. Evolution of South Africa's export mix according to skill intensity (based on SITC classification), 1996-2006



Source: UN ComTrade.

The main destinations for South African exports of goods are the EU, Japan, US, China, Switzerland and Australia, Figure 11.13. Overall, it is a tripolar export pattern of Europe, Asia-Pacific and Africa. The biggest changes over the decade from 1996 have been with respect to EU (down two percentage points), Japan (up four percentage points), US (up four percentage points) and Zimbabwe (down three percentage points). The concentration of exports in higher income countries reflects in part the industrial demand for precious metals and minerals by producers of high tech components and final goods.

South Africa's shares in export markets are, of course, highest in African countries, Table 11.13. Some emerging economies are also included for comparison. Its market share amongst BRIIC importers has trended differently. Interestingly, South Africa's market share in Brazil has been increasing in spite of the fact raised earlier that the two countries have a very high trade similarity index. Its share in China is also rising but falling in India where South Africa has had a 2% market share.

Trade intensity indices (Table 11.8) [4] provide another dimension on export market shares. Here South Africa's trade is examined with respect to a group of emerging economies and a group of African trading partners. The critical value for trade intensity is 1.0. South Africa trades much more intensively with a range of African countries than one would expect based on the global exports to these countries –

[4] The trade intensity index (T) is used to determine whether the value of trade between two countries is greater or smaller than would be expected on the basis of their importance in world trade. It is defined as the share of one country's exports going to a partner divided by the share of world exports going to the partner. It is calculated as: $T_{ij} = (x_{ij}/X_{it})/ (x_{wj}/X_{wt})$; where x_{ij} and x_{wj} are the values of country i's exports and of world exports to country j and where X_{it} and X_{wt} are country i's total exports and total world exports respectively. An index of more (less) than one indicates a bilateral trade flow that is larger (smaller) than expected given the partner country's importance in world trade.

the trade intensity indices for the countries from Guinea to Zimbabwe towards the bottom of the table are much greater than 1.0. However, the trade intensity with these African partners is generally weakening somewhat either because they are tending to source imports away from South Africa or because South Africa is tending to increasingly explore export markets away from Africa. This is not surprising given the rapid dispersion of economic activity globally in recent years and changing patterns of comparative advantages in goods and services that have resulted.

South Africa also trades intensively with India, Japan and Israel but while trade intensity with India and Israel is falling, it is rising sharply for Japan. Trade intensity is low for China but rising fairly rapidly. The EU is South Africa's major trading partner and the index has declined slightly but has tended to hover around 1.0 in recent years.

3.2 A Dynamic Analysis of Past Export Goods Performance

The view of South African and world trade through selected groups of HS6-digit products provides an opportunity to more closely relate changes in trade, to market and firm level changes in innovation, strategy and performance, and in relation to government policy changes that are often implemented at this micro level (*e.g.* with trade policy settings). Hausmann and Rodrik (2003) have promoted this approach as a potentially effective predictive tool for identifying comparative advantage. This is because, at this level of disaggregation, countries with very similar patterns of gross factor proportions (mineral resources, unskilled labour, agricultural land and capital ratios, for example) have quite different export product specialties. In part, this is due to difficulties in disaggregating factors of production finely enough, but it is also due to the impacts of past decisions by domestic and foreign firms to successfully specialise in particular products in particular global locations. Accordingly, micro trade categories might prove to be a valuable complement to factor proportions theory in understanding changes in comparative advantage.

There are approximately 6500 HS6-digit product codes. The top 25 export (import) product codes for individual countries are highly likely to comprise the set in which the country has a very high level of comparative advantage (disadvantage). Credence is given to this view by the fact that a surprisingly high proportion of world and country exports are encompassed by the top 25 HS6 products. It is certainly possible that government support policy is an important driver of export supply and/or import demand. Finally there is the question of the effects that South African trade policies are having on imports and exports in goods. This question is taken up in Section 5 of this report. Overall, however, it is likely that given the firm structure of the tradable industries, a product in the top 25 products would exhibit a comparative advantage without government support.

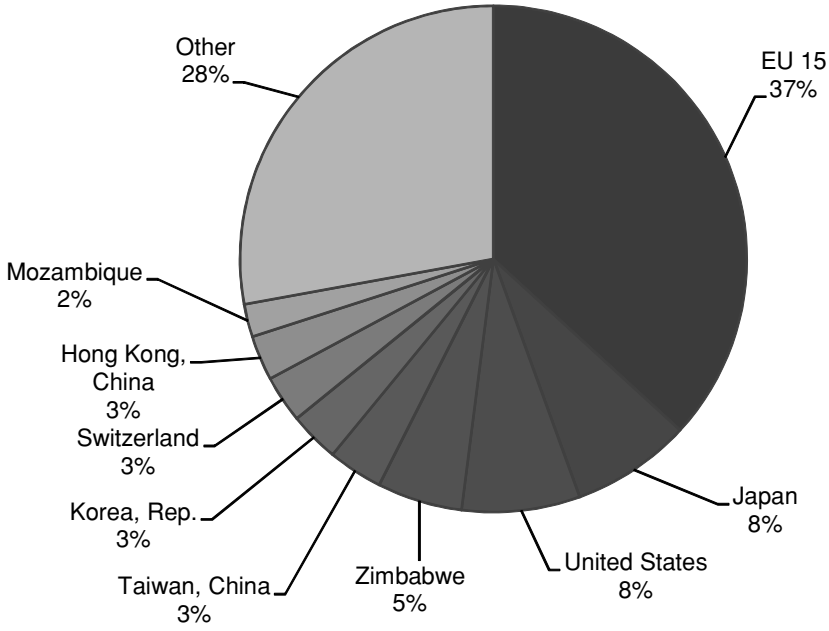
The top 25 HS6-digit products traded globally in 2006 encompassed only a few markets and they comprised 29% of world merchandise exports. They included:

- energy products (oil, gas and coal), 10% of world trade
- consumer electronics goods and their components, 11%
- pharmaceuticals, 2%
- cars and components, 6%
- aircraft components, 0.4%

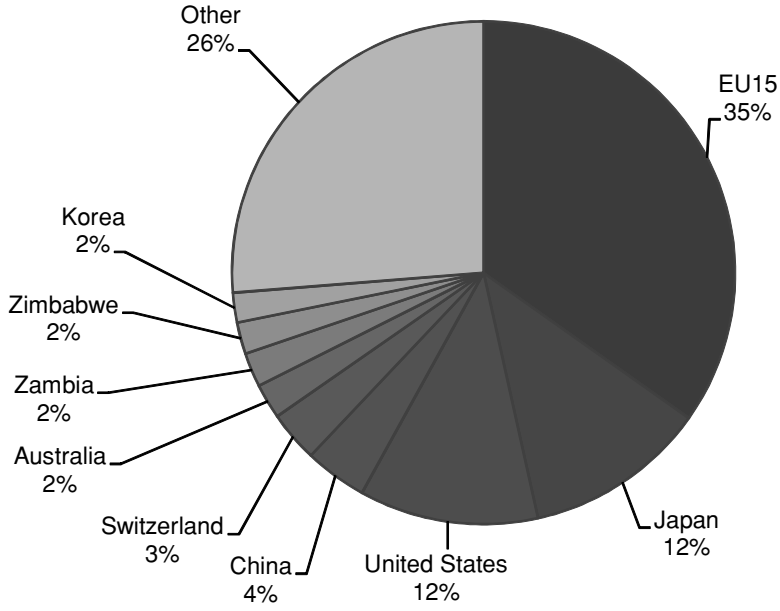
Figure 11.13. Top 10 destinations of goods exports of South Africa in 1996 and 2006

Percentages

A. 1996



B. 2006



Source: UN ComTrade.

Table 11.7. Evolution of South Africa's market share in key markets

Percentages

	2000	2006	Annual growth rate
Brazil	0.41	0.47	2.48
China	0.32	0.45	5.99
EU15	0.59	0.56	-0.85
India	2.06	1.35	-6.80
Indonesia	0.54	0.37	-6.17
Israel	0.81	0.25	-17.72
Japan	0.82	1.16	5.93
Kenya	7.77	6.50	-2.94
Korea, Rep.	0.60	0.45	-4.88
Madagascar	3.60	5.75	8.10
Tanzania	12.14	12.32	0.24
Uganda	6.91	6.12	-2.00
Zambia	55.60	47.83	-2.48

Source: UN ComTrade.

Table 11.8. Merchandise trade intensities, selected partners

	2000	2001	2002	2003	2004	2005	2006
Brazil	1.00	1.23	1.00	0.85	0.89	0.94	0.97
Russia	0.19	0.14	0.20	0.23	0.21	0.12	0.14
India	2.49	2.52	2.24	1.47	1.77	2.30	1.31
Indonesia	0.98	0.84	0.90	0.70	0.56	0.67	0.56
China	0.44	0.53	0.47	0.56	0.49	0.52	0.68
EU25	1.02	0.78	1.01	0.91	0.93	0.95	0.93
Japan	1.16	1.08	1.40	2.20	2.48	2.35	2.78
United States	0.56	0.49	0.60	0.74	0.75	0.68	0.77
Guinea	3.00	1.96	3.74	11.70	9.72	6.28	6.28
Israel	4.42	4.50	4.97	3.95	3.70	3.96	3.32
Kenya	26.50	18.26	24.49	20.67	24.19	17.57	15.18
Madagascar	15.15	13.38	17.75	19.01	15.60	13.93	12.75
Mauritius	42.85	27.67	39.22	30.39	23.73	27.48	18.45
Mozambique	151.32	132.80	109.15	114.61	98.02	89.92	92.45
Seychelles	31.30	12.11	31.97	25.06	20.71	29.31	23.55
Tanzania	42.80	28.97	36.15	29.13	32.14	27.64	26.42
Zambia	163.94	151.95	128.27	135.62	125.05	123.16	125.57
Zimbabwe	127.83	125.14	146.95	132.32	119.50	127.33	117.84

Source: UN ComTrade.

If focus is shifted to the top 50 HS6-digit products a number of additional markets come into view. Other key groupings include other minerals (diamonds, gold and copper), jewellery products, other machinery and equipment (ships, trucks, excavators and valves), plastic products and chemicals. No agricultural or food products are currently in this top 50 grouping.

The fastest growing Top 50 HS6-digit goods on world markets over the period 1996-2006 are given in Annex Table 3.2 of Kowalski *et al.* (2008). These fifty products represented around 45% of world

trade growth over the period. The list is very similar to the Top 50 export products in 2006. The dark blue commodities are the ten energy and mineral products. The light blue products are the nineteen consumer electronics components and products that increasing dominated world trade in the decade.

South Africa's Top 25 HS6 exports in 1996 and in 2006 are given in Annex Table 3.3 of Kowalski *et al.* (2008). An overall feature of the Top 25 is the increase in export (and import) concentration. The Top 25 product coverage rose from 39% in 1996 to 52% in 2006, a level much higher than in a typical developed economy where one would normally expect the export mix to be more diversified (Hausmann and Rodrik, 2003). For example, countries like Germany have only 30% or so of their exports in the Top 25 HS6 products.

The Top 25 are dominated by the valuable mineral products South Africa is noted for. However, their composition changed significantly over the decade. In 1996, they included diamonds, chromium, gold, nickel, manganese, zirconium and copper. In 2006, platinum replaces diamonds at the top and rhodium and palladium replaces titanium, manganese and zirconium. The specific platinum, rhodium and palladium export products listed here were virtually zero in 1996. Coal, aluminium, oil and iron ore all retained their high ranking in 2006. All these mineral-based products are coded blue in Kowalski et al (2008, Table 3.4). There were 16 colour coded products in 1996 and 17 in 2006, virtually the same. However, there were some major changes in composition amongst the precious metals, special metals and oil exports.

Amongst other products, wine retained its high ranking as did parts of seats (940190). Gas filtering machinery (842139) exports have increased a great deal over the decade. Copper cathodes dropped off the list in 2006, in favour of waste copper, which had become part of the worldwide rise in recycled materials over the decade. Other agricultural products like maize, sugar cane and ethanol dropped out of the list. Non-agriculturally based manufactures like cargo containers, construction equipment and gas filtering machinery also dropped. However, these were replaced by new entrants, mid-sized automobiles (1500-3000cc) and diesel trucks. In summary there are a number of specific growth poles in exports of what might be referred to as non-traditional South African exports and a number of areas where competitiveness seems to have declined over the decade.

The Top 25 South African import products are given in Kowalski *et al*. (2008, Table 3.4). Again, the Top 25 products are concentrating—from 25% of total merchandise imports in 1996 to 37% in 2006. It is not clear how to interpret this concentration of imports. Given that trade is in inputs as well as final products it may well reflect imported inputs, like aluminium oxide, required to produce expanding exports of aluminium products. The large increase in automobile imports may reflect lower import barriers in these products and falling competitiveness in the domestic automobile assembly industry. In a number of areas consumer demand in South Africa follows global trends. The rapid growth in transmission apparatus (cell phones), televisions and videos and computers (digital automatic data processing machinery) and their components are cases in point. The rapid growth in these consumer electronics products reflects global consumer demand fragmentation associated with higher real incomes. Health equipment and especially medicaments have also been subject to rapidly growing trends (especially in Africa).

Table 11.9. Top 25 Export Growth Products 1994/96 to 2004/06, value terms, with exports exceeding USD50 million in 2006

Rank	Product	Product_Name	Value Growth %
1	711019	Platinum in other semi-manufactured	670 107 487
2	711011	Platinum unwrought or in powder form	580 953 720
3	711031	Rhodium unwrought or in powder form	246 679 447
4	711021	Palladium unwrought or in powder form	104 677 185
5	711039	Rhodium in other semi-manufactured	91 089 273
6	711029	Palladium in other semi-manufacture	71 251 081
7	711041	Iridium, osmium and ruthenium unwrought	38 277 940
8	720292	Ferro-vanadium	7 648 933
9	261590	Niobium, tantalum and vanadium ores	1 615 154
10	750610	Plates, sheet, strip and foil, nickel	550 157
11	260400	Nickel ores and concentrates	493 496
12	291612	Esters of acrylic acid	260 965
13	271000	Petroleum oils, etc, (excl. crude)	229 532
14	290513	Butan-1-ol (n-butyl alcohol)	184 971
15	240310	Smoking tobacco	112 506
16	480419	Kraftliner, uncoated	32 822
17	740811	Wire of refined copper	25 148
18	854140	Photosensitive semiconductor device	22 911
19	852721	Radio receivers	16 076
20	840820	Engines, diesel	14 555
21	721331	Bars/rods,i/nas,hr,in irreg wnd coils	13 305
22	721931	Flat rolled prod, stainless steel,	13 003
23	870332	Automobiles with diesel engine disp	11 588
24	760820	Tubes and pipe, aluminium alloy	9 424
25	870850	Drive axles with differential	6 358

Source: UN ComTrade.

If we maintain the HS6-digit product focus the growth in the value of exports provides an interesting picture for South Africa and affirms a number of points raised with respect to Annex Table 3.3 in Kowalski *et al.* (2008). The Top 25 fastest growing South African exports are listed in Table 11.9. These products tend to be ones that were hardly exported at all in 1996 but are important exports in 2006. Not unexpectedly, the top half of the table reflects the fast growing exports in the platinum group of metals used in the manufacture of catalysts and principally in the automotive industry—platinum, rhodium, palladium, indium, osmium and ruthenium. The fastest growing list includes a number of other metal products: copper, steel, nickel and aluminium.

Outside these metals are a disparate group of products, tobacco, industrial chemicals, paper and two electronics products. Three automotive products are included: diesel powered automobiles, diesel engines, and drive axles for vehicles. Refined oils (271000) are included reflecting a niche South Africa appears to have in oil refining in spite of the fact that the country is not self-sufficient in crude oil.

3.3 Composition and Destinations of Trade in Services

South African services exports represent around 18% of current account credits. Services exports are heavily concentrated in travel services (65.6% in 2006) and their importance has risen 50%[5] since the trade embargo was lifted (Table 11.10). In absolute terms the rise is more dramatic—exports of travel services rose from USD 2.1 billion in 1995 to USD 7.9 billion in 2006. Figure 11.14 illustrates that the post mid-1990s expansion of services exports of South Africa can be attributed almost entirely to exports of travel services. In fact, the ratios of transport and other commercial services exports to GDP have been stagnant in the considered period. Figure 11.15 demonstrates that South Africa seems to have developed a strong advantage in travel services as its share of world travel services trade has gone up dramatically starting in 2003 and now stands above South Africa's share of world GDP. These developments point to the important endowments the country has in tourist attractions. This is a valuable set of resources in balance of payments terms and also because the provision of tourism services is usually very intensive in its employment of low-skilled labour.

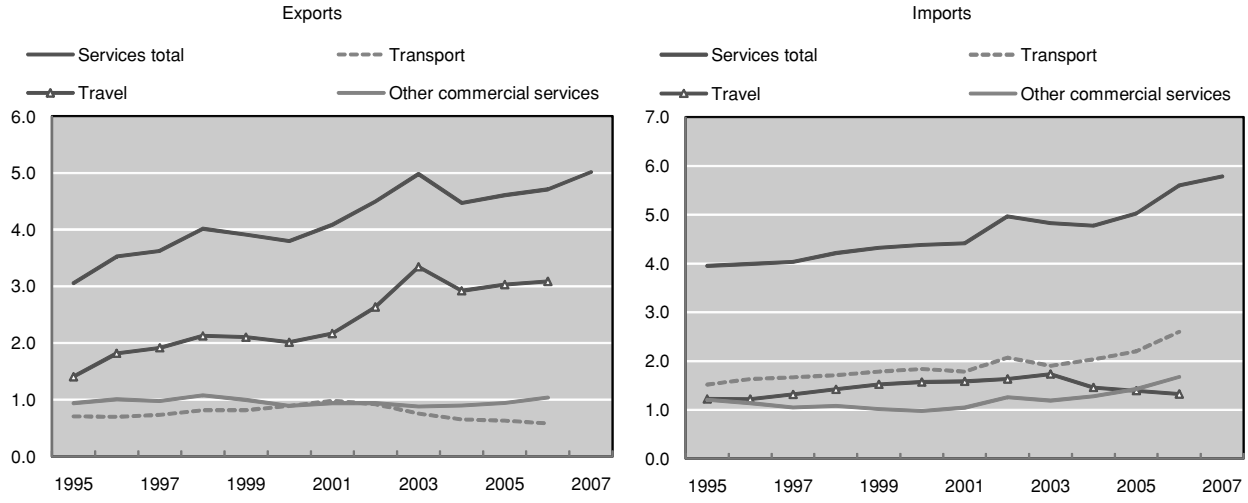
In a similar way travel exports have dominated services exports, transport dominated services imports and they now corresponds to close to 3% of GDP (Figure 11.14). Transport services amount to nearly 50% of South African imports of services as compared to 12.4% services exports of transport services. This reflects both large distances to major markets (see Table 11.1) economic and political instability in South Africa's neighboring countries and the relative use of foreign carriers. Imports of travel services, on the other hand, are much less than exports.

South Africa is a net importer of other services reflecting relatively large imports of foreign patents and licenses and insurance services. The business services deficit is less marked, however, and South Africa exports of business services represent 7.2% of total services exports in 2006. However, business services exports have tended to trend down in percentage terms since 1995 while imports of business services have tended to trend upwards in the same terms.

South Africa's export performance in the services trade is illustrated in Figure 11.16 using the `star' performance indicator discussed earlier. The *star* performers (world services trade growing faster than average and South Africa's market share increasing) are computer and information services, insurance, financial services and communications services. The fact that the travel sector is not considered a star performer shows limitations of the given methodology; this is the case only because the share of this sector in total services trade has gone down globally. The only *snail* service is transportation. The general pattern of these structure performance indicators reflects future potential in service sector trade performance though development of transportation services should be seen as a priority.

5 From 46% of USD 4.6 billion in 1995 to 65.6% of USD 12 billion in 2006.

Figure 11.14 South Africa's services trade (as a % of GDP)



Source: WTI (2008).

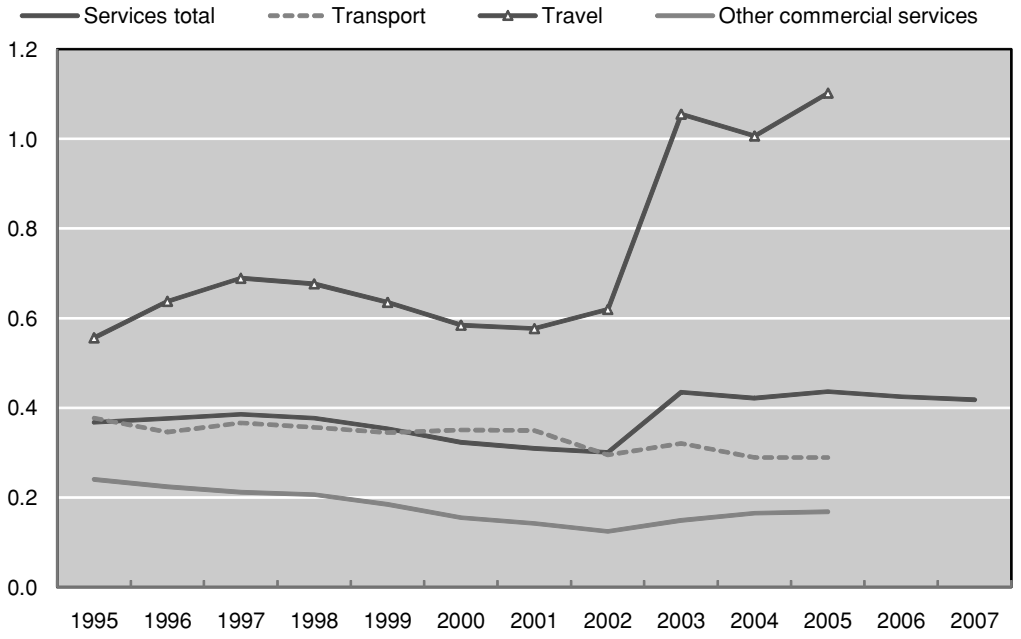
Table 11.10 Composition of services trade

Million USD and percentages

	1990	1995	2002	2003	2004	2005	2006
SERVICES	**-331**	**-1 352**	**-519**	**254**	**-646**	**-998**	**-2 276**
Total export	**3 407**	**4 619**	**4 985**	**8 298**	**9 682**	**11 157**	**12 014**
Transportation services	20.8	23.2	20.5	15.2	14.6	13.7	12.4
Travel	53.9	46.0	58.6	67.1	65.3	65.7	65.6
Other services	25.3	30.8	20.9	17.7	20.1	20.5	22.1
Communications	*1.5*	*0.9*	*1.9*	*1.6*	*1.9*	*2.1*	*2.5*
Construction	..	..	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*
Insurance	*10.4*	*9.5*	*1.1*	*0.9*	*1.1*	*1.1*	*1.3*
Financial	..	..	*4.5*	*3.6*	*4.4*	*4.8*	*5.9*
Computer and information	..	..	*0.9*	*0.8*	*0.9*	*1.0*	*1.1*
Royalties and licence fees	*0.6*	*1.0*	*0.4*	*0.3*	*0.4*	*0.4*	*0.4*
Other business services	*9.5*	*15.0*	*8.6*	*7.3*	*7.7*	*7.5*	*7.2*
Personal, cultural, and recreational	..	..	*0.8*	*0.7*	*0.9*	*1.0*	*0.9*
Government, n.i.e.	*3.4*	*4.4*	*2.5*	*2.2*	*2.5*	*2.3*	*2.5*
Total import	**3 738**	**5 971**	**5 504**	**8 045**	**10 328**	**12 155**	**14 291**
Transportation services	38.6	38.5	41.7	39.5	42.6	43.8	46.4
Travel	30.3	31.0	32.9	35.9	30.6	27.8	23.7
Other services	31.1	30.6	25.4	24.6	26.8	28.4	29.9
Communications	*2.5*	*2.1*	*1.3*	*1.2*	*1.4*	*1.6*	*1.7*
Construction	..	..	*0.0*	*0.0*	*0.0*	*0.1*	*0.0*
Insurance	*11.2*	*13.6*	*4.1*	*3.7*	*3.8*	*3.9*	*4.1*
Financial	..	..	*1.4*	*1.3*	*1.4*	*1.5*	*1.2*
Computer and information	..	..	*0.8*	*0.7*	*0.8*	*0.9*	*0.9*
Royalties and licence fees	*3.5*	*4.9*	*8.1*	*7.7*	*8.6*	*8.8*	*9.0*
Other business services	*10.1*	*6.4*	*7.4*	*7.5*	*8.1*	*9.1*	*10.5*
Personal, cultural, and recreational	..	..	*0.1*	*0.0*	*0.0*	*0.1*	*0.1*
Government, n.i.e.	*3.8*	*3.6*	*2.3*	*2.5*	*2.6*	*2.4*	*2.4*

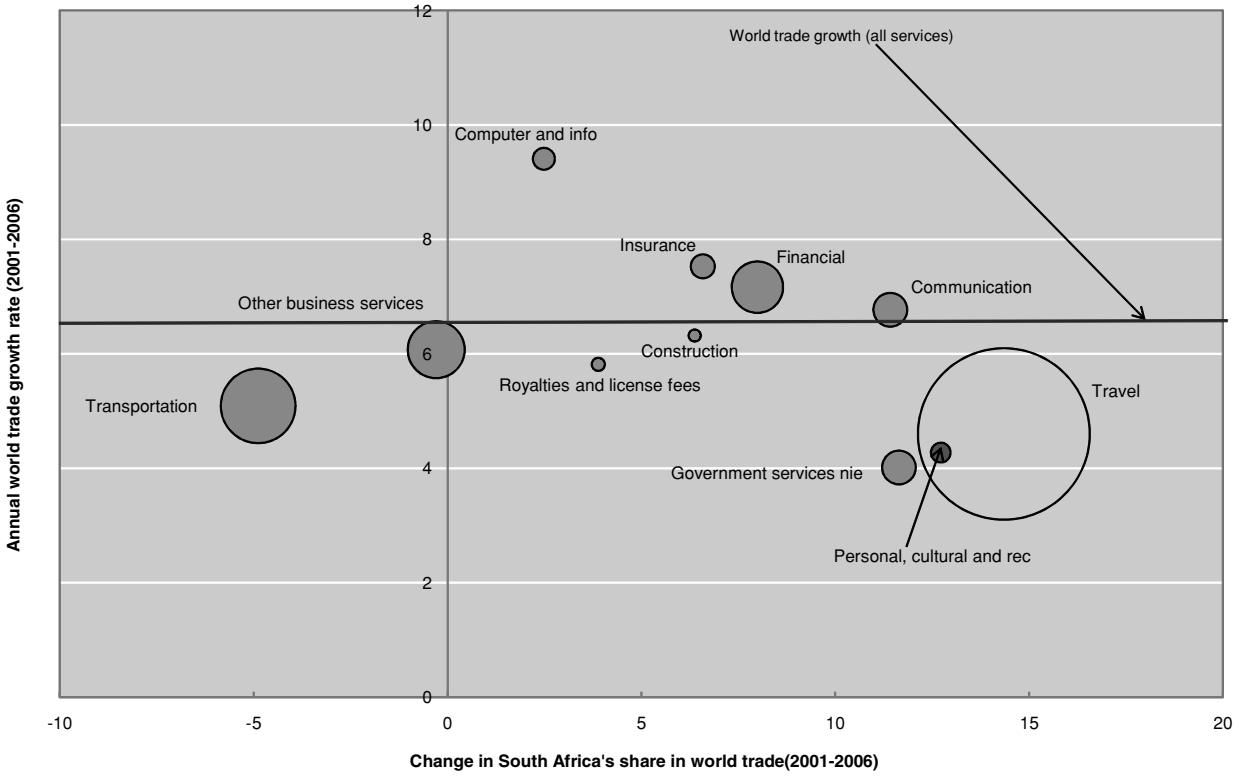
Source: IMF BOP (2008).

Figure 11.15 South Africa's services exports (as a % of world trade)



Source: WTI (2008).

Figure 11.16 South Africa's export performance: services trade, 2001-2006



Source: IMF BOP (2008).

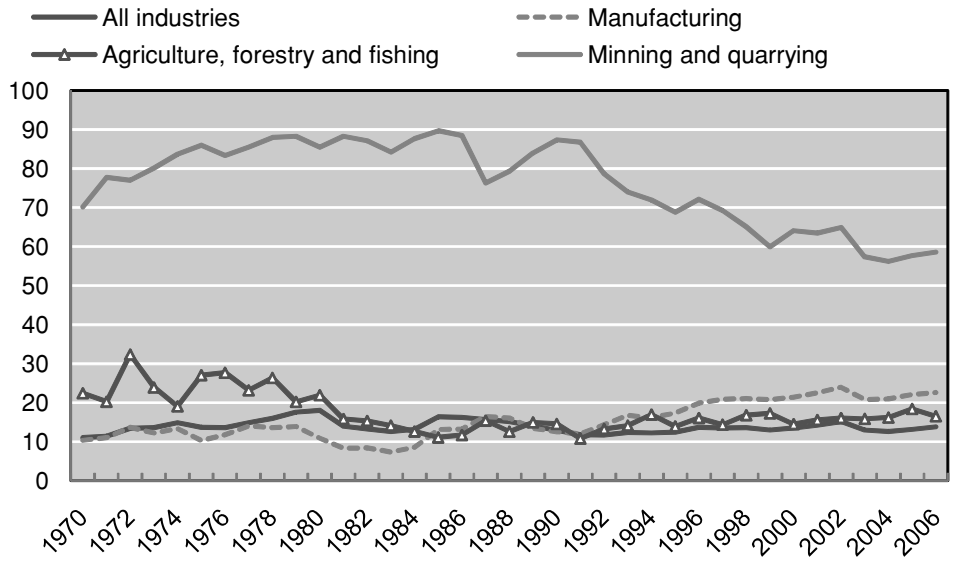
4. Trade policy and developments

4.1 Overview of trade policy developments

Up to the 1970s South Africa's trade policy was broadly geared towards import substitution with an aim to enhance growth, diversify economic activity and make it less dependent on gold and other natural resources (see *e.g.* Mabugu and Chitiga, 2007; Edwards, 2005). The import substitution policy and embargoes facilitated a development of domestically-oriented manufacturing sector under a highly protective structure of tariffs and quantitative restrictions. Figure 5.1 plots the evolution of export-output and import-domestic demand ratios across broad sectors and illustrates the progressive outward orientation of the mining and quarrying sector and the inward orientation of manufacturing and agriculture in 1970s and 1980s that was only reversed at the beginning of 1990s.

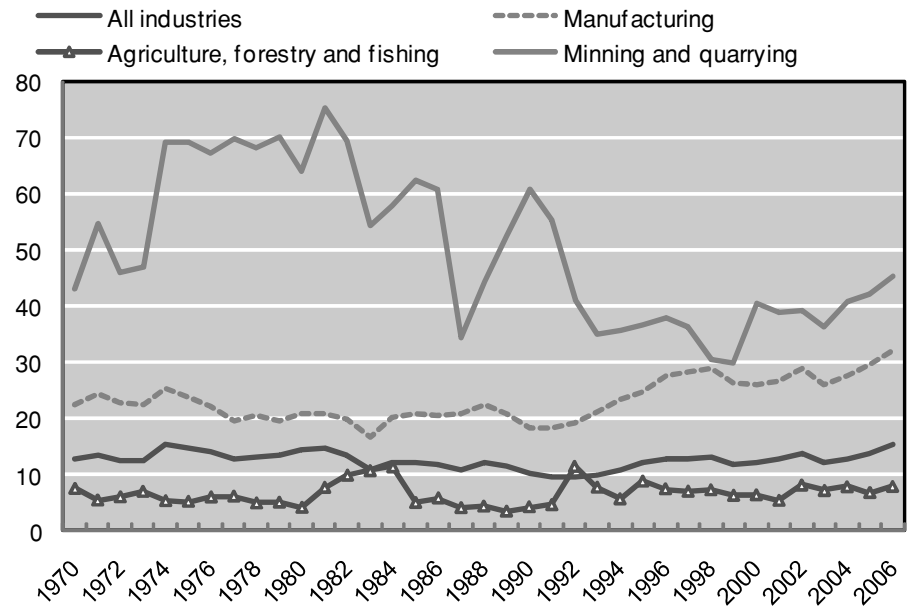
The failure of the import substitution policy to achieve the stated objectives became apparent in the late 1960s. The beginning of 1970s saw a gradual reorientation of policy towards freer trade, first through the stimulation of exports during the 1970s and 1980s and later through a broader approach to trade liberalisation (Thurlow, 2006). Notwithstanding the gradual opening up, the 1980s and early 1990s ended up being highly protective in part as a result of imposition of surcharges from 1985 in response to the debt crisis and increased calls for protection by the industry during the times of economic slowdown of the late 1980s (Bell, 1992). According to Belli et al. (1993) by the end of the 1980s South Africa had the highest tariff rates and the second highest level of tariff dispersion compared to a range of developing countries.

Figure 11.17. Export-output ratio, by industry



Source: Quantec database, authors' calculation.

Figure 11.18. Import-domestic demand ratio, by industry



Source: Quantec database, authors' calculation.

The embargoes that started in the 1960s, and tightened in the later part of the apartheid era, put additional constraints on South Africa's integration with the world markets. The embargoes did not apply with a uniform strength throughout the period or across economic sectors, nor where they uniformly imposed by all South Africa's trading partners. Typically they have been intensifying in the immediate aftermaths of the riots in black townships in 1970s and 1980s and relaxing in calmer times. The relatively toughest restrictions applied to South Africa's arms trade (exports and imports) but at times the embargoes have taken forms of broader restrictions on oil exports to South Africa, establishment, investment and export financing restrictions on foreign companies conducting business in or with South Africa, restrictions of banking services provision to South African companies and government and price limits on imports of South African gold etc.. Certain countries imposed complete embargoes on trade with South Africa while others applied only limited restrictions.

Overall, South Africa entered the post-apartheid era with a complex system of quantitative restrictions and relatively high tariffs (17% simple average tariff in 1993, Table 11.12), which were also highly dispersed (standard deviation of 22%). At that time, in contrast to most other developing countries, South Africa's tariff structure was characterised by relatively high tariffs on consumer products and lower tariffs on imported machinery and capital goods, resulting in relatively high effective rates of protection, Table 11.11. Such a protection pattern was also symptomatic of the country's established dependence on exports as a means of financing imported investment goods (Thurlow, 2006).

The year 1990 saw the release of Nelson Mandela and the beginning of a process of lifting of trade embargoes that was largely completed by the end of 1994. The same period brought about reviews of macroeconomic and industrial policies, including the introduction of export subsidies under the General Export Incentive Scheme (GEIS) in 1990, and an initiation of fully fledged trade liberalisation which involved such policy measures as tariff reductions, reduction of quantitative restrictions and, more broadly, simplification of the trade regime.

In 1994 South Africa signed the Marrakech Agreement under the Uruguay Round (UR) of the GATT where it committed to a significant liberalisation and simplification of its trade regime including a binding of 98% of tariff lines, reducing the number of tariff rates to six, rationalising the over 12 000 tariff lines and the replacement of quantitative restrictions on agriculture by tariff equivalents (see *e.g.* Edwards, 2005). Mabugu and Chitiga (2007) report that by 2004 significant progress on implementation of these commitments has been reported in that the number of tariff lines, the number of tariff lines with formula, specific and non-ad valorem duties had been reduced. Bell (1997) reports that South Africa's tariff reductions actually exceeded its UR commitments. Yet, several post 1994 assessments indicated that there was a need for further simplification of trade policy instruments (Mabugu and Chitiga, 2007; WTO, 1998; WTO, 2003). The 2003 Trade Policy Review of SACU (and South Africa as its core member) indicated that progress since 1994 on the application of formula duties, the imposition of non-ad valorem duties and the dispersion and escalation of applied MFN duties could hardly had ensured compliance with the WTO commitments.

4.2 Merchandise trade liberalisation of the 1990s and current policy stance

The extent of trade liberalisation in the 1990s and the scope for further liberalisation in South Africa have been fiercely debated since mid 1990s. Edwards (2005) summarised this debate and pointed to a number of methodological and data issues that underlined the differences in opinion. He also developed a coherent set of industry level tariff rates, including collection duty rates, scheduled rates and effective rates of protection, for the period 1988-2004.[6] Importantly, he accounted for the surcharges applied in various periods for the balance of payments reasons, which, as he demonstrates, had a marked effect on the levels of protection.

Table 11.11 reports the scheduled rates and the estimates of effective rates of protection by sector calculated by Edwards (2005) for 1994 and 2003. The time evolution of some of these ERPs are discussed in more details in Section 6 which deals with the impact of protection on labour and total factor productivity. The estimates suggest that effective protection has been reduced significantly over the 1990s, particularly when surcharges are taken into account. Edwards (2005) reports that the average rate of protection in manufacturing sector as a whole fell from 48% in 1993 to 12.7% in 2004 based on the scheduled rates and including surcharges and from 30.8% to 8% between 1993 and 2003 according to collection rates.

The highest rates of protection in 1994 were recorded for a number of traditionally labour-intensive manufacturing sectors such as *Textiles*, *Wearing apparel*, *Leather products*, *Footwear* and *Furniture* (though *Motor vehicles* and *Chemicals* also had high rates of protection). Low or negative rates were recorded in the *Primary sector* (agriculture and mining), *Machinery and equipment*, *Professional and scientific equipment* and *Other transport products*.

Over the 1994-2003 period protection inclusive of surcharges fell in all sectors.[7] The largest percentage reductions in ERPs were recorded in the initially highly protected manufacturing sectors such

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6 Effective rates of protection aim to capture the extent of protection on value added as opposed to protection on final output. Effective rates of protection are calculated according to the following formula: $ERP_j = \frac{(V_j^* - V_j)}{V_j} = \frac{t_j - \sum_i a_{ij} t_i}{1 - \sum_i a_{ij}}$ where V_j^* is the domestic value added to final product j at tariff distorted prices, V_j is the value added under free trade, t_j is the tariff on outputs, t_i is the tariff on inputs and a_{ij} is the quantity of intermediate input *i* used in the production of one unit of *j,* Edwards (2005).

7 Positive percentage change is calculated for coal mining but that means only that the sector became less disadvantaged.

as *Textiles*, *Wearing apparel*, *Leather products* and *Footwear* but also for *Other manufacturing* and *Communication equipment*. Significant decreases of more than 10% were observed in a number of other sectors. In 2003, the last year for which the effective rates of protection data are available at this stage, the most protected sectors were *Tobacco* (ERP of 315%), *Textiles* (85%), *Wearing apparel* (97%), *Footwear* (51%), *Furniture* (46%), *Food* (26%), *Motor vehicles* (33%), *Rubber and plastic products* (33 and 20%, respectively), *Beverages* (25%) and *Leather products* (19%).

The outlined ERP structure may seem rational from the point of view of broadly protecting 'traditional' labour-intensive sectors. Indeed, the 2003 ERPs seem to be higher in sectors where the ratios of fixed capital to formal employment are quite low (see Figure 11.19). Yet, at the same time these are also the sectors with relatively low shares of unskilled employment (see Figure 11.20). The latter tendency may be seen as an unintended consequence since, as many recent assessments emphasise, unemployment is particularly severe in the unskilled segments of the labour force (Banerjee *et al.* 2006; OECD, 2008). Additionally, high TFP rates correlate negatively with firm concentration and levels of competition across industries (OECD, 2008) and with the productivity performance across these sectors discussed in Section 6 of this report.

Importantly, several indicators suggest that that the process of liberalisation has largely stalled in recent years. The decline in average tariff seems to have stopped or even have been reversed since 2000, Table 11.12. Similarly, tax revenue on international trade and transactions expressed as percentage of imports, revenue or GDP has increased noticeably over the period 2004-2007, Figure 11.21. Table 11.13 indicates that this was driven by increasing duties on consumer goods though, with respect to 1999, small increases have been recorded also in intermediate products and raw materials categories.

Table 11.11. Effective rates of protection and scheduled tariff rates in the manufacturing sector

Based on scheduled rates

	ERP based on collection rates				% change in ERP 94-03		Scheduled tariff rates				% change in scheduled tariff 94-03	
	Excluding surcharges		Including surcharges		Excluding Surcharges	Including Surcharges	Excluding surcharges		Including surcharges		Excluding Surcharges	Including Surcharges
	1994	2003	1994	2003			1994	2003	1994	2003		
Agriculture, forestry & fishing	1.8	5.4	7.3	5.4	3.5	-1.7	5.1	5.4	8.9	5.4	0.3	-3.2
Coal mining	-4.3	-2.4	-5.5	-2.4	2.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0
Gold & uranium mining	12.7	-2.2	11.4	-2.2	-13.3	-12.2	10.0	0.0	10.0	0.0	-9.1	-9.1
Other mining	2.4	0.4	1.7	0.4	-2.0	-1.3	2.8	1.0	2.9	1.0	-1.8	-1.8
Food	35.2	36.4	55.3	36.4	0.9	-12.2	11.9	11.8	18.8	11.8	-0.1	-5.9
Beverages	6.2	25.3	51.9	25.3	18.0	-17.5	6.5	14.3	29.3	14.3	7.3	-11.6
Tobacco	239.0	315.4	340.5	315.4	22.5	-5.7	29.2	36.0	41.7	36.0	5.3	-4.0
Textiles	140.9	85.3	149.7	85.3	-23.1	-25.8	38.1	22.6	41.3	22.6	-11.3	-13.2
Wearing apparel	176.2	96.7	218.4	96.7	-28.8	-38.2	62.5	35.0	75.1	35.0	-16.9	-22.9
Leather products	37.0	19.2	59.7	19.2	-13.0	-25.4	16.7	11.6	25.9	11.6	-4.4	-11.4
Footwear	82.8	50.7	106.0	50.7	-17.6	-26.9	36.8	22.7	48.0	22.7	-10.3	-17.1
Wood products	17.5	14.8	21.7	14.8	-2.3	-5.7	11.0	9.1	14.5	9.1	-1.7	-4.7
Paper products	14.7	10.1	15.8	10.1	-4.0	-4.9	9.8	6.2	11.3	6.2	-3.2	-4.6
Printing & publishing	10.5	4.7	22.2	4.7	-5.2	-14.3	9.5	4.8	16.1	4.8	-4.3	-9.8
Coke & petroleum	10.4	8.0	10.0	8.0	-2.2	-1.8	5.1	3.3	5.1	3.3	-1.7	-1.8
Basic chemicals	15.1	1.4	14.4	1.4	-11.9	-11.4	8.0	1.7	8.1	1.7	-5.9	-5.9
Other chemicals	21.3	7.4	32.3	7.4	-11.4	-18.8	11.6	4.5	16.2	4.5	-6.4	-10.1
Rubber products	42.4	33.3	46.6	33.3	-6.4	-9.1	16.5	11.4	18.6	11.4	-4.4	-6.0
Plastic products	31.7	20.2	36.2	20.2	-8.7	-11.7	17.5	9.8	19.8	9.8	-6.6	-8.4
Glass products	17.3	14.3	32.1	14.3	-2.5	-13.4	10.1	7.7	17.2	7.7	-2.2	-8.1
Non-metallic minerals	21.8	10.8	29.9	10.8	-9.0	-14.7	11.3	5.6	15.0	5.6	-5.1	-8.2
Basic iron & steel	19.9	11.0	20.1	11.0	-7.4	-7.5	8.2	4.3	8.8	4.3	-3.6	-4.1
Non-ferrous metals	17.4	3.1	17.9	3.1	-12.1	-12.5	10.4	2.2	10.8	2.2	-7.4	-7.7
Metal products	24.7	16.6	36.7	16.6	-6.5	-14.7	13.6	8.1	18.3	8.1	-4.8	-8.6
Machinery & equipment	6.6	3.0	11.9	3.0	-3.4	-8.0	7.4	3.7	10.4	3.7	-3.5	-6.1
Electrical machinery	21.6	15.2	33.0	15.2	-5.2	-13.4	13.5	7.7	18.3	7.7	-5.1	-8.9
Communication equipment	19.6	1.3	35.5	1.3	-15.4	-25.3	14.6	3.1	24.2	3.1	-10.1	-17.0
Professional & scientific	-0.4	-6.3	9.5	-6.3	-6.0	-14.5	5.7	0.3	12.2	0.3	-5.1	-10.6
Motor vehicles	45.9	32.7	45.1	32.7	-9.1	-8.6	24.1	15.7	25.9	15.7	-6.8	-8.1
Other transport	5.4	-3.3	14.9	-3.3	-8.2	-15.8	7.0	0.9	12.3	0.9	-5.7	-10.2
Furniture	49.6	46.3	82.6	46.3	-2.2	-19.9	21.5	17.7	32.1	17.7	-3.1	-10.9
Other manufacturing	45.8	17.3	96.5	17.3	-19.5	-40.3	15.1	6.0	26.5	6.0	-7.9	-16.2

Note: % change in ERP (or tariff rate) is calculated as $\Delta ERP/(1+ERP_0)$ (or $\Delta t/(1+t_0)$).

Source: Edwards (2005).

Figure 11.19. Effective rates of protection and labour intensity by sector

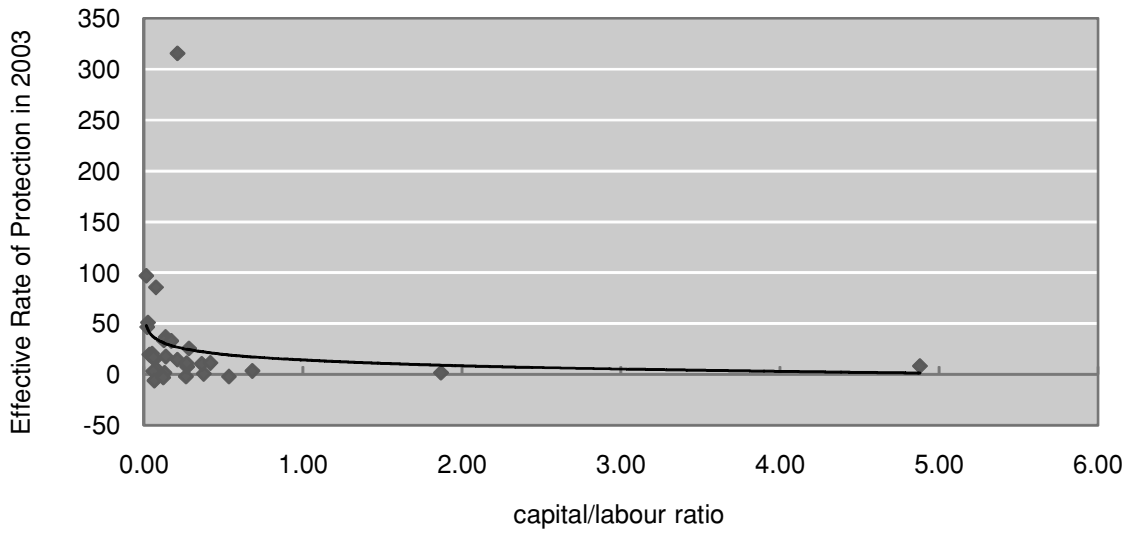
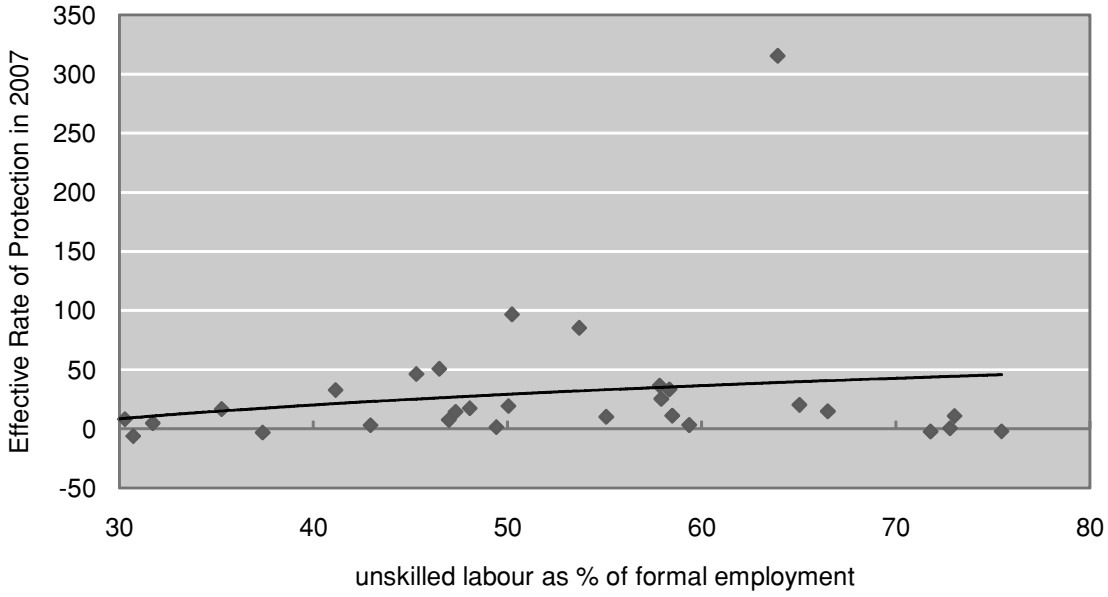


Figure 11.20. Effective rates of protection and labour intensity by sector



Source: Quantec database, author's calculations.

Annex Table 5.2 in Kowalski *et al.* (2008) provides yet more detailed information on the evolution of tariff protection by SIC sector in the years 2001-2007. Most products record small or insignificant decreases in average or maximum tariffs or their standard deviation. Exceptions are *Leather and leather products*, *Livestock and livestock products* and *Lumber and wood products* which record a small increase in tariff protection from 2001 to 2007. Some explanation of this tendency are provided by IMF (2007) who report on the consultations with South African government authorities who "saw some merit in further liberalisation, but argued that moves in this area needed to be informed by developments in ongoing multilateral and regional trade negotiations and the emerging industrial policy strategy, which seems to call for maintaining tariff protection on certain sectors, while reducing tariffs on selected inputs".

Doing business indicators compiled by the World Bank (Table 11.14) indicate also that while doing business in South Africa is generally relatively easy as compared to other BRIIC countries, in terms of trading across borders South African firms are more disadvantaged as compared to all BRIIC but Russian Federation. While to a large extent this is likely to do with South Africa's geographical location, improved customs procedures as well as other trade facilitation measures might have a large potential of improving South Africa's integration with the world markets.

Table 11.12. South Africa's tariff structure

	Agricultural Products			*Non Agricultural Products*			Maximum Rate
	Simple Average	Weighted Average	Standard Deviation	Simple Average	Weighted Average	Standard Deviation	
1988	8.35	4.11	10.39	11.66	12.07	11.85	100
1990	7.61	3.42	10.14	10.59	10.77	11.31	110
1991	8.94	3.48	12.18	10.25	11.54	11.73	110
1993	9.82	6.93	12.37	16.80	13.76	22.33	100
1996	10.79	7.68	12.55	14.67	8.69	23.89	83
1997	8.95	6.30	12.17	6.85	5.14	10.67	78
1999	8.33	5.28	11.80	5.58	4.39	9.64	55
2001	8.82	7.13	11.68	7.77	4.90	11.57	60
2004	8.98	7.76	12.00	7.91	5.39	10.99	96
2005	7.35	7.27	10.03	7.86	5.90	10.88	55
2006	7.36	7.75	10.06	7.83	5.67	10.87	55
2007	9.00	7.70	11.61	7.69	5.78	10.92	60

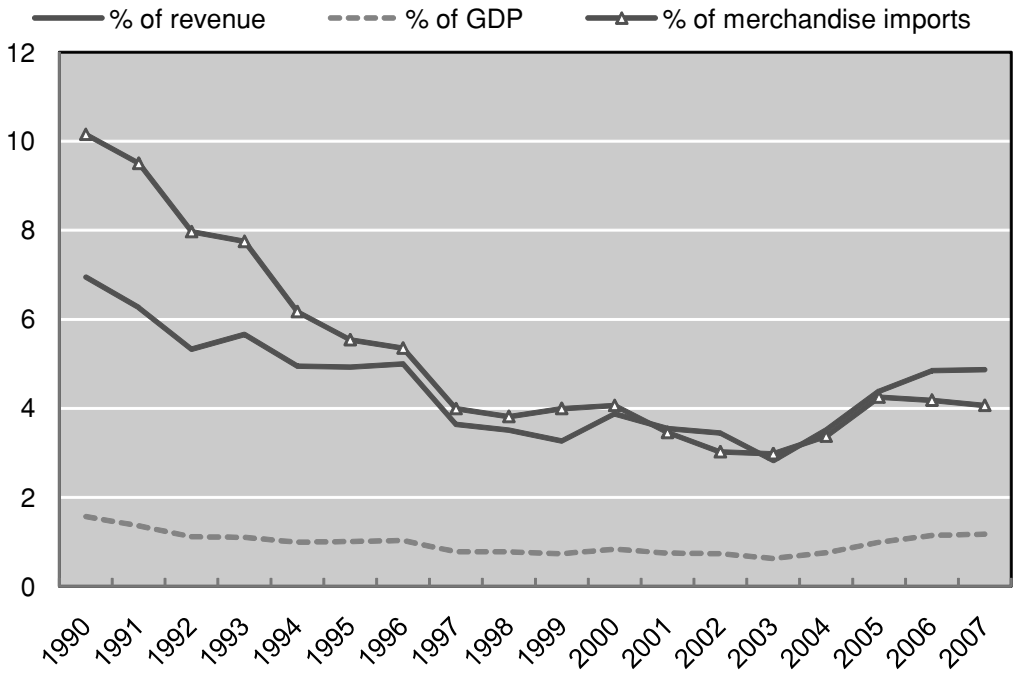
Source: UN TRAINS.

Table 11.13. Simple average tariff by production stage

	Capital goods	Consumer goods	Intermediate goods	Raw materials
1988	5.85	18.11	10.74	3.80
1990	5.83	16.22	9.92	3.69
1991	6.02	15.85	9.59	4.34
1993	6.19	27.89	14.55	5.61
1996	2.83	27.15	11.80	6.28
1997	4.27	12.93	5.21	5.65
1999	2.35	11.34	4.49	4.47
2001	2.17	15.24	6.10	5.22
2004	2.05	15.18	6.18	4.09
2005	2.03	14.95	6.11	2.86
2006	2.01	14.93	6.08	2.86
2007	2.06	15.28	5.64	4.19

Source: UN TRAINS.

Figure 11.21. Taxes on international trade and transactions



Source: SARB, authors' calculations

Table 11.14. Doing business, selected indicators, 2008

		South Africa	Brazil	China	India	Indonesia	Russia
Overall indicator		**35**	**122**	**83**	**120**	**123**	**106**
Starting a Business	Cost (% of income per capita)	7.1	10.4	8.4	74.6	12	3.7
Dealing with Licenses	Procedures (number)	17	18	37	20	19	54
	Time (days)	174	411	336	224	196	704
	Cost (% of income per capita)	30.4	59.4	840.2	519.4	286.8	3,788.4
Trading Across Borders	Time for export (days)	30	18	21	18	21	36
	Cost to export (US$ per container)	1,087	1,090	390	820	667	2,050
	Time for import (days)	35	22	24	21	27	36
	Cost to import (US$ per container)	1,195	1,240	430	910	623	2,050
Registering Property	Procedures (number)	6	14	4	6	7	6
	Time (days)	24	45	29	62	42	52
	Cost (% of property value)	8.8	2.8	3.6	7.7	10.5	0.3
Enforcing Contracts	Procedures (number)	30	45	35	46	39	37
	Time (days)	600	616	406	1,420	570	281
	Cost (% of debt)	33.2	16.5	8.8	39.6	122.7	13.4
Employing Workers	Difficulty of Hiring Index	56	78	11	0	72	33
	Difficulty of Firing Index	30	0	40	70	60	40
	Rigidity of Employment Index	42	46	24	30	44	44
	Nonwage labor cost (% of salary)	4	37	44	17	10	31
Closing a Business	Time (years)	2	4	1.7	10	5.5	3.8
	Cost (% of estate)	18	12	22	9	18	9
	Recovery rate (cents on the dollar)	33.2	14.6	35.9	11.6	12.6	29

Source: The World Bank Group, Doing business indicators.

4.3 South Africa's preferential trade agreements

In addition to pursuing trade liberalisation in the multilateral context, South Africa has been engaging in a number of important regional and bilateral initiatives. It is a core member of the South African Customs Union (SACU) between South Africa, Botswana, Lesotho, Namibia and Swaziland. It has two significant bilateral FTAs: Southern Africa Development Corporation (SADC)[8] (operational as of 1996) and the SA-EU Trade Development and Cooperation Agreement (TDCA) (entered into force in January 2000). As a member of SACU South Africa participates in SACU-EFTA FTA (entered into force in May 2008), SACU-Mercosur PTA (concluded in April 2008) and SACU-USA Trade, Investment and Development Cooperation Agreement with the United States (concluded in April 2008). Other bilateral preferential trade talks are also under way including the Economic Partnership Agreements initiative that has an objective of creating a free trade area between the European Union and the ACP countries and SACU-India PTA negotiations. The country is also a beneficiary of a number other preferential trading schemes such as the Generalized System of Preferences and the US's African Growth and Opportunity Act.

SACU was initially established in 1969 as a replacement of the Customs Union Agreement of 1910 but its roots go as far back as the establishment of the 1899 Customs Union Convention amongst a number of South African colonies, making it the oldest customs union in the world. The new 2002 SACU Agreement contains provisions that go beyond the original facilitation of intra-SACU trade and the application and revenue sharing of a common external tariff with the aim of encouraging greater regional economic integration among the SACU members. These include provisions for deeper integration such as creation of egalitarian SACU institutions to facilitate joint decision making process[9]; equitable trade benefits to members; promotion of fair competition in the common customs area; facilitation of investment in the common customs area; enhancement of economic development, diversification and competitiveness and an equitable revenue sharing formula as well as the development of common policies and strategies.

In practical terms, intra-SACU trade is free of duties and quantitative restrictions except in exceptional circumstances. SACU members apply customs, excise, sales and anti-dumping duties as well as rebates and duty drawbacks as decided by the SACU Council of Ministers. In this respect the process is more egalitarian than it was under the 1969 SACU Agreement where members followed South Africa's trade policy as now all participants to the agreement are suppose to take part in the decision making, which has the positive effect of minimising the potential for trade diversion in bilateral trade among SACU members. It is not clear whether the 2002 agreement is more constraining on South Africa with respect to any unilateral reform initiatives it might want to have, or in the WTO context. On the one hand, similarly to the earlier SACU Agreement, South Africa can negotiate and enter into new preferential trade agreements with third parties or amend existing agreements as long as it has the consent of other Member States. [10] On the other hand the country is no longer the sole decision making power over customs and excise policies of SACU and the new agreement makes provisions for

8 SADC consists of: Angola, Botswana, Dem. Rep. of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.

9 Prior to the 2002 SACU Agreement South Africa had the sole decision-making power over customs and excise policies in SACU. It was administered on a part-time basis by annual meetings of the Customs Union Commission and there were no effective procedures to ensure compliance or resolve disputes. The 2002 SACU Agreement established an independent SACU Secretariat and a number of key decision making institutions including a Council of Ministers, a Customs Union Commission, Technical Liaison Committees, a SACU Tribunal and a SACU Tariff Board. (Source: SACU Secretariat website www.sacu.int)

10 Art. 31 of 2002 SACU Agreement.

establishing a common negotiating mechanism for the purpose of undertaking negotiations with third parties.[11]

SACU is also known for its revenue sharing formula whereby all customs and excise duties collected by members are pooled in a common revenue fund and redistributed according to a formula that takes into account trade, economic size and development criteria.[12] The 2002 Agreement also established a dispute settlement mechanism for dealing with problems in the interpretation and application of the agreement. It called for the simplification and harmonisation of trade documentation and procedures across members, albeit only in general terms.

South Africa is also the core member of the Common Monetary Area (CMA) which provides for free flows of capital within the area and assures the stability of bilateral nominal exchange rates by pegging the national currencies of Lesotho, Swaziland and Namibia to the South African rand.

Membership of the Southern African Development Community includes the five SACU members as well as Angola, the Democratic Republic of Congo, Madagascar, Malawi, Mauritius, Mozambique, Seychelles, Tanzania, Zambia and Zimbabwe. The SADC Treaty provides a framework to coordinate and jointly develop policies aimed at sustainable development of the region. The Trade Protocol of SADC signed in 1996 and ratified in 2000 by eleven SADC members[13] is aimed at establishing a SADC free-trade area. In the Trade Protocol, SADC countries agreed on a classification of all traded products into three groups: one (consisting mostly of capital goods and equipment) that was liberalised in the first year of Treaty's existence; a second group to be liberalised gradually by 2008 and a third group of sensitive products (such as sugar, textiles and clothing but limited to 15% of each members total merchandise trade) are to be liberalised by 2012. Products not eligible for preferential treatment within the SADC are estimated to amount to approximately 2% of SADC merchandise trade by 2012. The Protocol identified also some non-tariff measures to be eliminated (*e.g.* import quotas, export subsidies) but excluded some other barriers such as local content requirements or import and export licensing. In the future, SADC intends to extend trade liberalisation to services.

South Africa is also a member of a yet more inclusive regional initiative, the African Union, launched in 2001. Its aim is to promote integration and harmonisation throughout the African continent[14] through, among other means, the establishment of a pan-African economic and monetary union over a period of 34 years.

The available trade data make it hard to judge how important SACU and SADC are for South Africa. For example the UN Comtrade database reports no data on South Africa's exports to any of the other SACU members (Table 11.15. Imports from SACU are reported but in 2006 they accounted for merely 1.2% of total South Africa's imports. Such a low number suggests that at least some trade flows

11 This common negotiating mechanism has not yet been agreed although SACU Executive Secretary Ms. Tswelopele Moremi reported that drafting and consultations are under way. She also revealed that now the SACU Secretariat has a negotiating team that negotiates on behalf of SACU as a whole. This is reported to have been the case in the SACU-Mercosur negotiations. (Source: interview with SACU Executive Secretary Ms. Tswelopele Moremi accessed at http://www.sacu.int/docs/pr/2008/interview.pdf).

12 Customs duties are distributed proportionally to intra-SACU imports (customs component) and excise proportionally to the share of a member in total SACU GDP (excise component) and inversely proportionally to the GDP per capita (development component). For a precise explanation of how the share is calculated see Box II.1 in WTO (2003).

13 Exceptions are Angola, Democratic Republic of Congo and Seychelles.

14 All African countries except Morocco are members of the AU.

within SACU are not being reported. For other SACU members reporting seems better and the data indicate that the customs union accounts for 80% to 90% of their imports and for 7% to 75% of their exports. Data for SADC (Table 11.16) are also likely to suffer from the problem of no data on South Africa-SACU flows but it is clear that in terms of trade shares SADC is an important initiative for most other SADC members.

Table 11.15 Importance of SACU trade for South Africa and other SACU members, 2006

	Imports from SACU as % of total imports		Exports to SACU as % of total exports	
	Value	Share	Value	Share
South Africa	799.7	1.2	..	..
Botswana	2 640.4	86.5	301.5	6.7
Lesotho	1 094.4	78.2	173.9	18.0
Namibia	2 317.9	82.9	845.9	25.1
Swaziland	1 460.6	88.3	1 175.2	74.9

a) 2004 for Lesotho and Zimbabwe, 2005 for Swaziland

Source: UN ComTrade.

Table 11.16 Importance of SADC trade for South Africa and other SADC Trade Protocol members, 2006a

	Imports from SADC as % of total imports		Exports to SADC as % of total exports	
	Value (million USD)	Share (%)	Value (million USD)	Share (%)
South Africa	1 978.3	2.9	4 110.6	7.8
Botswana	2 710.0	88.8	575.7	12.8
Lesotho	1 095.3	78.3	174.5	18.0
Namibia	2 338.7	83.6	878.1	26.0
Swaziland	1 475.2	89.2	1 296.7	82.6
Malawi	720.8	59.6	208.8	31.2
Mauritius	298.6	8.2	53.0	2.4
Mozambique	1 167.3	40.7	453.8	19.1
Tanzania	666.1	13.6	290.2	17.2
Zambia	1 739.7	56.6	574.9	15.2
Zimbabwe	1 481.3	63.4	766.8	55.0

a) 2004 for Lesotho and Zimbabwe, 2005 for Swaziland

Source: UN ComTrade.

Bilateral agreements

South Africa is also a party to a number of bilateral agreements either as an individual country or as a member of SACU. The 1999 Trade, Development and Cooperation Agreement (TDCA) between South Africa and the EU, historically the most important trading partner of South Africa, provides for trade liberalisation to the form of a free trade area by 2012. It is projected that by this date the EU will have liberalised (fully or partially) approximately 95% (61.4% and 99.9% of agricultural and industrial products respectively) of its imports from South Africa while South Africa liberalises approximately 86% (83% in agriculture and 86.5% of industrial products). The liberalisation by the EU will be accomplished within the first 3-6 years (WTO, 2003). The TDCA gives South African firms a

competitive edge in access to EU markets as compared with its SACU or SADC partners but TDCA does not have discriminatory impact in terms of access to South Africa's market as, according to the SADC Agreement, South Africa had to extend all the concessions granted to the EU to all SADC members.

South Africa is also a negotiating party to the Economic Partnership Agreements initiative that has an objective of creating a free trade area between the European Union and the ACP countries. ACP countries are expected to enter the EPAs in regional groupings, in the case of South Africa the SADC which consists of all the members of SACU plus Angola, Mozambique and Tanzania. For South Africa the EPA negotiations are to be streamlined with the review of the existing TDCA which has been interpreted as an indication that the TDCA will be submerged in the EPA negotiations and that the eventual EPA will replace TDCA trade provisions at the date of its entry into force.[15] Towards the end of 2007 an Interim EPA (IEPA) was initialled by Botswana, Lesotho, Swaziland, Namibia and Mozambique to ensure that the SADC EPA member states did not lose preferential access to the EU market after expiry of the Cotonou agreement on 31 December 2007. South Africa and Angola have not yet initialled the agreement due to concerns with the Interim agreement text and the TDCA remains the legal framework for South Africa's trade with the EU. It is expected that negotiations towards a full EC and SADC EPA agreement will be concluded in December 2008.

The recently approved (June 2008) SACU-Mercosur Preferential Trade Agreement that replaces the earlier agreement signed in 2004 and specifies, among other provisions, tariff concessions covering around 1 000 products with preference margins between 10% and 100%. The SACU-EFTA Free Trade Area (signed in 2006 and entered into force in May 2008) and the three associated bilateral agreements between SACU and the three individual EFTA members covering agricultural trade offer SACU fully duty and quota free access for industrial products and a limited but enhanced access to the EFTA agricultural markets. SACU concessions to EFTA largely mimic those offered to the EU under the TDCA on both agriculture and industrial products.[16] Trade, Investment and Cooperation Agreement (TIDCA) between SACU and the US and the SACU concluded in April 2008 makes provisions for a consultative process aimed at dealing with any matter relating to trade and investment between the two sides and possibly leading to future enhancements of agreements between the two sides. Negotiations are currently being held on SACU-India Preferential Trade Agreement (PTA). Sources have also reported on considerations of a trilateral free trade agreement (T-FTA) between SACU, India and Mercosur and of a bilateral agreement with China.[17]

4.4 Services trade

As Section 2 of this report indicated, services seem to be the main driver of South Africa's recent economic growth and this sector is a very important and dynamically growing employer. This is especially the case for *Wholesale and retail trade* and *Communication* and *Business services*—these sectors were responsible for over 40% of final output growth over the 1994-2007 period and accounted for over 46% of employment. Other evidence presented in sections 2 and 3, however, indicates that trade in services may be seen as not as important as trade in goods. For example, in 2006 the value of total South African exports of services did not exceed one fifth of the value of exports of goods (a slightly larger ratio holds for services imports) and since early 1990s South Africa has consistently recorded a deficit on services trade that nonetheless never exceeded one percent of GDP.

15 See discussion by Paul Kruger of TRALAC at http://epa.tralac.org/scripts/content.php?id=6241 .

16 Some adjustments were made taking into account BLNS sensitivities and errors made in the TDCA. This is based on information provided by the SACU Secretariat. Some adjustments were made taking into account BLNS sensitivities and errors made in the TDCA.

17 Source: www.bilaterals.org

However, there are also several reasons to think that trade in services does offer South Africa a considerable growth potential. First, the currently low current levels of services trade may quite simply indicate a large potential for the future. Second, exports of travel services are in fact an important source of export revenue that amounts to over 3% of South Africa GDP and imports of transports services seem indispensable reaching similar magnitudes. Third, existing balance of payments services trade data on which the analysis presented so far is based do not adequately account for the extent of services trade according to the current WTO typology as they merely capture two modes of services trade: cross-border trade (mode 1) and consumption abroad (mode 2). They do not, for example, account for sales of foreign affiliates in South Africa or sales of South African affiliates abroad (mode 3), nor do they account for services provided by temporary workers (mode 4). Fourth, the extent of services trade indicated by the currently available data is affected by existing services trade barriers, data on which is very elusive (see below). Finally, the effects of certain forms of services trade are different from those of merchandise trade. For example, a foreign company based in South Africa sells its output domestically and influences local market structure and competition. It may also be a source of technology or skill transfer. The difference with goods trade is that goods can be shipped from abroad without local presence.

Foreign direct investment performance of South Africa, which can be considered a proxy for mode 3 of services trade, is mixed. FDI inflows expressed as a percentage of GDP have grown considerably but are lower than in China, Brazil or the Russian Federation (Figure 11.22). When expressed as a share of total FDI into low and middle income economies grouping this share is growing very slowly and is currently smaller than in any other of the BRIICS apart from Indonesia. This mixed FDI performance is somewhat puzzling given the apparent relative openness of South Africa's services trade regime.

For the time being widely available indicators of restrictiveness of services trade with a broad sectoral coverage or with a broad coverage of different modes of services trade are scarce. Three pieces of currently available OECD research in this area include Dihel and Shepherd (2007), Koyama and Golub (2006) and certain components of the product market regulation indicators assembled by the OECD Economics Department (OECD, 2005).[18] The message of these pieces of analysis is quite similar: South Africa's services trade regime seems relatively liberal as compared to other emerging and developing economies as well as the OECD. In Dihel and Shepherd (2007), for example, South Africa is reported to have the least restrictive barriers to distribution trade (considering all modes of supply) across the sample of emerging countries covered in the analysis (see Figure 11.23 and Dihel and Shepherd, 2007). In Koyama and Golub (2006) the restrictiveness of South Africa foreign direct investment regime (mode 3) seems to be lower than those of China, India or the Russian Federation (see Figure 11.24). The analysis of Koyama and Golub (2006) indicates that barriers to actual operations of foreign companies have a disproportionately large contribution to the index as opposed to foreign equity or screening requirements. One component of the 2003 OECD product market regulation (PMR) indicators[19] indicates that restrictiveness of South African foreign ownership barriers (mode 3) is situated somewhere between the least and most open OECD economies. In the context of BRIICS foreign ownership restrictiveness is a little higher than Brazil's and a little lower than India's (see Table 2.1 in OECD, 2008).

It is worth pointing out that Dihel and Shepherd (2007) and OECD (2005) constructed their services trade restrictiveness indices on the basis of measures actually applied[20] while the FDI restrictiveness

18 OECD Trade and Agriculture Directorate is currently working on methodology and collecting data to develop a comparable services trade restrictiveness index though the first stages of this work will concentrate on current OECD members.

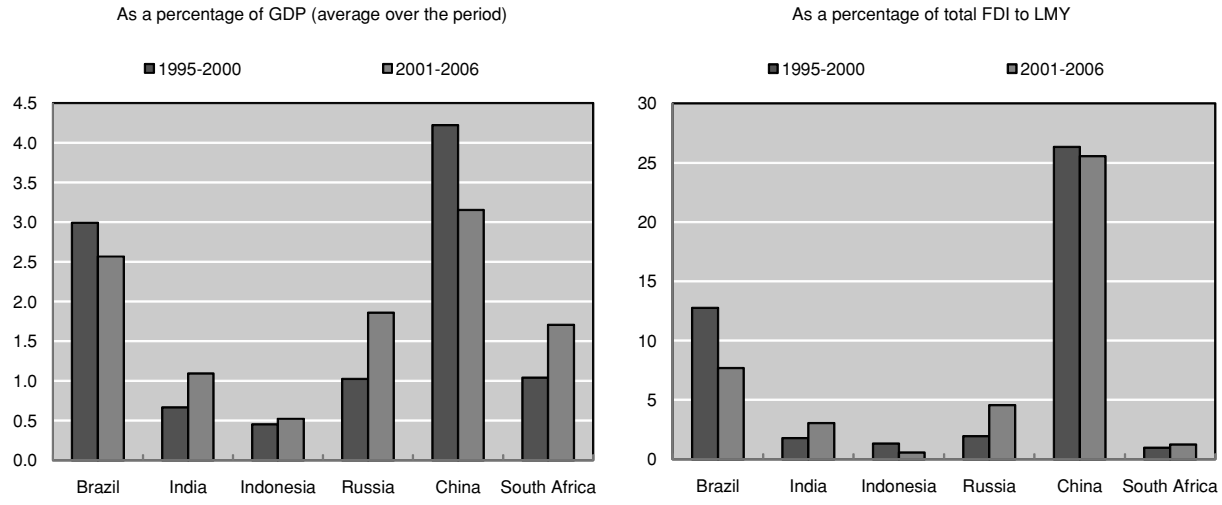
19 These indicators are currently being updated.

20 GATS commitments were only used wherever the information on actually applied measures could not be obtained.

index of Koyama and Golub (2006) reflected de jure but not the facto situation. The approach of the World Bank World Trade Indicators database (WTI, 2008) is instead based on the GATS commitments. In fact, WTI (2008) contains the only currently available comparative database of trade restrictiveness indices based on a broad sectoral coverage of GATS commitments.[21] The overall GATS commitment indices presented in Figure 5.7 confirm the relatively open nature of South Africa's services commitments. In fact, South African index is higher (reflecting more liberal regime) than those of a number of OECD countries and other regions across a number of services sectors (see WTI, 2008 for details).

At this stage of work on South Africa's trade and growth the Secretariat has not been able to gather and analyse more data on the importance of services trade and services trade barriers for South Africa's economy although the structure of recent economic growth suggests that they may be of key importance. It is therefore suggested that this theme be taken up as a priority in future work on South Africa and on services trade.

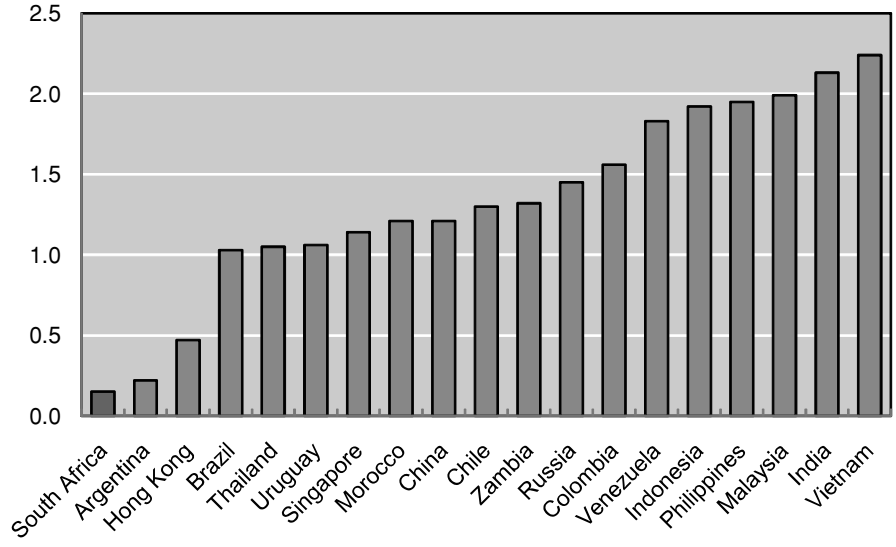
Figure 11.22 FDI inflows into BRIICS



Source: WTI.

[21] This approach is reported to follow the methodology of Hoekaman (1997) and Hoekman and Eschenbach (2006).

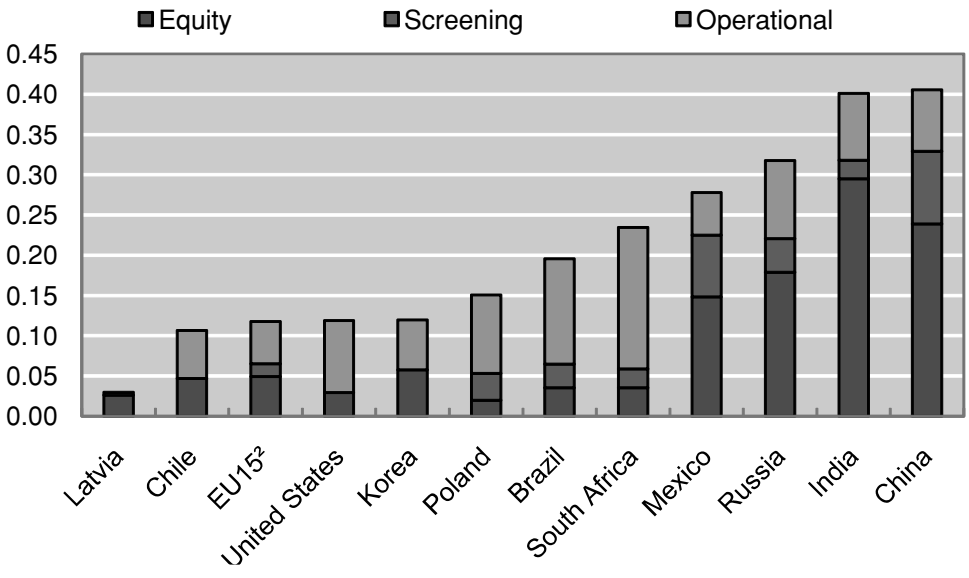
Figure 11.23 Services Trade Restrictiveness Index in Distribution Services[1]



1)The index encompasses all modes of services trade

Source: Dihel and Shepherd (2007)

Figure 11.24 Figure FDI restrictiveness index[1]

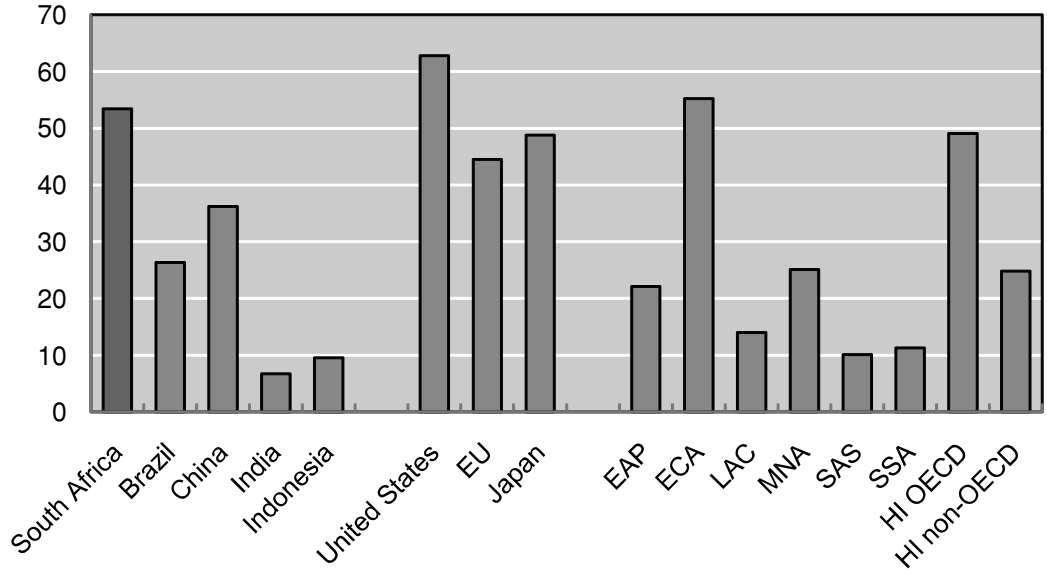


1) This aggregated Index covers the following sectors and sub-sectors: Business (legal, accounting, architectural, and engineering services), Telecommunications (fixed line telephony and mobile telephony), Construction, Distribution, Finance (insurance and banking), Tourism, Transport (air transport, maritime transport and road transport), Electricity and Manufacturing.

2) Except Luxembourg.

Source: Koyama T. and S. Golub (2006).

Figure 11.25 South Africa's overall GATS commitment index compared with other countries and regions



Note: This index encompasses all services sectors

Source: WTI (2008)

5. Did trade liberalisation affect productivity growth in South Africa's manufacturing?

5.1 Openness and productivity growth debate

The last decade witnessed an intense debate on to what extent trade liberalisation impacts upon economic growth. A recent OECD study (Nordas *et al*., 2006) analysed and summarised the various arguments of the debate. The analysis of the trade/openness-growth link essentially boils down to the analysis of trade/openness-productivity link as productivity growth is the only long term source of growth in the neo-classical growth framework. This is due to the fact that under the assumption of diminishing marginal returns, an increase in capital while holding labour input constant increases output, but at a diminishing rate as the stock of capital per worker increases. Eventually the capital stock reaches a level where investors will only replace depreciating capital in the absence of technological progress.

There are many channels through which openness could affect either the level or the rate of change of productivity. The two are often distinguished because the economic theory seems clearer about how openness could affect productivity levels than about how it could affect productivity growth rates. Also, econometric modelling of productivity and its determinants necessarily makes a distinction between the two concepts. The level and growth rate concepts, however, admittedly are less distinguishable in day-to-day economic reality since a one-off step upgrade of productivity will imply a change in productivity growth rate over the transitional period. Similarly, a change in productivity growth rate is presumably composed of a number of step changes in productivity levels.

Keeping this distinction in mind, Nordas *et al.* (2006), argue that from a theoretical point of view openness could cause shifts in the average productivity level (or its growth rate) for the economy as a whole when it leads to a shift of labour and capital towards the sectors with the highest productivity levels (or growth rates). In such a case the productivity level (or growth rates) of individual sectors need not even be affected. Alternatively, liberalisation could result in a shift in the productivity level (or

growth rates) in individual sectors, especially when it leads to deeper specialisation, capital deepening, improved scale economies or faster innovation. In such a case, the least protected or most rapidly liberalising sectors would normally be expected to have highest productivity growth rates, although the proponents of infant industry arguments could argue the opposite.

Even though the theoretical possibilities of a positive impact of liberalisation on growth are numerous the empirical support for them is rather mixed. A review of existing literature by Nordas *et al.* (2006) makes a distinction between openness and trade liberalisation[22] and concludes that a consensus seems to have emerged that openness, income and levels of productivity are positively and strongly correlated and that the direction of causality most likely goes from trade to income levels. The same literature furnished no conclusive evidence of a positive and causal link between trade liberalisation and productivity levels or productivity growth. Similarly, there is no evidence of a positive link between protection and productivity growth or productivity levels.

Nordas *et al.* (2006) argue that the lack of evidence of a link between trade liberalisation and productivity growth boils down to the sheer complexity of the growth process which makes it difficult to pin down a robust and causal relationship between any single policy variable and aggregate productivity growth. Indeed, many of the empirical studies that formed an integral part of the liberalisation-growth debate were conducted as large cross-country or as panel data studies (*e.g.* Dollar, 1992; Sachs and Warner, 1995) which prevented any analysis of the link at an adequate level of product disaggregation or in a specific country and institutional context.

5.2 Openness and productivity growth in South Africa

The remainder of this section follows the body of country-specific studies and attempts to shed light on whether the merchandise trade liberalisation observed in South Africa since early 1990s affected productivity growth across its industrial sectors. South Africa's manufacturing sector is an interesting case study as it experienced a varied pattern of liberalisation over the 1988-2003 period as well as a varied pattern in TFP growth rates. In initial years (88-93) average protection across manufacturing sectors actually increased somewhat. This was followed by a period of liberalisation (94-99) and period of continued, but much slower, liberalisation over the period 00-03.

TFP was on average declining over the 88-93 period, growing moderately over the 94-99 period and accelerating remarkably faster over the 00-03 period. This broad pattern does not provide a crystal clear picture of the correlation between liberalisation periods and periods of faster TFP growth, though a positive link could certainly be argued if one assumes time lags between policy reforms and industry responses. However, a casual analysis of this type does not control for any of the possible confounding factors and cannot shed light on the actual causality between protection and TFP growth. Also, the information on heterogeneity in trends across individual sectors is not exploited. An econometric analysis of the relationship between protection and TFP growth by industrial sector and year presented in the reminder of this section attempts to overcome these shortcomings and to estimate the magnitude and statistical significance of this relationship.

An early (and to our knowledge the only existing) assessment of the effects of South Africa's liberalisation on total factor productivity over the period was conducted by Jonsson and Subramanian (2000) for the period 1990-1998. Their cross-section analysis was based on the pooled data for the years 1990-94 and 1994-98 for 24 manufacturing industries at the ISIC 3-digit level and tariff rates for 1990,

22 Trade policies and thus trade liberalisation are but one factor determining the degree of a country's openness.

1994 and 1998, inclusive of surcharges. Their results indicated that there was a significant negative relationship between changes in tariffs and TFP growth across manufacturing sectors and that the result was robust to the inclusion of other determinants of TFP growth (in particular indicators of openness and R&D investment). They have also confirmed their cross-section result with a time series study of determinants of aggregate TFP growth.

The current assessment extends the existing evidence by employing a more comprehensive dataset on changes in tariffs, effective rates of protection, TFP growth, labour productivity, employment by skill, capital stock and openness by sector and over a longer and more recent period 1988-2003. One major improvement is the use of effective rates of protection calculated by Edwards (2005)[23] that account for protection of final output as well as intermediate inputs. The importance of effective rates of protection boils down to the fact that South Africa's tariff structure has traditionally been, and still is, characterised by relatively high tariffs on final products and lower tariffs on intermediate inputs and capital goods (Table 11.13), resulting in relatively high effective rates of protection, Table 11.11. For this reason the analysis in the reminder of this section and the results of econometric modelling focus on this policy variable, instead of simple tariff rates.

Three digit SIC data used in the assessment come from the Quantec Standardised Industry Indicators data set[24] which assembles information from a number of national data sources such as the Department of Labour (manpower surveys), the South African Reserve Bank (national accounts, balance of payments and public sector), The South African Revenue Service (international trade data, etc.), the National Treasury (government expenditures/revenue) and Statistics South Africa (sectoral value added, input-output tables, detailed sectoral remuneration and gross operating surplus, price and output, gross domestic fixed investment, employment).

Two measures of productivity growth that are available in the Quantec Standardised Industry Indicators data set are considered. Labour productivity is calculated as the ratio between output and total number of workers employed, inclusive of the informal sector. TFP is a measure of the growth in output that is not explained by the growth in the quantity of inputs. It includes technical progress, improvements in the workforce, improvements in management practices, and economies of scale.[25]

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23 See Section 5 for more details.

24 www.quantec.co.za

25 It is calculated on the basis of the following formula:

$$A(t) = \frac{Q(t)}{\left[\left(WL(t) * L(t)\right) + \left(WK(t) * K(t)\right)\right]}$$

where: Q(t) is the real output at time t; WL(t) is the labour's income share at time t calculated as the remuneration of employees divided by total income at time t; L(t) is the real labour input at time t; WK(t) is the capital's income share at time t calculated as the gross operating surplus divided by total income at time t; K(t) is the real capital input at time t.

Our assessment follows the growth accounting approach to measurement of TFP. The alternative econometric approach, that is often used as a complimentary method, specifies a stochastic production function and involves estimating its parameters, such as for example labour's and capital's shares. The econometric approach has some advantages such as greater flexibility and, possibly, greater accuracy of estimates of TFP but it comes as a cost of dealing with estimation issues that may themselves call into question the robustness of results. In this iteration of work on South African TFP we stick to the growth accounting approach because of its simplicity. Extension to complimentary measures could be implemented in future revisions of the report.

Liberalisation of manufacturing trade

As already discussed in more detail in Section 5 of this report, South Africa intensified the trade-liberalisation process during the 1990s after decades of protectionist trade policy and import controls that characterised the apartheid era. The programme of simplifying the complex and distorted tariff regime was a part of the government's national development strategy and the process was boosted by the conclusion of Uruguay Round of trade negotiation and accession to the World Trade Organisation (WTO) in January 1995.

Table 11.17 reports average sectoral effective rates of protection from Edwards (2005) at the end of each of the sub periods 1988 -1993, 1994-1999 and 2000-2003 and their average annual rates of change over those sub-periods. Data reveal that on average effective protection actually went up over 1988-1993 (average annual growth rate of 0.8% across all sectors) and then was significantly reduced over the period 1994-1999 (average annual growth rate of -2.9%) and to a much lesser extent over the period 2000-2003 (average annual growth rate of -0.4%). At the end of 2003 the average effective rate of protection was 32% though there was a good deal of variation across individual sectors.

Tobacco was, and remains, the most protected sector followed by such traditional sectors as *Textiles*, *Wearing apparel*, *Footwear*, *Furniture* or *Other manufacturing*. Interestingly, the extent of liberalisation in these highly protected sectors over the period 1988-2003 has generally been much less than average (average annual growth rate over the period lower than -1%), with the exception of *Furniture* (-1.4%). *Other manufacturing* (-2.9%), *Leather and leather products* (-1.5%), *Rubber products* (-1.5%), *Plastic products* (-1.5), *Glass and glass products* (-1.3%) were initially relatively highly protected but also experienced significant liberalisation. Yet, there is also considerable variation over time with certain sectors initially experiencing increasing protection over the 1988-1993 period and then liberalisation over the two next sub-periods. A number of sectors experienced liberalisation throughout all three sub periods.

Output and TFP developments

Table 11.18 presents the developments in output and TFP over the investigated period. TFP is clearly a major determinant of output developments. Averaging across sectors, annual TFP growth rates were negative in the pre-liberalisation 1988-1993 period (average annual rate of change -1.45%). Over the same period output grew on average by a mere 1.3% per year. Beginning in 1994 and coinciding with an intensification of the trade liberalisation process, productivity growth rates turned positive (average annual rate of change 0.9%) and output growth accelerated to 3.4% per year. This was still, however, a period when the TFP growth rates remained low and unstable. Finally, during the early 2000s productivity started increasing at a faster pace (average annual rate of growth of 4.3%) and this coincided with a much stronger output growth (average annual rate of growth of 7%). Not unusually for an economy undergoing a major structural change, the employment growth rates have been consistently negative throughout the 1988-2003 period (especially after 1996). This, however, contributed to the current labour market difficulties. Across manufacturing there were some exceptions to these general trends. High TFP growth rates coincided with positive employment growth rates in, for example, *Furniture*, *Other manufacturing* and *Professional and scientific equipment,* Table 11.19.

Table 11.17. Evolution of effective rates or protection

	Effective Rate of Protection (%)			Average annual growth rate over the period				Δ%
	1988	1994	2003	1988-1993	1994-1999	2000-2003	1988-2003	1988-2003
Food	51.4	55.3	36.4	1.1	-2.4	-0.1	-0.6	-9.9
Beverages	43.1	52.0	25.3	1.9	-3.8	1.4	-0.5	-12.4
Tobacco	410.9	340.5	315.4	5.4	-5.4	2.3	0.3	-18.7
Textiles	95.3	149.7	85.3	8.3	-4.1	-3.5	0.2	-5.1
Wearing apparel	101.9	218.4	96.7	11.5	-4.4	-6.0	0.5	-2.6
Leather and leather products	52.4	59.7	19.2	0.2	-3.2	-1.1	-1.5	-21.8
Footwear	77.3	106.0	50.7	2.8	-4.0	-0.9	-0.9	-15.0
Wood and wood products	25.9	21.7	14.8	0.3	-1.8	0.2	-0.6	-8.9
Paper and paper products	12.4	15.8	10.1	0.8	-0.7	-0.4	-0.1	-2.0
Printing, publishing and recorded media	28.7	22.2	4.7	-0.7	-2.8	0.1	-1.3	-18.7
Coke and refined petroleum products	10.5	10.0	8.0	0.0	0.2	-0.9	-0.1	-2.2
Basic chemicals	15.6	14.4	1.4	-0.3	-1.9	0.0	-0.9	-12.3
Other chemicals and man-made fibers	33.6	32.3	7.5	0.0	-3.3	-0.2	-1.4	-19.6
Rubber products	68.0	46.6	33.3	-1.9	-1.9	-0.5	-1.5	-20.7
Plastic products	51.0	36.2	20.2	-1.1	-2.1	-1.0	-1.5	-20.4
Glass and glass products	40.7	32.1	14.3	-0.7	-2.9	0.1	-1.3	-18.7
Non-metallic minerals	34.6	29.9	10.8	-0.4	-3.0	0.2	-1.3	-17.7
Basic iron and steel	24.6	20.1	11.1	-0.4	-1.5	0.0	-0.7	-10.9
Basic non-ferrous metals	16.4	17.9	3.1	-0.2	-1.7	-0.1	-0.8	-11.4
Metal products excluding machinery	46.4	36.7	16.6	-0.6	-3.2	0.1	-1.5	-20.3
Machinery and equipment	22.0	11.9	3.0	-0.8	-2.0	-0.1	-1.1	-15.6
Television, radio and communication equipment	33.6	35.5	1.3	0.3	-4.4	-0.1	-1.7	-24.2
Professional and scientific equipment	13.3	9.5	-6.3	-0.4	-2.9	0.2	-1.2	-17.3
Motor vehicles, parts and accessories	58.1	45.1	32.7	-1.4	-0.9	-1.0	-1.1	-16.1
Other transport equipment	21.3	14.9	-3.3	-1.0	-2.7	-0.2	-1.5	-20.2
Furniture	83.8	82.6	46.3	-0.6	-3.2	0.4	-1.4	-20.4
Other manufacturing	95.8	96.5	17.3	0.4	-7.6	-0.1	-2.9	-40.1
Average across sectors	58.1	59.8	32.4	0.8	-2.9	-0.4	-1.0	-15.7

Note: % change in ERP (or tariff rate) is calculated as $(\Delta ERP/(100+ERP_0))*100$, where ERP is expressed as a % rate (*e.g.* 20%).

Source: Edwards (2005), authors' calculation.

Table 11.18. Evolution of output and TFP

	Average annual output growth rate				Annual average TFP growth rate			
	1988-1993	1994-1999	2000-2003	1988-2003	1988-1993	1994-1999	2000-2003	1988-2003
Food	2.83	0.41	5.51	2.59	1.27	-1.90	5.88	1.23
Beverages	0.26	1.39	2.86	1.33	-3.89	-0.29	2.37	-0.97
Tobacco	0.36	-0.08	1.17	0.40	-7.86	4.41	3.46	-0.43
Textiles	-1.81	1.67	6.72	1.63	-3.40	-0.15	2.80	-0.63
Wearing apparel	1.44	1.00	2.43	1.52	2.45	-1.92	3.36	1.04
Leather and leather products	1.53	5.76	12.17	5.78	-1.14	1.30	12.73	3.24
Footwear	1.07	-1.67	0.14	-0.19	-2.65	-1.30	7.02	0.27
Wood and wood products	0.54	4.80	7.50	3.88	0.96	0.70	1.63	1.03
Paper and paper products	-0.39	4.42	5.98	3.00	-0.88	0.68	2.82	0.63
Printing, publishing and recorded media	2.24	-0.69	-0.36	0.49	-0.34	-3.52	-1.22	-1.75
Coke and refined petroleum products	3.11	11.19	7.13	7.15	-8.94	9.78	1.75	0.75
Basic chemicals	0.86	8.74	8.74	5.78	3.75	4.14	3.80	3.91
Other chemicals and man-made fibers	2.91	8.02	7.28	5.92	3.95	7.54	4.43	5.42
Rubber products	2.77	3.63	4.44	3.51	-3.76	0.29	3.54	-0.42
Plastic products	4.65	4.43	8.07	5.42	3.19	-0.50	7.57	2.90
Glass and glass products	-0.69	2.81	10.79	3.49	1.88	1.15	9.72	3.56
Non-metallic minerals	0.05	0.14	6.62	1.72	-0.09	0.36	5.23	1.41
Basic iron and steel	0.19	5.82	12.72	5.44	0.31	5.05	13.67	5.43
Basic non-ferrous metals	0.65	13.23	3.77	6.15	-3.96	6.16	1.70	1.25
Metal products excluding machinery	-0.21	2.21	3.15	1.54	-4.95	0.00	4.19	-0.81
Machinery and equipment	2.25	2.18	5.09	2.93	-1.81	-1.50	2.64	-0.58
Television, radio and communication equipment	-5.06	1.48	4.24	-0.28	2.44	-0.84	4.53	1.73
Professional and scientific equipment	1.83	-4.84	17.62	3.28	-7.42	-8.46	1.40	-5.61
Motor vehicles, parts and accessories	4.32	9.33	12.92	8.35	2.82	1.38	2.07	2.09
Other transport equipment	-5.44	-0.88	22.94	3.37	-6.78	-0.98	0.75	-2.72
Furniture	3.77	5.85	5.84	5.07	-0.89	4.94	13.48	4.89
Other manufacturing	11.97	1.08	4.57	6.03	-3.43	-1.88	-5.98	-3.49
Average across sectors	1.33	3.39	7.04	3.53	-1.45	0.91	4.27	0.87

Source: Quantec database and author's calculations.

Table 11.19 Evolution of employment

	average annual growth rate over the period		
	1988-1993	1994-1999	2000-2003
Food	0.55	-1.52	-2.61
Beverages	-0.16	-1.59	-2.04
Tobacco	-1.98	-0.03	-1.45
Textiles	-3.89	-1.69	-0.87
Wearing apparel	-1.09	2.28	-2.35
Leather and leather products	0.69	1.69	-7.03
Footwear	-2.12	-3.29	-11.30
Wood and wood products	-0.61	2.36	0.51
Paper and paper products	2.49	-1.74	-1.25
Printing, publishing and recorded media	1.43	0.87	0.83
Coke and refined petroleum products	-2.08	-5.65	1.65
Basic chemicals	-1.34	-0.94	-3.80
Other chemicals and man-made fibers	-1.01	-2.13	-0.07
Rubber products	1.09	-0.16	-1.72
Plastic products	2.64	1.76	-0.51
Glass and glass products	1.13	-3.26	-1.76
Non-metallic minerals	2.74	-3.50	-5.88
Basic iron and steel	-3.56	-6.93	-1.29
Basic non-ferrous metals	-2.27	-3.53	-2.46
Metal products excluding machinery	-0.16	0.32	-0.69
Machinery and equipment	-2.76	2.56	1.55
Television, radio and communication equipm	4.18	0.92	-9.94
Professional and scientific equipment	4.46	0.15	4.38
Motor vehicles, parts and accessories	-0.63	2.39	0.93
Other transport equipment	-3.05	-5.54	3.94
Furniture	1.36	0.33	0.30
Other manufacturing	8.80	4.80	3.89
Average across sectors	0.18	-0.78	-1.45

Source: Quantec database and author's calculations.

5.3 Methodology and results

The previous section highlights a broadly positive correlation of trade liberalisation efforts and productivity developments. However, as already foreshadowed, the descriptive analysis of trends does not fully use the information on variation in the trends by sector and time, nor does it control for any of the possible confounding factors such as other structural and macroeconomic policies or institutional changes over the 1988-2003 period. For example the progressive transition towards democratic governance and the end of the apartheid regime that are briefly covered in Section 5 could have been important determinants of productivity growth. At the same time the productivity improvements could have been linked to sector-specific features that are less well discernible in the context of broad policy developments described in this report.

In order to examine all these possibilities, we study the relationship between trade liberalisation and productivity growth using econometric techniques. Indeed, this approach allows us to capture the impact of decline in effective rates of protection on productivity growth while controlling for other variables that

could have impacted on the sectors' performance. In line with the literature, we estimate the following model:

$$dprod_{it} = \alpha_i + \sigma_t + \beta Z_{it} + \gamma C_{it} + \epsilon_{it} \qquad i = 1\ldots..27 \text{ and } t = 1988\ldots.2003$$

where $dprod_{it}$ is the growth of productivity (either labour productivity or TFP) in sector *i* and year *t*, α_i is the industry-specific fixed effect, Z_{it} are variables used as proxies for trade liberalisation, σ_t is a vector of time dummies, C_{it} is a set of control variables and ϵ_{it} is the error term.

Terms α_i and σ_t capture, respectively, the unobserved time-invariant sector specific features and the macroeconomic-institutional changes common to all sectors but evolving in time. The term Z_{it} represents a set of trade liberalisation proxies. It includes the effective rate of protection inclusive of surcharges ($ERP_incl_s_{it}$, see Kowalski *et al*., 2008). $import_share_{it}$ is the imports/output ratio, $intermediate_imports_share_{it}$ is the share of imported intermediate inputs and $import_final_g_{it}$ and $import_interm_g_{it}$ are, respectively, measures of final and intermediate imports growth. As suggested by Coe *et al*. (1997), all these indicators may be considered as distinct measures of trade openness as well as indirect measures of technology adoption. Importing intermediates, for example, may enhance productivity by providing firms with better inputs. This indicator is also often used also as a proxy for 'inshoring' (Feenstra and Hanson, 1995) or technological change (Ekholm and Hakkala, 2006).

Overall, while we would expect a positive impact of intermediate imports on productivity, the effect of imports of final goods on productivity is less clear. In the latter case a positive effect would be expected on the basis of 'pro-competitive' and innovation-stimulating effects of imports, especially if the local industry remains competitive and is not driven out of the market.

The term C_{it} is a set of control variables that capture time-evolving sector characteristics. First of all we control for a sectors' export orientation, using the export/output ratio (exp_share_{it}) and the export growth rate ($export_g_{it}$). The literature suggests that export orientation might boost productivity and favour knowledge spillovers (Bernard and Jensen, 1999; Wagner, 2002; and Girma *et al*., 2003). Secondly, we control for capital intensity and labour force composition impact on productivity growth. Capital intensity[26] ($K_labour_ratio_{it}$) is computed as the share of capital per worker. The investment rate ($investment_{it}$) is computed as the growth rate of the fixed capital stock at constant prices. The labour force composition[27] is measured as the ratio of skilled to unskilled workers ($skill_unskill_{it}$). We would expect a positive link between capital intensity, investment, skill intensity and productivity growth.

Inflation is another control in our regressions. The negative impact of inflation on growth is well documented in the literature (Fisher, 1993). It increases uncertainty and can discourage investment with a concomitant negative effect on productivity. We control for both local inflation ($local_\pi_{it}$) -computed as the rate of change in the final goods price for the sector and for imported-inflation ($import_\pi_{it}$), computed as the rate of change in import price.

Finally, we control for the market structure, labour costs and the sector dimension. As a proxy for the type of market structure ($markup_{it}$), we use mark-up computed as the net operating surplus of an industry as a percentage of total intermediate inputs plus labour remuneration and the consumption of capital for that industry, excluding all net indirect taxes. As the literature suggest, more competitive sectors (with lower mark-ups) present higher productivity growth, and hence we would expect a negative

26 See Abramovitz, 1979; Solow, 1988 and Wolff, 1991 for a review of the impact of capital intensity on productivity.

27 See Acemoglu, 1996; Hellrstein, 1999 and Moretti, 2004 for a review on the impact of skill on productivity.

coefficient in our regressions on the mark-up variable. At the same time, higher mark-up could be associated with a better exploitation of economies of scale or higher R&D investment rates, making the overall influence of mark-up on productivity growth uncertain.

As a proxy for wages, we adopt the growth in unit labour costs ($unit_labour_cost_{it}$) and we expect that an increase in labour costs impacts negatively on productivity at least in the short run. Sector size is measured as the share of total employment in sector *i* in total manufacturing employment ($empl_share_{it}$). One would expect that larger sectors have more inertia, grow slower, innovate less frequently and consequently present lower TFP growth rate (Pavit, 1984).

The literature has highlighted that the type of analysis being suggested here may suffer from endogeneity problems. Indeed, the political economy literature suggest that a less productive industry might be more likely to receive protection, biasing the estimated productivity impact of trade liberalisation. However, the preceding analysis broadly suggests that a number of sectors that were relatively highly protected in South Africa in 1988 often experienced deeper than average reductions in ERPs over the 1988-2003 period. We interpret this as evidence against the existence of endogeneity in our sample.

Table 11.20 presents the results of the estimation using TFP growth as dependent variable.[28] As far as the control indicators are concerned, the results suggest that while the outward trade orientation does not significantly impact on productivity growth, the use of imported intermediates does. There is also some evidence that an increase in imports of final goods has a negative productivity impact. Higher capital intensity seems to be positively associated with TFP growth but, contrary to our expectations, an increase in investment has a negative impact on productivity. Skill intensity does not seem to be an important determinant of productivity growth. In line with our expectations, an increase in inflation, both domestic and imported, reduces TFP growth, though the impact of domestic inflation is larger. Labour costs are significant only when we control for export and import growth and thus we conclude they cannot be classified as a significant determinant of TFP growth on the basis of these estimates. The positive coefficients on the mark-up variable support the hypothesis of pro-competitive effects on TFP growth but their statistical significance is not robust to alternative specifications. Finally, as expected, larger sectors tend to have lower TFP growth rates.[29]

Turning to the effects of trade liberalisation, the estimated effect of the effective rate of protection on total factor productivity is negative, significant and consistently robust with respect to the different sets of control variables.[30] It means that, after controlling for sector-specific features and time-evolving effects, trade liberalisation exerts a positive impact on productivity. In particular, it can be calculated that if effective rate of protection decreases by 1%, the TFP growth increases by 1.50-2.20%. Alternatively, it can be estimated that the decrease in the effective rate of protection observed over the whole period implies an increase of the annual TFP growth rate by up to 1 percentage point. This is equivalent to more than the average annual TFP growth rate observed over the 1994-1999 sub period, 23% of the annual TFP growth rate observed over the high growth sub period of 2000-2003 and more than 100% of average

28 The results don't change significantly if we use labour productivity instead of TFP as a dependent variable Regression results available upon request.

29 However, the sector size and mark-up turn out to be insignificant if added contemporaneously in the same specification. Indeed, the correlation analysis suggests that larger sectors present also higher mark-ups and the results on these variables may suffer from multicollinearity.

30 However, if we use change in ERP instead of level, the coefficient is almost never significant, suggesting that what matters for performance is the liberalisation process and not its acceleration. This result can also be associated with the time lags with which the industry reacts to liberalisation.

annual TFP growth rate observed over the whole 1988-2003 period, Table 11.18. These results suggest that trade liberalisation was indeed an important contributor to TFP growth and to general output growth across South African manufacturing sectors.

Table 11.20. TFP regression results

Dependent variable $dprod_{it}$

	Specification									
	1	2	3	4	5	6	7	8	9	10
erp_incl_s	-0.027	-0.028	-0.028	-0.027	-0.027	-0.028	-0.03	-0.027	-0.036	-0.038
	(4.33)***	(7.04)***	(6.34)***	(5.19)***	(4.83)***	(4.84)***	(5.44)***	(5.19)***	(7.13)***	(7.23)***
import_share	-0.092	-0.059	-0.097							
	-0.66	-0.45	-0.76							
intermediate imports share				0.912	0.755	3.765	3.85	5.326		
				-0.19	-0.15	-0.76	-0.83	-1.02		
export_share	-0.049	-0.039	-0.036	-0.046	-0.044	-0.028	-0.025	-0.028		
	-1.21	-0.97	-0.89	-1.54	-1.41	-0.82	-0.78	-0.85		
empl_share	-1.38	-8.345	-8.106	-8.515	-7.869		-5.988		-7.106	
	-1.21	(2.17)**	(1.96)*	(2.24)**	(1.92)*		-1.31		(2.21)**	
cap_lab_ratio	3.402	3.295	3.054	3.248	3.684	3.387	3.2	3.307	3.68	3.658
	(4.82)***	(5.90)***	(5.24)***	(3.82)***	(3.37)***	(3.05)***	(2.95)***	(2.90)***	(5.80)***	(5.43)***
investment		-0.161	-0.17	-0.161	-0.163	-0.181	-0.17	-0.183	-0.195	-0.207
		(1.84)*	(1.99)*	(1.89)*	(1.89)*	(2.12)**	(2.01)*	(2.22)**	(2.55)**	(2.68)**
local_π		-0.329		-0.33	-0.327	-0.308	-0.309	-0.281	-0.274	-0.259
		(2.82)***		(2.84)***	(2.82)***	(2.73)**	(2.75)**	(2.50)**	(2.61)**	(2.59)**
imported_π			-0.191							
			(2.05)**							
skill_unskill					-3.146	-3.775	-2.933	-4.182	-1.805	-2.431
					-0.74	-0.86	-0.67	-0.96	-0.48	-0.62
markup						0.213	0.186	0.218		0.161
						(1.84)*	-1.6	(1.96)*		-1.4
unit labour cost								-0.058	-0.073	-0.068
								-1.48	(2.12)**	(2.10)**
import final g									-0.001	-0.001
									(3.56)***	(5.41)***
import interm g									0.19	0.186
									(4.06)***	(4.11)***
export_g									0.02	0.012
									-0.43	-0.22
year	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Constant	2.837	5.658	5.362	4.755	7.663	0.587	3.14	8.737	12.945	6.072
	-1.53	(2.46)**	(2.13)**	(1.73)*	-1.63	-0.1	-0.57	-1.59	(3.45)***	-1.37
Observations	432	432	432	432	432	432	432	432	432	432
Number of sector	27	27	27	27	27	27	27	27	27	27
R-squared	0.22	0.28	0.27	0.28	0.28	0.29	0.29	0.29	0.37	0.37
F_test: Prob>F	6.24	7.43	6.86	7.42	7.13	7.28	7.08	6.94	9.5	9.57
F_test: all ui=0	2.36	2.48	2.62	2.06	2.04	2.12	2.05	2.13	2.75	2.6
WaldTest:heterog:chi2	0	0	0	0	0	0	0	0	0	0

Note: * significant at 10%; ** significant at 5%; *** significant at 1%.

Robust t statistics in parentheses

Absolute value of t statistics in parentheses

6. Conclusions

South Africa has succeeded in reinserting its economy back into world trade in the mid 1990s following a long period of internal political difficulties and international reactions to the apartheid regime. Since the early 1990s successive South African governments have faced major economic policy challenges to change the institutional structure of the economy and adapt the trade policy regime to the

new agenda and structures. Since the mid 1990s, the trade sector has not been able to keep up with developments in world markets – especially in raw materials and intermediate goods. Indeed, South Africa's position in the global trade architecture has remained constant or even deteriorated slightly since 1995. This flat trend contrasts with the performance of China, Russia and India who continued to deepen their integration into world trade supply chains after 1995.

Indicators of trade performance and trade policy suggest that this may be related to the process of trade liberalisation. That process appears to have stalled or even slightly reversed in recent years. The decline in average tariffs and duties collected, for example, has been interrupted and in some cases even reversed direction since 2000 as a result of increasing duties on consumer and, to a lesser extent, intermediate products and raw materials. There are some signs suggesting that this may be related to the slow progress in the current multilateral negotiations, growing numbers of preferential trading agreements and the emerging industrial policy strategy, all of which call for maintaining relatively high effective rates of protection on certain sectors.

Trade reforms had already started to be implemented in the period preceding 1994. This was reflected in robust rates of export and import volume growth in the 1988-1993 period. Indeed, in the first years (1994-1999) of majority rule the average growth rates of exports were actually slightly lower as compared to the preceding period, probably reflecting the restructuring of the economy, while import volume growth rates picked up more quickly post 1994 and stayed above those of exports until very recently. These developments contributed to the worsening of South Africa's current account since 2003 which, up until then, was either in moderate surplus or an insignificant deficit. What drove these current account developments was a deteriorating balance on the trade in goods side which became negative in 2004 for the first time since the early 1980s. Balances on services, income and current transfers have not undergone significant changes, although the balance on services in 2006 has reached its lowest position in the 1994-2006 period. As far as financing of these deficits is concerned, portfolio investment regained its position on the financial account reaching almost 8% of GDP in 2006 and outperforming the levels from before 2001. Somewhat worryingly, direct investment inflows have been much weaker raising questions about the sustainability of the current account position.

The current financial market turmoil is likely to have a negative impact on international financial flows and thus can negatively impact the financing of South Africa's deepening current account deficit. Another aspect of the current global financial and economic turmoil are the worsening terms of trade for commodity producers, including South Africa. These recent unexpected events have added to already existing economic (electricity shortages and inflation), social (health and crime) and political (unexpected resignation of President Thabo Mbeki in September 2008) problems of the country. All these factors reduce somewhat the confidence with respect to South Africa's future growth and commercial performance.

The expansion of South Africa's share of world GDP over the period 2003-2006, if sustained, could mark a break from a downward trend that has been observed since the beginning of the 1980s. Interestingly, this coincided with an increase in South Africa's share of the value of world exports of goods and services, and services in particular. This signals that there may be more to the pick-up in South Africa's trade since 2003 than the rising precious metals prices.

South Africa has been gaining market shares in a number of dynamic products that have been growing in world markets at a rate faster than average as well as in a number of less dynamic products. This reflects South Africa's broad-based comparative advantage across a range of products. However, an overall feature of South Africa's trade is the increase in export and import concentration to levels that are higher than those observed in OECD economies. The Top 25 HS6 (6 digit) products are dominated by

the valuable mineral products South Africa is noted for. However, their composition changed significantly over the decade. In 1996, they included diamonds, chromium, gold, nickel, manganese, zirconium and copper. In 2006, platinum replaced diamonds at the top and rhodium and palladium replaced titanium, manganese and zirconium.

There are also major differences to the order in which individual products appear in the revealed comparative advantage index list and the top export list. If resources in the tradable sector were allocated most efficiently, these two lists would be consistent with one another. This points to trade and industry policy distortions. For example, South Africa reveals a moderate comparative advantage in machinery and equipment items. These products are, however, towards the top of the major export list suggesting an element of implicit export subsidisation. On the other hand, the situation for some agricultural products appears to be the reverse—there are fewer agricultural products in the major export list than one might expect from the revealed comparative advantage data. This suggests that industry and trade policy in South Africa is implicitly taxing the agricultural sector through negative relative rates of trade protection. This is consistent with some independent evidence that policy assistance to non-agricultural tradable sectors has increased relative to South African agricultural sectors. Furthermore, this implicit export tax on agricultural products has grown in recent years – from a relatively neutral position prior to 2000.

Another notable feature of South Africa's trade performance is the decline in the proportion of low-skill manufactures in the mix since 1996. If this decline is an accurate depiction of a rising skill intensity in the export mix then it shows a lack of congruence with the low-skill endowment of the workforce as a whole and the slow progress in raising skill levels over the last decade.

South African services exports represent around 18% of current account credits. Services exports are heavily concentrated in travel services (65.6% in 2006) and their importance has risen 50%[31] since the trade embargos were lifted. In absolute terms, the rise is more dramatic—exports of travel services rose from USD 2.1 billion in 1995 to USD 7.9 billion in 2006. This points to the important endowments the country has in tourist attractions. This is a valuable set of resources in balance of payments terms because the provision of tourism services is usually very intensive in its employment of low-skilled labour.

South Africa entered the post-apartheid era with a complex system of quantitative restrictions and relatively high tariffs, which were also highly dispersed. At that time, in contrast to most other developing countries, South Africa's tariff structure was characterised by relatively high tariffs on consumer products and lower tariffs on imported machinery and capital goods, resulting in relatively high effective rates of protection (ERPs). Such an ERP structure may seem rational from the point of view of broadly protecting 'traditional' labour-intensive sectors. Indeed, the 2003 ERPs seem to be higher in sectors where the ratios of fixed capital to formal employment are quite low. Yet, at the same time these sectors that are intensive in their use of labour overall are also the sectors with relatively low shares of unskilled employment. The latter tendency may be seen as an unintended consequence since, as many recent assessments emphasise, unemployment is particularly severe in the unskilled segments of the labour force. Additionally, high ERPs correlate negatively with firm concentration and levels of competition across industries and with the productivity performance across these sectors.

The estimates suggest that effective protection has been reduced significantly over the 1990s and that the process of liberalisation has largely stalled in recent years. The decline in average tariff seems to have stopped or even have been reversed since 2000. Similarly, tax revenue on international trade and transactions expressed as percentage of imports, revenue or GDP has increased noticeably in 2004-2007.

Our analysis indicates that this was driven by increasing duties on consumer goods though, with respect to 1999, small increases have been recorded also in intermediate products and the raw materials category.

Our econometric assessment of productivity determinants in South Africa's manufacturing sector suggests that the levels of effective rates of protection have significantly affected TFP growth rates over the 1988-2003 period. It is estimated that the effect of effective rate of protection on total factor productivity is negative, significant and consistently robust with respect to various control variables. It is estimated that the decrease in the effective rate of protection observed over the whole period implies an increase of annual TFP growth rate by approximately 1 percentage point. This is equivalent to more than 100% of the actual average TFP growth rate over the period. These results suggest that trade liberalisation was indeed an important contributor to TFP growth, and in general to output growth, across South African manufacturing sectors.

There are signs that South African authorities continue to see merit in further liberalisation but remain vigilant in the context of the protracted multilateral trade negotiations in the WTO and the current environment of proliferating regional trade agreements. In the WTO context a strategy of retaining 'negotiating currency' and not taking unilateral liberalisation actions is not an isolated case. All this may make South Africa's policy makers reluctant to unilaterally continue trade reforms but the political benefits of such a strategy should be considered in the context of the ongoing costs of protection for the economy. Each year protection costs are incurred, the economy as a whole performs at a slower pace.

Because of its regional position and commodity orientation, South Africa may be seen as an attractive preferential trade agreement partner, though preferential trade always bears the risk of discrimination and associated economic costs. As such, preferential trade is a second best option as compared to broad based multilateral liberalisation.

The OECD Economic Review of South Africa (OECD, 2008) emphasised the need for South Africa to address major labour market issues relating to low-skilled employment and the equity and other gains that would ensue. This report has shown that while South African trade performance has been good in recent years there is significant room to liberalise further as an adjunct to labour market reforms. Further trade policy liberalisation would, of course, result in efficiency and real income gains as well. These equity and efficiency gains are important to South Africa irrespective of the outcome of the Doha Round. Multilateral trade liberalisation has the potential to ease the transition to freer trade for South Africa but there are other options. The objective is to reduce unemployed resources and to get resources into their most valuable use.

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