

Edited by Luiz de Mello

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Growth and Sustainability in Brazil, China, India, Indonesia and South Africa

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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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Foreword

Sustained growth in Brazil, China, India, Indonesia and South Africa will be critical for the global economy in the coming decades. This volume, based on the proceedings of a conference organised by the Economics Department of the OECD on 24 September 2009, analyses growth performance in these five emerging-market economies and the prospects for sustaining strong growth over the longer term.

Drawing on contributions from distinguished policymakers and scholars, the volume discusses the specific drivers of growth in each of the five countries with which the OECD has had a programme of Enhanced Engagement since May 2007. Although a number of commonalities can be identified, different aspects of the growth process in each individual country are brought to the fore. They include a reduction of external vulnerability in Brazil, the contribution of human and physical capital accumulation to growth in China and Indonesia, initiatives to promote infrastructure and social development in India and financial deepening in South Africa.

While recognising that country-specific policy settings, preferences and needs should be taken into account, the policy considerations highlighted in this volume emphasise a number of common challenges for all five countries, including a need for further structural reform in areas ranging from product market regulations to social policies. Such reforms could help lift productivity growth in a durable manner and ensure that the benefits of strong growth can be shared more equitably. In some cases, policy action would also be necessary to rebalance growth towards domestic sources in countries where net exports have been an important driver of growth.

A better understanding of the experiences of Brazil, China, India, Indonesia and South Africa can enrich the debate on the policy levers that can be used to sustain strong growth in emerging-market economies in the years to come. This volume provides a very valuable contribution in this regard.

Angel Gurría
Secretary-General

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Executive summary

This volume focuses on different aspects of the growth process in five major emerging-market economies: Brazil, China, India, Indonesia and South Africa. There are some commonalities in these countries' growth trajectories, including a gradual strengthening of trade and financial linkages with the OECD countries and considerable resilience to the global recession, as well as differences, reflecting economic structure and social preferences.

Brazil's growth experience

Ms. Eliana Cardoso and Mr. Vladimir Kuhl Teles focus on the Brazilian growth experience from the country's discovery in 1500 to the 19th century. Using a methodology to identify structural breaks in Brazil's GDP growth rate between 1900 and 2008, the authors split the country's growth history into four periods, based on regime changes in 1918, 1967 and 1980. A growth accounting methodology is subsequently used to analyse the behaviour of productivity in the post-World War II period. The authors show that high inflation might have been a reason for a decline in productivity between 1980 and the mid-1990s. They also show that changes in the terms of trade have played a significant effect on economic growth and on fluctuations in output. Other factors (such as fiscal stimuli or easy access to foreign finance) also matter for output growth in the short run. From 2004 to 2008, improvements in the terms of trade and a reduction in government indebtedness underpinned economic growth. The authors conclude that the emergence of a new era in the 2000s will depend on continued efforts to consolidate fiscal adjustment.

The main drivers of China's growth

Mr. Gang Fan and Mr. Xiaolu Wang evaluate the main drivers of China's growth over the last 30 years based on a comprehensive econometric growth accounting exercise. They argue that, although China's growth has been predominantly input-driven, productivity gains have contributed to more than 40% of output growth in recent years. The authors

identify a number of policy challenges for sustaining high growth in the future, including a need to reduce social disparities and preserve the environment. They conclude that China will be able to sustain high growth through 2020 if further structural reforms are implemented.

India's renewed growth momentum

Mr. Arvind Virmani and Mr. Rajeev Malhotra discuss India's long-term growth prospects. Following structural breaks in GDP growth in 1979-80 and 2003-04, the authors contend that the Indian economy is now on a high-growth path. The chapter identifies the main drivers of strong growth, the components of aggregate demand, the sectoral composition of growth and its spatial distribution across the country's different regions. The authors also discuss India's economic policy management in the wake of the global crisis and conclude that the economy responded well to the fiscal and monetary measures taken in response to the global slowdown and that the pre-crisis growth momentum is set to be regained. However, an uncertain external environment calls for a continued focus on the domestic growth drivers. To sustain high growth over an extended period, the authors argue that it will be vital to pursue reforms to make the economy more competitive and the economic regulatory and oversight systems more efficient and sensitive to new developments, as well as delivering fiscal consolidation.

Indonesia's increased reliance on domestic demand

Mr. M. Chatib Basri and Mr. Sjamsu Rahardja discuss the effects of the global crisis on Indonesia and concluded that the country was affected less severely than regional peers. Although Indonesian exports have been hit hard by the collapse of commodity prices and falling demand for manufacturing products, GDP growth remained surprisingly buoyant during the global slowdown. The authors argue that the strength of domestic demand has been an important driver of growth during the crisis. They conclude that, given Indonesia's reliance on exports for sustaining economic growth, it is important to deepen integration within the domestic economy and to improve the country's trade competitiveness. To this end, the authors argue that Indonesia has to invest massively in both its physical and 'soft' infrastructures to reduce domestic transactions costs.

South Africa's longer-term policy challenges

Mr. Johannes Fedderke reviews a broad literature on the drivers of growth in South Africa. He recognises that, while growth has recovered since the mid-1990s, a number of constraints continue to restrain the level and sustainability of growth, including uncertainty surrounding physical capital investment, concerns about property rights, distortions in product markets and an excessively rigid labour code. In addition, human capital, credit and R&D activity remain low, and the fiscal space for more aggressive growth-promoting public expenditure has been reduced by an expansion of welfare payments. Policy implications include a need for macroeconomic stability and for addressing economic and social infrastructure bottlenecks, as well as for pro-competition reform in product and labour markets.

Summary of policy discussions

The main points

During policy discussions, all speakers underscored the economic resilience of the five countries during the global crisis. Their comparatively strong performances was attributed to appropriate macroeconomic management (Brazil), the increasing role of domestic demand as a driver of growth (China and Indonesia) and a timely implementation of stimulus measures (China and India). Speakers nevertheless noted the importance of the recovery in the OECD economies and a normalisation of global financial conditions for sustaining strong growth amongst these countries.

The speakers also discussed global “rebalancing” and the merits of increasing reliance on domestic demand as an engine of growth in the Asian countries. Discussions emphasised the main determinants of savings in the five countries and the factors explaining low savings rates in Brazil (and Latin America at large), as opposed to high savings, especially in the corporate sector, in China (and Asia more generally).

The panel discussion emphasised the role of investment and structural reform to sustain productivity growth in the different countries. Discussions also touched upon whether or not the five countries, and the emerging-market economies more generally, could support global growth in the future and the role of investment as a driver of growth.

An in-depth view of each country

The need for maintaining macroeconomic stability - and for building on the achievements of the last 15 years - was stressed in the case of Brazil. Both the speaker (Ms. Eliana Cardoso) and the discussant (Mr. Luiz de Mello) emphasised the importance of a less pro-cyclical policy setting in mitigating the effect of terms-of-trade fluctuations on growth and productivity. Floor discussions focused on the main changes in the country’s growth dynamics over the recent past, the factors behind the recovery in

total factor productivity (TFP) growth since the 1990s and progress made in the area of income distribution.

A rebalancing of the engines of growth away from net exports and physical capital accumulation towards domestic consumption was underlined in the case of China. The speaker (Mr. Gang Fan) discussed the determinants of corporate savings, which have been the main factor behind the increase in national savings since the 1990s. The discussant (Mr. Richard Herd) delved into policy options, including in financial and labour markets, for sustaining TFP growth at the level prevailing during the early stages of structural reform. Floor discussions focused on the prospects for further capital account opening and the removal of institutional constraints on factor mobility as options of generating productivity gains.

Discussions on India emphasised the need for raising investment in support of faster growth. The speaker (Mr. Arvind Virmani) talked about the structural reforms implemented in the early 1990s and their effect on growth, noting that there is a “J-curve” relationship between structural reform and growth. He also pointed out the role of investment in the current stage of India’s growth process. The discussant (Ambassador Dominic Martin) wondered about the prospects for carrying out ambitious structural reforms in a less supportive global economic environment. Floor discussions focused on the role of agriculture in India’s growth process, the impediments to productivity enhancement arising from a rigid labour code, and the determinants of India’s outward foreign direct investment.

Discussions on Indonesia stressed the importance of a strong private sector in the growth process. The speaker (Mr. Sjamsu Rahadja) mentioned the efforts that have been placed on removing constraints to entrepreneurship arising from cumbersome product market regulations (including at the sub-national level of government). He emphasised the need for eliminating logistical bottlenecks, especially in transport, in an archipelago nation, such as Indonesia. The discussant (Mr. Kiichiro Fukasaku) highlighted the need for developing infrastructure as a means of enhancing productivity. He also cautioned against too much emphasis on “rebalancing”, because excessive reliance on domestic demand may deprive the economy of technologies embodied in imported capital and intermediate inputs. Floor discussions dealt with the role of financial market development in providing alternative sources of finance for investment and on the obstacles to growth arising from decentralisation, particularly through the use of onerous product market regulations by sub-national governments.

The role of financial market development came to the fore during discussions on South Africa. The speaker (Mr. Johannes Fedderke) noted

that the country already has a large financial sector, but uncertainty is holding back investment and further financial deepening. Growth is nevertheless becoming increasingly reliant on TFP enhancement, rather than input accumulation. The speaker expressed concern that there may not be enough fiscal space to meet increasing demands for publicly funded social protection and human capital accumulation. The discussant (Mr. Geoff Barnard) wondered about the optimal level of spending on infrastructure development so as to avoid a wasteful allocation of resources. Floor discussions included the role of labour market regulations, which are perceived as restrictive in South Africa, despite a relatively low score in the OECD indicators of restrictiveness in employment protection legislation.

Panel discussions (led by Mr. Andrew Dean and Mr. Val Koromzay) focused on different aspects on the growth process in the five countries. There was broad agreement on the need for greater reliance on domestic sources of growth in the Asian countries (China and Indonesia); on the role of investment, especially in removing logistical impediments to growth (India and Indonesia); on the need to overcome institutional obstacles to productivity enhancement, including in labour, product and financial markets (China, India and Indonesia), and on the benefits of a stable macroeconomic environment for reducing uncertainty, which is detrimental to investment (Brazil and South Africa). The panel chairman (Mr. Val Koromzay) concluded that there was no one single country model, nor was there a single OECD model of growth.

Discussants and panellists

Geoff Barnard is Head of the Russia-South Africa Desk, OECD Economics Department, Paris.

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Luiz de Mello is Economic Counsellor to the Chief Economist, OECD Economics Department, Paris.

Kiichiro Fukasaku is Head of Division, Regional Desks, OECD Development Centre, Paris.

Richard Herd is Head of the China-India Desk, OECD Economics Department, Paris.

Val Koromzay is former Director, Country Studies, OECD Economics Department, Paris.

Dominic Martin is Ambassador, Head of the Delegation of the United Kingdom to the OECD, Paris.

Chapter 1

A brief history of Brazil's growth

Eliana Cardoso and Vladimir Kuhl Teles*

This chapter focuses on the Brazilian growth experience and begins with a brief overview of events that marked the country's development from its discovery in 1500 to the 19th century. The chapter then divides the years between 1900 and 2008 into four periods, based on the methodology developed by Bai and Perron (1998, 2003) to identify structural breaks in statistical series. We identify regime changes in 1918, 1967 and 1980. Growth accounting is subsequently used to analyse the behaviour of productivity in the post-World War II period and suggests that high inflation might have been a reason for a decline in productivity between 1980 and the mid-1990s.

The chapter shows that the terms of trade have played a significant effect on economic growth and on fluctuations in output. Other factors (such as fiscal stimuli or easy access to foreign finance) also matter for output growth in the short run. From 2004 to 2008, improvements in the terms of trade and government debt reduction underpinned economic progress. The emergence of a new economic era in the years to come will depend on wiser fiscal policies than those of the past.

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Introduction

The most significant part of the economic divergence that currently exists between wealthy and poor nations took place between 1750 and 1900.¹ Countries with good institutions, such as the United States, were able to take advantage of the Industrial Revolution and grew rapidly, whilst the inheritors of exploitative institutions from their colonial past, such as Brazil, were left behind.

The United States entered the 20th century with a GDP per capita 10 times higher than that of Brazil. The gulf in relative living standards between Brazilians and Americans was reduced over the course of the century to 1980. It increased again after 1981. However, thanks to rapid growth between 1918 and 1980, Brazil finished the 20th century with an average income per capita (measured on a par with purchasing power) that was approximately one-fifth of that of the United States. Brazil therefore started the 21st century better off than it did the 20th century. From 2004 to 2008, improvements in the terms of trade and debt reduction ushered in further progress. Will it last?

We address this question in the concluding section, after examining Brazil's economic growth in three steps. The chapter begins with a brief overview of events that marked Brazil's development from its discovery to the 19th century. The years between 1900 and 2008 are divided into four periods, reflecting structural breaks in 1918, 1967 and 1980, which were identified according to the methodology developed by Bai and Perron (1998, 2003). The analysis turns to sustained growth and uses a growth accounting methodology to analyse the behaviour of productivity in the post-World War II period. We then discuss output fluctuations and shows that changes in the terms of trade have played a significant effect on economic growth and output fluctuations. The importance of factors other than changes in the terms of trade is evident in the recessions of 1942-45, 1956-57 and 1964-65, which coincided with improvements in the terms of trade. The section also explores the importance of abundant liquidity in international financial markets for both the economic "miracle" of 1967-79 and its debacle. Finally, the section looks at growth oscillations from 1980 to 2008, when the country moved from severe macroeconomic instability until mid-1994 to prosperity in more recent years. High inflation might have been a reason for a decline in productivity between 1980 and the mid-1990s.

Structural breaks in economic growth

This section focuses on the history of Brazil's economic growth by presenting a stylised picture of the country before the 20th century.

Before the 20th century: “Yes, we do have bananas!”

“The seas are plentiful, infinite. And the earth, likewise, is so bountiful that, should one just care to use it, it can provide everything”. Pero Vaz Caminha wrote this description of the land (where Portuguese caravels arrived in April 1500) to the King of Portugal, D. Manuel. In his letter, Mr. Caminha addressed the owner of the new findings as the “The Lucky One”, since the curse of natural resources was unknown at the time.

For centuries, Brazilian exports reflected cycles of boom and bust for different commodities. Sugar exports peaked in the 1650s. Competition from the Caribbean reduced sugar prices and Brazil's north-eastern region lapsed into subsistence agriculture. The discovery of gold in the 1690s and diamonds in the 1720s in Minas Gerais created new opportunities. The gold industry peaked around 1750, with gold production at about 15 tonnes a year. As the richer deposits were exhausted, exports declined. When gold production collapsed, Brazil turned back to agricultural exports. At its independence in 1822, the country's three main exports were cotton, sugar and coffee.

At the end of the 19th century, the country experienced a boom from rubber exports, to which the Manaus Opera House still testifies. The Amazon region lived a fleeting dream of wealth. Between 1840 and 1911, when industrial uses for rubber multiplied, the price of rubber rose from £45 to £512 a tonne - an annual increase of almost 15%. Rubber exports increased fivefold between 1870 and 1911. Manaus drowned itself in luxuries. It was the first city in South America to feature a tram. Its residents would send their laundry to be done in Lisbon. Architects, contractors, painters and sculptors came from all over Europe to build the Manaus Opera House, the central point of Werner Herzog's film, *Fitzcarraldo*, set in 1896. The film helped to spread the myth that Enrico Caruso performed there. A quick check of the website www.visitamazonas.com.br, which lists the musical companies that performed at the Opera House, denies the fantasy created by Mr. Herzog with the help of Bellini's opera *I Puritani*. Yet, even without Bellini's music, at the beginning of the 20th century “*lucavano le stele*” (the stars shone) in Manaus, at least until the collapse of rubber prices ended the feast, emptied the theatre and extinguished the stars.

Exporting commodities, in particular semi-manufactured goods that add value to primary products, does not seal a country's fate. Notwithstanding the unhappy ending of the rubber boom, a positive terms-of-trade shock could have bequeathed a more solid legacy, although it did not necessarily turn the country into a Venezuela or a Nigeria; in these countries, despite abundant oil, economic policy errors, despotism and corruption leave the majority of the population behind and in poverty.

In 1876, Sir Henry Wickham harvested 70 000 seeds from Brazil's rubber trees and sent them to Asia. Malaysia, Indonesia and Thailand are currently responsible for 90% of the world's production of natural rubber. Although these three countries are now specialised in exports of electronic goods, rather than natural rubber, they still sell 42 different natural rubber products, ranging from surgical latex gloves to furniture.

There is no shortage of examples of countries that have made good use of their natural resources and survived the turnabouts of the terms of trade. Australia (with a per capita GDP more than three times higher than that of Brazil) exports agricultural and mineral goods. Minerals make up 45% of Australian exports, and meat, dairy and forestry products account for 40% of New Zealand (also wealthier than Brazil) exports. Chile prospered by exporting copper and agricultural products. It transformed its grapes into wine and stuck labels on its tomatoes, in the same way that New Zealand transformed the milk from its cows into the best butter in the world.

The successes demonstrated by Australia, New Zealand and Chile did not depend on magic formulas. They resulted from sensible economic policy, the use of tax revenues to invest in education and R&D, and determination not to inhibit the development of more dynamic sectors through trade protection for the laggards. This is because the opening of the economy invites investment in new technologies, which has a positive influence on productivity; it also boosts competition, provides incentives for efficiency and reduces inflationary pressures. The paper returns to this discussion in the next section, which gauges the importance of terms-of-trade oscillations for Brazil's output fluctuations during the 20th century.

As a result of the abolition of slavery in 1888 and mass inflows of immigrants, the money supply was insufficient to deal with the new reality of salaried labour. Thus, in 1889, after the proclamation of the Republic, the government encouraged banks to print money and promote credit. As a result, business and financial speculation took over the Republic's first year. Companies were founded: some real, others fictitious. Stock exchange speculation increased, and so did inflation.

In 1890, when people thought money grew on trees, inflation ceased to be a mystery. Machado de Assis² notes in *A Semana* (16 December 1894): “At the time, whoever placed a basket, bowl, barrel or receptacle of any kind out in the moon - or starlight - and awakened to find himself with five, ten or twenty thousand coins, soon understood that the only way to make money down here is through forgery”. For Machado de Assis, any money not based on gold was false and, therefore, created inflation. But, even if that was not quite the case, there is little doubt that inflation during the first years of the Republic resulted from an excess of credit at a time when there was no central bank and accompanying financial regulation.

The period referred to by Machado de Assis is known as *Encilhamento* and ended with the crash of stock prices and the bankruptcy of banks and companies in 1891, when British capital fled Brazil in the wake of a crisis in Argentina. As a result, the Campos Sales administration agreed to an external loan in 1898, which was collateralised by revenue from Rio de Janeiro's Customs and Excise department. Furthermore, it committed itself to a programme of deflation, incinerating part of the currency in circulation.

At the time, the State of São Paulo had already moved ahead of other regions, launching the kind of development characterised by agricultural diversification, urbanisation and industrialisation. Between 1890 and 1900, the population of the city of São Paulo grew at a rate of 14% per year, increasing from 64 000 inhabitants in 1890 to 239 000 in 1900. The coffee businesses set the stage for the first wave of industrialisation by raising incomes, creating a market for manufactured goods and promoting investment in railways and immigration. Approximately 3.8 million immigrants settled in Brazil between 1887 and 1930.

Over the course of the first Republic (1889-1930), the majority of loans and investments continued to be sourced in England. The United States represented the main market for the most important Brazilian export of the time: coffee. And coffee reigned until 1930.

Finding structural breaks in 20th century growth rates

Jones and Olken (2008) investigate extremes of growth experiences within countries and examine the changes that occur when growth starts and stops. Their growth accounting reveals that physical capital accumulation plays a negligible role in growth takeoffs and a larger, albeit still modest, role in growth collapses, which typically come on the back of reduced manufacturing production and investment amidst increasing price instability. Growth takeoffs are primarily associated with large and steady expansions in international trade.

Jones and Olken use the methodology developed by Bai and Perron (1998, 2003) to identify changes in growth regimes and study these periods using growth accounting. The Bai and Perron methodology considers a multiple structural break model, with m breaks ($m+1$ regimes). The null hypothesis of no structural break is tested against the alternative of an unknown number of breaks. The tests are used to determine if at least one structural break is present. In addition, a maximum number of breaks is chosen. If the tests show evidence of at least one structural break, then the number of breaks can be determined by the Schwartz Bayesian Information Criteria (SBC).

This section applies the Bai and Perron methodology to the growth rate of GDP per capita in Brazil between 1900 and 2008. The maximum number of breaks is 9 when the authors choose a minimum period of 10 years between breaks. Table 1.1 shows the values of the SBC statistics, the number of breaks and the corresponding years. The lowest SBC value is 808.75 and identifies the number of breaks as three, corresponding to four periods: 1900-17, 1918-66, 1967-79 and 1980-2008.

Table 1.1. Growth rate of GDP per capita: Structural breaks

Number of breaks	SBC statistics	Year of break
0	817.74	
1	815.00	1980
2	810.16	1918, 1980
3	808.75	1918, 1967, 1980
4	810.09	1918, 1967, 1980, 1992
5	811.36	1918, 1928, 1967, 1980, 1992
6	812.66	1918, 1928, 1942, 1967, 1980, 1992
7	813.89	1910, 1928, 1942, 1955, 1967, 1980, 1992
8	814.97	1918, 1928, 1942, 1955, 1967, 1977, 1987, 1998
9	816.66	1916, 1926, 1936, 1947, 1957, 1967, 1977, 1987, 1998

Source: IPEA (IPEADATA) and authors' estimations.

Growth accounting

This section uses growth accounting to analyse the different growth regimes identified in the previous section. A variety of ways of carrying out the same exercise, undertaken by several authors, generally demonstrates that total factor productivity (TFP) grows until the end of the 1970s before dropping sharply over the following decades.³

Methodology and data

Methodology

The theoretical framework is basically the same as that used by the pioneering estimations of Gomes, Pessoa and Veloso (2003). The first equation specifies a Cobb-Douglas production function with human capital such that:

$$y_t = A_t k_t^\alpha H_t^{1-\alpha}, \quad (1)$$

where y_t is output per worker, k_t is capital stock per worker, H_t is human capital (education) per worker, A_t is TFP, and t is a time index. Estimation of human capital follows the Mincerian approach, as in Bils and Klenow (2000), such that:

$$H_t = e^{\phi(h_t)}, \quad (2)$$

where h is the average years of schooling of the labour force, and

$$\phi = \frac{\theta}{1-\psi} h^{1-\psi}, \quad (3)$$

where $\theta > 0$ and $0 < \psi < 1$.

Log-differentiation of equation (1) yields:

$$\frac{\dot{A}}{A} = \frac{\dot{y}}{y} - \alpha \frac{\dot{k}}{k} - (1-\alpha) \frac{\dot{H}}{H}. \quad (4)$$

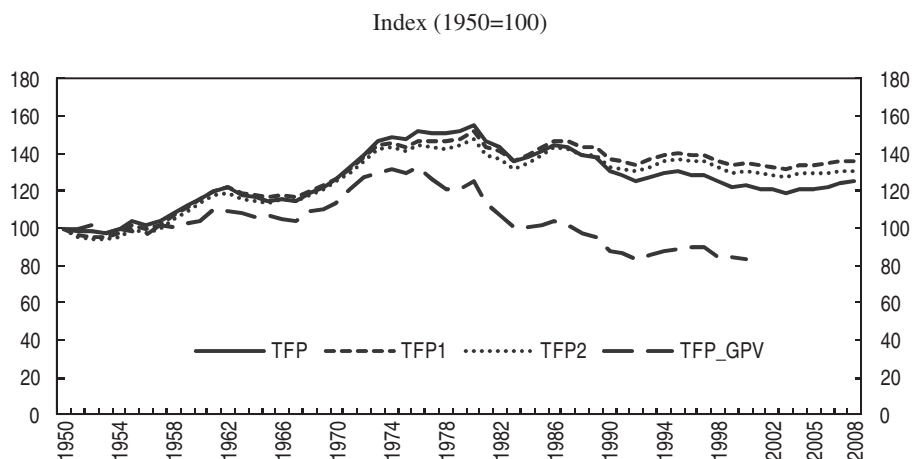
Data

For the physical capital stock, we use the series calculated by Morandi and Reis (2004), which is available at www.ipea.gov.br, IPEADATA. For human capital, we use the series of five-yearly averages by Barro and Lee (2001) interpolated to deal with missing observations. As in Gomes, Pessoa and Veloso (2003), the values of θ and ψ are 0.32 and 0.58, respectively. Instead, Gomes, Pessoa and Veloso constructed the physical capital series using the perpetual inventory method.⁴ The work by Morandi and Reis (2004) is, however, more precise because they used more reliable depreciation information for each point in time and assessed the accumulation of capital by sector, instead of at the aggregate level, taking

into account differences in the quality of capital. Furthermore, separate series for construction and machinery and equipment, are now available, avoiding a bias in capital prices during the 1980s, as well as distinguishing public from private capital. With this in mind, we calculated three TFP series, using total net stock of capital (TFP), total net stock of machinery and equipment (TFP1) and net stock of private sector machinery and equipment (TFP2).

We set α equal to 0.4, as in Gomes, Pessoa and Veloso, which is comparable to the estimate reported by Ferreira, Issler and Pessoa (2004). The number of workers used to calculate y and k was obtained by building a series of the population aged over 25 using data from the 1950, 1960, 1970, 1980, 1991 and 2000 censuses and performing a polynomial interpolation to fill in the missing years. On the basis of this calculation of k and y , the different TFP indices can be computed (Figure 1.1).

Figure 1.1. Total factor productivity, 1950-2008



Source: IPEA (IPEADATA) and authors' calculations.

If the economically active urban population (urban EAP, obtained from IPEADATA) is used to calculate y and k , the results depicted in line TFP_GPV are similar to those of Gomes, Pessoa and Veloso. However, it is inappropriate to use the urban EAP to calculate k and y because the average years used to compute H , which is obtained from Barro and Lee, is

not calculated for the same base. Barro and Lee provide data for average years of schooling of the total population aged over 25. This figure would only be similar to the human capital stock of the urban EAP, for example, if human capital were the same in rural and urban areas. In addition, the rate of growth of the urban EAP differs from that of the population aged over 25 because of the rural-urban migration that took place over the period of study. Finally, a significant part of economic growth is due to advances in agricultural productivity; as a result, using the urban EAP could affect drastically the measurement of Brazilian TFP. In addition to the reasons for using a different series for the labour supply, there is an important methodological question to take into account. The calculation of TFP uses output and the capital stock divided by EAP and years of schooling, divided by the population aged over 25 to ensure compatibility.

Thus, we have a strong preference for the results shown in the TFP, TFP1 and TFP2 lines. Although our estimations reflect similar patterns to previous studies, these results show that, when the number of workers is consistent with other measures, the drastic drop in productivity after the 1970s is significantly lower.

Capital and productivity in three post-World War II periods

Before turning to the decomposition of the growth rate of output per worker, we report the average growth rates of output, population, labour supply, output per capita and per worker, physical capital per worker, human capital per worker and productivity per worker (Table 1.2).

On average, the growth rate of output per capita is positive in all periods (the growth rate of output is higher than the rate of population growth); however, the growth rate of output per worker is negative in the last period because the growth rate of labour supply is higher than the growth rate of output. Although the growth rate of output per worker declines in the last period, total output grows at a rate that is still high enough for output per capita (which grows much more slowly than in the previous periods) to grow at positive rates. Also, the growth rate of human capital is comparatively very high in the last period. The growth rate of capital per capita is both positive and high in the first two periods and negative in the third. Productivity growth is exceptionally high in the second period and negative in the third.

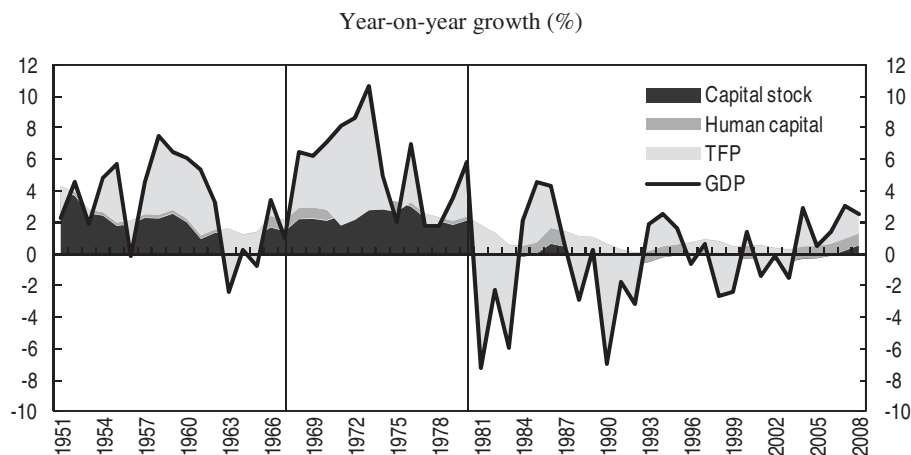
Table 1.2. Growth outcomes, 1951-2008

Period averages, annual growth rates (%)

Period	Growth rate of:							
	Output	Population	Employment	Output per capita	Output per worker	Human capital	Physical capital per worker	Total factor productivity
1951-66	6.36	3.02	2.99	3.24	3.27	0.41	5.16	0.96
1967-79	8.90	2.52	3.05	6.22	5.67	-0.02	6.51	3.08
1980-2008	2.47	1.69	2.86	0.77	-0.38	1.35	-0.14	-1.13

Source: Authors' calculations.

The contributions of each factor of production to productivity growth are depicted in Figure 1.2. The decomposition uses the population aged over 25 as the labour supply and the net capital stock as the capital measure. The vertical lines indicate the structural breaks listed in Table 1.2.

Figure 1.2. Decomposition of growth of GDP per worker, 1951-2008

Source: Authors' calculations.

The increase in the rates of output growth from the first regime (1951-67) to the second (1968-80) is due exclusively to higher TFP growth. The rates of growth of physical and human capital do not change much across regimes. The contribution of these variables to growth of

output per worker is approximately 2% per year in both periods. This result, which shows that economic growth does not arise from policies aimed at increasing investment, casts doubt on a policy recommendation to increase savings and investment as a means of stimulating growth. However, the third regime (1981-2008) is marked by a fall in both the growth of productivity and the rate of accumulation of capital by worker, whose contribution is less than 1% for all the years in question. This could mean, for example, that periods of fast and slow growth are driven by different factors, as suggested by Jones and Olken (2008). According to this logic, the increase in risk, both political and economic, experienced by the Brazilian economy since 1980 would have inhibited investment and constrained economic growth.

This asymmetry between growth accelerations and decelerations could be explained differently. A fall in productivity naturally implies a fall in the marginal product of capital and, consequently, investment. Thus, the deceleration of capital accumulation could be a consequence of the fall in productivity, as could the fall in economic growth. This may be a better description of the Brazilian experience, as the contribution of TFP to growth continues to outweigh that of the other factors.

The Brazilian economy's long-term growth dynamics depend closely on variations in productivity growth. Mussolini and Teles (2010) attribute this finding to the behaviour of public infrastructure investment. Using various measures of TFP and public capital, they obtain a highly robust result: the stock of infrastructure capital co-integrates with TFP, and infrastructure capital Granger-causes TFP, although the converse does not hold true. One of the explanations for the increase in productivity during the second regime is the increase in public infrastructure spending. The fall in productivity over the third regime could therefore be partly explained by the fall in this expenditure.

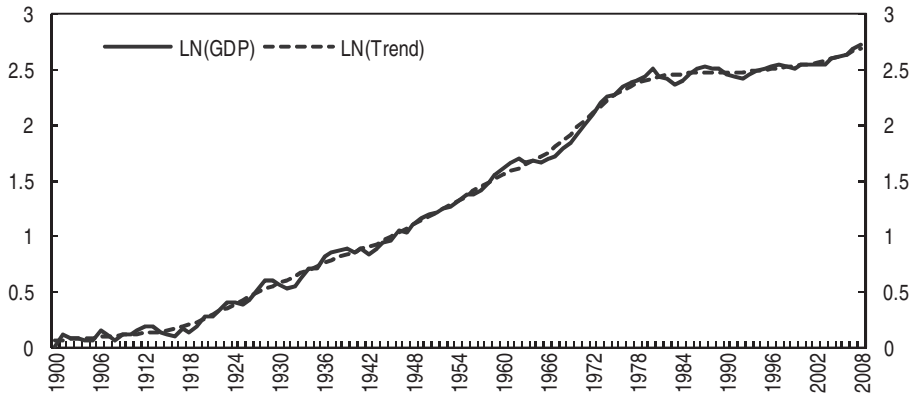
Output fluctuations

External turbulence amplified domestic policy mistakes during the 19th and 20th centuries. In the 1930s and 1940s, the Great Depression, with its protectionist policies, and World War II isolated the country from the rest of the world and import substituting industrialisation (ISI) followed from a lack of external financing. The 1950s, not only in Brazil but also in Latin America in general, was characterised by voluntarism and the belief that State intervention was better than the market. The ideology of the period centred around the theoretical model of imperialism and centre-periphery models, such as the theory of dependence (developed at the

United Nations' Economic Commission for Latin America (ECLA), based in Chile).

The growth of trade during the 1960s and 1970s ushered in a debate on land and tax reforms. The Alliance for Progress and the Inter-American Development Bank participated in reforms during this period. With the availability of inexpensive credit from petrodollars in the 1970s, the government and the private sector borrowed heavily, which generated high but unsustainable economic growth. When oil prices increased, both in 1974 and in 1979, and interest rates rose in 1980, the country's external debt proved unsustainable, giving rise to a debt crisis. The result was almost 15 years of low growth and hyperinflation. Failure of the heterodox stabilisation programmes led to the emergence of the Washington Consensus and praise for the Asian economic model. Privatisation and trade liberalisation took place in the 1990s. The accumulation of problems from high levels of debt and inefficient State-owned enterprises led Brazil to rethink its growth strategy and to adopt a more market-driven and trade-oriented approach.

Brazil's post-1900 growth history has witnessed periods of acceleration and deceleration. GDP per capita oscillated around its trend of 0.8% growth per year during 1900-17 (Figure 1.3). After negative growth in 1918, a new growth regime started with an "up-break" (trend growth acceleration) and growth in GDP per capita that peaked in 1928. The sharp decline in activity in 1929 was followed by two years of recession. Recovery started in 1933 and culminated with a boom in the late 1950s, which came to an end in 1962. Activity growth fell once again and the gap became negative between 1964 and 1967. A new up-break occurred in 1967, with renewed acceleration in GDP from 1968 onwards. GDP exceeded its trend in 1974 and the acceleration phase continued until 1980, the year of a new "down-break" (trend growth deceleration). A sharp contraction in 1982-83 was followed by a recovery in the mid-1980s and another severe contraction in 1991-93. The most recent recovery started in 2004 with a marked improvement in the terms of trade. This last event highlighted possible links between output growth in Brazil and movements in commodity prices.

Figure 1.3. GDP per capita and trend GDP, 1900-2008

Source: IPEA (IPEADATA) and authors' calculations.

Trend, cycles and the terms of trade

Oral tradition has attributed the weak performance of South American countries relative to Asia to the volatility of commodity prices. Due to export price volatility, income sources are also volatile, which generates uncertainty and reduces investment. In turn, pro-cyclical international capital flows amplify income fluctuations and create “boom-bust” cycles.

Intuition agrees with the perception that natural resource booms cripple non-resource export sectors, create incentives for rent-seeking, inhibit other forms of productive activity and foster corruption.⁵ Nonetheless, despite the important share of commodities in Brazil's exports, Cardoso and Holland (2009) find a small and statistically insignificant correlation between the price of commodities and economic growth after 1980. One can also reject the hypothesis that the price of commodities was a good explanation for growth in Brazil between 1900 and 2007. The correlation between the growth rate of GDP per capita and metal prices (or food and non-food commodity prices) is also low, negative and statistically insignificant.

Yet, what matters for Brazil are the terms of trade, which do not reflect swings in commodity prices one for one. In 2007, primary products and natural resources-based manufactured goods accounted for 54 and 37% of Brazil's exports and imports, respectively.⁶ As a first approximation, there is

a positive and statistically significant correlation between Brazil's growth rate of GDP per capita and the terms of trade (0.24 between 1900 and 2007, and 0.40 between 1973 and 2007).

Has the effect of the terms of trade on growth changed over time? To answer this question, we use a linear state space model, which allows for the estimation of a vector autoregressive process (the transition equation) with coefficients that change over time. These coefficients are called unobservable variables (known as state variables) and are incorporated into, and estimated along with, the observable model (or the measurement equation).⁷

The first model describes a linear relationship between growth and the terms of trade. The measurement equation is:

$$g_t = \mu + \beta_t TOT + \varepsilon_t, \text{ where } \varepsilon_t \sim NID(0, \sigma_\varepsilon^2). \quad (5)$$

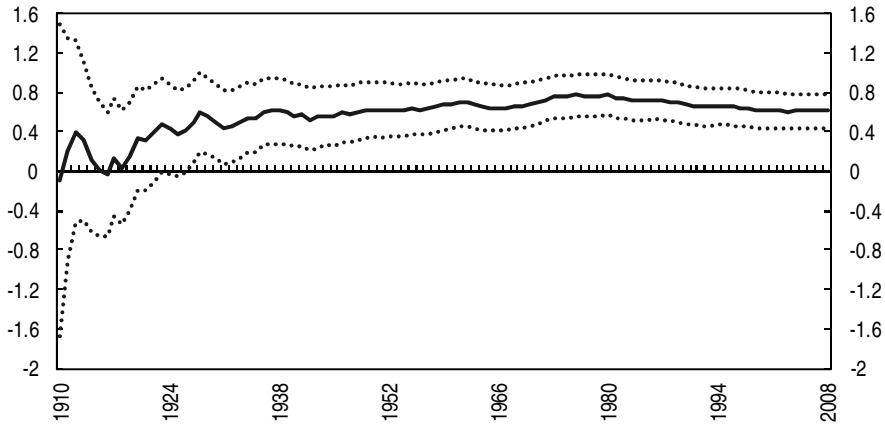
where g is the growth rate of GDP per capita, TOT is the log of terms of trade and β is the state variable.

The transition equation is:

$$\beta_{t+1} = \beta_t + u_t, \text{ where } u_t \sim NID(0, \sigma_u^2). \quad (6)$$

Estimation of the space model shows that the terms-of-trade effect is positive for the whole period and increases in magnitude from 1910 to 1940 (Figure 1.4). After 1940, the relationship continues to be positive, statistically significant and becomes relatively more stable.

Figure 1.4. The effect of the terms of trade on the growth rate of GDP per capita, 1910-2008



Source: Authors' estimations.

The next step is to introduce proportional changes in physical and human capital in the estimation of the relationship between the growth rate of output per worker and the terms of trade. The data cover the period 1950-2008 and is the same used in the growth accounting exercise reported above. The measurement equation is now:

$$\gamma_t = \eta + \lambda_t TOT + \alpha_1 dK_t + \alpha_2 dH_t + \xi_t, \text{ where } \xi_t \sim NID(0, \sigma_\xi^2) \quad (7)$$

where γ is the growth rate of output per worker, dK is the proportional change in physical capital and dH is the proportional change in human capital.

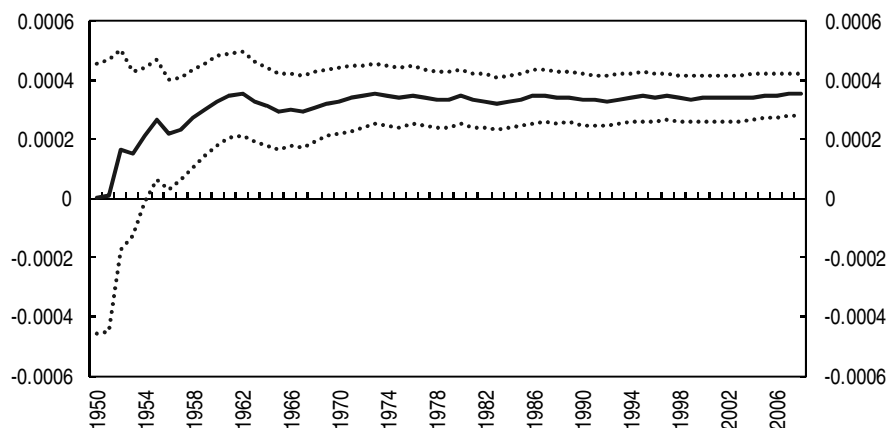
The transition equation is:

$$\lambda_{t+1} = \lambda_t + \nu_t, \text{ where } \nu_t \sim NID(0, \sigma_\nu^2). \quad (8)$$

Estimation of Equation (8) shows that the relationship between the growth rate of output per worker and the terms of trade remains positive and statistically significant, despite the introduction of control variables (Figure 1.5). For comparison, we also looked at the estimation results for the relationship between the growth rate of GDP per worker and the terms of trade without the control variables. The difference in the results shows that the introduction of control variables reduces the effect of the terms of trade

on output growth. The reason is that only part of the estimated effect takes place through productivity changes.

Figure 1.5. The effect of the terms of trade on the rate of growth of GDP per worker (with control variables), 1950-2008



Source: Authors' estimations.

Output gap and terms of trade

If the terms of trade affect growth through a volatility channel, there must be a positive correlation between the terms of trade and the gap of output in relation to its trend. This correlation is indeed positive and statistically significant. Using the same methodology as above, the effect of the terms of trade on the output gap remains positive during the 20th century. The linear state space model used here defines the measurement equation as:

$$gap_t = \delta + \pi_t TOT_t + \zeta_t, \text{ where } \zeta_t \sim NID(0, \sigma_\zeta^2) \quad (9)$$

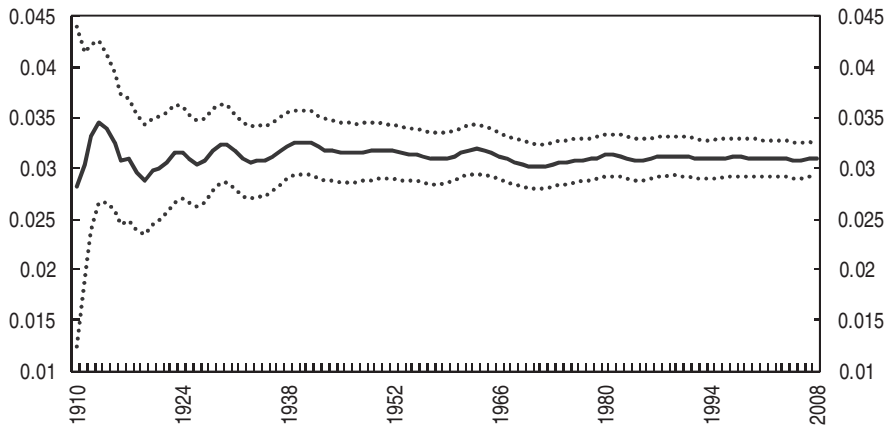
where *gap* is the percentage difference between GDP per capita and trend GDP per capita. The Hodrick-Prescott filter was used to compute the trend GDP per capita series.

The transition equation is:

$$\pi_{t+1} = \pi_t + \vartheta_t, \text{ where } \vartheta_t \sim NID(0, \sigma_\vartheta^2) \quad (10)$$

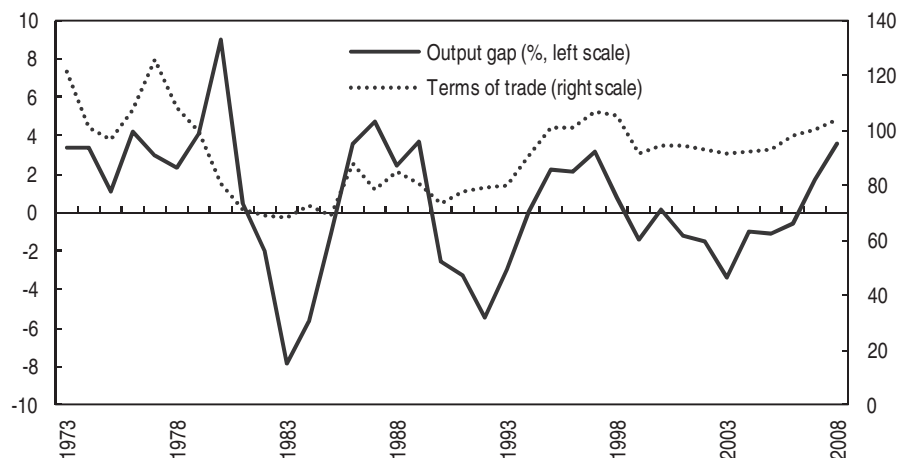
Estimation of Equation (10) shows a positive and significant effect of the terms of trade on the output gap (Figure 1.6). The estimated coefficient oscillates markedly from 1910 to the 1940s and becomes more stable thereafter.

Figure 1.6. The effect of the terms of trade on the output gap, 1910-2008



Source: Authors' estimations.

For illustration, there is a clear correlation between the boom of 2004-08 and the concomitant improvement in the terms of trade (Figure 1.7). The effect of the terms of trade is nevertheless less obvious in previous booms over the post-World War II period. Inflationary finance and import-substituting industrialisation are behind the output acceleration of the Kubistchek presidency (mid-1950s to early 1960s), which left the economy ill equipped to face the political crisis of 1963-64. Exceptionally favourable international liquidity contributed markedly to the “economic miracle” between 1968 and 1980.

Figure 1.7. Output gap and the terms of trade, 1973-2008

Source: IPEA (IPEADATA) and Oxford Latin American Economic History Database and Funcex.

Efforts to maintain high growth after 1978, when the terms of trade declined, are also visible in Figure 1.7. As a result, with its large current account deficits, the economy was not well prepared to face a scarcity of capital when the external crisis hit in 1981-82. By contrast, large international reserves at the end of 2008 allowed the economy to weather the effects of a global crisis-driven scarcity of credit and a decline in the terms of trade.

1918–66: Import-substituting industrialisation

During World War I, a lack of competition from imported goods created an incentive for domestic producers to invest in industrialisation. In the 1920s, two large companies were founded with government incentives: *Siderúrgica Belgo-Mineira* and *Companhia de Cimento Portland*. Based on their experience and the profits made throughout the war, small workshops were transformed into factories that produced machinery and equipment. According to the 1920 census, out of a working population of nearly 9 million people, 6.2 million (70%) were employed in agriculture, 1.2 million (14%) in the industrial sector and 1.5 million (16%) in services. While the proportion of people employed in the industrial sector had doubled in relation to the 1872 census, many “factories” were no more than small workshops. The majority of the few “real” factories were dedicated to producing low-quality textiles and garments.

Brazil came to enjoy a monopoly in the coffee market in the first half of the 20th century. During the 1920s, the government artificially maintained coffee prices by buying the national production through the use of external loans. The crash of 1929 dried up the sources of foreign financing and forced both the central government and the State of São Paulo to abandon the scheme. Between 1928 and 1930, the price of coffee dropped by almost 40% and caused export revenues and GDP to fall as well. In 1931, the National Coffee Council began buying and destroying stocks.

It is estimated that Brazil's GDP per capita fell by 3.4% in 1930 and by another 4.6% in 1931, and yet the economy was growing again in 1932 and had already overtaken its 1929 output level in 1933. Despite the fact that the recession was serious, it only lasted two years. The price-fixing policy for coffee, by guaranteeing the income of the plantation owners, allowed for an expansion of manufacturing.⁸ However, the impact on the government budget was severe, with a suspension of the servicing of external debt between 1931 and 1932, followed by an adjustment plan in 1934, which culminated in a default declared by President Vargas in 1937.

The crisis of 1929 reinforced import-substituting industrialisation, which raised productivity. Kuznets (1953) was among the first economists to argue that labour migration from agriculture to manufacturing enhances growth because manufacturing is more productive. Krugman (1987) also argues that this movement provides learning-by-doing spillovers.

After the 1940s, coffee began to lose its supremacy among exports. Currently, Brazil's main commodity exports are iron ores, soy beans, oils and oilcake. However, Brazil's exports today are highly diversified, as is reflected in a very low export concentration index of 9.1, which is typical of OECD countries (OECD, 2008).

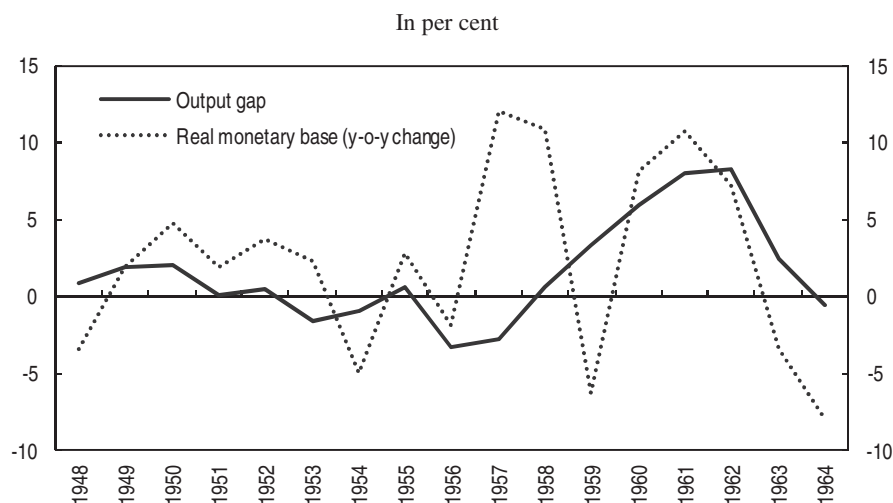
From the Kubistchek years to the military coup

In the 1950s, the Kubistchek administration used inflation to finance “50 years of growth in five”, with the setting-up of the automobile industry and the construction of a new capital city, Brasília. As discussed above, an improvement in the terms of trade was not the root cause of the boom that lasted until 1962. Inflationary finance was the government's response to its growing budget deficits. The beginning of an inflationary process takes people by surprise. Budget revenue falls as inflation becomes endemic and the population learns to hold money for as short a period of time as possible. However, before people learn to anticipate purchases or to deposit money in interest-bearing bank accounts, the government has time to collect revenue from the inflation tax. This is how President Kubistchek could finance the government's investment programme - by borrowing directly from *Banco*

do Brasil - during a period when Brazil did not have a central bank and government bonds were almost non-existent.

There is a close association between the output gap and money creation (Figure 1.8). The correlation between the output gap and the percentage variation of the monetary base between 1948 and 1964 is 0.32. This correlation disappeared after the mid-1960s with the creation of a central bank and the introduction of indexed government bonds. Even during the mega-inflation years, the government was unable to finance itself through increased seignorage, which remained at around 2% of GDP during the 1970s until mid-1990s.⁹

Figure 1.8. Output gap and money creation, 1948-1964



Source: IPEA (IPEADATA) and authors' calculations.

However, it was not capital flight that interrupted the escalation of inflationary financing in the beginning of the 1960s; it was the military coup and the new government's policies. After introducing a programme that is discussed below, the military leaders then invented painless inflation. They created salary pegging, indexation and mini-devaluations of the exchange rate.

From anti-export bias to export subsidies

The strong anti-export bias of import-substituting industrialisation, in vogue until the mid-1960s, derived to a large extent from a real exchange

rate overvaluation. Foreign exchange controls were introduced in 1947. Throughout the period from 1947 to 1953, the domestic currency became increasingly overvalued. A system of licensing kept demand for imports under control. At the beginning of 1953, Law 1807 created an incipient market for foreign exchange in which the inflows and outflows of capital and its earnings were allowed, as well as the buying and selling of foreign exchange for tourism. Later that year, a multiple exchange rate system was created, which replaced direct quantitative controls by auctions for foreign exchange. In 1957, the exchange control system underwent further changes. *Ad valorem* tariffs were introduced and the exchange rate categories were reduced from five to two. Political crises dominated the years from 1962 to 1964 and the official exchange rate lagged substantially behind inflation, thus creating a disincentive to export.

After 1964, the military government acted to boost economic growth and promote export diversification by undertaking a series of measures. It abolished state-level export taxes, simplified administrative procedures for exporters and introduced a programme of tax incentives and subsidised credits for exporters. Fiscal subsidies for exports introduced after 1964 included exemptions from the tax on industrialised products (November 1964) and the income tax on profits from exports (June 1965), drawback of taxes on imported raw materials and components used in exported goods (November 1966) and value added tax (VAT) exemption for manufactured product exports (Constitution of 1967).

Changes introduced after 1964, such as a more stable real exchange rate and export subsidies, may have contributed to export diversification. The share of manufactured exports increased from less than 30% of exports in 1974 to more than 50% in 1981.¹⁰ Export diversification and the growth of exports of manufactured goods may have contributed to the increased productivity and the up-break in output growth of 1967. This hypothesis is reinforced by Pablo Fajnzylber (2005), who studied Brazilian exporting firms at the beginning of the 21st century and showed that exporting firms are more competitive and productive than non-exporting firms.¹¹

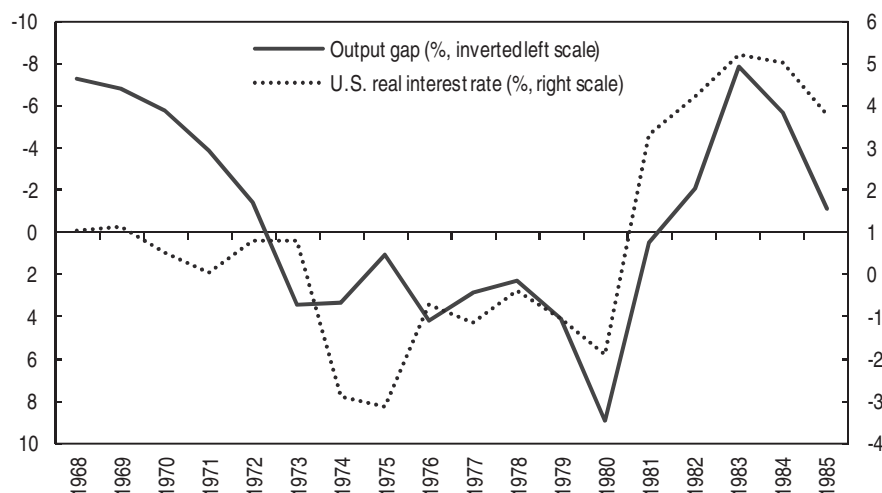
1967–79: The economic miracle

After the military coup of 1964, the government introduced the *Programa de Ação Econômica do Governo* (PAEG), which promoted important structural reforms, such as a deep fiscal adjustment with a reduction of budget deficits based on expenditure cuts and a tax reform, including the introduction of a VAT; and a reform of financial markets, including the creation of a central bank. Veloso, Villela and Giambiagi (2008) contend that the growth acceleration episode associated

with the Brazilian economic “miracle” was due to a large extent to the delayed effect of the reforms associated with PAEG. Everything was fine until the oil shock of 1974. Between 1973 and 1976, GDP continued to grow rapidly in line with higher potential output. However, aggregate demand began to sag towards the end of the 1970s, and the limits imposed by the second oil shock began to be felt. The government adapted to the shock and avoided a recession, letting inflation rise and financing the current account deficit with external debt.

There is a close association between Brazil's output gap and the real US interest rate (Figure 1.9). The correlation is -0.62. Economic growth persists as long as foreign loans sustain the current account deficit. A new oil shock in 1979 and higher foreign interest rates came at a bad time. GDP growth peaked in 1980 well above potential. The 1981 crisis put an end to a period of spectacular growth, which turned negative in 1982, as the economy entered a recession. The oil shock, acting as a production tax paid to non-residents, also took a toll on the economy's potential growth.

Figure 1.9. Brazil's output gap and the US real interest rate, 1968-1985



Source: IPEA (IPEADATA) and US Bureau of Labour Statistics.

1980–2008: From the “lost decade” to a new era

An important reason for the low growth rates of the last hundred years is economic volatility, largely due to external financial shocks. Each period of growth (not induced by an improvement in the terms of trade) has been followed by an external crisis that wipes out some of the previous gains.

Phases of abundant external capital have coincided with spending booms. When capital becomes scarce, growth collapses. With potential growth in the 1980s reduced by the increase in oil prices, periods of growth, such as in 1985 and 1986, drove actual GDP above potential. In the absence of external financing, the heterodox macroeconomic stabilisation plans were doomed to failure.

During the 1980s, the country's external debt overhang remained unsolvable, despite the 1987 moratorium; it was only to be resolved in 1993. Domestically, the Brazilian government tried to finance fiscal imbalances through inflation - not that inflation produced any significant revenue. Brazilians had already learned about capital flight. However, inflation did allow budget imbalances to be hidden through a process in which the increase in prices converted nominal expenditure (which could not be financed by nominal tax revenue) into real expenditure (which is compatible with real tax revenues).¹²

The very high inflation of the 1980s may well be a reason for the down-break of trend growth that was observed after 1980. Jones and Olken (2008) show that down-breaks are associated with substantial increases in inflation. Of the 39 down-breaks in their sample, 33 show increases in inflation.

During the 1980s, Brazil's government hid the problem of external debt, which had been inherited from previous administrations, as well as the maladjustments that it provoked, under the soft carpet of mega-inflation. However, as inflation rose, the government became increasingly unpopular. On the one hand, salaries failed to keep up with rising prices; on the other, the inflation transferred middle-class savings to the upper class, which had better access to diversified information and investment opportunities.

The problems that had been accumulating since 1980 took a significant toll on growth. After frustrated attempts to control inflation through price freezes and heterodox plans, the government declared the 1987 moratorium. President Collor then tried even more radical measures by freezing bank deposits and thereby made the 1990-92 recession even more traumatic. Indeed, inflation remained so uncomfortable that, in the second half of the 1990s, the government indexed the public debt to interest rates, which were indexed to the exchange rate. From the middle of 1994 onwards, President Cardoso used the exchange rate as an anchor to keep inflation under control. With abundant foreign capital, it was possible to finance the current account deficits, which reached 3% of GDP on average during the eight years of his administration. Government spending increased year after year.

However, GDP began to grow again after 1993 at close to potential, which was then lower than before due to a lack of investments in infrastructure. GDP fell in 2003, although an increase of about 5% in 2004 left it close to potential once again. Utilisation of installed manufacturing capacity peaked in the middle of 2004. The central bank remembered that the last politician to speak of the flexibility of full capacity, with an expansion of hours and overtime, was Alan Garcia, the populist Peruvian president and sponsor of Peru's inflation explosion of 1985-90. Monetary policy was tightened and GDP fell in 2005.

A new era?

Between 2002 and 2008, Brazil benefited from global growth, particularly in China and its demand for commodities. Between mid-2002 and mid-2005, the price of Brazil's semi-manufactured exports rose by 43%, and the price of its basic products by 59%. The benefits brought about by this positive terms-of-trade shock were evident. An exchange rate appreciation allowed for a reduction in external indebtedness and the increase in export prices encouraged investment in the production of raw materials. Such prosperity came under threat in the second half of 2008 as a result of the global crisis.

However, this time the Brazilian economy responded to the international crisis differently. Until 2002, net public sector indebtedness would surge each time the exchange-rate depreciated - as a result of the effect of a depreciation on the value of the external debt in domestic currency and the national debt, which was in part indexed to the exchange rate. This time around, the stock of domestic debt indexed to the exchange rate had been unwound and the government had accumulated international reserves during the boom years thanks to the improvement in the terms of trade.

It is also true that the 2008-09 crisis was different. Until then, an exchange-rate devaluation resulting from an external shock would have an inflationary impact and lead to an increase in the public debt-to-GDP ratio. The central bank would be forced to increase the interest rate in order to control the inflationary effect of the currency depreciation. In turn, this measure would contribute to a new rise in public indebtedness. To maintain confidence in the solvency of the public sector, the government would have to increase the primary budget surplus. Both monetary and fiscal policy reactions would aggravate the impact of the external shock on activity. Nevertheless, the devaluation of the *real* in 2008-09 did not lead to an increase in public indebtedness during the crisis. High international reserves served to soften part of the devaluation shock. This brought losses for

companies that speculated in exchange-rate derivatives, but there was no capital flight. The central bank was also able to reduce interest rates.

Even so, the damage caused by the external turbulence to the Brazilian economy was evident in October 2008. Companies put in place collective vacation schemes and postponed investments. During the first six months of the crisis, from October 2008 to March 2009, manufacturing output declined by more than 10% (14% in the first quarter of 2009). However, a gradual recovery started in the second half of the year, with positive growth in manufacturing output compared with the level of December 2008. Although affected by the crisis, Brazil was one of the countries that could react effectively to it because it had less financial vulnerability and could rely on appropriate regulation and supervision of its financial market.

Conclusions

This paper applied the Bai and Perron methodology to the growth rate of GDP per capita in Brazil between 1900 and 2008 and identified four periods (1900-17, 1918-66, 1967-79 and 1980-2008) on the basis of structural breaks in the series. Growth accounting analyses for these periods attributed the growth acceleration that took place after 1968 to an increase in productivity, possibly due to lagged effects of the structural reforms introduced in 1965-68 and to increased investment in infrastructure. A down-break in 1981 was marked by a fall in both productivity growth and capital accumulation. A decrease in productivity growth over the third regime could be explained in part by lower infrastructure investment and by high inflation until mid-1994. Finally, the country moved from severe macroeconomic volatility until mid-1994 to prosperity in more recent years.

Using linear state space models, the paper also found a positive and significant terms-of-trade effect on economic growth, and volatility around potential output. We argue that policies to raise growth through higher government expenditure in the presence of deteriorating terms of trade (as in the late 1970s) ended in disaster when external finance dried up.

An Ideal Husband, Oscar Wilde's play, tells a story of unrealistic expectations. Lady Chiltern, a woman of strict principles, idolises her husband, a rising star in politics. Their life is filled with nectar and ambrosia, until the appearance of Mrs. Cheveley. She comes with a letter - one that proves Sir Chiltern's fortunes were made on the back of privileged information during the construction of the Suez Canal. In exchange for this letter, she seeks support for the construction of a new canal in Argentina. Having previously denounced the Argentine project as a fraud, Sir Chiltern is faced with a dilemma. Should he alter his stance or allow the contents of

the letter to come to light? In either case his spotless reputation would suffer and his marriage would come to an end. Although loathe to disabuse his wife of her unrealistic expectations, no amount of money can buy back one's past.

The same principle holds for governments. Every administration is hostage to the actions undertaken by the previous one, and Brazil's history is littered with mistakes that were made when trying to correct previous errors. The Kubistchek administration used inflationary finance to deal with fiscal disequilibria and low tax revenue. The military governments adopted generalised indexation to live with inflation and offered subsidised loans through the National Development Bank to deal with a scarcity of long-term credit in a volatile economy. Policy makers' responses to the global crisis of 2008-09 have been different; yet, Brazil's fiscal strategy remains questionable. The government has relied on a steadily rising tax burden to finance steadily rising spending. In 2008, tax collection amounted to 36% of GDP, nearly 14 percentage points higher than during 1991-93.

Brazil's fiscal deterioration appears mild by recent international standards. The primary budget surplus declined to just 1% of GDP during the 12 months through to October 2009, down from 4.3% of GDP a year earlier, and the overall budget deficit increased to 4.6% of GDP from 1.3% of GDP a year earlier. Counter-cyclical policies, however, have to be temporary. This is the case of recent tax cuts, but the rise in spending sounds a note of caution. Federal expenditures have risen in areas, such as public sector wages and employment, which seem hard to unwind quickly, if necessary, and fiscal policy is unlikely to be tightened ahead of elections in 2010. There is also reason for concern about the potential quasi-fiscal costs associated with the current aggressive expansion of credit by public banks.

Two longer-term fiscal challenges require attention. *Firstly*, the composition of spending has deteriorated because social security outlays have increased steadily over the years, while public-sector investment has remained extremely low at just 1% of GDP. *Secondly*, the strategy to raise the tax burden to finance ever-increasing expenditure does not seem sustainable and Brazil's complex tax system is a hurdle to doing business in the country. Out of 183 countries, Brazil ranks 167 in terms of the amount of taxes and mandatory contributions on labour that are paid by business as a percentage of commercial profits (69% in Brazil, against 41% for the median of countries surveyed by the World Bank in its *Doing Business* publication). When it comes to the number of hours needed to prepare, file and pay the corporate income tax, VAT and social security contributions, Brazil ranks last (at 10 standard deviations from the sample median).

From the point of view of stimulating Brazil's growth potential, important fiscal reforms will need to be made and infrastructure investment will need to be raised to sustain higher productivity. A hypothesis worth investigating in future work is whether high and complex taxation is a reason for Brazil's poor GDP growth performance relative to other emerging countries.

Notes

1. See, for instance, Acemoglu (2001).
2. Brazilian novelist, poet, play and short-story writer (1939-1908), widely regarded as the greatest celebrity of Brazilian literature.
3. See, for instance, de Mello (2008).
4. Data used in Gomes, Pessoa and Veloso (2003) is available on the site: www.victorgomes.com.br.
5. Humphreys, Sachs and Stiglitz (2007) argue that natural resources are different from other sources of wealth because they do not need to be produced. Their case for a negative impact of natural resources on growth also includes arguments, such as the “Dutch disease”, insufficient investment in education and weak unaccountable government. One can also hypothesise that unearned riches are a curse because governments get fat on revenue from primary activities and do not have to tackle the far more difficult task of creating a framework of laws and institutions that generate sustained growth and stable tax revenues (Sal-i-Martin and Subramanian, 2003). A massive inflow of natural resource revenues produces perverse political effects, such as corruption and clientelism. Manzano and Rigobon (2007) find that the curse operates through a debt overhang and their finding supports the perverse voracity effect of natural resources on economic performance. However, development is subject to the wise, or foolish, decisions on which society embarks. Different results can come from the same situations because unexpected factors are inherent to progress, such as chance or psychological variables. Thus, the empirical evidence on the curse of natural resources remains elusive.
6. Loyaza *et al.* (2005) find that negative terms-of-trade shocks have the effect of slowing down the growth rate of Latin America and Caribbean economies, and Astorga (2009), intrigued by the negative association between trade openness and growth in his estimation of the determinants of long-term growth in the six largest economies of Latin America over the period 1900-2004, tests if high openness in the context of specialisation in primary products can be harmful to growth. Adjusting

the openness variable by changes in export composition over the century, he finds that export diversification has mixed results: in some regressions, it is not significant and its inclusion does not affect the strength of the openness coefficient; in others, he finds some evidence that the degree of export diversification influences the growth impact of openness.

7. For details, see Harvey (1989), Hamilton (1994, Chapter 13; 1994b), and especially the excellent analysis by Koopman, Shephard and Doornik (1999).
8. See Cardoso (1981).
9. See Cardoso (1998).
10. Since the 1980s, the share of manufactured exports in total exports has oscillated between 50% and 60%, depending on the level of commodity prices.
11. Fajnzylber (2005) studied 1 636 firms across 13 Brazilian States and 9 industrial sectors. Exporting firms sell 2.7 times more per worker and have 94% more capital and 50% higher total factor productivity than non-exporting firms. The share of workers with secondary education is 30% higher and wages are 90% higher in exporting firms than in non-exporting firms.
12. See Cardoso (1998).

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Chapter 2

China towards 2020: Growth performance and sustainability

Gang Fan and Xiaolu Wang*

The chapter identifies the main drivers of China's growth over the last 30 years based on a comprehensive econometric growth accounting exercise. The challenges for sustaining high growth in the future are discussed. Although China's growth has been predominantly input-driven, productivity gains contributed to more than 40% of output growth in the past.

Moving forward, maintenance of strong growth depends on further structural reforms, including those that can reduce social disparities and preserve the environment. China will be able to sustain high growth through 2020 if further structural reform is implemented.

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Introduction

Over the past 30 years, China has enjoyed uninterrupted annual growth rates of GDP of around 9 to 10%, without undergoing the financial crises, high inflation, international debt imbalances or social unrest that most developing countries have experienced at similar stages of economic development. So far so good, but what comes next?

In this chapter, we use standard growth accounting to identify the factors behind China's economic expansion since reforms began to be implemented in 1978. We then discuss the factors that have contributed to output growth and may continue to do so through 2020, as well as the new internal or external drivers that will possibly emerge in the next few years. Finally, we draw conclusions about the most likely scenarios for China's growth and propose policy recommendations for sustaining high growth in the years to come.

The main drivers of China's growth

Growth accounting

China has maintained high growth over the three decades that have followed economic reform in 1978. The average GDP growth rate rose from 9.7% during 1979-2000 to 10.4% between 2001 and 2007. Due to the global financial crisis, economic growth slowed in 2008, although it still reached a relatively high rate of 9% (compared to 13% in 2007). At USD 4.3 trillion in 2008, based on the market exchange rate of 6.9 yuan per dollar (NBS, 2008 and 2009b), GDP was 16.5 times higher in real terms than in 1978, which ranks China as the third largest economy in the world, just behind Japan.

However, China's economic growth has been described as "unsustainable" by some Western economists (e.g., Krugman, 1994), while Chinese leaders refer to it as an "extensive pattern of growth" (Premier Wen Jiabao, 2006), reflecting the driving forces of massive input and investment growth with little technological progress or total factor productivity (TFP) gains. Economic growth has been supported by very high rates of savings and investment, an unlimited supply of cheap labour, a workforce with low levels of education, little innovation, significant income

inequality, a heavy dependency on external demand, inefficient energy consumption and heavy environmental degradation.

Nevertheless, massive migration of unskilled labour away from agriculture to take up urban non-agricultural jobs should be regarded not only as an accumulation of labour inputs, but also as a major source of allocative efficiency gains. Moreover, growth appears to have changed over recent years as a result of reforms and economic liberalisation. Demand for skilled labour and professional workers is increasing. The supply of unskilled rural labour from some regions is diminishing, causing both shortages of labour and wage increases in a few regional labour markets. Furthermore, the educational level of workers is rising at a fast pace. Some authors have started to talk about a turning point in China's economic development (e.g., Garnaut, 2006).

Investment in R&D is still low, although it has increased from 0.7% of GDP in 1998 to 1.5% in 2008, a ratio that is likely to increase further. The number of registered patents tripled during the same period. Some studies have also identified higher growth in capital productivity at the national and firm levels in recent years (e.g., Jefferson, Rawski and Zhang, 2007). Large and increasing income inequality is holding back domestic consumption growth and continued improvements in the savings rate. Nevertheless, since 2004 the government has adopted some new policies to encourage rural income and consumption growth, and to tackle poverty, including exemptions to the agriculture tax and to school fees for rural nine-year compulsory education, and improvements to the rural and urban social security systems.

In order to shed further light on the growth debate, we have extended the use of traditional growth accounting to identify the extent to which China's growth has been driven by input accumulation and productivity gains. We have also decomposed TFP to assess how non-input factors have contributed to GDP growth. According to new GDP data published by the National Bureau of Statistics in 2006 (NBS, 2006), following the new National Economic Census of 2004, the level of GDP was raised by 16.8% in 2004, which affected GDP growth rates and facilitated growth modelling and accounting.

Table 2.1. Growth accounting, 1953-2007

	Annual growth rate, in per cent			
	Pre-reform (1953-78)	Post-reform		
		1979-88	1989-98	1999-07
GDP				
Growth rate (real)	6.15	10.06	9.59	9.72
Growth rate (fitted)	6.36	10.03	9.48	9.62
Residual	0.21	-0.03	-0.10	-0.10
By sources				
Inputs	4.46	7.18	5.54	5.78
Capital ¹	2.66	2.76	2.94	3.80
Human capital ¹	1.71	4.18	2.46	1.82
TFP	1.81	2.66	3.74	3.63
Human capital spillover ¹	0.32	1.49	0.79	1.09
R&D ¹	0.10	-0.16	0.15	0.31
Marketisation ¹	-0.55	0.82	0.55	0.67
Urbanisation ¹	0.06	0.24	0.23	0.38
Foreign capital ¹	0.00	0.51	0.69	-0.55
Trade ¹	0.00	0.11	0.04	0.27
Infrastructure ¹	0.57	-0.04	1.02	2.57
Government administration cost ¹	0.44	-0.18	-0.15	-1.66
Final consumption ratio ¹	0.85	-0.16	0.36	0.49

1. Refers to the estimated instantaneous growth rate.

Source: "Pattern and Sustainability of China's Economic Growth towards 2020", by X. Wang, G. Fan and P. Liu, NERI-China working paper.

Inputs

Fixed capital stock

Physical capital accumulation has been the main driver of growth in China (Table 2.1). It has contributed 3.8 percentage points to the 9.7% average annual growth rate of GDP since 1999. There has been a high rate

of capital formation in the past years as a result of very high savings and massive capital inflows. The average rate of capital formation was 35.2% of GDP in the 1980s, 37.8% in the 1990s and 40.2% in 2001-5. The fixed capital stock grew by 9.2% on average in the 1952-78 pre-reform period, compared to 10.6% during 1979-98, 12.8% during 1999-2005 and 15.6% in 2005-07.

Human capital

Following Lucas (1988), we define human capital as the total labour force times average years of schooling. The annual formation of human capital during 1952-2007 is calculated using the graduation and enrolment data for all school types from primary to post-graduate education. The average growth rate of the human capital stock was 7.3% in 1979-88, 3.2% in 1989-98 and 2.5% in 1999-2007. It contributed 4.2 percentage points of the 10.1% average growth of GDP in the 1980s, but has declined more recently, reflecting the demographic effects of population control since the early 1980s.

All in all, input accumulation has explained about two thirds of the annual growth rates of GDP in the past five decades, before and after the 1978 reforms. However, input accumulation is losing ground as a driver of growth. Its contribution to GDP growth has declined notably in the past six years.

Total factor productivity

The contribution of TFP growth to GDP growth was small in the pre-reform period (planned economy with State ownership) and began to rise with the reforms. Productivity gains have become increasingly significant since the 1980s. They have also been quite high in recent years (3.6 percentage points), based on the newly revised national accounts. Compared to developing or industrialised countries, China's GDP growth could hardly be characterised as essentially input-driven. An analysis has identified a number of factors that contribute to TFP growth in China.

Education

Education enters our calculations twice: first as a human capital input and then in terms of the average years of education to measure the spillover effects associated with interactions between educated and less educated labour.¹ These spillover effects should not be neglected in a developing

country, where disparities in educational attainment are still large. As expected, this factor has made an important contribution to TFP growth.

Innovation (R&D)

While research inputs (i.e., accumulated R&D investment calculated by the perpetual inventory method) were not found to have a significant impact on growth, their annual growth rate is significant. The effect was positive, although very small, in the 1990s and has risen to 0.3 percentage points in recent years. Considering the fact that both the research capital stock and R&D expenditure are still fairly low, innovation is likely to grow in importance in the future. The fact that innovation has not been an important driver of China's growth is not surprising. However, this does not mean that GDP growth has been all input-driven. Efficiency improvements have been tremendous, but they have not arisen from innovation *per se*, but mainly from technology transfers (paid or unpaid), institutional reforms, a reallocation of labour and other resources and the removal of some bottlenecks. This, moreover, does not rule out the possibility for China to move forward faster on the frontier of technological progress in its next stage of development.

Marketisation

The most important source of TFP growth in the 1980s and 1990s was market-oriented structural reforms, which we measure by the ratio of private sector output. This is unlike the experience of most developed countries, where TFP growth is mainly due to technological progress. However, this finding is consistent with a reallocation of resources due to changes in incentives and constraints. China's reforms since 1979, including the development of the private sector, the privatisation of State-owned enterprises (SOEs), the decentralisation of decision-making from central to local levels, the development of capital markets and the reform of the banking sector have all resulted in efficiency improvements and productivity gains. This effect is also shown in a combination of improvements, for example, in corporate profitability, in the competitiveness of Chinese goods in global markets, and in the country's low inflation rate in recent years at a time when the price of natural resources has soared.

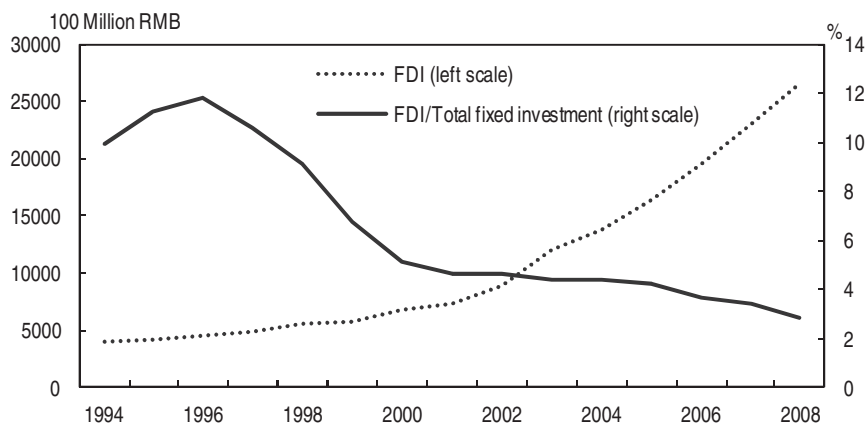
Urbanisation

Urbanisation, which has become an important contributor to TFP growth in recent years, is also about allocative efficiency, including the reallocation of labour from agriculture to higher value-added industries and population

migration from rural areas to urban centres, with the potential to generate economies of scale. This process started in the early 1980s, initially in the context of industrialisation, rather than urbanisation in its narrow sense. It was due to government policies aimed at “rural industrialisation”, as farmers started to work in “township and village enterprises” or self-employed non-farming businesses and were not constrained from moving to the cities. Only in the late 1990s did various levels of administration start to encourage migration to the cities.

Foreign capital and trade

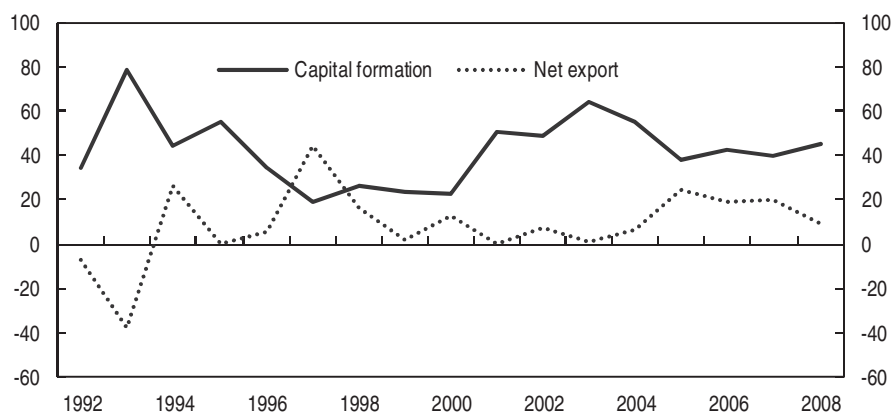
Due to the liberalisation of China’s foreign direct investment (FDI) and foreign trade regimes, the country has benefited a great deal from globalisation over the past three decades. FDI inflows have contributed to capital accumulation (as included in the “capital stock” factor) and trade has provided markets for China’s products; otherwise, domestic demand might have been too small to sustain industrialisation. In addition to input accumulation, FDI and trade liberalisation may have generated a spillover effect, which contributes to TFP growth through the channel of “unpaid transfers” of technology and management skill/know-how in business activities and learning-by-doing. Together, these two factors are measured by the ratios of FDI to total investment and foreign trade to GDP, respectively. While the share of FDI in the capital stock has decreased in recent years due to the increase in domestic savings (Figure 2.1), foreign trade is playing an increasingly important role in TFP growth (Figure 2.2).²

Figure 2.1. Foreign direct investment, 1994-2008

Source: China Statistics Yearbook, National Bureau of Statistics of China, various years.

Figure 2.2. Net exports, 1992-2008

In per cent of GDP growth



Source: China Statistics Yearbook, National Bureau of Statistics of China, various years.

Infrastructure

Infrastructure development, measured in our calculations by the rate of growth of highways in per capita terms, removes logistical bottlenecks and reduces production costs. Its contribution to TFP growth increased in the 1980s and 1990s, reaching 2.6 percentage points in recent years.

Government administrative costs

Such costs, measured in relation to GDP, have made an increasingly negative contribution to TFP growth due to rising government administrative expenditures.

Economic structure (final consumption ratio)

Economies in transition inherit sub-optimal economic structures from central planning. Conflicts between reformed and unreformed systems arise in the process of transformation. One typical problem in such an economy is that consumption tends to be too low and investment too high in relation to GDP. In our model, we find that these structural effects (measured by the ratio of final consumption to GDP) depress TFP growth only when the final consumption ratio falls below an estimated critical level of 55%. China's final consumption ratio fell dramatically from 62.3% in 2000 to 49.2% in 2007. This reduction resulted in a negative contribution to TFP growth in 2007, although it was not explicitly reflected in the average contribution for the 1999-2007 period. Further drops in the consumption ratio in the coming years may be averted by government policies to improve income distribution and reduce poverty.

Other factors

There is a small part of TFP growth that is unexplained. Due to data problems, we could not assess the effect of other factors that might have contributed, positively or negatively, to TFP growth, such as income inequality, macroeconomic stability and stock market developments. In this study, the Gini coefficient, the inflation rate, the level of equity market capitalisation and of turnover in proportion to GDP were all used to test these three possible effects. However, they were found to be statistically insignificant and were ultimately dropped from the analysis.

Conclusions about the past: China's growth has been partially productivity-driven

The results reported above indicate that physical and human capital accumulation (i.e., input-driven growth) has indeed played an important role in China's economic growth in the pre- and post-reform periods. However, this is not unusual, as inputs still account for a major share of GDP growth in both developed and developing countries. Most importantly, the results reject the hypothesis that China's economic growth has been input-driven without productivity changes (e.g., Krugman, 1994; Yang, 2000), since TFP growth has accounted for an increasing share of GDP growth during the post-reform period.

Of course, a large share of TFP growth has been due to allocative effects, or productivity growth induced by improvements in the factor allocation that is associated with pro-market reform and urbanisation, among other things. The problem is that economic theory shows that a reallocation of economic resources has a short-run effect that does not sustain high growth in the long run. In the next section, we will therefore discuss whether reallocative effects, together with other long-term factors, such as the spillovers from further liberalisation, human capital accumulation and R&D investment would have a lasting bearing on growth. Furthermore, our growth accounting analysis also shows that there are factors that bear down on growth, such as government administrative costs and sub-optimal economic structures. We believe that there may be improvements in these areas in the future, but other negative factors are also likely to emerge in the new stages of the development, which may all jeopardise growth.

Projections based on simple scenarios: Reform still matters!

Scenarios with different assumptions about reforms

Based on available data and the growth accounting exercise reported above, we can build alternative growth scenarios. To do so, we need to make working assumptions about the main drivers of growth in order to understand its future trends. The key factors that we have focused on are institutional reforms and structural changes. We project economic growth in 2008-20 in the following two scenarios. The first scenario (Scenario I) is "business as usual", based on the current changes to the main contributing factors. The alternative scenario (Scenario II) is based on optimistic assumptions about improvements in government efficiency and economic structure (consumption/saving-to-GDP ratios) as a result of further

institutional reform, with all other conditions remaining the same as in the first scenario. The two scenarios are compared in Table 2.2.

Table 2.2. Growth forecasts: Different scenarios

Period averages, in per cent			
	1999-07 (actual)	2008-2020 (Scenario I)	2008-2020 (Scenario II)
GDP	9.72	6.70	9.34
Inputs	5.78	4.82	5.18
Capital ¹	3.80	3.67	3.67
Human capital ¹	1.82	1.04	1.39
TFP	3.63	1.79	3.95
Human capital spillover ¹	1.09	0.82	1.23
R&D ¹	0.31	0.32	0.32
Marketisation ¹	0.67	0.30	0.30
Urbanisation ¹	0.38	0.27	0.27
Foreign capital ¹	-0.55	-0.16	-0.16
Trade ¹	0.27	-0.05	-0.05
Infrastructure ¹	2.57	1.98	1.98
Government administration cost ¹	-1.66	-1.45	0.00
Final consumption ratio ¹	0.49	-0.25	0.00

1. Refers to the estimated instantaneous growth rate.

Source: “Pattern and Sustainability of China's Economic Growth towards 2020”, by X. Wang, G. Fan and P. Liu, NERI-China working paper.

Three assumptions are made in the “more optimistic” scenario. *Firstly*, the ratio of government administrative costs to GDP will continue to expand in 2006-10 and 2011-20 at the same rate as in 1999-2007 (0.15 percentage points per year), whereas in the alternative scenario, it is assumed that it stops rising in 2006-10 and decreases by 0.1 percentage points per year during 2011-20 as a result of reforms to enhance government efficiency. *Secondly*, we assume that in the baseline scenario the share of final consumption in GDP will continue to decrease, albeit at a slower rate, due to increases in government transfer payments. In 2000-5, this ratio dropped by 10.5 percentage points. It is assumed that it decreases by a further 5 percentage points in 2006-10 and by another 5 percentage points in 2011-20. In the alternative scenario, the consumption ratio is assumed to be stable during 2006-10 and to increase to 55% in 2011-20 as a result of a series of reforms and improvements in the social security system and public services. *Thirdly*, we assume a faster rate of human capital growth, at 2% per year instead of the 1.5% average of the past, led by further improvements in education, especially in relation to completion rates for compulsory education (i.e., nine years) in both urban and rural areas, a faster

development of secondary vocational education and improvements in adult labour training.

GDP growth rates are very different in the two scenarios. Further reform would add 2.6 percentage points to the GDP growth rate through 2020. This exercise shows that, with all other factors unchanged, structural transformation will continue to be one of the most important drivers of growth in China. Without serious reforms, China's growth rate could fall to less than 7% per year. If reforms continue in the right direction, GDP growth of about 9% per year may be sustained through to 2020.

These scenarios can be interpreted in two ways: on the one hand, they underscore the negative effects of an unreformed system on GDP growth; on the other hand, the analysis suggests that China has not yet exhausted the gains or dividends from the institutional reforms that were implemented gradually from the late 1970s. The reallocative effects of reforms may be of a short-term nature, but they may be maintained as the reforms are deepened.

Reforms and consumption behaviour: Structural imbalances

One of the current, major imbalances in the Chinese economy is its high saving rate, which is up to 50% of GDP. The sustainability of further growth is very much contingent on how this structural distortion can be eliminated by tackling institutional deficiencies through further reform. There are two types of institutional causes for China's high savings:

1. The normal problems associated with developing countries or transition economies, including an underdeveloped social security system, which depresses consumption, and large income disparities, which may lead to higher savings. When a country is both developing and in transition, additional problems, such as corruption, which contributes to income disparities, could be more severe and difficult to solve rapidly.
2. Two China-specific problems: firstly, State-owned enterprises (SOEs) do not pay dividends to the State, and all after-tax profits are retained and become corporate savings; secondly, Chinese companies, including SOEs, pay neither royalties for the exploitation of natural resources nor a share of the windfall revenues associated with commodity price increases. Instead, such revenues are saved as retained profits and dividends.

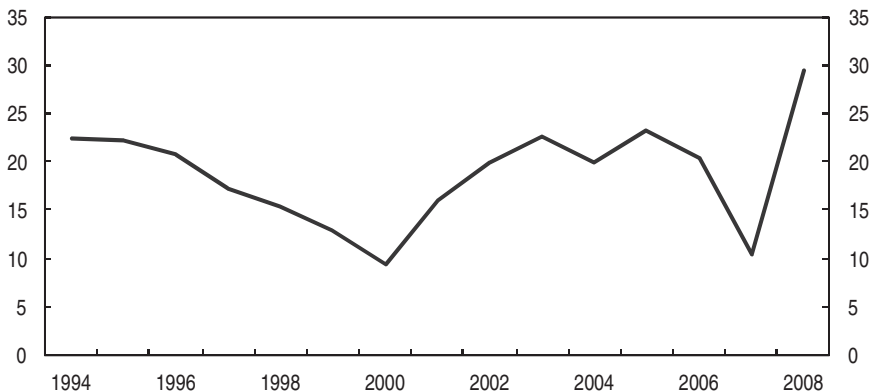
These two institutional features of China's economy have contributed to the recent dramatic increase in the savings-to-GDP ratio. There is a general belief that China's high level of savings is due to a low level of household

consumption, but in fact China's households saving rate has been quite stable over recent years (Figures 2.3 and 2.4). The fall in household consumption reflects a fall in household disposable income as a proportion of GDP from about 65% of GDP in the early 1990s to 50% in 2008. Household consumption decreased therefore from 45% of GDP in the late 1990s to 36% of GDP in 2008, and the share of household savings as a percentage of national savings decreased from 53% in the early 1990s to about 46% in 2008, estimated on the basis of available statistics.

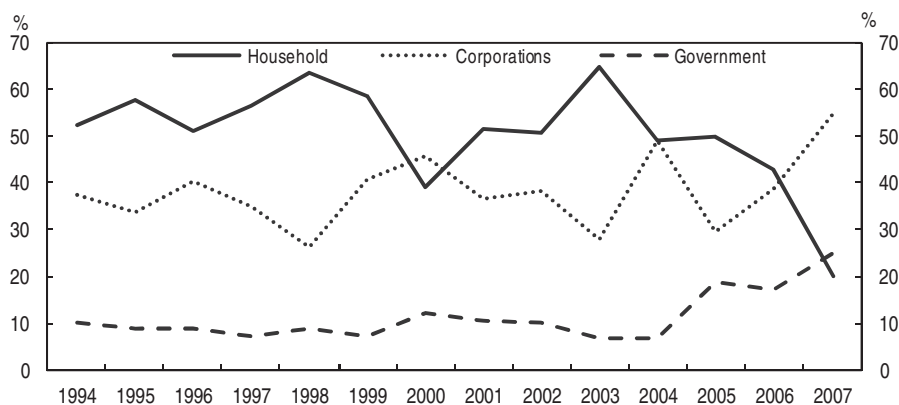
Meanwhile, government and corporate savings increased significantly. Government savings rose sharply because government revenue increased from about 10% of GDP in the early 1990s to 22% of GDP in 2006, which more than compensated for spending hikes on social programmes in recent years. Most importantly, corporate savings increased from 28% of national savings in the mid-1990s to over 40% in 2005, which is almost as high as the household sector's share, thereby contributing much to the overall increase in the savings-to-GDP ratio. The increase in corporate savings has been predominantly due to improved profitability on the back of the efficiency gains discussed above, as well as the special institutional arrangements in relation to natural resources' revenues and the distribution of corporate dividends.

Figure 2.3. Household savings, 1994-2008

In per cent of GDP



Source: China Statistics Yearbook, National Bureau of Statistics of China, various years.

Figure 2.4. Composition of domestic savings, 1994-2007

Source: China Statistics Yearbook, National Bureau of Statistics of China, various years.

If the savings-to-GDP ratio continues to rise, it is clear that China will suffer from a further deterioration of its economic structure, in addition to having a high external imbalance (discussed below). GDP growth will slow as a result of these imbalances. It is also clear, therefore, that reforms are badly needed, including a household tax cut, if high growth is to be maintained in the longer term.

China's growth towards 2020

There are numerous other factors that go beyond growth accounting and may have important effects on China's future growth. They include pro-growth factors that may continue to contribute positively to growth; existing pro-growth factors that may contribute increasingly more than before, or new pro-growth factors; existing pro-growth factors that may have a decreasing contribution; growth-detering factors that may be at most as problematic as before; and growth-detering factors that may become increasingly important in the future, or emerging anti-growth factors.

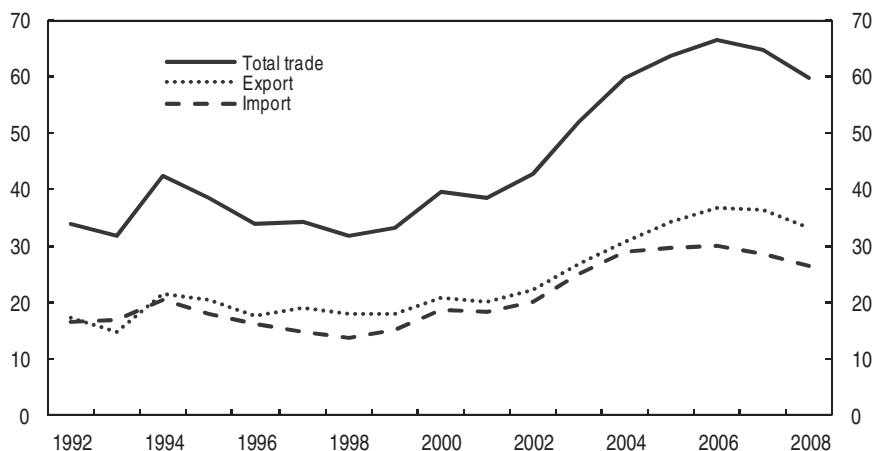
Pro-growth factors that may continue to contribute positively to growth

Under this category, we may list the following factors:

- Capital investment and savings. China's current savings rate is too high and changes are badly needed, as discussed above. However, a sufficiently high pool of savings will continue to support growth without the need for foreign savings. The structural problems resulting in high savings should be removed as soon as possible through reforms.
- Urbanisation. China "officially" started the urbanisation process in the late 1990s, which explains the dramatic increase in the contribution of urbanisation in our growth accounting. This process will continue to underpin growth for the next 20 to 50 years, as there are more than 900 million people still living in areas that are classified as rural and 800 million are still living in the countryside. The current urbanisation ratio is estimated at 42% according to official statistics and it will increase by 1.5 percentage points per year in the foreseeable future. However, the contribution of urbanisation to growth will not increase because many local urban development programmes have caused investment to overheat and given rise to social tensions in recent years.
- Foreign investment and trade. Basically, there is no reason for China to turn away from globalisation as the country has benefited tremendously from greater openness to trade and investment (Figure 2.5). China will continue to attract international capital and increase its share in global trade. However, it seems that the contribution of these factors to growth may not increase over time.

Figure 2.5. China's trade openness, 1992-2008

In per cent of GDP



Source: China Statistics Yearbook, National Bureau of Statistics of China, various years.

FDI inflows have been growing in recent years, but their share in total fixed investment has been falling (Figure 2.1). The spillover effects associated with FDI are therefore negative in our estimations (Table 2.1). This trend may not change in the future. However, with further gradual capital account liberalisation, other types of foreign capital inflows may increase in China's next stage of development (Figure 2.6). Financial capital may also have spillover effects because the knowledge and techniques of financial market management are also needed in order to improve capital efficiency. As for trade, even though China's ratio of foreign trade to GDP has increased to 70%, we expect this ratio to stabilise for the following reasons: current global imbalances, the appreciation of the yuan, increasing protectionism mainly from developed countries and a deterioration of China's terms of trade in recent years.

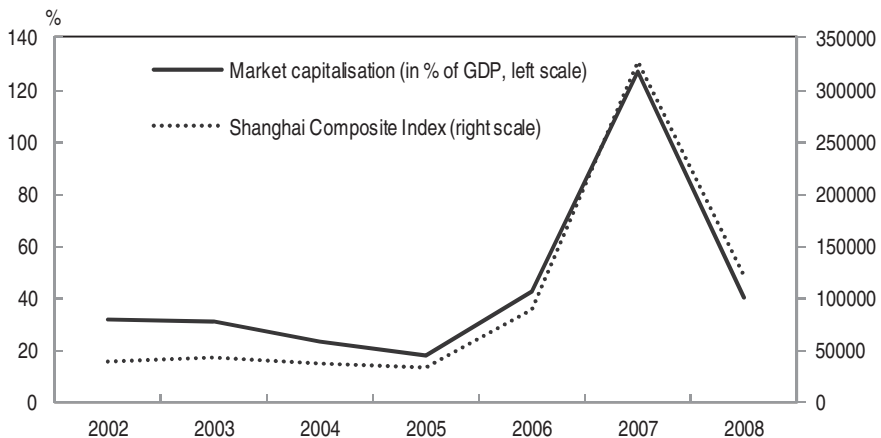
Financial reform and development

It has been argued that, after nearly three decades of reforms, the effects of China's institutional changes may be starting to wane. On the contrary, we believe that the effects of reform should be at least as strong as in the late 1990s or early 2000s because there is still a long way to go between the current system and a well-functioning market economy. A gradual approach

to reform may also mean that the effects of reform are small (“shocks” may be small too) in the early stages of implementation; however, they may increase continuously as new steps are taken.

Reforms aimed at reducing administrative costs and lowering savings may have a large positive impact on growth. To this end, financial reforms, which have gathered momentum in recent years, are a case in point. Implemented in 2006, reform of the securities market is expected to play an increasingly important role in improving capital efficiency over the next 10 to 20 years by removing bottlenecks for China’s growth and providing a better environment for the private sector to grow.

Figure 2.6. Stock market trends, 2002-08



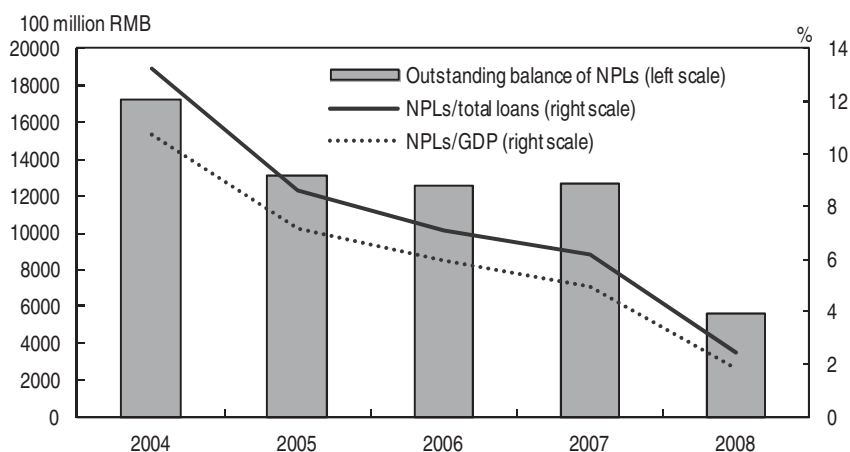
Source: China Statistics Yearbook, National Bureau of Statistics of China, various years.

Banking sector reform has yielded some preliminary results from the partial privatisation of large State-owned banks and the removal of constraints to foreign competition under WTO entry terms. Additional structural changes and reform of banking supervision may further reduce risks related to non-performing loans (Figures 2.7 and 2.8). Development of debt and insurance markets may also have a positive effect on the economy as a whole.

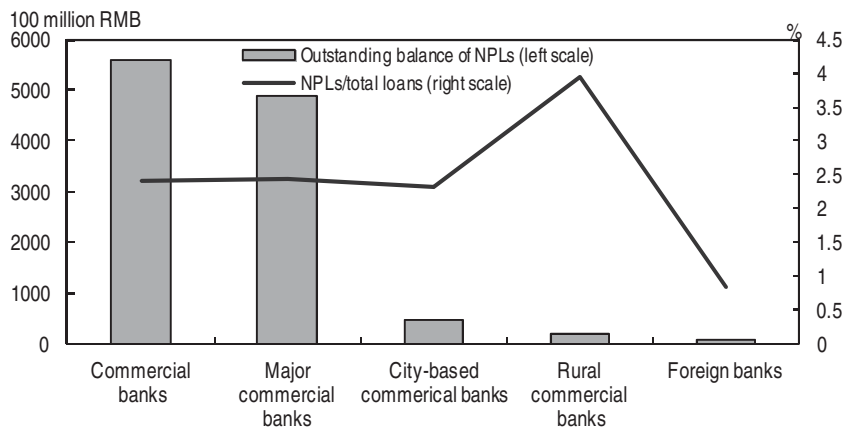
Meanwhile, the private sector will enter its second stage of development. Entrepreneurship is gaining ground, although obstacles remain, especially in comparison with other countries, including India. Younger entrepreneurs who started their businesses from scratch some 10 to

15 years ago are learning quickly and their sons and daughters are graduating from Western business schools. In the next 5 to 20 years, these entrepreneurs will grow much stronger and the private sector will catch up with their counterparts in other parts of the world.

Figure 2.7. Non-performing loans (NPLs), all banking institutions, 2004-08



Source: Annual Report of China Banking Regulatory Commission, 2009.

Figure 2.8. Non-performing loans (major banking institutions), by sector

Source: Annual Report of China Banking Regulatory Commission, 2009.

We measure the development of market institutions as the share of the private sector in output. As a result of the reform process and the expansion of financial markets and entrepreneurship, private sector development will continue to contribute to growth over the next 15 years. The relevant question is not whether the reforms will still have a strong enough positive impact on growth, but whether the momentum for reforms can be maintained long enough for new initiatives to come to fruition. While all scenarios are possible, it seems that there is no return to the past and that the gains as well as the problems associated with previous reforms are moving the process forward. Financial reform is a case in point. When hundreds of millions of ordinary people are now able to invest in the stock market and/or place their ever increasing financial assets in banks and insurance accounts, further reforms are somehow supported by public opinion.

Existing pro-growth factors that may contribute increasingly more than before, or new pro-growth factors

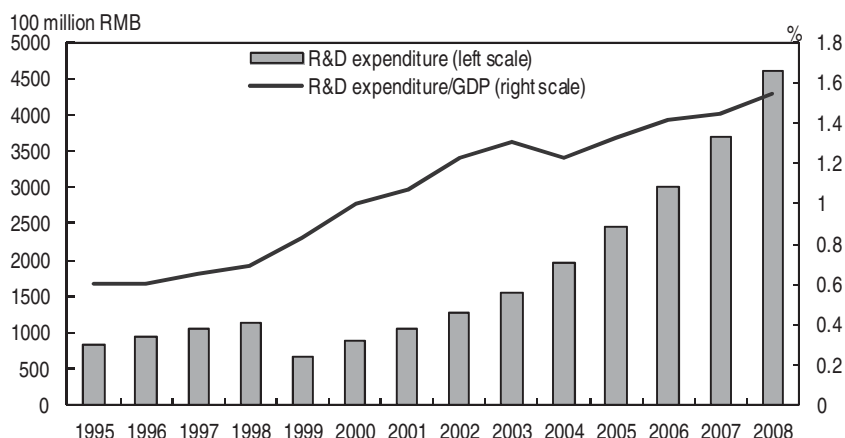
R&D investment

R&D investment has been rising in recent years (Figure 2.9). At an earlier stage of development, it could be said that R&D may be wasteful

because most new and small enterprises are far from the innovation frontier. However, beyond an initial phase of imitation and technology transfers, enterprises usually increase their R&D efforts. It may take another 30 to 50 years for China to become one of the major sources of global innovation and for growth to become innovation-driven, but innovation will become increasingly important in the next stages of development. A related issue is the protection of intellectual property rights (IPR). With more and more Chinese firms starting to innovate, IPR protection will feature more prominently in the domestic policy debate, rather than being relegated to discussions between foreign companies and the nation as a whole. This will lead to improvements in the legal framework and social environment for innovation.

Figure 2.9. R&D expenditure, 1995-2008

In per cent of GDP



Source: China Statistics Yearbook, National Bureau of Statistics of China, various years.

Improvement in resource efficiency

Rising energy and commodity prices in the past few years may not change China's competitive position in the world supply chain for the time being, but high commodity prices have exposed inefficiencies in the country's resource utilisation, which will need to be resolved if China is to maintain its competitive advantages. The government established a goal in the five-year plan 2006-10 to reduce energy use per unit of GDP by 20% in five years. Environmental pressures, including the reduction of CO₂

emissions, also require China to improve energy efficiency in order to achieve the same level of growth with fewer emissions. Therefore, it would be reasonable to predict better energy efficiency as a new driver of future growth.

Existing pro-growth factors that may decrease growth

Low labour costs

China's growth take-off was supported by cheap labour and, as discussed above, the reallocation of farmers to higher-paid occupations. This factor will continue to contribute to growth for at least the next 15 years because, by any calculation, there are still about 250 million individuals, or 35% of the labour force, making a living from agriculture and with an income of less than USD 500 per year (compared to USD 1000 per year for workers who have recently migrated from agriculture to other sectors). The calculation is simple: in order to reach wage equilibrium, the number of farmers may need to be reduced to 10% of the labour force, which implies the reallocation of another 150 million farmers out of the agricultural sector. Since 2002 about 11 million new non-farming jobs have been created and the government's target for the next five years is to reallocate 9 million farmers. If this trend is maintained, "full-employment equilibrium" can be achieved by around 2020.

The absorption of these 150 million rural labourers into non-farming activities and the reallocation effects that ensue would continue to be an important driver of growth. However, it can also be argued that these effects would play smaller roles. First, migration costs are likely to rise for new workers who come from increasingly remote areas. Also, the cost of living in coastal areas could rise; companies may move to the interior in search of lower labour costs, but the equilibrium between labour and transportation costs will push wages up in the coastal areas. Moreover, with the rising disparity in incomes, the government is increasing fiscal transfer to rural areas, which may encourage people to remain in agriculture and thereby slow labour reallocation. Finally, the world may enter a cycle of increasing food prices, due to rising commodity prices, which may also discourage labour reallocation. Therefore, labour supply and reallocation will continue to contribute positively to growth, but by a decreasing amount through to 2020.

Infrastructure

In addition to urbanisation, China has benefited from improvements to its infrastructure since the late 1970s. The mechanism for further investment and upgrades to infrastructure is still in place and more effort will be needed to remove production and logistical bottlenecks. However, after almost 30 years of massive construction in the national road transport network, railway systems and sea ports, the contribution of infrastructure development to growth may be diminishing too.

Growth-detering factors that may become increasingly important

Corruption

As a part of the legacy of central planning, China still suffers from heavy-handed government intervention. This problem has two interrelated outcomes: large government administrative costs, as discussed above, and corruption. Economic transition has also encouraged reforms in government and the political system. These are not gauged by superficial phenomena, such as popular voting, but rather by more fundamental structures in relation to checks and balances and interest-group participation. It is still somewhat difficult to say that China has established the rule of law, but the legal system has developed rapidly over the past 20 years. We believe this process of administrative, legal and political reforms will continue to result in smaller government and lower administrative costs, and therefore bring about a reduction in corruption. Therefore, we predict that the negative effects on economic growth of government administrative costs and corruption will be smaller in the future. However, as the reform process is gradual, we do not expect these problems to disappear over the next 20 years.

State-owned enterprise monopoly

In our growth accounting analysis, the problems related to SOE monopoly are dealt with as part of the process of private sector development (or marketisation), which is measured by the size of the non-State sector in GDP. While most of the locally-based small and medium SOEs have been privatised one way or another, the large SOEs in natural resources, utilities and the financial sector will probably remain for a long time. The lack of competition in these areas, as well as the unavoidable government control of these enterprises, may continue to constrain their efficiency. However, assuming that regulatory reforms and managerial improvements in these

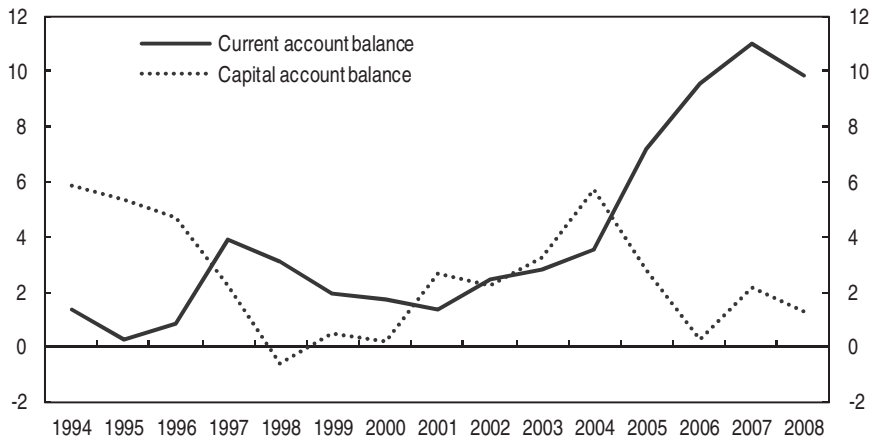
large SOEs continue, we predict a declining negative impact of this factor on growth in the years to come.

Growth-detering factors that may become increasingly important in the future, or emerging growth-deterrents

External imbalances and protectionism

The most important medium-term challenge for China is to deal with its external imbalance and the financial risk associated with it. Given the problems of domestic economic structure and the “Breton Woods II” international monetary system, China is now running a large current account surplus (Figure 2.10), notwithstanding a recent reduction due to the global financial crisis. As a result, at the end of 2008, China had accumulated more than USD 2.3 trillion of foreign reserves, making it increasingly difficult for the central bank to sterilise these massive inflows so as to keep the money supply under control.

Figure 2.10. China’s external imbalances, 1994-2008



Source: China Statistics Yearbook, National Bureau of Statistics of China, various years.

One policy recommendation is, of course, to revalue the yuan against the US dollar and other currencies. It nevertheless appears that the Chinese authorities have ruled out the possibility of a sharp revaluation for a number

of reasons. *Firstly*, no matter how big the one-time jump (the US Congress has asked for a 30-40% revaluation) in the exchange rate, it would not solve the problem of the US trade deficits and would not even satisfy the US Congress. *Secondly*, the big jump would not drive jobs back to the United States, but may take some jobs away from China to Bangladesh, Vietnam or Indonesia, and many Chinese firms may not be able to compete when faced with such a shock - a situation that would not be acceptable politically in China. More importantly, a sharp revaluation of the yuan would not change the international monetary system or stop a further depreciation of the US dollar; rather, it would relax the US fiscal and monetary policy further. Finally, these shocks would inevitably invite speculation in capital and currency markets and those speculative capital flows would create risks for China's financial system. Under these circumstances, backed by the global monetary events of the past, such as the Nixon shock in 1971, the US dollar-DM relationship in the 1970s and the US dollar-yen relationship in the 1980s, it is expected that the Chinese monetary authority will maintain its current approach to exchange-rate management.

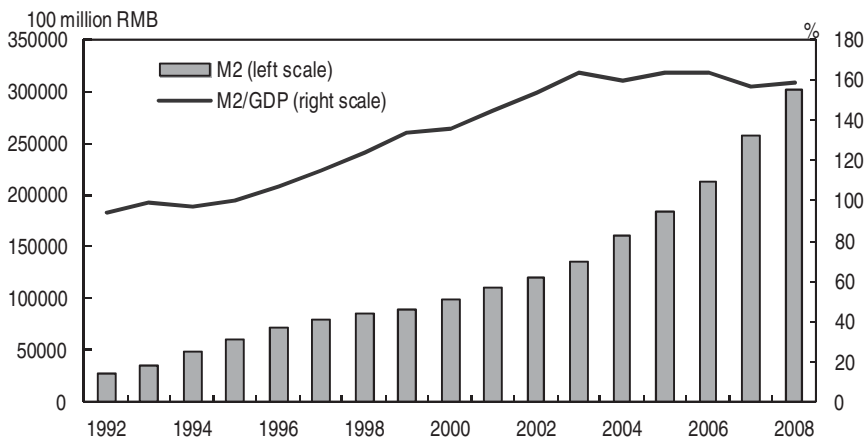
Assuming maintenance of the current exchange-rate regime and its incremental approach to currency revaluation, what are the risks for the future? *Firstly*, there will be increasing protectionism in various forms aimed at China's exports, from anti-dumping disputes to nontariff barriers, including actions related to safety, health, environmental, labour, and human rights standards. These, of course, will slow down the growth of Chinese exports. *Secondly*, there is a risk of a disorderly depreciation of the US dollar against other major currencies, such as the euro and the yen, which may cause financial turmoil and even a serious economic slowdown worldwide, including in China. *Thirdly*, if China cannot lower its savings rate, it may face the risk of over-liquidity, which may create inflationary pressures or asset bubbles, and macroeconomic instability.

Asset bubbles

There could be many reasons for an asset bubble to emerge and for a developing country, like China, to be more affected by it than countries with a higher degree of financial development. *Firstly*, expectations of high growth in the long term may cause over-optimism and speculation by domestic and overseas investors. *Secondly*, differences in house prices between China and more developed countries may cause over-investment (from overseas) in China's housing market. *Thirdly*, there is still no stabilising mechanism in China's housing market, such as property taxes, to prevent excessive demand and investment. *Fourthly*, the M2-to-GDP ratio is currently close to 160% (Figure 2.11) and the rapid growth of

foreign-exchange reserves may add liquidity to the economy, even though the central bank is doing whatever it can to sterilise these inflows. Given China's manufacturing supply capacity, excess liquidity or investment are unlikely to lead to serious inflation in product markets in the foreseeable future, but asset-price inflation could rise. The central government has been aware of these problems and is trying to learn lessons from Japan, Hong Kong China and the Southeast Asian economies, as well as speed up reforms and take preventive measures. However, it appears that market fluctuations may occur repeatedly in the years to come.

Figure 2.11. China's money supply, 1992-2008



Source: China Statistics Yearbook, National Bureau of Statistics of China, various years.

Social disparities

The fundamental cause of rising income/social disparities is not the underdevelopment of China's social security system or a lack of government fiscal transfers, as claimed by many Western observers, but rather the under-employment of 300 million rural workers, which is depressing the wages of about 70% of the labour force. At the same time, the economic and political system in which the government still has considerable powers and enjoys a monopoly position in some industries is breeding corruption and other kinds of "unfair income distribution", as discussed above. As a result, disparities are likely to continue to rise because another two decades may be needed for China to reach a stage of development at which labour supply will no longer be infinitely elastic and wages can respond more forcefully.

In addition, structural reform affecting the government and other economic, political and social systems will take years, or even decades, to come to fruition.

In some ways, China is entering the most difficult stage of its development in terms of social and political change. During this phase, which could be long, social unrest and political turmoil may arise if the government fails to take steps to prevent social disparities from worsening. This said, if the financing of social programmes aimed at narrowing income gaps puts a burden on the government budget and creates inflationary pressures, as in the case of some Latin American countries in the past, financial and economic crises may follow, putting an end to market-friendly reforms and creating further disparities.

The possibility of social crises should not be overstated. Although relative poverty is worsening, material standards of living and the provision of public goods have improved. As long as growth and job creation continue, the poor may have expectations of a family member finding a well-paid job and making the whole family better-off. Social stability may therefore be maintained in spite of rising income disparities. The government has so far avoided budget deficits, despite recommendations from international observers and domestic advisers for it to take on more and more responsibility and emulate Western social safety nets.

Therefore, although we think that China will run some risk of social turmoil, we remain optimistic that social stability will be maintained and that economic or social problems will be overcome as long as growth and reforms persist.

Resource constraints

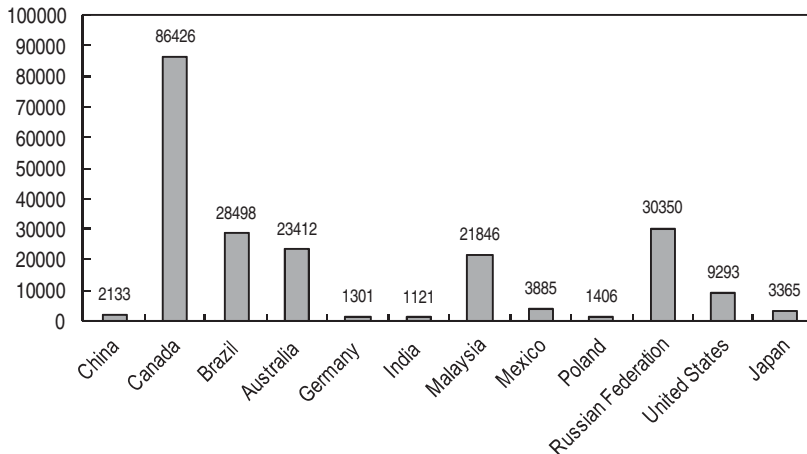
It is often argued that a scarcity of natural resources in terms of land, water, minerals and energy will constrain China's development. However, countries cannot rely solely on their own resources for growth. Soaring oil prices may reflect a scarcity in oil relative to other resources; as long as other importing countries pay the same price for oil, this scarcity should not create any special problem for China's competitiveness and growth. A more interesting question is whether China will be able to maintain or even improve its efficiency in the use of natural resources. This depends on the more general issue of incentives and pricing (as discussed briefly above), rather than on a scarcity of resources. A related consideration is that of China's access to resources at the same price as other countries. If for some reason Chinese companies had to pay a higher political premium than their competitors, then China's competitiveness would be reduced. However,

again, this is related to issues of geopolitics, rather than a scarcity of resources.

A country with limited endowments of land and water can, of course, rely on food imports. However, it may be difficult for China to abandon food self-sufficiency because of the traumatic experience with the “food embargo” of the early 1960s (and, indeed, the current “high-tech embargo”). A more difficult challenge is related to those resources that cannot be imported, such as land and water (Figure 2.12). Due to these constraints, China may face increasing urbanisation costs.

Figure 2.12. Water resources: International comparisons

In cubic meters per capita



Source: World Bank Development Indicators 2009.

Environmental and ecological deterioration

Most countries in the world have achieved the early stages of their development at the expense of their environment, sustaining some degree of ecological deterioration in the process. However, these environmental costs must be paid sooner or later, mostly by subsequent generations. In the next stages of its development, China will increasingly pay these environmental costs for the following reasons - and its growth may therefore be constrained:

- Ecological and environmental deterioration may reach such a level that it would make further growth impossible. For instance, if the water is polluted, urbanisation in certain areas may no longer be possible.
- With the growth in incomes and the rise in material living standards, increasing numbers of people will no longer tolerate the country's environmental deterioration and will want solutions to be found. The history of other countries shows us that this is a likely development. There would be growing domestic political pressure on the government to take the matter more seriously.
- Global warming will increase international pressure on China to do more to reduce pollution.

Concluding remarks: A check-list for future reform in China

To sum up, we have constructed the following list of the factors that are expected to have an impact on China's future growth (Table 2.3).

Factors are labelled with a + (plus) or a - (minus) sign to indicate whether they contribute positively or negatively to growth over three periods of time: up to 2007, 2007-10 and 2011-20. A rating of "0" means that the impact is neutral or small. While some factors may be important, they may not have a large positive or negative influence on GDP growth (i.e., as opposed to other outcomes, such as quality of life or happiness). For example, education and R&D have increased significantly in recent years, but their positive effects on GDP growth may not show up until the longer term. Similarly, environmental damage is already significant and its impact on "non-green" GDP growth may remain positive for some time, because polluters may still be competitive, due to the fact that they do not pay the full costs of the damage they create, at least for now.

After assigning the appropriate number of "+" and "-" to the different cells, we calculated the "net +" and found that the number of positive factors remains overwhelming for the next 15 years, although it is declining over time, suggesting that the growth rate of GDP may slow down. Nevertheless, China may still be able to achieve a growth rate of up to 7% per annum until 2020, if we assume that the number of positive factors remains high enough to sustain GDP growth.

Table 2.3. Check-list of growth factors

Growth factors	Up to 2007	2007-2010	2011-2020
Savings/capital investment	+++	+++	+++
Labour supply	+++	++	+
Human capital (education)	+	++	++
Human capital spillover	+	+	++
R&D	+	++	++
FDI	+++	++	+
External financial shocks	0	-	--
Trade	+++	+++	++
External imbalance – protectionism, USD depreciation	-	--	-
Reform I - marketisation	++	+	+
Reform II - government costs	-	0	+
Reform III - financial system	+	++	+
Urbanisation	++	+++	+++
Infrastructure improvement	+++	++	+
Financial risks - asset bubbles	--	--	--
Structural bias (consumption ratio)	-	--	-
Income disparities	-	-	--
Resource efficiency	-	-	0
Environmental costs	-	-	--
Net	15 +	13 +	10 +

Notes

1. This is the same methodology that was first used by Lucas (1988).
2. The variable used here is the ratio of foreign trade to GDP. The demand effect that is driven by export growth cannot be separated from that of trade-related productivity growth.

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Chapter 3

Shaping the Indian miracle: Acceleration towards high growth

Arvind Virmani and Rajeev Malhotra^{*}

This chapter discusses India's long-term growth prospects. Following structural breaks in GDP growth in 1979-80 and 2003-04, the Indian economy has been on an accelerated growth path. The chapter examines the main drivers of strong growth, the components of aggregate demand, the sectoral composition of growth and its spatial distribution across the country's different regions. The chapter then reviews India's economic policy management in the wake of the global economic slowdown, which also impacted the Indian economy.

The economy has responded well to the fiscal and monetary measures taken in response to the global slowdown and the pre-crisis growth momentum is set to be restored. However, an uncertain external environment calls for a continued focus on the domestic growth drivers. To sustain high growth over an extended period, it will be vital to pursue reforms, including in the financial sector, to make the economy more competitive and the economic regulatory and oversight systems more efficient and responsive to new developments, and to deliver fiscal consolidation.

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Introduction

A lot has been written about India's economic growth and, in general, about its development experience since independence. It has been a history of great contradictions, evoking, as one would expect, contrasting emotions from observers, foreign as well as domestic. There were periods when the Western world was earnestly engaged with India's development; at other times interest waned and the economy was considered a basket case. In the 1950s and 1960s, the Indian economy was a favourite battleground for economists and policy advisers of all ideological persuasions. In fact, during that period, the dominant thoughts of development economics influenced the logic of India's development strategy; similarly development theory was at times greatly influenced by the Indian experience. Yet, by 1970 the Western world had lost interest in India, and the country started looking inwards. There followed a phase in the 1980s and 1990s when the popular depiction of the Indian economy was as a sleeping mammoth that was taking its time to wake up. This was during the period when the agile high-growth "tiger" economies of East Asia were setting new benchmarks for growth and poverty eradication, which reinforced the image of the Indian economy as destined to run a sub-par course, failing yet again to realise its potential. This view has nevertheless changed in the last few years. Over a five-year period from around 2003-04 to 2007-08, the Indian economy has grown by nearly 9% per year, which has rekindled interest and raised the global stakes in its future. It seems that the mammoth is finally on the move and with a certain vigour too to make up for lost time!

Throughout this period, there have been many studies¹ on the underlying growth trends of the Indian economy and the structural changes brought about by policy breaks. Policy developments have often been gradual, subtle and so far apart that they have gone unrecognised at first. With the benefit of hindsight and new information, some of the developments that go back to the mid-1980s have in fact turned out to be game changers. They have imparted a gradual but significant dynamism to the economy and improved its growth performance in each of the last three decades. In more recent years, the cumulative impact of these developments, particularly those arising from the reforms of the 1990s, has been coupled with a supportive external environment, thereby creating a momentum that has taken economic growth to new heights. As it turns out, even one additional year of data provides new insights into the analysis reported in these studies and leads perhaps to more credible conclusions about the medium to long-term prospects for the Indian economy. This paper is one such attempt to use the

vantage point of the latest available data to study India's recent growth experience. It uses data up to 2008-09 from the National Accounts Statistics (NAS) of the Indian economy. Unfortunately, the analysis continues to be on the old 1999-2000 base of NAS, which was revised in 2004-05 by the Central Statistical Organisation (CSO) in February, 2010. Data are not yet available for the pre-2004-05 years using the new base year.²

The analysis is divided into three broad sections. The first takes a brief look at long-term growth trends and the characteristic features of the Indian economy in its first and second growth phases. This is followed by a more detailed discussion of the most recent growth phase, beginning in 2003-04, including an analysis of the underlying dynamics of this phase and its main growth drivers, as well as the components of aggregate demand, the sectoral composition of growth and its spatial distribution across the country's different regions. We then describe the role of policy reforms in sustaining growth. In that context, as a postscript, it presents a brief review of economic policies in the wake of the global economic slowdown, which also impacted India. Finally, we focus on the medium-term prospects of the economy.

Historical patterns of growth: Trends and features

Most studies of India's growth identify a structural break around 1980 (e.g., Virmani, 2004a). A few, such as Virmani (2005), suggest one in the 1990s, broadly coinciding with the launch of the economic reforms of 1990-91. The distinct phases of India's growth could be identified in terms of a change in policy regime or as a statistically significant break in the growth trend, or ideally in terms of both, with the former leading to the latter (Virmani, 2006c).³ In the case of the 1980 break, the change in policy regime and the statistical break in the growth trend coincide reasonably well to indicate a clear structural break. However, the same is not true for the second structural break, where there was a distinct change in the policy regime in the wake of the balance-of-payments crisis of 1990-91. The policy change was largely concentrated in the first few years following the crisis and then with a small gap towards the end of the decade. However, a significant statistical break is not really apparent until much later (Virmani, 2006a). The average growth rate of GDP was marginally higher in the 1990s than in the 1980s. In other words, the impact of the policy changes of the 1990s was gradual, with some improvement in the average growth rate, but the statistical break in trend growth came more than a decade after the launch of the reforms.

The first structural break in the post-independence growth experience occurred in 1979-80. Having the use and advantage of more recent data, it is

likely that the economy entered its third phase of accelerated growth only after a statistically significant second break in 2003-04. This observation follows from a detailed econometric analysis of the data, which allows for a statistically more accurate determination of the different phases of India's economic growth (Virmani, 2009). The analysis explicitly accounts for the role of rainfall variation and finds that the rate of agricultural growth, as well as the effect of rainfall on it, remained largely unchanged over more than 50 years. Though the effect of rainfall variation on supply (agricultural GDP) declined with the share of agriculture in GDP, demand-side effects (i.e., demand for non-agricultural goods from agricultural income) appear to have risen. On balance there was little change in the impact of rainfall variation on overall economic growth.

Growth phase I: 1951-52 to 1979-80

As a result of the first break, the economy moved away from what has been commonly described as “the Hindu growth rate” of around 3.5% to 5.5%.⁴ This followed a policy shift away from excessive controls and restrictions on private enterprise, and towards gradual liberalisation. While the first phase of growth could be characterised as the “Indian version of socialism”, the post-1980 phase has been a period of “gradual experimentation with market reforms”.

Regression analysis (Table 3.1) confirms that during growth phase I, from 1951-52 to 1979-80, the trend growth rate of GDP was about 3.6% per annum and that of per capita income was 1.4% per annum. Furthermore, two sub-phases can be identified within this period. In the first sub-phase (from 1951-52 to 1964-65) GDP growth averaged about 4.1% per year against around 2.9% in the second sub-phase (from 1965-66 to 1979-80). In terms of policy regimes, the first sub-phase was relatively more liberal than the second, where restrictive controls on investments, both domestic and foreign, and on imports, due to the foreign-exchange constraint, reinforced regulations in the economy.

Table 3.1. Trend changes in GDP growth, 1951-52 to 1979-80

Dependent variable: Growth rate of GDP (market prices)						
	Coefficient	Standard error	t-statistics	P-value	R ²	0.60
Intercept	0.0360	0.0037	9.7	0.0000	Adj. R ²	0.57
Dummy 1980-81+	0.0175	0.0061	2.9	0.0059	Standard error	0.02
Dummy 1994-95+	0.0022	0.0007	2.9	0.0049	Log likelihood	147.7
Rainfall index	0.1730	0.0283	6.1	0.0000	F-statistic	19.9
Rainfall index(-1)	-0.0717	0.0285	-2.5	0.0147	Prob.(F-stat)	0.0000
Akaike information criterion		-4.92	Mean dependent variance		0.04877	
Schwarz criterion		-4.72	S.D. dependent variance		0.03026	
Hannan-Quinn criteria		-4.85	D.W. statistics		2.26	

Note: All variables are statistically significant at the 1% level of confidence, except lagged rainfall, which is significant at the 5% level.

Source: Authors' estimations.

Even though independent India favoured a mixed-economy framework, combining individual initiative and planning, this phase of India's development was characterised by a conscious effort to increase the role of the State in the economy. Chakravarty (1987) analysed the development strategy adopted during this phase. The underlying objective was to maximise the rate of output growth by increasing the rate of capital formation, principally in the public sector. This was the essence of the well-known Feldman-Mahalanobis model of development. In addition, there was a general pessimism regarding the economy's capacity to raise exports due to a reliance on primary goods with low-income elasticity of demand. As a result, and in view of the uncertainty associated with the magnitude and timing of foreign aid, India opted for a strategy of import substitution, with an increasing dependence on domestic resources to finance rising investment requirements.⁵

The decomposition of GDP growth within the first sub-phase (1951-52 to 1964-65) reveals growth of 1.6% per annum in total factor productivity (TFP) (Table 3.2). Of the 2.4% growth in net domestic product (NDP) per worker per annum, TFP growth contributed 68% while capital deepening (fixed capital per worker) contributed 13%, with the remaining accounted

for by good rainfall. During this sub-phase there was strong investment growth of 7.9% per annum, which was led by growth in government investment at 11.6% per annum. As a result, the share of the public sector in the total capital stock grew from an estimated 10.7% at the beginning of the sub-period to 35.7% at the end. Improvements in productivity were driven by growth in investment in machinery at 9.7% per annum. Government consumption growth exceeded growth in GDP and private consumption. Thus, the ratio of government to private consumption also rose sharply during this sub-phase.

Table 3.2. Comparative economic performance

Average year-on-year growth, in per cent

	Phase I: Indian socialism			Phase II: Market reforms
	1951-52 to 1964-65	1965-66 to 1979-80	1951-52 to 1979-80	1980-81 to 2003-04
GDP at factor cost	4.1	2.9	3.5	5.8
Per capita GDP	2.0	0.6	1.3	3.7
Poverty rate (HCR)	50.5 ¹	55.4 ¹	0.2	-0.8
Rainfall:				
Difference from mean	4.0	-2.7	0.5	-1.8
Contribution to growth	0.44	-0.48	-0.03	-0.08
TFP growth	1.6	0.2	0.9	2.7
Consumption				
Private	3.7	2.8	3.2	4.6
Government	6.6	5.1	5.8	6.0
Investment (total)	7.9	4.5	6.1	6.3
Public	11.6	3.7	7.5	2.4
Private	3.5	3.8	3.6	8.7
Investment (fixed)	6.5	3.2	4.8	6.2
Machinery and equipment	9.7	3.7	6.6	8.8
Structures	5.8	3.2	4.4	4.5
Private (fixed)	3.5	3.8	3.6	8.7
Electricity, gas and water	25.3	6.5	15.2	4.4
Railways	11.1	-5.1	2.4	3.7
Communications	13.1	6.8	9.7	11.5

1. Average level estimates.

Source: Estimates from National Accounts Statistics, Central Statistical Organisation and Planning Commission, Government of India.

The second sub-phase (1965-66 to 1979-80) was characterised by a further expansion of the State at multiple levels. With the large-scale

nationalisation of banks, oil companies, coalmines and various other industries, the control of the State in industrial activity, the reservation of sectors for the government, a tax system with high marginal rates and the presence of effective barriers to labour layoffs in the organised sector created rampant rent-seeking in socialist India. This undermined private enterprise and shackled economic growth. The economic system degenerated into what has been described as the “licence-permit-quota *raj*”. The decline in growth during this sub-phase was associated with a decline in TFP growth to 0.2% per annum.

The second sub-phase also witnessed the introduction of a redistributive dimension in India’s development strategy, with a direct attack on poverty. Intervention took the shape of a plethora of public programmes that were either directed at strengthening the endowments of the targeted individuals/households, by way of reallocation of land and distribution of income-generating assets, or aimed at influencing the flow of income/consumption to the targeted population through wage/employment programmes and all kinds of subsidies. Apart from the fact that these measures were inherently prone to leakages and vested patronage, public investment in elementary education and public health was not given the required attention. Many of the measures taken by the government in the 1970s were politically difficult to reverse in the subsequent periods. They continue to be a drag on the economy, with large areas still awaiting policy reforms even now.

On the whole, the analysis shows that GDP growth remained remarkably stable during phase I. If one adjusts for weather conditions, favourable in the first sub-phase and adverse in the second, GDP growth drops from 4.1% to 3.6% in the first sub-phase (1951-52 to 1964-65) and rises from 2.9% to 3.4% per annum for the second sub-phase (1965-66 to 1979-80). Despite some isolated measures, the role of competition as a disciplining force on producers and the concept of modern regulation, as opposed to bureaucratic control, were missing throughout this phase of economic development.

Growth phase II: 1980-81 to 2003-04

In the second phase of economic development, the GDP growth rate increased from 3.5% per annum to an average of about 5.8% per annum, with an evident acceleration from around the mid-1990s. Rising growth followed from the policy reforms that were introduced at first gradually and in a piecemeal manner in the 1980s to the more wide-ranging measures implemented from 1990-91 in the wake of the balance-of-payments crisis. However, the statistical break in trend growth that one expects to see

around 1990-91, after the significant change in the policy regime, is not conclusively visible until 2003-04. The regression estimates of GDP growth during the market reform phase (Table 3.1 and Table 3.3) corroborate this finding.

Trend growth is estimated at 5.4% per year in phase II. Though the trend variable is significant from 1991-92, it becomes most significant from 1994-95, when the underlying trend growth rate increased by 0.22% per annum. Thus, it can be argued that the effects of the 1990-91 balance-of-payments crises had dissipated by 1994-95 and that the beneficial effects of the reforms started to impart momentum to economic growth. The trend rate of growth in per capita income more than doubled to about 3.2% during the period from 1980-81 to 1993-94, compared with 1.4% per annum in phase I. It then increased by about 0.26 percentage points per annum from 1994-95.⁶

In terms of the policy regime, the second phase of economic development was characterised by a move from import substitution to export promotion and on to broader import liberalisation, coupled with freedom to compete, and increased competition in different markets and sectors of the economy. The early 1980s saw a gradual easing of controls on industry, a liberalisation of imports and a major depreciation of the rupee (in the mid-1980s), which boosted exports and GDP growth. Steps were taken to enable capacity to expand, to raise the threshold levels of investment beyond which licences were required and to liberalise investment in certain sectors. As a result, private investment picked up and the structure of investment moved towards machinery and equipment of improved quality due to greater access to imported capital goods.

In addition, the output gap, which had widened during phase I due to the policy-induced maintenance of economic growth below its potential, was closed during the 1980s. This was partly due to the supply-side stimulus provided by the moderation in oil-price rises and the demand-side stimulus associated with rising budget deficits. Thus, GDP grew above potential for a while in the 1980s and the outcome gap closed around 1990-91.

The economic reforms that started in 1991-92 were more systematic and wide-ranging than the previous ones. They covered the fiscal, financial, industrial and external sectors of the economy and were aimed at enhancing the competitiveness of Indian industry and bringing about greater transparency and discipline in the conduct of macroeconomic policy. Not only was the industrial licensing regime phased out, but import tariffs were also lowered considerably. Moreover, the economy was opened to external competition through a dismantling of import licenses and the opening of a large number of sectors to foreign investment. The tax system was reformed,

and there was a gradual move towards fiscal consolidation and a guarded liberalisation of the financial sector, particularly for domestic private enterprises (Malhotra and Kumar, 1995).

A change in the central (federal) government did not hold back the opening of the economy to greater (domestic and foreign) competition. Imports of consumer goods were liberalised and tariffs were further reduced, especially the peak duty rates. A policy for privatisation was formulated, including divestiture and outright sale of public enterprises. The administered price regime for petroleum products was dismantled for a while. The insurance sector was opened to private participation and to limited foreign investment. Similarly, the banking sector was opened to competition from domestic and foreign private players. Most interest rates were liberalised and certain capital account transactions were deregulated. More importantly, infrastructure sectors, such as telecommunications, saw considerable policy reforms and there was a move to speed up the construction of highways and to reform the power sector with the enactment of the Electricity Act of 2003. The Urban Land Ceilings and Regulation Act of 1976 was also repealed.

The average GDP growth rate was 5.8% per annum in phase II, significantly higher than in phase I. Per capita GDP growth almost tripled to 3.7% per annum. This was accompanied by an acceleration in private consumption from 3.2% per annum in phase I to 4.6% per annum in phase II. As a result of higher growth in income and private consumption, the proportion of the population living below the poverty line declined by 0.8 percentage points per annum during phase II. Thus, the shift in policy led to a dramatic improvement in economic growth and poverty reduction.

The improvement in per capita GDP was driven by a tripling of the rate of growth of TFP, from an average of 0.9% per annum in phase I to 2.7% per annum during phase II (Table 3.2). TFP growth experienced a temporary setback due to the balance-of-payments crisis but recovered rapidly. Though the rate of growth of investment remained more or less the same as in phase I at 6.3% per annum, the growth of capital stock accelerated from 3.6% to 5.4% per annum. Consequently, the rate of capital deepening (i.e., the rate of growth of capital per worker) doubled to 2.7%. There was also a shift in the structure of investment from government to the private sector, with the growth rate of the former falling to one-third and that of the latter doubling from their respective phase I levels. The growth rate of investment in machinery increased from 6.6% per annum in phase I to 8.8% per annum in phase II. This was in line with economic theory, which suggests that a liberalisation of imports reduces the price of tradable goods (e.g., machinery) relative to that of non-tradable goods (such as structures). Consequently, the share of machinery in fixed investment rose throughout

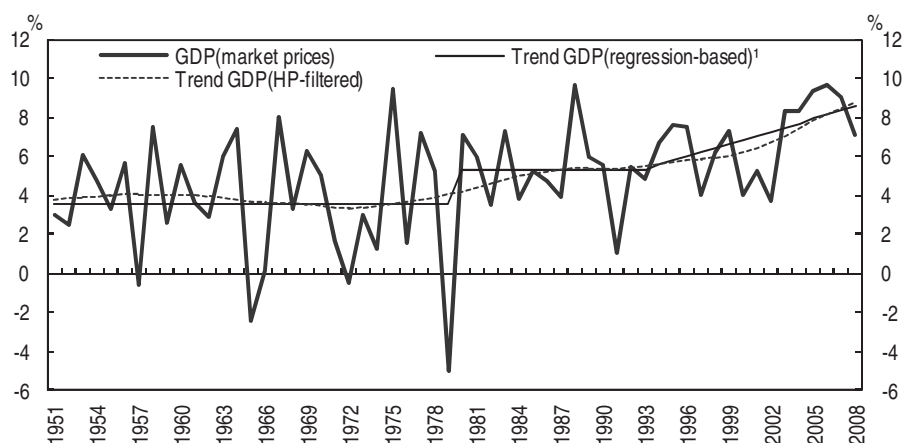
the 1980s and much of the 1990s. The technology embodied in new machinery and equipment is an important determinant of productivity growth and played a significant role in the recovery of TFP growth in phase II. Moreover, the change in the pattern of investment was supported by a change in the pattern of demand, with faster private consumption growth surpassing government consumption growth.

The impacts on GDP growth of the piecemeal policy reforms of the 1980s and the more wide-ranging reforms of the 1990s did not differ much. Average GDP growth was 5.5% per annum in the sub-period 1980-81 to 1991-92, against 6.1% per annum in the sub-period 1992-93 to 2003-04. Virmani (2005 and 2006a) suggests that in a heavily protected economy major import liberalisation will initially result in a slowing of measured productivity growth. Productivity growth would accelerate only after a lag, leading to what has been labelled as the J-curve of liberalisation and productivity (Figure 3.1). This is because, *firstly*, with the opening of a hitherto closed economy, a reduction of tariffs and a phasing-out of quantitative restrictions, there is a re-balancing of historically distorted prices, which raises the relative price of previously slow-growing sectors. While there is little, if any, evidence of this adjustment in relative prices resulting in any large-scale changes in the composition of domestic industries, there is evidence of changes in product lines within industries that try to anticipate new demand and comparative advantages in a new environment. It results in an immediate reduction in capacity utilisation in unprofitable product lines, which persists due to capital immobility until depreciation eliminates the excess capacity. Thus, there is obsolescence of some product lines and their associated capital stock, which would still be part of measured capital. *Secondly*, there are gestation lags in new investments, and the development of new products requires adaptation of technology and production processes - the S-curve of technology diffusion - during which time productivity growth slows down. *Thirdly*, it also takes time to develop complementary inputs and to train the human resources required by the new capital. Moreover, technology-specific skills are lost when a new technology replaces an old one, resulting in a temporary decline in labour productivity.⁷

Virmani and Hashim (2009) and Hashim *et al.* (2009) find that the pattern of TFP growth in manufacturing is broadly consistent with the J-curve effect. One would expect that the weakest effects would be in the sub-sectors that were globally competitive at the time of trade liberalisation and the strongest effects in those where the technological gap between domestic and global industries was largest. Such is the case, for example, in textiles and machinery, where the observed effect of trade liberalisation on

TFP growth was minimal. By contrast, the effect was quite pronounced in motor vehicles and food products.

Figure 3.1. Rising growth: The J-curve of liberalisation and productivity, 1951-2008

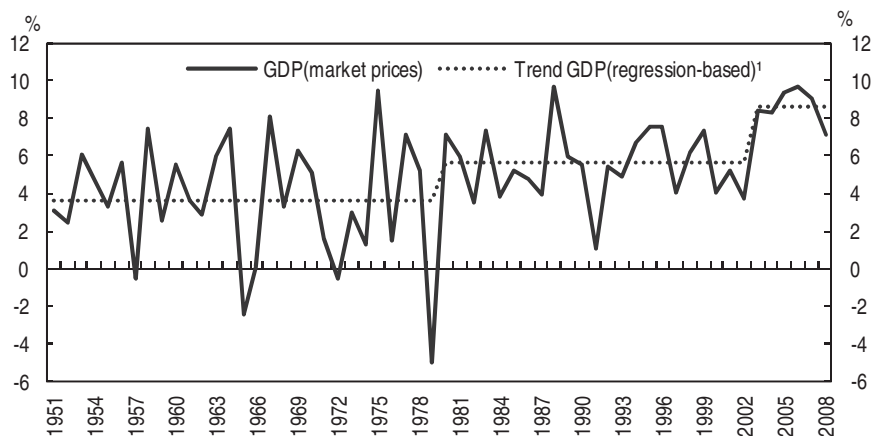


Note: Trend GDP is based on the regression results reported in Table 3.1.

Source: National Accounts Statistics, Central Statistical Organisation and Planning Commission, Government of India and authors' estimations.

Growth dynamics and acceleration

There is a statistically significant break in GDP growth around 2003-04. The regression results (Table 3.3) suggest that trend GDP growth, which was around 5.6% in phase II, increased to over 8.6% around 2003-04, leading the economy into a high-growth phase. At three percentage points, this statistical break marks a higher jump in the growth rate vis-à-vis phase II, where trend GDP growth had increased by about two percentage points over the preceding period.

Figure 3.2. Rising trend growth, 1951-2008

1. Trend GDP is based on regression results reported in Table 3.1.

Table 3.3. Trend changes in GDP growth (phase III), 1951-52 to 2008-09

Dependent variable: Growth rate of GDP (market prices)

	Coefficient	Standard error	t-statistics	P-value	R ²	0.62
Intercept	0.0360	0.0036	9.9	0.0000	Adj. R ²	0.59
Dummy 1980-81+	0.0201	0.0055	3.6	0.0006	Standard error	0.02
Dummy 2003-04+	0.0302	0.0089	3.4	0.0013	Log likelihood	148.9
Rainfall index	0.1686	0.0277	6.1	0.0000	F-statistic	21.3
Rainfall index (-1)	-0.0704	0.0279	-2.5	0.0147	Prob.(F-stat)	0.0000
Akaike information criterion			-4.96	Mean dependent variance	0.0488	
Schwarz criterion			-4.78	S.D. dependent variance	0.0303	
Hannan-Quinn criteria			-4.89	D.W. statistics	2.32	

Note: All variables are statistically significant at the 1% level of confidence, except lagged rainfall, which is significant at the 5% level.

Source: Authors' estimations.

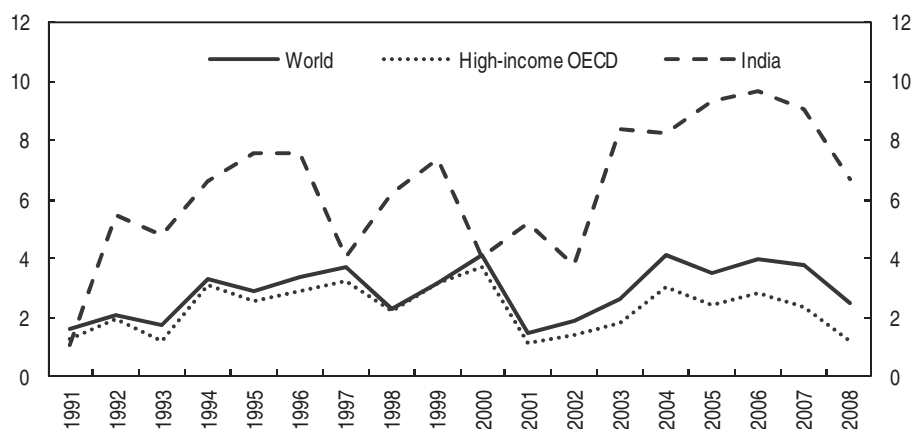
Real GDP growth (at both market prices and factor costs) averaged close to 9% in the period 2003-04 to 2007-08. Per capita GDP growth more

than doubled from a little less than 3.5% per annum to around 7.2% per annum. If this trend is maintained, per capita GDP will double in ten years, placing India among the select group of about a dozen medium-to-large economies (such as China, Chinese Taipei, Greece, Hong Kong China, Japan, Portugal, Singapore, South Korea and Thailand) that have averaged per capita GDP growth of 7.2% or more for at least a decade during their high-growth trajectory. There are good reasons to believe (discussed in the following section) that the slowdown of 2008-09 and 2009-10, when GDP grew at 6.7% and an estimated 7.2% per annum (according to CSO advance estimates) respectively, due to the impact of the global recession, marks only a temporary break in this trend.

In the last two decades, fluctuations in India's economic growth were not closely linked to cycles in high-income OECD countries (Figure 3.3).⁸ The upward hump in Indian growth between 2003-04 and 2008-09, however, seems to coincide with a similar rise in global and OECD growth. Similarly, the sharp decline in India's GDP growth to around 6% in the second half of 2008-09 from 7.8% in the first half of 2008-09, following the US and global financial meltdown in August 2008, seems to be following the global pattern. This has led many analysts to believe that growth in emerging markets and developing countries had been driven by global excess liquidity/monetisation, the associated capital flows from developed countries and demand for commodities. Consequently, with the bursting of the asset price bubble and due to the painful process associated with deleveraging and the collapse of capital flows, the initial impact would be a growth slowdown followed by a return in the medium term to growth rates that prevailed before 2004-05. Some analysts concluded that India's growth would fall to around 4.0-4.5% during 2009 and perhaps even 2010, before reverting to around 5.0-5.5% over the medium term. An analysis of recent growth suggests that this outcome is unlikely. Indeed, it is instructive to analyse trends in demand and supply in recent years to understand the observed acceleration in GDP growth.

Figure 3.3. GDP growth: International comparisons, 1991-2008

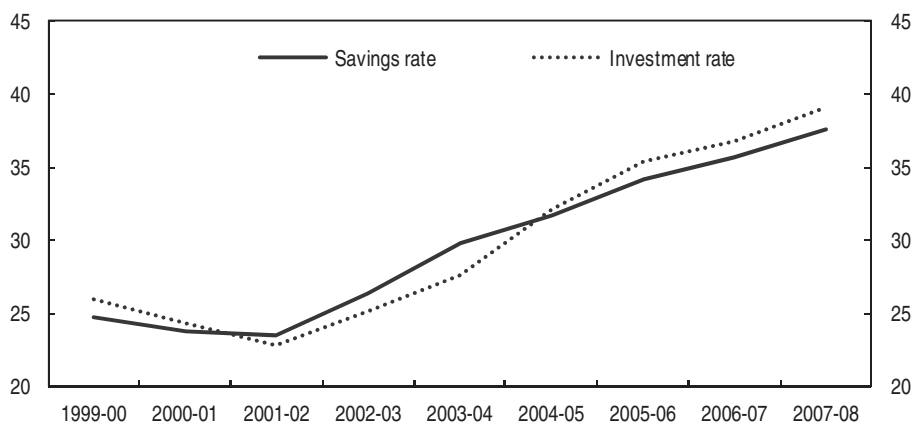
Year-on-year GDP growth, in per cent



Source: World Bank.

Figure 3.4. Investment and savings, 1999-2000 to 2007-08

In per cent of GDP



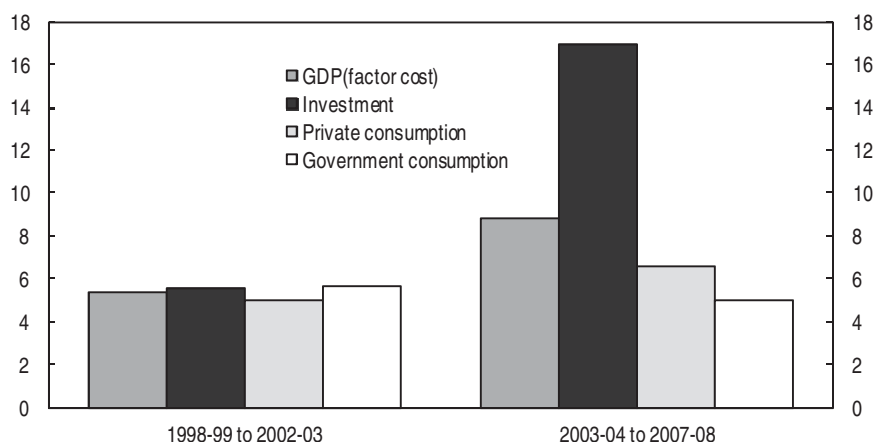
Source: National Accounts Statistics, Central Statistical Organisation and Planning Commission, Government of India.

*Aggregate demand and supply*⁹

The increase in the trend growth rate of the Indian economy since around 2003-04 is due to significant improvement in the country's domestic investment and saving rates.¹⁰ The investment rate increased from 25.2% in 2002-03 to 39.1% in 2007-08 (Figures 3.4 and 3.7). The private corporate sector contributed almost four-fifths of this increase, with the rest coming from the public sector. In terms of growth drivers, there was a significant increase in the growth rate of investment, which nearly tripled from an average of around 6% in the five-year period leading up to 2002-03 to nearly 17% in the next five years (Figure 3.5).

Figure 3.5. GDP, investment and consumption

Year-on-year growth rates (5-year averages), in per cent

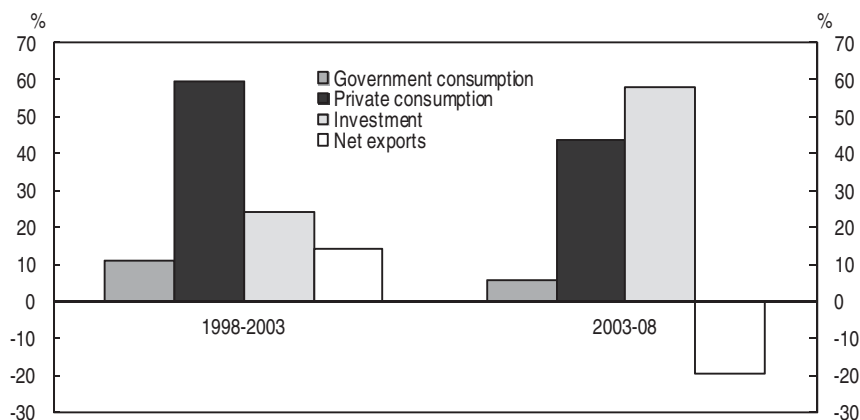


Source: National Accounts Statistics, Central Statistical Organisation and Planning Commission, Government of India. CSO (NAS).

Private consumption has also been supportive, with its growth rate increasing from less than 5% in the first period to nearly 7% in the second period, although its contribution to growth has come down below that of investment for the first time (Figure 3.6). While private consumption accounted for nearly 60% of growth in the period 1998-99 to 2003-04, against less than 40% in the period 2003-04 to 2007-08, the contribution of investment more than doubled from about 24% in the first period to over 58% in the second. Moreover, this spurt in investment growth was driven primarily by private fixed investment, rather than a build-up of inventories (Figure 3.7). There was, therefore, an increase in the productive

capacity of the economy. The growth rate of government consumption slowed significantly in the period 2003-04 to 2007-08, reflecting the government's adherence to the Fiscal Responsibility and Budget Management (FRBM) Act of 2003, which had laid down annual targets for the reduction of budget deficits. As a result, the contribution of government consumption to growth fell by half in the second period.

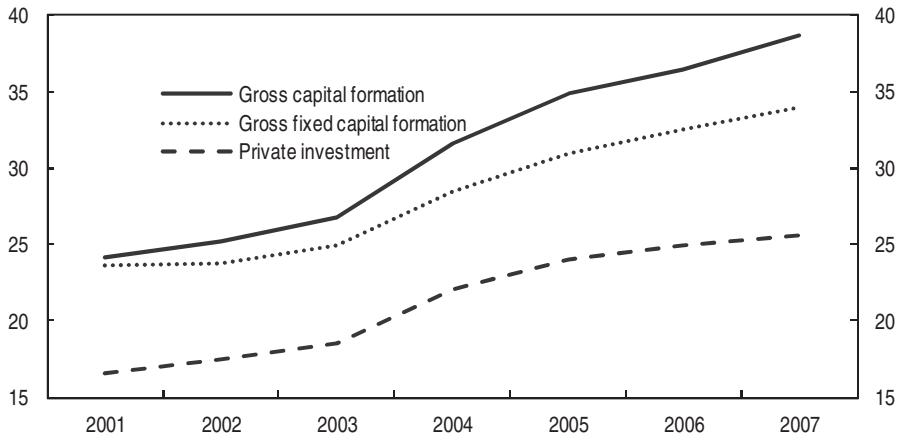
Figure 3.6. Contributions to GDP growth, 1998-2003 and 2003-08



Source: National Accounts Statistics, Central Statistical Organisation and Planning Commission, Government of India.

Figure 3.7. Trends in investment, 2001-07

In per cent of GDP



Source: National Accounts Statistics, Central Statistical Organisation and Planning Commission, Government of India.

It is also worth noting, particularly in the context of the global slowdown, that the contribution of the external sector (i.e., net exports of goods and services) to growth has been negative since 1990, except for a brief period, from 1998-99 to 2002-03 (Figure 3.6). Although India's integration into the world economy has been surprisingly rapid over the last decade, with foreign trade (exports and imports of goods) doubling from 18.6% of GDP in 1997-98 to close to 40% of GDP in 2008-09, the economy remains much less dependent on exports as a demand-side driver of growth than some other emerging-market and developing countries. The expansion in demand that supported the significant increase in GDP growth was predominantly domestic and primarily involved a rapid rise in private investment.

Gross domestic savings increased from 26.4% of GDP in 2002-03 to 37.7% of GDP in 2007-08 (Table 3.4). Both the private and public sectors contributed to the increase in domestic savings, the former supporting more than half of the increase, with much of it coming from corporate savings. Household savings contributed 10% to the increase. During this period, the share of the public sector in gross domestic savings increased substantially.

Table 3.4. Savings and investment rates, 2002-03 and 2007-08

In per cent of GDP		
	2002-03	2007-08
Savings	26.4	37.7
Private	27.0	33.2
Households	23.2	24.3
Corporate sector	3.9	8.8
Public	-0.6	4.5
Investment (total)	25.2	39.1
Investment (fixed)	25.2	38.7
Private	18.6	28.5
Households	12.6	12.6
Corporate sector	5.9	15.9
Public	6.1	9.1
Current account balance	1.2	-1.4

Source: National Accounts Statistics, Central Statistical Organisation and Planning Commission, Government of India.

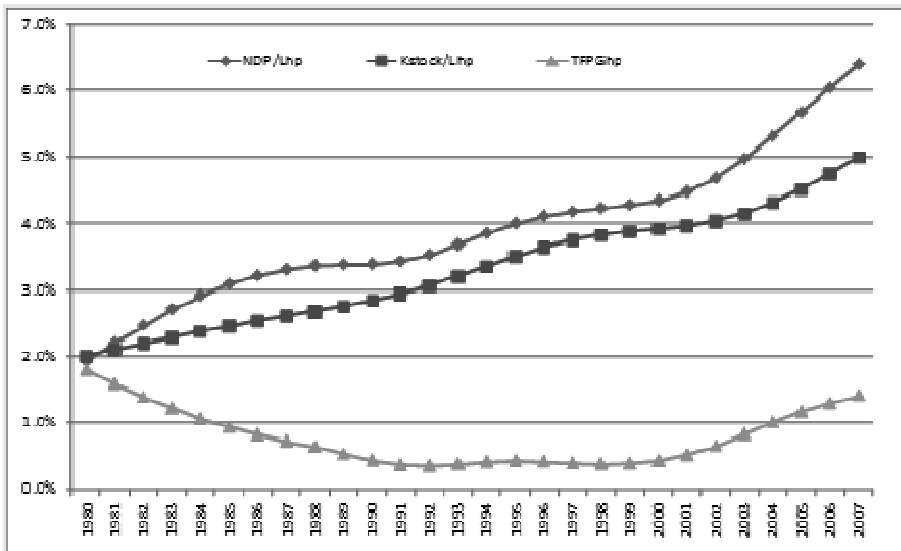
From 2001-02 to 2003-04, the saving rate exceeded the investment rate, resulting in an increasing current account surplus, which, however, reverted to deficit soon thereafter (Figure 3.4). The current account balance turned from an average of 0.9% of GDP during 1998-99 to 2002-03 to an average of -0.4% of GDP during 2003-04 to 2007-08, indicating a modest contribution of foreign savings to aggregate investment and GDP growth. Thus, a significant increase in foreign capital inflows was important not so much for bridging the domestic savings-investment gap, but for facilitating the intermediation of financial resources to meet the growing needs of the domestic industry and services for long-term and risk capital. Moreover, though domestic funds were available, they were expensive relative to foreign funding.

Even in 2007-08, when it peaked, the current account deficit was only about 1.4% of GDP. The rest of the capital inflows, almost 7% of GDP, were rechanneled abroad in the form of foreign exchange reserves. However, these capital flows in excess of the current account deficit reflect the importance of external financing and India's financial integration with the rest of the world. Further, there was a sharp increase in net inward and outward FDI after 2005-06, which is indicative of the increased confidence of foreign companies in the growth potential of the Indian economy and in the increased capability and confidence of domestic entrepreneurs in meeting global competition. Indeed, India's financial integration with the world was as rapid as its trade globalisation, if not more so. As a broad

measure of globalisation, the ratio of total external transactions (gross current account flows plus gross capital flows) more than doubled over a ten-year period from 46.8% of GDP in 1997-98 to 117.4% of GDP in 2007-08.

The increasing competitiveness of the Indian economy is reflected in rising TFP growth from 2001-02 (Figure 3.8). The near stagnation of TFP growth in the 1990s is explained on the basis of a J-curve effect of liberalisation on productivity (discussed above). Once the transition to a more competitive structure had been completed, productivity rose faster. Thus, from around 2001-02 there was a rise in TFP growth to about 1.4% per annum in 2007-08. This was accompanied by a rise in the rate of growth of the capital-labour ratio from less than 4% to about 5% during this period.

Figure 3.8. Sources of growth: Capital deepening and productivity, 1980-2007



Source: National Accounts Statistics, Central Statistical Organisation and Planning Commission, Government of India.

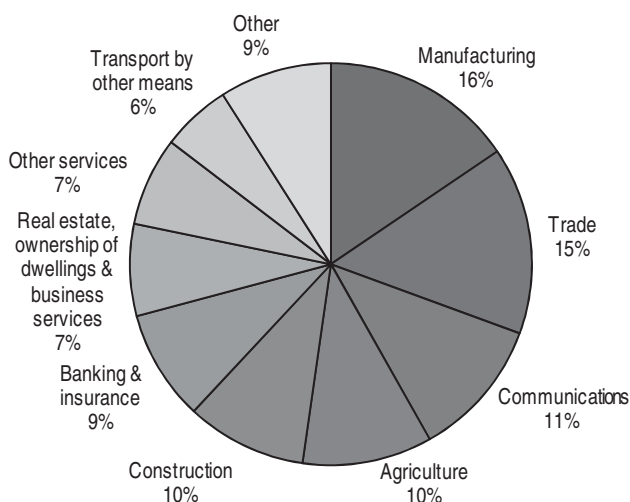
Sectoral growth drivers

In terms of sectoral composition, manufacturing, trade, communications, agriculture and construction have been the major contributors to growth

(Figure 3.9). This is contrary to popular perception, which associates the pick-up in growth with the performance of services, in particular with sustained growth in information and communications technology (ICT). During the period 2003-04 to 2007-08, agriculture grew by more than 4% per year. The production of food grains increased by about 10 million tonnes each year to reach an all-time high of over 230 million tonnes in 2007-08. Manufacturing, registered as well as unregistered, grew by 9.5% per annum and the communications and construction sectors grew by 27% and 13.5% per annum, respectively, in the period 2004-05 to 2007-08. The growth of investment in manufacturing was around 30% per annum. Similarly, the capital stock at end-2007-08 was nearly one-and-a-half times higher than at end-2002-03 in construction, manufacturing and in trade, hotels and restaurants. Some of these sectors recorded significant efficiency gains, which are captured somewhat crudely by the incremental capital-output ratios, benefiting from a competitive environment and technological upgrading.

Figure 3.9. Composition of sectoral growth

Contributions to growth, 2002-03 to 2007-08



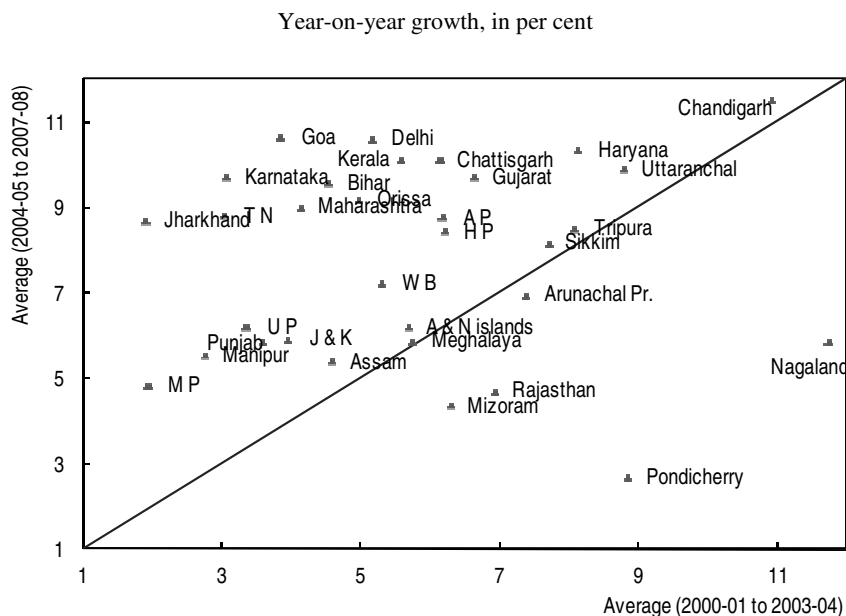
Source: National Accounts Statistics, Central Statistical Organisation and Planning Commission, Government of India.CSO (NAS).

Manufacturing, agriculture and four other sectors (trade, communications, construction, and banking and insurance) accounted for

nearly 70% of total growth during 2002-03 and 2007-08. Since half of these sectors employ skilled/semi-skilled labour and the other half (agriculture, construction and trade) are traditional, labour-intensive sectors, it appears that the demand for both skilled and semi-skilled labour would have increased during the period (the next round of employment data after 2004-05 becomes available only in 2011).

Spatial dimension of growth¹¹

Nationwide GDP growth increased substantively from 5.6% per annum in sub-period I (2000-01 to 2003-04) to 8.9% per annum in sub-period II (2004-05 to 2007-08). A total of 27 out of 32 states and Union Territories improved their performance in sub-period II (i.e., the states located above the 45-degree line in Figure 3.10). Of these 27 states and Union Territories, nine (Delhi, Karnataka, Tamil Nadu, Jharkhand, Bihar, Maharashtra, Goa, Madhya Pradesh and Manipur) more than doubled their growth rates in sub-period II. Chandigarh was the only jurisdiction that maintained a two-digit growth rate in both periods.

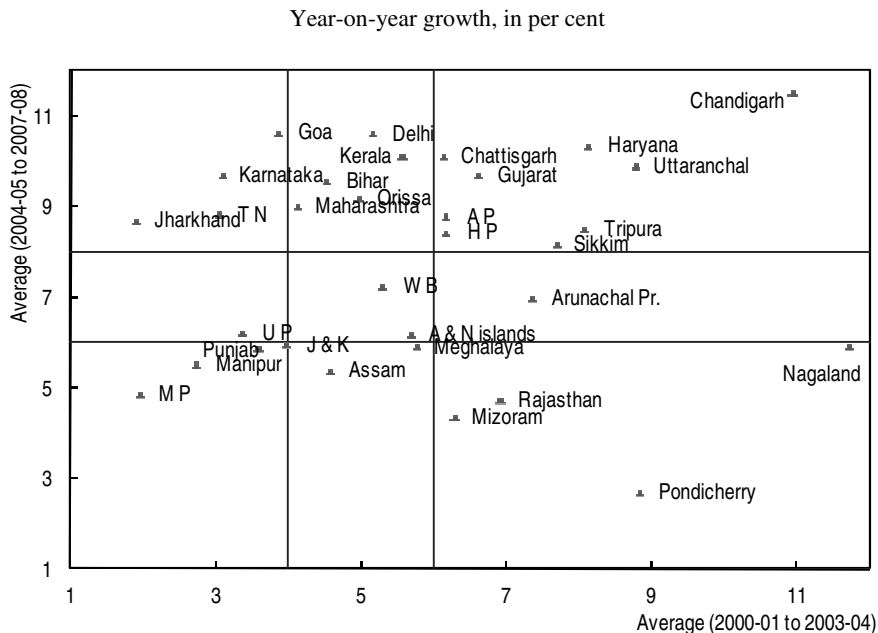
Figure 3.10. Trends in state-level growth, 2000-01 to 2003-04 and 2004-05 to 2007-08

Source: Directorates of Economics and Statistics, and authors' calculations.

It is instructive to group the states and Union Territories in low-, medium- and high-growth categories across the two sub-periods (Figure 3.11). Although Madhya Pradesh and Manipur managed to more than double their growth rates in sub-period II, this performance was not enough to pull them out of the low-performing category (i.e., below the nationwide average of 4% per annum in sub-period I and below 6% per annum in sub-period II). In the case of Rajasthan, Pondicherry, Nagaland and Mizoram, the high-growth rates of sub-period I (i.e., above 6% per annum) could not be sustained in sub-period II (i.e., above 8% per annum). Indeed, these four jurisdictions fell from the high-performing category in sub-period I to the low-performing category in sub-period II. Similarly, Assam and Meghalaya moved from the medium-performance category (i.e., growth rates between 4% and 6%) in sub-period I to the low-performance category in sub-period II. It is somewhat of a surprise to see Punjab among the low-performing states in both sub-periods, even

though it improved its growth rate from about 4% to nearly 6%. Haryana, Uttarakhand, Tripura, Sikkim, Gujarat, Himachal Pradesh, Andhra Pradesh, Chhattisgarh and Chandigarh retained their position among the high-performing regions in both sub-periods.

Figure 3.11. Transition in state-level growth, 2000-01 to 2003-04 and 2004-05 to 2007-08



Source: Directorates of Economics and Statistics, National Accounts Statistics, Central Statistical Organisation and Planning Commission, Government of India, and authors' calculations.

Almost all the jurisdictions where growth in sub-period II was less than in sub-period I are the traditional low performers. None of these states has sustained high growth over extended periods of time in the past. Also, more than half of the nine high-performing states/Union Territories that have retained their position in the high-performing category in both sub-periods are the more developed ones. Moreover, the average growth rates among the traditional high- and low-performers have risen over the last two decades. The analysis therefore suggests that there is considerable scope for improving growth (for instance, to the levels of the first sub-period) in many traditionally low-performing states and Union Territories. More importantly, an improved growth climate appears to be benefiting all jurisdictions,

although growth rates continue to differ, and regional variations appear to be declining.

Policies for sustaining high growth: Recent slowdown and recovery

The challenge of sustaining high growth has become more complex because of increased globalisation. Developments in the United States and other industrialised economies since 2007 and their impact on the emerging-market and developing economies, including India, in 2008 and 2009 are the most recent examples of this reality. In general, the history of economic growth in a wide range of countries across the world and over different periods bears testimony to the fact that such setbacks are common. However, the experience of high-growth economies suggests that these difficulties can be overcome by appropriate, pragmatic and expeditious action to address the problems that are exposed by external shocks and by seizing the opportunities that they open up. This is what distinguishes the few economies that sustain growth over decades, as they successfully return to high growth after temporary shocks, from the many that fail to adjust in time and suffer the consequences.

Over the last three to four years, the Indian economy has been buffeted by three major external challenges. *Firstly*, there was a sudden surge in capital inflows (a positive shock), which peaked in the last quarter of 2007-08, posing a serious challenge to monetary policy and threatening price stability. *Secondly*, an inflationary explosion in global commodity prices, which began even before the first challenge had ebbed, that hit the economy with great force in the middle of 2008. It shifted the inflationary impulse from demand to supply, narrowing the policy options for ensuring price stability. There was barely any time to deal with this problem before the third challenge, the global financial meltdown and collapse of international trade, hit the world economy with severity.

The global crisis affected India in its initial phase primarily through deleveraging and risk aversion, which resulted in a significant reversal of capital flows of about USD 16 billion during the five months (February to June 2008) following the end of the “positive shock” period in January 2008. Subsequently, with the collapse of Lehman Brothers in mid-September 2008, there was a crisis of confidence, which led to the seizure of the interbank market and the associated effects on trade financing. Together with slackening global demand and declining commodity prices, it resulted in a fall in exports and the financial crisis spread to the real economy. The impact on the Indian economy was less severe than elsewhere due to the lower dependence of the economy on exports and the fact that growth relied on domestic sources and the service sector. However, the

global crisis led to a growth slowdown and a significant deterioration in business sentiment. GDP growth had averaged 7.8% in the first half of 2008-09 and declined to under 6% in the second half of the year. The investment growth rate (as now revealed on the new NAS series with base year 2004-05) plunged to -2.4%.¹²

It did not help matters that all this coincided with the political cycle of general elections (April to May 2009), which, as one would expect, imposes high political costs and increases uncertainty. There was apprehension that the economic slump would persist for some time in fiscal year 2009-10, as the full impact of the recession in the developed world worked through the system. Moreover, a delayed and severely sub-normal southwest monsoon (June to September 2009), with its implications for food production and prices, as well as for the demand of non-agricultural goods, added to the overall uncertainty.

These developments reinforced the short-term trade-off between inflation and growth and the challenges related to the use of monetary versus fiscal policy, their relative effectiveness and coordination between the two, and the medium-term policy options of returning to a high-growth path. The latter included the tension between short- and long-term fiscal policy, the immediate longer-term imperatives of monetary policy, and the policy and institutional reforms necessary for restoring high growth.

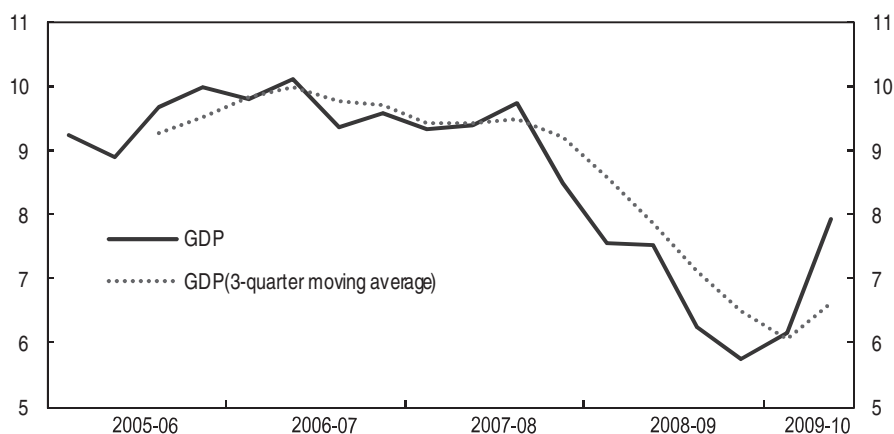
Within the span of a year, the short-term challenges arising from these global shocks were to a large extent met. The economy posted a remarkable recovery, not only in terms of its overall growth but, more importantly, in terms of its fundamentals, which justify optimism about growth in the medium term. Nevertheless, there has been some concern about inflation, especially food-price inflation, since the second half of 2009-10 when it reached double digits. A significant part of this inflation can be explained by supply-side bottlenecks in some of the essential commodities, which have been precipitated by the delayed and sub-normal southwest monsoon. Part of it may be due to long-term problems related to a lack of competition in the entire agriculture supply chain from inputs and farming to retailing. Since December 2009, there have been signs of these high food prices, together with rising non-administered fuel prices, spreading to other non-food items and creating concern about higher-than-anticipated headline inflation over the next few months. In addition, if the policy and regulatory measures that have the effect of restricting competition in agriculture are not addressed, the inflationary consequences may be more long lasting.

The turnaround in growth came in the second quarter of 2009-10 when GDP grew by 7.9% on an annual basis (Figure 3.12). According to the advance estimates of GDP for 2009-10, released by the CSO, the economy

is expected to grow by 7.2% in 2009-10, with the industrial and service sectors growing at 8.2% and 8.7% respectively. This recovery is impressive for at least three reasons. *Firstly*, it has come about despite a decline of 0.2% in agricultural output, which was the consequence of sub-normal monsoons. *Secondly*, it foreshadows renewed momentum in the manufacturing sector, which had seen a continuous decline in growth rates for almost eight quarters since 2007-08. Indeed, growth in manufacturing output more than doubled from 3.2% in 2008-09 to 8.9% in 2009-10. *Thirdly*, there has been a recovery in the growth rate of gross fixed capital formation, which had declined significantly in 2008-09. While private and government final consumption acted as a drag on private demand, there has been a pick-up in the growth of private investment. There has also been a turnaround in merchandise export growth since November 2009, following a decline over 12 consecutive months.

Figure 3.12. Trends in GDP, 2005-06 to 2009-10

Year-on-year growth, in per cent



Source: National Accounts Statistics, Central Statistical Organisation and Planning Commission, Government of India. CSO (NAS).

As anticipated by one of the authors,¹³ the moderation in the decline of the GDP growth rate in the second half of 2008-09 and its subsequent recovery in 2009-10 were primarily a result of the boost to consumption that was provided by the fiscal stimulus. The fiscal expansion undertaken by the central government as part of the policy response to counter the impact of

the global economic slowdown in 2008-09 was maintained in fiscal year 2009-10. The expansion took the form of tax relief to boost demand and increased expenditure on public projects to create employment and public assets. The net result was an increase in the budget deficit from 2.6% of GDP in 2007-08 to 5.9% of GDP (new series) in 2008-09 (provisional) and 6.5% of GDP in the budget estimates for 2009-10 (against 6.8% of GDP in the old NAS series, as reported in the budget documents). Thus, the fiscal stimulus amounted to 3.3% of the GDP in 2008-09 and 3.9% in 2009-10 from the level of the fiscal deficit in 2007-08.¹⁴

The relative success of the fiscal stimulus in supporting effective demand, particularly consumption in 2008-09 and 2009-10, could be traced to its composition. The approach of the government was to increase disposable income by reducing indirect taxes (excises and the service tax) and by expanding public expenditure on programmes, such as the National Rural Employment Guarantee Scheme, and on rural infrastructure. Implementation of the revision to the salaries and pensions of civil servants and a debt relief for farmers that took place in 2008-09 and 2009-10 also contributed. The fact that the approach worked is attested by the GDP growth rate, and more specifically by the growth of private consumption demand in 2008-09 and 2009-10.

Consumption expenditure, by its very nature, has short lags and affects demand quickly, with little or no effect on productivity, while productive infrastructure expenditure takes much longer to translate itself into effective demand. The recovery having taken root, there is a case for the government to review its fiscal expansion and move towards a fiscal consolidation that is aimed at encouraging medium-term productivity gains and making up for the decline in investment growth in certain sectors of the economy. It is now time to focus fiscal policy on its medium-to-long-term growth objectives. There has to be a certain urgency in pursuing fiscal reforms that will bring government balances rapidly back to sustainable levels. These reforms have to cover tax policy, as well as public spending on ballooning subsidies on food, fuel (petroleum derivatives) and fertilisers.¹⁵

In the medium-term context, an analysis of the impact of these shocks brings to the fore the importance of pursuing reforms, including in the financial sector, to make the economy more competitive and the regulatory and oversight systems more efficient and responsive to new developments.¹⁶

Given the nature of the global financial crisis and the deleveraging process that is likely to follow, global private capital flows are set to decline and remain low and uncertain for a few years. This may affect capital flows into India and consequently the availability of risk capital. It is therefore imperative to rapidly improve domestic financial intermediation to channel

the potentially large domestic savings to entrepreneurs who can make the best use of these savings. There are other issues in the financial sector, such as those related to the development of long-term debt instruments and the deepening of corporate debt markets, that would contribute to improving resource flows to infrastructure investments, improving futures markets for better price discovery and regulation, encouraging financial inclusion through the use of technology and overcoming institutional hurdles to better intermediation.

To sustain high growth over a long period of time, India needs an adequate, affordable supply of energy. The present interregnum of lower global demand and lower fuel prices provides an opportunity to liberalise fuel prices. It would make demand more responsive to price changes and facilitate fiscal management when global prices rise again. Moreover, there is a need for creating incentives for the development of non-polluting energy sources, such as solar power, to replace environmentally harmful alternatives, including fuel wood and kerosene.

Productivity gains are vital for sustaining the growth of Indian industry. This is especially the case in the present global context of excess capacity in manufacturing and tradable consumer services in the medium term, which puts downward pressure on Indian investment in these sectors. It is therefore important to remove any policy obstructions and institutional constraints on domestic productivity enhancement in these areas. This includes reviewing the sector limits on FDI, the fragmentation of labour laws and issues, such as land use, the supply and development of urban land and utilities, as part of a comprehensive urban development policy, and a reform of policies relating to agriculture. There is also a need for augmenting the skills that will be in increasing demand as the economy returns to a high-growth path. This calls for a liberalisation of education and the creation of an effective, modern regulatory system, as well as skills development.

Conclusions

The Indian economy is in a far better position in February 2010 than it was in February 2009. It is fast returning to the trend growth rate of its most recent growth phase. The economy has responded well to the measures that were taken as a part of the response to the global slowdown from the third quarter of 2008 and is on its way to regaining its pre-crisis growth momentum. Looking ahead, there are some positive developments emerging from the recovery, which reflect the underlying strengths of the economy. At the same time, there are concerns related to uncertainties - domestic as well as international - and some policy risks that will have to be managed prudently, if the economy is to sustain high growth in the coming years.

There are several features of India's growth experience over the last year that justify optimism about a rapid return to a high-growth path. To begin with, there has been a revival in investment and private consumption demand, although the recovery has yet to attain the momentum of the pre-2008 period. Also, despite the continued sluggishness in developed economies, Indian exports have recorded impressive growth since November 2009. In addition to a favourable base effect, there is a revival of industrial growth, which is reminiscent of the experience of 2003-04 to 2007-08. More importantly, infrastructure services, including railway transport, power, telecommunications and, more recently but to a lesser extent, civil aviation, have shown a remarkable turnaround since the second quarter of 2009-10. The favourable capital market conditions, with an improvement in capital flows and business sentiment, as reflected in the Reserve Bank of India's business expectations survey, are also encouraging. Finally, with the letdown of the Kharif (summer) crop now past and the likelihood of an above-average Rabi (winter) crop ahead, the recovery appears deep and broad-based enough to sustain higher growth in fiscal year 2010-11.

At a more fundamental level, the size of India's domestic market, the stability of its financial system, its capacity to sustain high savings and investment over an extended period of time (like the East Asian high-growth economies)¹⁷ and a policy of gradual liberalisation of the capital account have all created an inherent strength in the economy. The downward adjustment in the savings and investment rates in the revised NAS series for the recent years, with GDP growth remaining unchanged, implies an increase in the overall productivity of the economy, which is indeed a very encouraging sign for sustaining growth over an extended period of time. The drop in the savings rate (in the new series) from 36.4% in 2007-08 to 32.5% in 2008-09 was expected.¹⁸ Although there was significant public sector dissaving on account of the fiscal measures taken in response to the growth slowdown, the contribution of the household and private corporate sectors remains largely unchanged. Moreover, there is a significant likelihood of a recovery in all three sectoral contributions to the overall saving rates. Fiscal consolidation with enhanced revenues through the rationalisation of both direct and indirect taxes, tax buoyancy and disinvestment proceeds should help to raise public saving. The pick-up in corporate earnings, as well as higher profit margins, should encourage an improvement in corporate saving. In the medium term, with better financial inclusion and intermediation, and given the demographic dividend of the Indian population, there should be a further increase in the saving rate of the household sector.

Uncertainties are primarily related to the global recovery, especially as it affects India's main export destinations. Some concerns remain about high unemployment, growing fiscal deficits and levels of credit availability, which cast a shadow over the recovery, as well as the effects of a rollback of the fiscal stimulus and monetary accommodation in these economies. With the global recovery taking root, there could be some uncertainty as a result of rising commodity prices, particularly for fuel. The principal uncertainty on the domestic front relates to the southwest monsoon and its impact on the Kharif crop in the agricultural season 2010-11.

There are at least two inter-related policy risks that may have a bearing on the consolidation of the recovery from the second quarter of 2009-10. The first relates to the timing and the sequencing of the exit from fiscal stimulus. While it is imperative to go back to the path of fiscal consolidation that served the economy well in the pre-crisis period, there may be some concern about the strength of the recovery currently underway. Both private consumption and investment need to regain their pre-crisis momentum. Even when a strong case can be made for a continuation of the stimulus for a few more months (as seems to be the case from the budget proposals for 2010-11), it is critical that its composition should now shift towards revitalising investment. In addition, the current inflationary pressures, though largely confined to food, if not addressed adequately, will tend to spill over to the rest of the economy, which appears to be the case judging from the post-December inflation data. This would have implications for interest rates and the revival in private credit demand.

On balance, as one looks forward, the upside prospects for the economy seem to outweigh the downside risks and uncertainties. In fiscal year 2010-11, GDP should grow at around its pre-crisis pace. In the medium term, in view of recent growth and given a full recovery of the global economy, the Indian economy should revert back to its high-growth path, estimated by Virmani (2009) to be between 8.5-9.0% per year. Whether or not it breaks the "double-digit barrier" in the next few years will depend on whether the risk factors mentioned above materialise or not.

Notes

1. See, for example, Bhagwati (1993), Ahluwalia (1995), Acharya (2002), Williamson and Zagha (2002), Ahluwalia (2002), DeLong (2003), Virmani (2006b), Panagariya (2008) and Virmani (2009).
2. With the release of the Quick Estimates of National Income for 2008-09, the CSO has changed the base year of its NAS from 1999-2000 to 2004-05. It includes certain refinements in the definitions of some aggregates, widening of coverage, inclusion of long-term survey results and the normal data revisions for 2008-09. While there are no major changes in the overall growth rate of GDP at constant 2004-05 prices, except for 2007-08, where it has been revised upward from 9% to 9.2%, there are some changes in growth rates at the sectoral level and in the level estimates of GDP. Thus, for instance, the contribution of agriculture to GDP at factor cost in 2004-05 declined from 17.4% in the old series to 15.9% in the new series. Similarly, while the contribution of registered manufacturing declined from 10.9% in the old series to 9.9% in the new series, that of unregistered manufacturing increased from 4.9% to 5.4%. There is also an increase in the contribution of real estate, ownership of dwellings and business services from 8.2% to 8.9%. In the case of level estimates of GDP at current prices, the difference ranges from 3.1% in 2004-05 to 6% in 2008-09. As a result, there are also changes in the expenditure estimates of GDP, which are analysed in the penultimate section.
3. Structural breaks could also be related to external shocks. However, since such breaks are invariably accompanied by policy changes/responses, there may not be a case for identifying such breaks as a separate category.
4. Raj Krishna, the eminent economist popularised the phrase “Hindu rate of growth” in the 1970s, though B.P.R. Vithal was perhaps the first to suggest a connection between Hindu culture and the nature of economic development.
5. As a corollary, growth in private consumption was discouraged under this development model.

6. See for further details Virmani (2009), pp. 34-37.
7. In the face of policy reforms, such as in the early 1980s, some additional factors could explain the acceleration in TFP growth lagging investment. For instance, there could be overshooting due to new and existing investors rushing into newly opened sub-sectors, resulting in excess investment and a decline in capacity utilisation, which may show up as a decline in measured TFP growth in the broader sector. There could also be the case of planned excess capacity, particularly in sectors with economies of scale, where reforms and perceived/anticipated improvements in the investment climate and deregulation may lead investors to create capacity that is not fully utilised immediately, which creates a situation akin to overshooting.
8. Economic Survey 2008-09, chapter 2 (Government of India, 2008-09).
9. The analysis is based on data from the NAS series with base year 1999-2000 as the back series on the new NAS base of 2004-05 are not available. The implications of the new NAS series is discussed in the penultimate section in the context of the analysis of the impact of the growth slowdown in 2008-09 and 2009-10 on the prospects for the economy in its phase 3 of development.
10. This has been highlighted in Economic Survey, chapter 2 (Government of India, 2008-09).
11. Economic Survey 2008-09, chapter 2 (Government of India, 2008-09).
12. Economic Survey 2009-10, Chapter 1 (Government of India, 2009-10).
13. The author who was the Chief Economic Advisor of the Ministry of Finance (until October 2009) communicated to the media, market participants and visiting members of the International Financial Institutions (IFI) from October 2008 to October 2009 that the fiscal stimulus was absolutely necessary (despite concern about a lack of fiscal space in India) for offsetting the decline in private demand (exports and investment) and that it would keep GDP from declining by as much as markets and the IFIs had projected.
14. The Chief Economic Advisor also argued and communicated to the media and markets that this was essential in the light of the global situation and that a reversal to the normal FRBM fiscal trajectory would be imperative from 2010-11.
15. The approach to fiscal consolidation unveiled in the Union Budget for 2010-11 takes some steps in this direction. The anticipated return of the economy to high growth (improved tax buoyancy) and the measures announced to control the increase in revenue expenditure, including on

subsidies (fertiliser), are expected to help the government to meet its fiscal targets as part of the fiscal road-map announced for the next three years. The government has taken steps to make all expenditure on various subsidies explicit in the budget (in other words, subsidies will be included in the government accounts). This in itself creates the case for greater fiscal responsibility in spending. The government has also set clear targets for disinvestment (i.e., privatisation of public sector enterprises) and the mobilisation of other non-tax revenues. It has also laid out the road-map for implementation of the new tax policy, both for direct and indirect taxes.

16. A menu of reforms was presented by the then Chief Economic Adviser in a set of Boxes in chapter 2 of the Economic Survey 2008-09 (Government of India 2008-09).
17. According to Prof. Eswar Prasad's estimates, India's household saving rate is now greater than that of China.
18. The saving rate increased from 32.2% in 2004-05 to 36.4% in 2007-08 before declining to 32.5% in 2009-10, in the new NAS series as opposed to the old series, where it rose from 31.7% in 2004-05 to 37.7% in 2007-08. Thus, from 2005-06 to 2007-08, the saving rate was overestimated in the NAS old series by an average of 1.3%. Definitional refinements, better estimates of saving and a higher denominator, due to an increase in the level estimates of GDP, have contributed to the reduction of the saving rate in the new NAS series. Similarly, the rate of gross capital formation (investment rate) at current prices rose from 32.7% in 2004-05 to 37.7% in 2007-08, before declining to 34.9% in 2008-09 in the new NAS series.

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Chapter 4

Indonesia beyond the recovery: Growth strategy in an archipelago country

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Indonesia has been affected less severely by the global crisis than neighbouring countries. Although Indonesian exports have been hit hard by the collapse of commodity prices and falling demand for manufacturing products, GDP growth has remained surprisingly buoyant.

We argue that the strength of domestic demand has been an important driver of growth during the crisis. However, given Indonesia's reliance on exports for sustaining economic growth, it is important to deepen integration within the domestic economy and improve the country's trade competitiveness. To this end, Indonesia has to invest massively in its physical and 'soft' infrastructure to reduce domestic transactions costs.

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Introduction

Indonesia has withstood the effects of the global crisis relatively well. For a country whose economy and political stability were ruined by the Asian Crisis, it was particularly important to avoid a comparable economic collapse and social unrest during the global crisis that erupted at the end of 2008-09. The situation was nevertheless different in 2008. Indonesia continued to grow, despite falling exports, as was the case of other Asian countries. Although the share of exports in GDP is lower in Indonesia than in its neighbours, the collapse of global trade was powerful enough to lower GDP growth from 1.5% in the third quarter of 2008 (quarter-to-quarter, seasonally adjusted) to 0.2% in the following quarter. However, in the wake of the global crisis, growth in domestic demand was able to cushion economic activity and underpin the recovery, which was swifter than in other countries.

The challenge for Indonesia now is to sustain growth beyond the recovery. We show that both exports and domestic demand are important drivers of economic growth. Should Indonesia adopt inward-looking policies, which focus only on domestic demand growth, and become protectionist? We certainly do not believe that such policies would serve the best interest of the country because openness has played an important role in Indonesia's development over the last three decades. Therefore, we argue that it is time to pay closer attention to policies that could sustain domestic demand and remove the bottlenecks that prevent it from growing faster. We find many synergies among policies aimed at sustaining growth in domestic demand and promoting trade competitiveness. Indonesia is the largest archipelago economy in the world, comprising more than 12 000 islands. 80% of the population resides in Java and Sumatra, with the remaining 20% scattered in regions that are rich in agricultural and natural resources. Improving integration within the domestic economy entails overhauling crumbling physical infrastructure, including logistical facilities, and improving soft infrastructures, such as the regulatory framework. Improvements in these areas would not only enhance growth but also Indonesia's competitiveness in export markets. Addressing issues of domestic integration would also help muster public opinion for additional structural reform.

The chapter is structured in the following manner. We briefly describe recent macroeconomic developments. We then take stock and discuss a few salient features about domestic demand and foreign trade. We describe the strength of domestic demand and gauge the impact of demand shocks on

GDP growth. We also discuss the risks and opportunities of joining regional production networks, given that Indonesia is less integrated in these networks than its neighbours. We also make a case for integrating the domestic markets, tackling logistical bottlenecks and dealing with soft infrastructures. Finally, we discuss the challenges that are related to the political economy of reform and present our conclusions.

A snapshot of the Indonesian macroeconomic situation

Indonesia is recovering from the global crisis and the strength of the global recovery will affect Indonesia's growth prospects. The IMF recently revised its growth forecast for OECD countries upward to 2.5% from 2%. Recent trade data for East Asia shows signs of positive growth. Indonesia has been able to withstand the effects of the global crisis, despite a relatively poor export performance, due to the country's vibrant domestic demand. GDP growth reached 4.5% in 2009.

Economic activity lost steam as a result of the global crisis in the second half of 2008. The rupiah depreciated by as much as 30% against the US dollar. Foreign trade was the main channel through which the crisis affected the Indonesian economy, with exports collapsing by 21% (quarter-on-quarter) in the last quarter of 2008. GDP growth slowed to 5.2% year-on-year in the same period, compared with 6.3% in both the second and third quarters. Growth decelerated to 2.3% on a quarter-on-quarter basis in the second quarter of 2009 (4% year-on-year) on the heels of an incipient global recovery, raising GDP growth to 4.2% in the first semester 2009 compared with the same period in 2008. Growth began to gather momentum in the second quarter of 2009 and recent GDP outcomes have been stronger than expected.

On the supply side, activity has been strongest in the non-tradeable sectors. This has been important given the background of an unfavourable external economic environment. On a yearly basis, the transportation and communication sectors grew by 15.5%, and electricity, gas and water expanded by 13.8%, and other services by 6.4% in 2009. By contrast, tradeables have contributed only 1.6% to GDP growth of 4.5% in 2009. Thus one of the lessons from this crisis is the important role of the non-tradeable sector in sustaining growth during periods of global economic turbulence.

However, there are risks that the global recovery will not be sufficiently strong to sustain growth in trade and investment at pre-crisis rates. Although Indonesia is less dependent on exports than other East Asian economies, they have been important contributors to growth. We are also sceptical about

the ability of Asian economies to de-couple from developed countries. This is because trade integration in Asia has been driven by trade between “production networks”, which also include Europe and the United States as important consumers of Asia’s exports of final goods. The second reason is that intra-industry trade in machinery and equipment has been driving intra-regional trade in Asia. It would take time and effort to intensify intra-industry trade in import-competing products. Without a significant lift in global trade, Indonesia will have to depend more on domestic demand than on exports to attract investment and create jobs.

In an uncertain external environment, policies to boost economic competitiveness can also have a pay-off in terms of promoting growth. Currently global trade remains weak and investment flows to developing countries have not yet recovered to pre-crisis levels. However, even if domestic demand is expected to become a stronger engine of growth, Indonesia will still need to remove barriers to faster growth in the long run, including bureaucratic inefficiency, high transaction costs, infrastructure bottlenecks and regulatory uncertainty. In addition, with a slump in global demand, a fiscal stimulus to prop up domestic demand can indeed worsen the trade balance. In other words, Indonesia should focus its structural reform efforts on increasing productivity and reducing transactions costs to make the economy more efficient and attractive to investment and job creation.

Compensating for a slump in exports with strong domestic demand

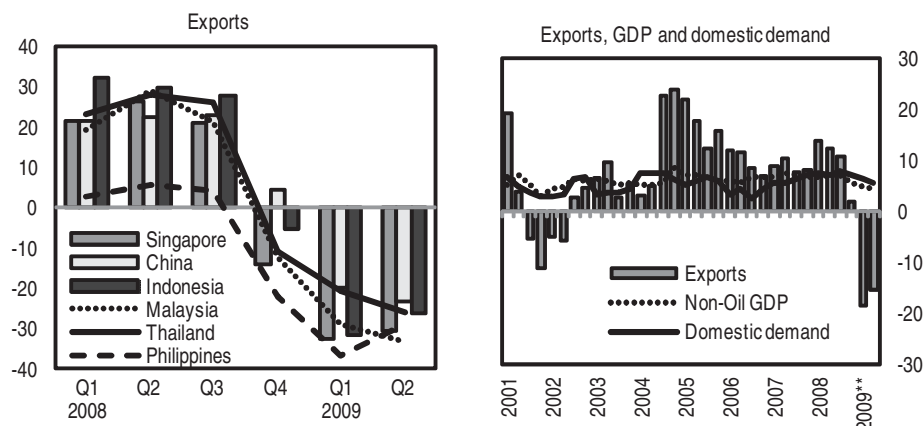
Although exports represent only a modest share of Indonesia’s GDP compared with other Asian economies, they have become important drivers of economic growth in recent years. Compared with Malaysia and Thailand, which have export-to-GDP ratios of 104% and 76% respectively, the share of exports in Indonesian GDP has only been 32% on average over the last eight years. This share is higher than the 27.5% achieved during the period of export promotion from 1988 to 1996. The contribution of exports to GDP growth has nevertheless increased in recent years. Export volumes grew by 4.6% per year during 2000-04 and by 11% during 2004-08 due to a rising demand for commodity exports. Investment in sectors that produce commodity exports, particularly minerals and agricultural products, has also increased significantly over the last few years. Furthermore, anecdotal evidence suggests that sales of non-durable goods have grown faster in commodity-exporting regions than elsewhere.¹

However, the global recession hit Indonesia’s exports just as hard as it did other Asian economies. The direct impact came from Europe, Japan and

the United States, which account for about 40% of the nation's exports. Labour-intensive exports, such as clothing and footwear, were also affected because their markets are mainly concentrated in developed economies. Before the global financial crisis, markets in the United States and Europe absorbed 78% of Indonesia's exports of clothing and footwear. However, there was also an indirect impact that resulted from weakening demand in Asia, particularly for commodity exports, which account for 65% of Indonesia's non-oil exports and whose value fell in tandem with commodity prices. Indeed, Indonesia's exports fell by 26% on an annual basis in the second quarter of 2009, making it the worst contraction since 2000 (Figure 4.1).

Figure 4.1. Exports, GDP and domestic demand

Year-on-year growth rate, in per cent



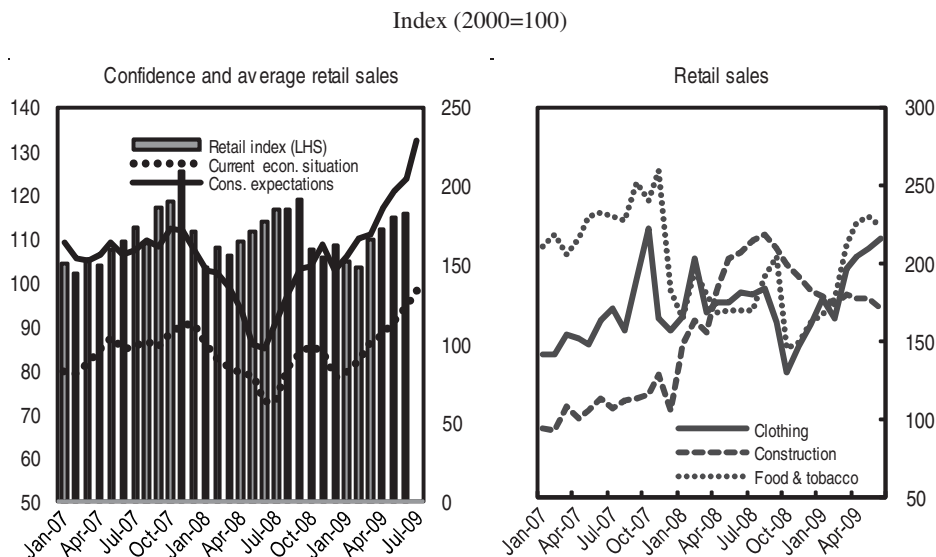
Source: CEIC Data Company and Statistics Indonesia.

Fortunately, Indonesia's domestic demand was quite resilient. In aggregate terms, total domestic demand grew at 5.3% in the second quarter of 2009, at the same time as exports were collapsing.² Private consumption expanded by 4.8% in the second quarter of 2009 and contributed 2.7% to the 4% growth in real GDP in that quarter. Growth in government spending also started to pick up from the third quarter of 2008 in response to the government's fiscal stimulus and rising expenditure. In addition, private investment (gross capital formation) expanded rapidly throughout 2008. However, in the first half of 2009 private investment weakened considerably as the global financial crisis affected credit lines for investment and pushed up borrowing costs. Overall, the Indonesian economy continued to grow

at 4% in the second quarter on the back of domestic demand growth, even though exports acted as a drag on growth.

Several high-frequency indicators underscored the relative strength of domestic demand during the crisis. Personal consumption was particularly resilient, as consumer sentiment quickly bounced back after a brief dip following the depreciation of the rupiah and an overnight 10% fall in Indonesia's Stock Exchange (IDX) index in October 2008. We believe that easing inflation and a stabilising exchange rate contributed significantly to this strengthening of confidence. Sustained political stability after a peaceful presidential election was another important factor that boosted consumer confidence. Although actual retail sales trailed behind sentiment indices, the data suggest that sales have since rebounded. From early to mid-2008, retail sales of food and clothing plunged because of high food prices and a reduction in fuel subsidies (Figure 4.2). Sales of food and clothing fell again in the wake of the significant drop in the IDX index and the exchange rate depreciation but quickly rebounded to 2008 levels as the economic outlook appeared to improve.

Figure 4.2. Activity and confidence indicators, 2007-09

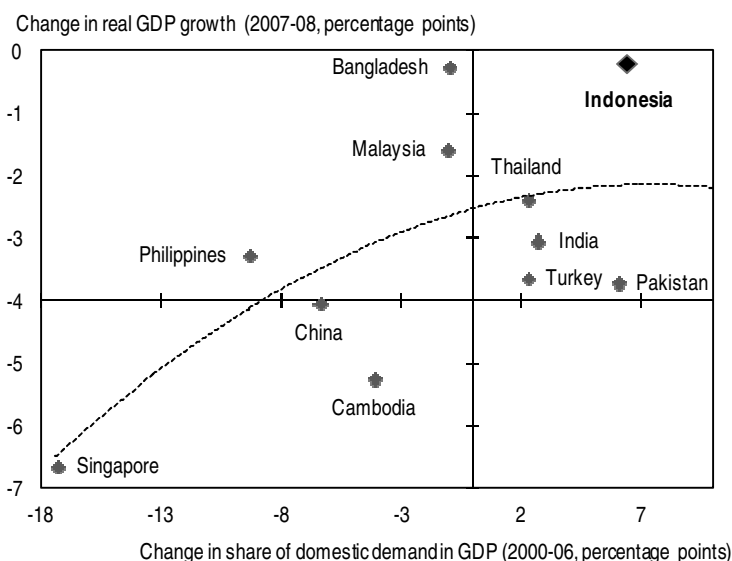


Source: CEIC Data Company.

The importance of domestic demand in sustaining GDP growth throughout the global recession is not unique to Indonesia. In Asia at least,

those countries where the share of domestic demand in GDP was maintained or even increased were in a better position to withstand the global economic downturn. Indonesia increased its share of domestic demand in GDP to 97% in 2007 from 88% in 2000 and experienced a 0.22 percentage point decline in GDP growth in 2008 (Figure 4.3). Bangladesh and Malaysia are examples of countries where domestic demand had declined slightly but they still managed to avoid further drops in GDP. By contrast, the share of domestic demand in GDP rose in some exporting countries, such as India and Vietnam, which experienced relatively lower declines in GDP growth compared with other economies. The most extreme case was Singapore, which exports 234% of its GDP and experienced a decline of 6.6% in GDP growth in 2008.

Figure 4.3. Domestic demand and resilience in the global crisis



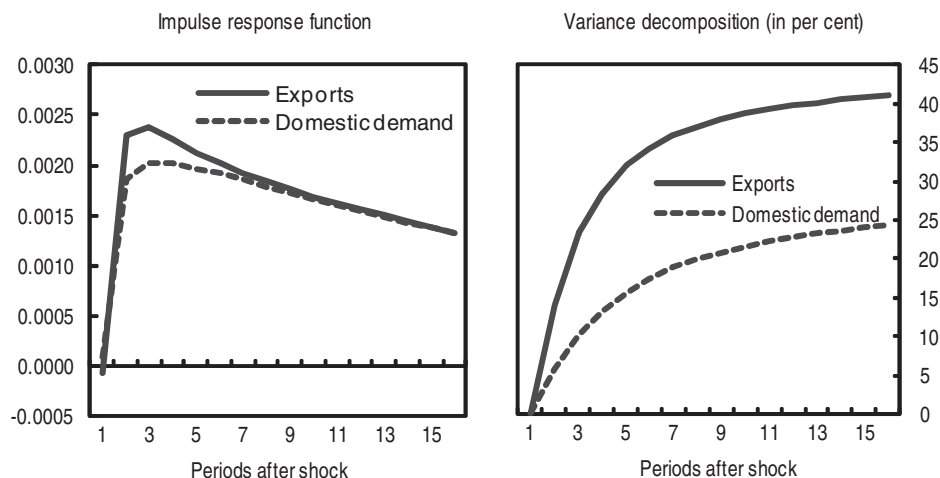
Source: Economist Intelligence Unit.

We now turn to a comparison of the impact on GDP of different shocks to domestic demand and exports. To answer the question of whether or not domestic demand has the capacity to sustain GDP growth as much as exports, we estimated a vector autoregressive (VAR) model consisting of GDP growth, exports and domestic demand using quarterly data from 2000 through the second quarter of 2009.³ As exogenous variables, we included

dummy variables that capture internal shocks, such as elections and reductions in fuel subsidies, as well as external shocks, such as the US recession of 2001 and the global financial crisis of 2008-09. Despite a relatively short series, we chose a VAR model because of its simplicity and ability to exploit the interrelationships between the relevant variables through a feedback process (see Appendix for the results of the VAR estimation). Our goal was not to use the VAR for assessing selected parameters but rather for gauging the impact of shocks on GDP growth.

The VAR results reveal several interesting findings. *Firstly*, both domestic demand and exports have a noticeable impact on GDP growth. Separate likelihood ratio tests reject the null hypothesis that lags in exports and in domestic demand have no impact on subsequent GDP growth. *Secondly*, on the basis of the impulse response functions, GDP responds more strongly when impacted by shocks to exports than to domestic demand, although responses to both shocks are similar over time (Figure 4.4).⁴ *Thirdly*, variance decomposition analysis shows that export shocks explain a larger proportion of movements in GDP than shocks to domestic demand. This finding is rather interesting, because it suggests that export shocks cause more variation in GDP movements than domestic demand shocks. In sum, this exercise suggests that both exports and domestic demand are important engines of growth, but variations in exports have a stronger impact on variations in GDP growth.

Figure 4.4. Impulse response function and variance decomposition of GDP to shocks to exports and domestic demand



Source: Authors' estimations.

Indonesian trade and the East Asian production network

East Asian trade is shaped by regional production networks, or production sharing, in that parts and components, rather than final products, account for the bulk of regional flows. Intra-industry trade (*i.e.*, trade within similar industries) also accounts for most of the trade flows among East Asian countries. This is the case, for example, of the electronic goods, motor vehicle and computer industries. The emergence of such production networks has been associated with economies of scale and falling trade costs and has resulted in deeper trade integration, as well as technology spillovers through foreign direct investment (see, for example, Kharas and Gill, 2007). Kimura (2005) and Ando and Kimura (2007) have also pointed out that production networks have become important drivers of economic growth.

Indonesia has been a laggard when it comes to participation in regional production networks. With the exception of the automotive industry, there has been little insertion of Indonesian producers into intra-regional trade in parts and components. Ando and Kimura (2007) have pointed out that the

country's unfavourable investment climate and the poor logistics infrastructure have reduced the incentive for Indonesian manufactures to join such networks. Using a definition developed by Kimura (2005), the share of parts and components in Indonesia's total intra-regional trade with East Asia was only 11%, compared with 20% in China and 22% in ASEAN4 (Table 4.1).

Table 4.1. Export profiles: Indonesia and other emerging Asian economies

	Indonesia	China	Malaysia	Philippines	Thailand	Vietnam
Average growth in non-oil export value (2004-2007, %)	17.0	28.2	10.5	7.8	16.5	23.9
Contributions to export growth (%)						
Manufacturing	38.9	94.9	75.1	73.3	80.7	69.1
Agriculture, forestry and fisheries	35.9	2.2	18.7	6.9	14.7	28.6
Mining and minerals	23.7	2.6	3.6	18.2	3.0	1.0
Share of parts and components in intra-Asian trade (%)	11.2	20.1	22.5	29.0	18.5	10.8

Source: UN-Comtrade.

In fact, the composition of Indonesia's exports is quite different from that of other Asian economies. Manufactured products contribute less to exports in Indonesia than in its regional peers. Indeed, Indonesia has specialised in exports of agricultural and mineral commodities. To some extent, Indonesia's incipient involvement in the region's production networks may have insulated the countries from the global crisis. However, when the world economy began to recover, the rebound in activity was stronger among economies that were better integrated than Indonesia through production networks. Singapore, for example, experienced a strong rebound of 5.1% in quarterly GDP growth in the second quarter of 2009. As the global recovery took hold, companies linked to production networks could restore trade with their established counterparts relatively quickly. This was possible because transactions costs are lower within production

networks than among new or unknown companies.⁵ Participation in production networks could also generate externalities that could increase export prices to the extent that the price of the final products could also rise.⁶

Why should domestic markets be integrated?

As discussed previously, one of the most important lessons from the global financial crisis was the need to maintain a balance between exports and domestic demand. A policy strategy is therefore needed to achieve and maintain such a balance as part of the country's development strategy. An immediate implication is to ensure that domestic markets are integrated and that this integration takes place in tandem with the overall economy's insertion into the global economy.

Integrated domestic markets help to generate important externalities for growth in domestic demand (Krugman, 1991 and 1995; Fujita, Krugman and Venables, 1999). Assuming that transport costs are negligible, externalities can arise from trade opportunities between producers in Java or Sumatra and suppliers in the outer islands by expanding market size and diffusing knowledge and innovation across the regions. Businesses requiring strong vertical linkages with upstream industries, such as agro-processing, might choose to locate near commodity production in Sulawesi or Sumatra, which may in turn create demand for goods and services produced in those regions (see Venables, 1996, for discussion). Integrated markets, by way of lower transport costs, allow businesses in the outer islands to reach markets beyond their territories (see Fujita *et al.*, 2002, for discussion). If the cost of services linking different locations decreases, industries could locate different stages of production in different regions according to their cost advantages (Jones and Kierzkowski, 2005; Kimura, 2005).⁷

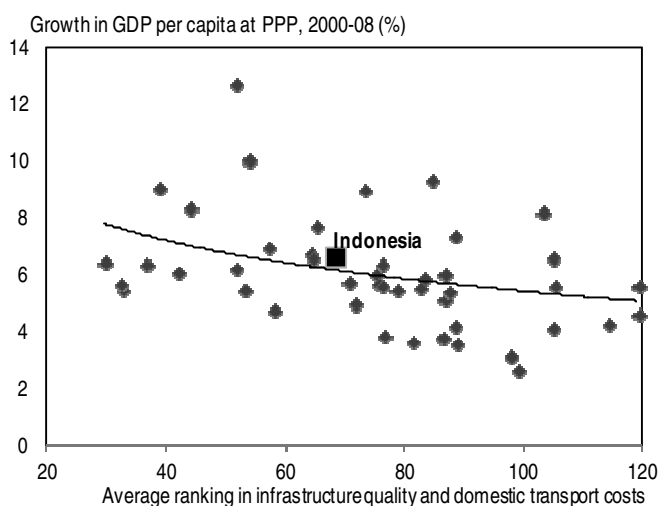
Similar to landlocked countries, geographically remote areas have difficulty in benefitting from specialisation in production (Faye *et al.*, 2004). As pointed out by McKellar *et al.* (2000), goods crossing a border incur transactions costs that are related to logistics, customs operations and storage. Therefore, being landlocked increases import prices and reduces incentives to export.

The costs of domestic integration in an archipelago country as large as Indonesia could be higher than those of other economies of comparable size. There are likely to be non-linearities in transport costs in an archipelago country because of inventory costs and different modes of transport. High transport costs could therefore limit the transmission of demand shocks and the scope for externalities in "thick markets". In an extreme case, such as

market imperfections in inter-island trade, transactions costs could lower growth or even prevent growth from taking off in the outer islands (Ziliboti, 1994). Barriers in distance and transport are also likely to have a negative effect on trade as shown in a gravity model by Siregar (2009). Hence, an improvement in domestic transport infrastructure should not only boost growth but also increase economic welfare.⁸

To illustrate how better logistics could be associated with higher standards of living, we plotted the growth rate of GDP per capita (correcting for differences in purchasing power parity) against the measures of infrastructure cost and quality in 49 developing countries (Figure 4.5). We measured infrastructure costs as a simple average of a country's ranking in the indicators of physical infrastructure quality and domestic transport costs based on the World Bank's Logistics Performance Index (LPI). There is a negative correlation between transport costs and standards of living. Developing economies that manage to grow fast, like China, can achieve rapid improvements in standards of living and transport goods relatively more cheaply than low-growth countries.

Figure 4.5. Transport infrastructure and relative living standards



Source: Economist Intelligence Unit; World Bank (Logistics Performance Indicators).

Improving infrastructure to boost domestic demand

We now turn to a particular challenge that Indonesia will have to face to strengthen its domestic demand: improving its logistics to integrate the domestic market in an archipelago nation.⁹ The sea accounts for at least 75% of the Indonesian territory, making inter-island transport the main channel for the transmission of demand shocks, as well as an important link for different activities in different regions. Tropical forests and mountainous terrain also pose a challenge for improvements to intra-island transport, even in large islands, such as Kalimantan. Given that transport costs matter, densely populated and well-connected islands, such as Java, Bali and Sumatra, are comparatively better integrated than outer islands, such as Ambon, Papua and Southeast Nusa.

Due to a lack of integration within markets, price differentials across regions are large (Table 4.2). Sugar, flour and cement prices are lower in Java than in Eastern Indonesia, with price differentials of more than three times the Javanese level.¹⁰ The prices of basic necessities are higher in remote areas despite a much lower purchasing power.

Table 4.2. Average commodity prices

	In rupiah					
	Rice	Wheat flour	Sugar	Cooking oil	Salt	Cement
East Java	4 250	3 800	6 000	4 450	1 600	38 000
West Kalimantan	4 400	4 000	5 800	4 500	2 400	37 500
East Kalimantan	4 500	4 000	6 500	4 500	2 000	37 000
South Sulawesi	4 400	3 500	6 500	4 500	2 000	30 500
East Nusa Tenggara	4 200	4 500	5 800	6 300	2 000	31 000
Merauke	5 000	7 000	7 000	6 670	3 000	62 000
Nabire	6 000	10 000	11 000	11 000	4 000	230 000
Paniai	10 000	7 500	8 000	7 000	8 000	60 000

Source: Ministry of Trade.

Domestic transport is costly and time consuming. The cost of transporting goods from Warsaw to Hamburg, a distance of 750 km, is half of that from Makassar to Enrekang in Sulawesi, a distance of only 240 km (Carana Corporation, 2004). According to the Indonesian Regional Transport Association (ORGANDA), transport costs between Jakarta and Makassar, Jakarta and Ambon, and Jakarta and Jayapura are on average about USD 141 per ton, USD 250 per ton and USD 451 per ton, respectively.¹¹ Considering that a 20 cubic-foot container costs USD 682 and weighs about 6-10 tons, freight costs between USD 68 per ton and USD 103 per ton. Similarly, transporting goods from industrial sites to ports is very expensive in Indonesia. The country's National Committee for Enhancing Exports and Investment (PEPI) has estimated that it costs USD 775 to move a 20 cubic feet container from the Cikarang industrial site to the port of Tanjung Priok, a distance of less than 40 km (26 miles). Given such costs, imports are likely to generate higher profit margins than exports or trade within Indonesia. Due to the fact that most Indonesian manufacturing clusters are located in Java, together with a few in Sumatra, such a cost disadvantage could limit the ability of local manufacturers to compete with low-cost imports from markets in other regions.

Logistical barriers and the poor quality of the country's infrastructure also constrain the expansion of supply. A study by Solikin (2004) points out that the impact of the output gap on Indonesia's inflation was relatively modest (between 0.2-0.3) before the crisis, suggesting that the Phillips curve had been relatively flat. Following the economic crisis, the impact of the output gap on inflation increased to 0.4-0.6 and the Phillips curve became increasingly steeper. These findings indicate that the response of inflation to changes in activity has strengthened, which implies the presence of supply constraints to growth.

Numerous recent studies have highlighted logistics as a major constraint to business in Indonesia. Basri and Patunru (2008) argue that, due to the decline in real public spending and the cancellations of numerous private infrastructure projects, a deteriorating infrastructure has lowered the supply capacity of the economy. They also argue that infrastructure problems are responsible for "sub-standard" growth compared with the pre-crisis period. LPEM (2005) also indicates that logistics account for 14% of total production costs in Indonesia, which is a much higher share than in Japan (4.9%), for example. The study points out that input, output and internal logistical costs contributed to 7.2%, 4% and 2.9% of total logistical costs, respectively.¹² The main logistical problems are poor road infrastructure, unauthorised collection of payments on the way to and in ports, as well as government regulations (primarily local taxes and minimum wage regulations). A joint study by LPEM and the Asia Foundation (2009) shows

that a combination of convoluted regulations and high domestic transport costs is undermining competitiveness in commodity exports, such as cacao, rubber and coffee.

Indonesian sea ports are inefficient. Patunru *et al.* (2007) found that inefficiencies add to transport costs for export-oriented and import-intensive industries. Ray (2008) pointed out that the port of Jakarta is more expensive and inefficient than Chitagong, Port Klang or Singapore. The study also shows that average turnaround time, which is the time required for waiting, approaching and idling, is about 65 hours (2.7 days) in Indonesian ports. Even so, the average working time at ports is less than half of the turnaround time. Ray also shows that operational improvements were successful in increasing container moves to 60 containers per hour in 2007. However, increases in container traffic and port congestion, combined with lengthy procedures for customs clearance, caused container moves to decline to between 40 and 45 containers per hour in 2008.

Government regulations on domestic shipping also affect inter-island transport. The new Shipping Law (Law No. 17, 2008) relaxed restrictions on licensing and ports. However, the government also controls routes and imposes strict cabotage requirements (*i.e.*, Indonesian ships, Indonesian flag, Indonesian majority-owned companies in Indonesian waters) at a time when Indonesia needs to improve its internal market integration and remain competitive abroad. In addition to the re-emergence of government control in domestic shipping, strict regulation and the poor quality of regulators are the most likely reasons for the underdevelopment of the Indonesian domestic shipping industry (Dick, 2008).

Logistical obstacles are constraining Indonesia's domestic and external economic integration. At present, import tariffs are low in comparison with regional peers (Table 4.3). The average of Indonesia's most favoured nation (MFN) tariffs is 6.9%, which is lower than those of China, Thailand and Vietnam.¹³ However, Indonesia's logistics infrastructure is poorer than those of China, Malaysia and Thailand. Of the 125 countries surveyed by the World Bank, Indonesia ranks 93rd in terms of domestic logistical costs and 44th in terms of infrastructure quality. Indonesian businesses are also behind their competitors in the region in terms of timeliness of shipping. Indonesian exporters are paying more to ship containers abroad than their Chinese and Malaysian counterparts. These logistical bottlenecks are putting Indonesian businesses at a competitive disadvantage relative to neighbouring countries.

Table 4.3. Import tariffs and logistics: International comparisons

	Indonesia	China	Malaysia	Philippines	Thailand	Vietnam
Trade policy indicators (2006-08, latest) ¹						
Trade Restrictiveness Index	4.47	5.06	3.01	3.80	6.65	n.a.
Applied tariff	6.73	13.63	8.10	6.10	n.a.	19.31
Simple MFN	6.93	9.67	8.37	6.27	9.94	16.81
Ranking in Logistics Performance Indicator (2008)						
Domestic cost	93	73	37	19	28	17
Quality of infrastructure	44	30	28	87	31	60
Timeliness	58	36	26	69	28	65
Average USD/per-container for exports and imports(2009) ³	682	503	450	818	710	818

1. World Trade Indicators (2008).

2. Doing Business (2009).

Source: World Bank.

In addition, there are problems in relation to Indonesia's "soft infrastructure" that will need to be resolved, especially in the areas of regulation and bureaucracy, which affect the costs of doing business and enterprise profitability, decisions on investment, production location and employment intake.

Box 4.1. Other supply constraints inhibiting growth

Labour strikes. Labour disputes are one of the problems about which businesses and foreign investors in Indonesia often complain. Basri (2004) estimated the elasticity of value in foreign and domestic investment approvals with respect to the frequency of labour strikes and hours lost due to strikes. The findings suggest that a 1% increase in the number of strikes could reduce the value of (approved) foreign investment in labour intensive sectors by -0.3%. The result holds also for the number of hours lost due to strikes. Interestingly, the study did not find that labour issues had significantly affected foreign investment in capital-intensive sectors. Likewise, the findings did not find that labour issues had a significant effect on domestic investment.

Box 4.1. Other supply constraints inhibiting growth (continued)

Regional minimum wages. Regional governments often use minimum wages as a policy intervention to protect workers. However, it has been widely studied and argued that imposing a minimum wage could increase unemployment among unskilled labour. The study carried out by SMERU (2001) warned that regional government intervention on minimum wages can cost local businesses, especially small and medium enterprises (SMEs). More than 60% of surveyed SMEs paid their workers wages below the minimum level. These SMEs are mostly labour-intensive in nature and would otherwise have to lay off workers to survive. Likewise, increases in regional minimum wages can raise real wages relative to capital and reduce the incentive for export-oriented firms to expand businesses in labour-intensive sectors.

Bribes and informal charges to businesses. Conceptually, corruption or bribery could be considered as unofficial taxes on business activity to make government bureaucracy more agile (McCleod, 2001). As in the case of taxes, there could be an optimum level of bribery. However, LPEM (2001) shows that bribery has not shortened the time it takes businesses to deal with bureaucracy. Interestingly, the study also shows that in general businesses would not mind paying higher taxes as long as they replaced illegal payments and reduced hurdles in bureaucracy.

The political economy of reform

Managing trade liberalisation has not been an easy task for Indonesian policy makers. The return to democracy has increased political participation, especially for groups that could suffer from liberalisation. Studies suggest that exchange-rate changes and cost-push inflation could create political pressure, even amplifying the pressure from those who prefer the *status quo* against further liberalisation (Basri and Hill, 2004).

Pressure against liberalisation would come from Indonesia's producers who are struggling to compete abroad or in the domestic market. A recent study suggests that competition from low-cost suppliers, such as China or Vietnam, has reduced the market share of Indonesia's labour-intensive manufactured products in third countries (Freund, 2006). Meanwhile, labour-intensive firms located in Java are competing for domestic market share with imported products from countries that have cost advantages and economies of scale due to greater international integration. In addition to infrastructure bottlenecks, many Indonesian manufacturing companies also face costs related to an inflexible labour code and burdensome local regulations.

We also argue that it will be difficult to achieve further trade liberalisation without tackling the logistical challenges that prevent domestic integration. Indonesian manufacturers could perceive liberalisation to be all

about immediate costs, such as layoffs and company restructuring, while future benefit may be seen as elusive. Local manufacturers would reject giving foreign competitors access to domestic markets that they have so far been unable to tap due to high intermediation costs. This situation could lead to lobbying by manufacturers to push the government to implement protectionist trade policies (possibly along the lines described by Helpman and Grossman, 1994). In this case, it would be difficult for a coalition government to carry out comprehensive reform all at once.

Instead of a focus on trade liberalisation, we argue that a reform agenda based on infrastructure development could attract many supporters. Given the geographical characteristics of Indonesia, overcoming infrastructure and logistical barriers would serve a common interest among businesses. They would welcome public intervention to reduce intermediation costs and to strengthen the capacity of local businesses to compete with imports. Lower transaction costs would allow manufacturers in Java and Sumatra to expand their domestic market and compete more effectively. Likewise, horticultural producers in Sumatra and West Kalimantan would be in a better position to compete against Chinese and Thai products in markets, such as Jakarta, Makassar and Surabaya. Tackling soft infrastructure bottlenecks would also help to win support from stakeholders and pave the way for further reform.

Conclusions

The global crisis provides important lessons for Indonesia, including the need to strengthen domestic demand, which we consider to be an important, albeit often neglected, policy challenge. Domestic demand can be strengthened without resorting to protectionism. There are a number of policy challenges that need to be addressed, such as logistics and transactions costs, to boost domestic demand and improve the nation's competitiveness in global markets. Indonesia should not become inward-looking or fully integrated in regional production networks. In this context, framing trade liberalisation and structural reform in the context of initiatives to boost domestic demand has the political economy advantage of attracting support from those stakeholders who could be cushioned from adverse adjustment costs. Stakeholders need to be persuaded that immediate losses are more than compensated by longer-term gains. Hence, a focus on reform initiatives that raise competitiveness and improve the integration of domestic markets could win more support from stakeholders.

Given this background, we believe that efforts to improve logistics are vital for unlocking growth opportunities in many Indonesian regions. Infrastructure and other bottlenecks are undermining the competitiveness of local businesses, regardless of their ownership and trade orientation. The

development of physical infrastructure that can help integrate the domestic economy deserves therefore top priority. This includes the development of national roads, ports, inter-island transportation systems and competitive freight services. However, the outcome of efforts in these areas also depends on the quality of public institutions. For this reason, bureaucratic hurdles should be eliminated and non-competitive behaviour discouraged. Simplifying procedures for business permits; operating ports 24 hours a day, 7 days a week; harmonising regulations; and regulatory reforms must be carried out to boost competition and improve the business climate.

Notes

1. For example, see www.temppointeraktif.com/hg/ekbis/2008/05/05/brk_20080505-122526.id.html, which suggests that high commodity prices in 2008 pushed up motorcycle sales in commodity-producing regions in outer Java.
2. Domestic demand is defined as private consumption, government expenditure and gross fixed capital formation. A share of investment is driven by external growth and oriented to exports, but we argue that this proportion is relatively modest. Growth in gross capital formation correlates more strongly with lagged growth in Indonesian GDP than growth in GDP of Indonesia's major trading partners.
3. The sample size is relatively short. However, extending the data to include the 1990s could pose another problem because the Indonesian census bureau (Statistics Indonesia) changed the base year for GDP in 1993 and again in 2000. Nominal GDP figures based on the previous base year tend to be lower than nominal GDP figures in the new base year. To date, there has not been any systematic attempt to backcast the quarterly GDP series to the early 1990s using the 2000 base year.
4. We use a generalised impulse as introduced by Pesaran and Shin (1998) to ensure that the result is unaffected by the ordering of the endogenous variables in the VAR.
5. Obashi (2009) found that trade in parts and components among Asian countries became longer-lived and more stable after the Asian Crisis. Once transactions start, trade is more likely to be maintained even at a long distance, regardless of exchange-rate fluctuations.
6. Rahardja (2007) found that the unit value of exports in parts and components from emerging East Asia tends to increase as China increases its export volumes of those parts and components. The findings suggest that, as the value added of Chinese exports increases, so does the price of parts and components imported from emerging East Asia.

7. Fragmentation can increase in the case of standardised products that do not require a tight delivery schedule. In such cases, transnational firms seek a location with the lowest production cost. However, in the case of changing production costs and just-in-time delivery, production tends to be concentrated geographically.
8. Indeed, improved domestic transport can trigger migration to core regions, such as those in Java. Nevertheless, better transport infrastructure is likely to increase growth in all regions, irrespective of their endowment intensities. Migration to Java could slow down because commodity prices are likely to stay relatively high, making the rate of return of investment in agriculture increasingly attractive outside Java.
9. For example, Hill *et al.* (2008) did not include transport and logistics in their discussion of Indonesia's changing economic geography.
10. A study by Varela *et al.* (2009) shows that due to their remoteness, consumers in West Kalimantan and Papua pay more than 121 rupiah and more than 600 rupiah respectively over and above the national average per kilogram of rice.
11. They were likely to quote outbound transport. Hence, the return costs from remote areas could cost more because transporters have to compensate the loss in volume or pooling time.
12. The study chose three segments of logistics, input logistics (from vendor or port to the factory), internal logistics (within the factory) and output logistics (from the factory to the port),
13. Tariffs do not fully capture barriers for imports. Non-tariff measures (NTMs), such as import bans and controls, have been proliferating, especially after the global crisis. Although Indonesia's tariffs are low, anecdotal evidence suggests that Indonesian NTMs and import procedures have become barriers that add to the costs of imports.

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Annex 4.A1

Estimating a vector autoregressive model (VAR) for Indonesia

We estimate the following VAR system consisting of three variables with the following standard representation:

$$x_t = a_{10} + \sum_{j=1}^p \alpha_{1i} x_{it-j} + \sum_{j=1}^p \beta_{1i} dd_{it-j} + \sum_{j=1}^p \gamma_{1i} y_{it-j} + \phi_1 Z_t + \delta_1 t + e_{1t},$$

$$dd_t = a_{20} + \sum_{j=1}^p \alpha_{2i} x_{it-j} + \sum_{j=1}^p \beta_{2i} dd_{it-j} + \sum_{j=1}^p \gamma_{2i} y_{it-j} + \phi_2 Z_t + \delta_2 t + e_{2t},$$

$$y_t = a_{30} + \sum_{j=1}^p \alpha_{3i} x_{it-j} + \sum_{j=1}^p \beta_{3i} dd_{it-j} + \sum_{j=1}^p \gamma_{3i} y_{it-j} + \phi_3 Z_t + \delta_3 t + e_{3t},$$

where x , dd , y are quarterly logs of exports, domestic demand and non-oil GDP, respectively. All series are seasonally adjusted before differencing. Z contains contemporaneous shocks, such as the removal of oil subsidies, the global economic crisis and the *Ied'l Fitri* period. Z is equal to 1 for a negative shock and zero, otherwise. Instead of differencing the series, we control for the presence of a common trend to preserve other co-movements among the variables of interest.

Given the sample size, the appropriate lag length was selected using the Likelihood Ratio test. The final results are reported in Table 4.A1.1 (t-statistics are given in parentheses).

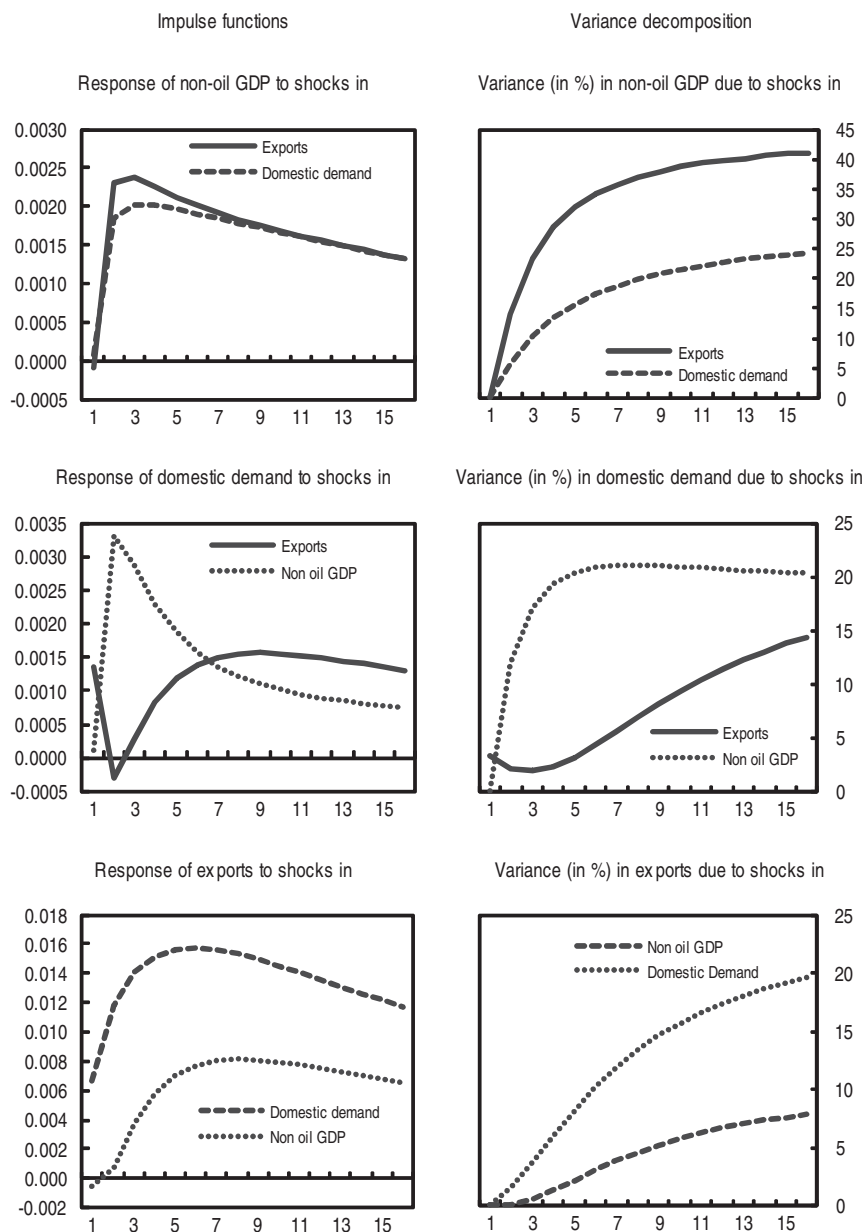
Table 4.A1.1. Vector autoregressive model estimation

	x_t	dd_t	y_t
X_{t-1}	0.846 (7.790)	-0.029 -(1.300)	0.056 (3.570)
Ddt_{-1}	0.823 (1.310)	0.603 (4.730)	0.194 (2.170)
Y_{t-1}	0.219 (0.220)	0.610 (3.050)	0.277 (1.960)
Constant	-11.288 -(0.945)	-2.326 -(0.956)	6.009 (3.510)
Z_t	-0.153 (-4.762)	0.002 0.340	-0.008 (1.834)
TREND	-0.010 -(0.798)	-0.003 -(1.201)	0.007 (3.771)
Number of observations	37		
Adj. R-squared	0.973	0.997	0.999
F-statistic	183.56	1802.50	4646.30
Log likelihood	74.0	132.9	145.9
Akaike AIC	-3.57	-6.75	-7.45
Schwarz SC	-3.22	-6.40	-7.11
Mean dependent	12.12	12.84	12.87
Log likelihood		353.42	
Akaike information criterion		-17.81	
Schwarz criterion		-16.76	

Source: Authors' estimations.

To investigate the short-term impact of shocks to all variables, we plot in Figure 4.A1.1 generalised impulse functions that are invariant to the VAR ordering (Pesaran and Shin, 1998).

Figure 4.A1.1. Impulse response functions and variance decomposition



Source: Authors' estimations based on the VAR model reported in Table 4.A1.1.

Chapter 5

Sustainable growth in South Africa

Johannes Fedderke*

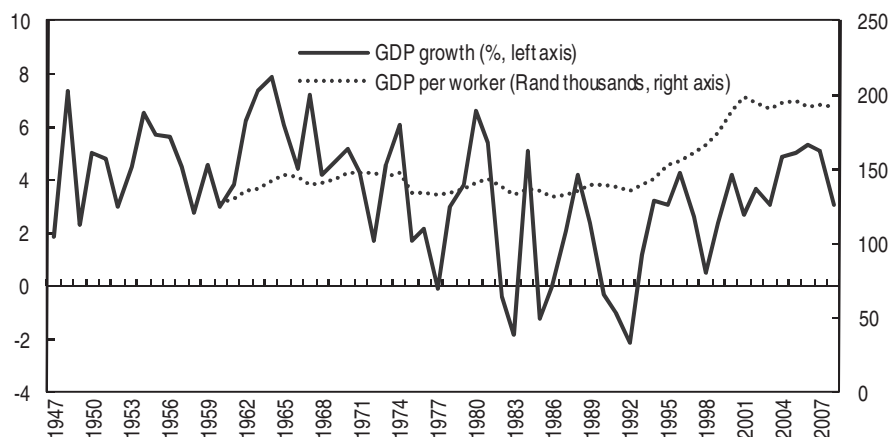
This chapter reviews the literature on the drivers of growth in South Africa. While growth has picked up since the mid-1990s, there are a number of impediments to faster, sustainable growth. These include a continued impact of uncertainty on physical capital investment, uncertainty surrounding property rights, incomplete recovery of infrastructure investment, market distortions that thwart competition in product markets and an excessively rigid labour code. In addition, skills creation, credit and R&D activity remain too low, while credit rationing in financial markets stills appears to be a feature of the economy. The fiscal space for more aggressive growth-promoting public expenditure has been reduced by the expansion of welfare payments. A number of policy implications follow from the analysis, including a need for macroeconomic stability and for credible, transparent policies to address economic and social infrastructure bottlenecks, to maintain fiscal discipline in the face of pressures for further expansion in welfare payments, and to reform product and labour market regulations. Finally, action is also needed to improve the quality of education, create incentives for R&D activity, and improve the efficiency of the financial sector.

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Introduction

This chapter focuses on the prospects for sustainable growth in South Africa. The country's economic performance has improved considerably since the turn of the century (Figure 5.1). After a long period of deceleration over the years 1970-95, growth has not only returned to positive territory, but it has also trended upwards, suggesting that the improvement in performance has been sustained. The only countervailing evidence is the decline in growth due to the financial crisis of 2008-09. GDP per capita has been rising, reversing a long downward trend since approximately 1980.

Figure 5.1. South Africa's growth performance, 1947-2008



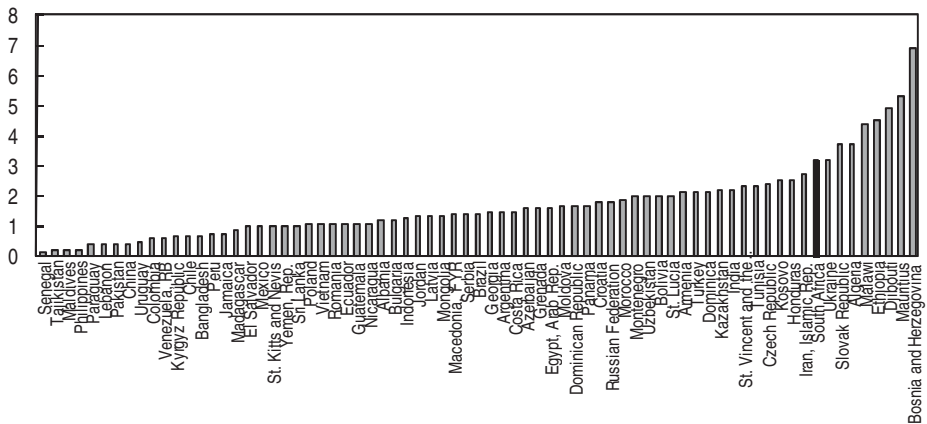
Source: South African Reserve Bank.

There are reasons for optimism, although South Africa's growth performance has not been unambiguously strong in the post-1995 period. Output per worker, which remained essentially constant during 1960-90, rose in response to substantial labour shedding in the formal sector in the 1990s and has trended down since 2000 as employment has begun to rise again. Job creation appears to have been associated with productivity losses, rather than gains, raising questions about the sustainability of employment growth as the economy resumes strong growth.

In addition, South Africa's high unemployment and income inequality have led to the development of an extensive welfare system, which imposes a significant burden on the budget. Expenditure on social safety nets accounts for 3–4% of GDP (Figure 5.2), which is high in comparison with other middle-income and developing nations.

Figure 5.2. Social assistance expenditures: International comparisons

In per cent of GDP



Source: World Bank (2009), Weigand and Grosh (2008).

The coverage of the chapter is guided by the potential growth drivers identified by growth theory. Thus, it covers capital accumulation, and to some extent its interaction with savings behaviour. Attention is paid to international capital flows, in terms of both portfolio and foreign direct investment. A particularly important consideration is the role of the public sector in capital accumulation in the form of infrastructure investment, as well as the presence of market distortions that thwart competition in product and labour markets and hence productivity growth.

Since modern growth theory emphasizes the importance of technological progress and human capital accumulation, the chapter also reviews the role of innovation and human capital investment. The ability of the education system to meet the demands of an economy that appears to rely increasingly on TFP growth, rather than factor accumulation, is examined. Finally, the chapter breaks new ground by exploring the role of the service sector, which accounts for more than half of GDP in South Africa, paying particular attention to financial services.

Private capital accumulation and its determinants

Standard growth theory places emphasis on factor accumulation. A range of growth accounting studies have confirmed that capital accumulation has been of declining significance in South Africa since the 1970s.¹ This has constrained growth, since South Africa is a middle-income country, where factor accumulation should remain a significant component of growth in real per capita GDP. Yet, the ratio of gross fixed capital formation to GDP, which fell from a peak of more than 30% in the early 1970s to a low of approximately 15% in the 1990s and early 2000s, has since shown signs of recovery, to close to 25% in the first quarter of 2009. Nevertheless, the rise in investment as a proportion of GDP has been financed predominantly by the public sector and is largely attributable to substantial infrastructure programmes in electricity, gas and water, which were launched in the 2000s. While rising from 5 to 26% of sectoral gross value added in electricity, gas and water over the 2009 period, the increase has not yet returned investment to the levels of the late 1970s and early 1980s, when investment in electricity, gas and water accounted for about 40% of sectoral gross value added.

By contrast, investment in manufacturing, financial services, insurance, real estate and business services has remained well below 10% of gross value added. There has been some increase in investment in mining and quarrying, and transport, storage and communications (TSC). In the case of mining, investment has risen from approximately 5% to 11.5% of gross value added, while for the TSC sector the ratio has risen from 5% to 9%. Given the likely effect of the commodity price boom of the 1990s, it remains to be seen whether this increase in investment activity will be maintained. Finally, general government investment is recovering. From a high of approximately 17% of gross value added in the early 1970s, public investment declined to less than 4% in the first half of the 1990s and then rose to close to 7% of the gross value added in the 2000s.

Gross savings have not increased in line with investment. The investment-savings gap rose to approximately 8% of GDP in 2009. Households have dissaved since 2006 - and the household propensity to save out of disposable income was 6 percentage points lower during 2000-05 than the average of upper-middle income countries, and 26.6% and 12.5% lower than the Chinese and Indian levels, respectively. Even allowing for the fact that rising social security payments have reduced the need for precautionary savings (in contrast to the situation in China), South Africa's low savings rate raises specific policy challenges, including a reliance on capital inflows.

What might account for these investment trends? One of the core insights of recent literature is that uncertainty generates a reward for postponing irreversible investment and, as a result, greater uncertainty is likely to lower investment. On the other hand, since uncertainty may be partly due to increased volatility of profits, such that the higher threshold level of profitability needed to trigger investment is satisfied more frequently under uncertainty, investment may actually be encouraged by economic uncertainty. Crucial to any empirical modelling of investment that allows for the irreversibility of investment is that it must allow for an impact of uncertainty on investment.

The empirical literature on investment in South Africa offers a number of consistent insights.² *Firstly*, proxies for the rate of return on capital and the user cost of capital are consistently statistically significant in investment equations and conform to theoretical priors. *Secondly*, uncertainty has a statistically significant and strong negative effect on investment at the aggregate level³ and in manufacturing.⁴ Measures of both systemic and sector-specific uncertainty appears to affect investment, although systemic uncertainty has a stronger impact. The implication of these findings is that the standard policy handles - the marginal rates of return and the cost of capital - are significant determinants of investment. Importantly, however, since uncertainty also raises the threshold rate of return below which investment is unlikely to occur, any policy intervention designed to stimulate investment may be constrained in sectors operating below this threshold. Thus, the policy goal should be to create an environment that is stable, predictable without sudden and arbitrary intervention. In effect, lower uncertainty not only stimulates investment directly, but it also renders other policy levers more effective in achieving this objective.

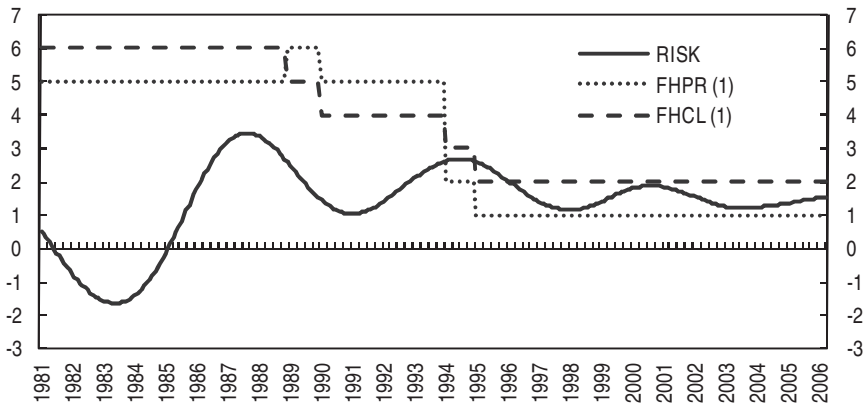
In considering the impact of net rates of return on investment and the associated growth constraints, Eyraud (2009) considers evidence from South Africa and compares it with data from a panel of countries that experienced strong economic recoveries at the turn of the century. The study confirms that South Africa's investment performance is below that of comparator countries, despite the recovery of the 2000s. The savings constraint appears to be among the main culprits, since South Africa's savings-to-GDP ratio was on average 14 percentage points lower than in comparator countries over the 1996-2006 period, with the result that the cost of capital as measured by the real interest rate has remained high in South Africa (despite a decline in the South African real interest rate over 1996-2006).

The study also shows that the savings constraint has become increasingly binding over time. The strong decline in household savings has been complemented by a decline in corporate savings. The tax burden on the

corporate sector has risen sharply, despite a declining marginal tax rate, due to improvements in the efficiency of tax collection and a broadening of the tax base. As a result, the ratio of taxes to primary income rose by 25 points between 1996 and 2007. Increased dividend payments, and hence lower retained earnings, also contributed to lower the rate of corporate savings. Note however that the falling corporate saving rate was mitigated by the rising public savings rate.

Given the main findings of the empirical literature on the determinants of investment, it follows that relatively high returns do not necessarily translate themselves into stronger investment growth because they reflect a risk premium, which remains high by international standards. The measure of systemic uncertainty that is employed in a number of empirical studies is related to political instability. Fedderke and Luiz (2008a) examine the institutional determinants of investment in greater detail and find that - in addition to the rate of return on capital, the user cost of capital and systemic political uncertainty - property rights are important drivers of capital accumulation.⁵ The study confirms not only a strong direct impact of property rights on investment, but also that property rights affect political instability. Significantly, the study shows that crime has an additional strong impact on uncertainty. Fedderke and Luiz (2008b) extend these findings and demonstrate that social and human capital are closely related to the political and economic environment, and that human capital accumulation and crime are important determinants of the long-term evolution of the institutional measures that directly impact on investment. Fielding (1999) also finds a positive effect for a property rights measure.

In addition, while systemic risk has improved considerably over the past 15 years, it has not been eliminated. According to the methodology used by Fedderke and Pillay (2010), Figure 5.3 shows a measure of the time-varying risk implied under the hypothesis that the expectations hypothesis holds in the determination of the yield curve. The risk premium associated with long-term bonds declined through the 1990s. However, comparison of the risk measure implied by the yield curve with the Freedom House's Political Rights and Civil Liberties index suggests that the decline in the measurable risk implied by the yield curve has not been as dramatic as it might have been given the concomitant strengthening of political institutions.

Figure 5.3. Risk, political rights and civil liberties, 1981-2006

1. FHPR denotes the Freedom House's Political Rights index and FHCL denotes the Freedom House's Civil Liberties index. The Freedom House indices are on an inverted scale: lower scores denote better rights and freedoms.

Source: Fedderke and Pillay (2010, Figure 11).

To sum up, uncertainty is an important deterrent to investment in South Africa and the institutional environment contributes to the establishment of a favourable climate for investment in a number of dimensions. Property rights, political stability and crime affect investment decisions, as do macroeconomic stability and the predictability of investment returns.

Foreign capital inflows

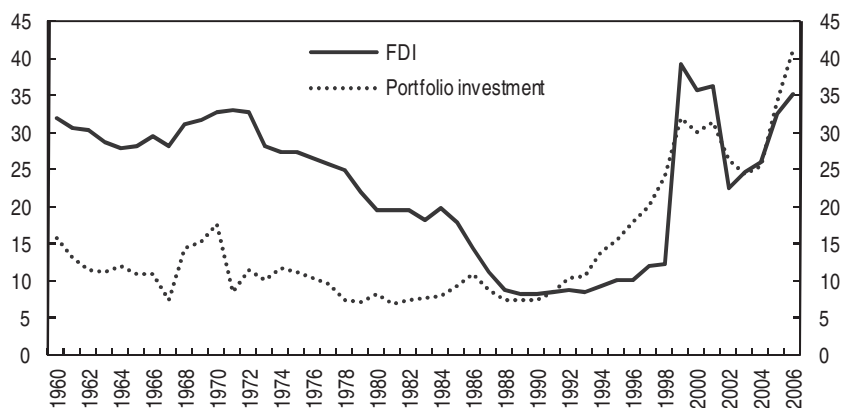
Foreign direct investment and portfolio flows are crucial for South Africa's development, given the country's reliance on foreign capital as a result of low rates of domestic savings.

Foreign direct investment (FDI)

FDI has recovered strongly since 1994 (Figure 5.4). FDI declined gradually during 1956-94 and began to rise again after 1994-98, with a very sharp one-off increase in 1999 due to the re-listing of four large companies from the Johannesburg stock exchange to the London stock exchange.

Figure 5.4. FDI and portfolio investment, 1960-2006

Stocks, in per cent of GDP



Source: Fedderke and Gwenhamo (2009).

Fedderke and Romm (2004) examine the determinants of FDI and its impact on growth in South Africa. They find that there is complementarity between foreign and domestic capital in the long run, implying the presence of positive technological spillovers from foreign to domestic capital. While domestic investment is crowded out by FDI, this impact is restricted to the short run. In addition, FDI has tended to be capital-intensive, suggesting that it has been horizontal rather than vertical. Market size is estimated to encourage FDI (a 1% increase in GDP generates an increase in FDI of approximately 13.6%). By contrast, increases in corporate taxation (elasticity -2.65) and wage costs (elasticity -3.62) hamper FDI. Openness to trade also has a strong impact on FDI: the implied mean elasticities are -4.23 and 6.12 for imports and exports, respectively. Finally, political institutions also matter: both property rights and political stability make South Africa a more attractive destination for foreign investment. The impact of property rights is strong (elasticity 3.81), while political instability appears to have had a far weaker impact on FDI than on portfolio investment or domestic private investment. Given the long-term and potentially irreversible nature of FDI, the greater importance of property rights than political instability is not implausible.

The findings suggest that policy action should focus on reducing political risk, ensuring property rights, promoting wage moderation (ideally by lowering real wages), lowering corporate tax rates and ensuring full

integration of South Africa into the world economy. The empirical findings confirm for FDI what was found to be true for domestic investment. Institutions matter in the sense of rendering returns on investment more certain. However, for both foreign and domestic investment, the impact of the institutional environment is derived from a range of different dimensions, such as political instability, property rights, and market structure and size, which may interact with one another. Finally, additional research could address the question of how FDI might evolve from the current predominance of horizontal to increased vertical FDI.

Portfolio flows

Fedderke and Liu (2002) examine the determinants of portfolio flows in South Africa. Capital flows are expected to respond positively to higher domestic returns on assets and negatively to risk and higher returns on foreign assets. The estimation results conform to theoretical priors: higher rates of return on assets and lower risk encourage capital inflows. Capital flows are also sensitive to political risk, just as FDI and domestic investment. Changes in political rights and political instability impact on capital flows: greater political instability and political liberalisation have tended to encourage capital outflows.

Capital flows and capital flight have become more favourable to South Africa since the early 1990s. However, lowering political uncertainties and the need to offer healthy rates of return to potential investors should continue to be a central concern of policy makers. The policy inference reflects that for portfolio investment, as much as for foreign direct investment, and for domestic capital formation, institutional determinants of uncertainty have been found to matter, and matter strongly for South Africa.

The composition of capital inflows

South Africa's political liberalisation in 1994 led to its reintegration into the world economy. Since 1994 South Africa has attracted relatively more portfolio investment than FDI. On average, FDI inflows amounted to 1.5% of GDP per year between 1994 and 2002, against about 3.5% of GDP for portfolio investment.⁶ The current composition of foreign investment contrasts sharply with the pre-1994 period. Ahmed *et al.* (2005) point out that the predominance of portfolio investment inflows deviates from the experience of other middle-income countries, where FDI tends to outweigh portfolio investment.

It has been argued that the composition of capital inflows determines whether or not the capital is beneficial or detrimental to the host country (Dooley and Warner, 1995). In this regard, FDI is often considered superior to portfolio flows and foreign loans, as it potentially facilitates the transfer of new technology and helps improve workers' skills and market access by the recipient country (Borensztein *et al.*, 1998). Furthermore, FDI is generally considered to be more stable and resilient than portfolio investment during periods of financial stress.

There is, however, an alternative strand of literature, which argues that the relative share of FDI in foreign capital inflows tends to be lower in countries that are safer and have better institutions and policies. This argument is based on the notion that FDI is less subject to expropriation than other forms of capital inflows because of its intangible nature (technology and brand names) (Albuquerque, 2003). Countries that have tighter financial constraints and weak institutions will therefore be primarily reliant on FDI, which is seen as harder to expropriate. Interpreting a high relative share of FDI in foreign capital inflows as a sign of good economic health is therefore unwarranted. By contrast, Faria and Mauro (2004) argue that the inalienability of FDI applies mostly to high technology or human capital-intensive sectors, where the benefits of expropriating foreign capital by the host country are very low. In most developing countries, FDI is concentrated in capital-intensive and/or the commodities sectors, where the host country can easily expropriate foreign capital. Under such conditions, the Albuquerque prediction breaks down, and a combination of institutional weaknesses and high domestic risk alters the composition of foreign capital towards non-FDI inflows.

In testing these alternative hypotheses, Fedderke and Gwenhamo (2009) take into account the quality of property rights in South Africa and Zimbabwe to control for the possibility of neighbourhood effects. The authors show that South African political instability has a negative and statistically significant effect on the relative share of FDI in total foreign capital stocks with an elasticity of -0.94. Symmetrically, an improvement of property rights leads to an increase in the relative share of FDI in foreign capital stocks, although this effect is only marginally statistically significant.

Since the findings suggest that domestic risk and institutional inefficiency reduce the relative share of FDI in the stock of foreign capital, they contradict the FDI inalienability hypothesis proposed by Albuquerque (2003) in favour of the Faria and Mauro (2004) alternative. The likely explanation is that South Africa specialises in the production of natural resources and/or capital-intensive goods, where the host country can expropriate foreign investment easily. When property rights and the institutional environment weaken under such circumstances, foreign

investors tend to shift their investment away from FDI to other forms of foreign capital, such as portfolio capital, thus reducing the relative share of FDI in the stock of foreign capital. As regards neighbourhood effects, property rights in Zimbabwe have a negative and statistically significant effect on South Africa's share of FDI in capital flows in the long run. Thus, as property rights worsen (improve) in Zimbabwe, the share of FDI in total foreign capital stocks increases (decreases) in South Africa. The implication is that Zimbabwe and South Africa compete for FDI in similar sectors. By contrast, poor property rights in Zimbabwe appear to raise the perceived risk for portfolio investment in South Africa, too.

Infrastructure

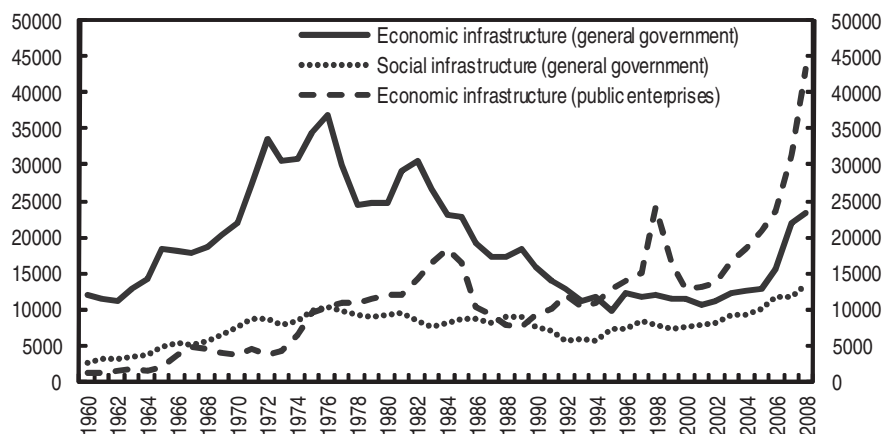
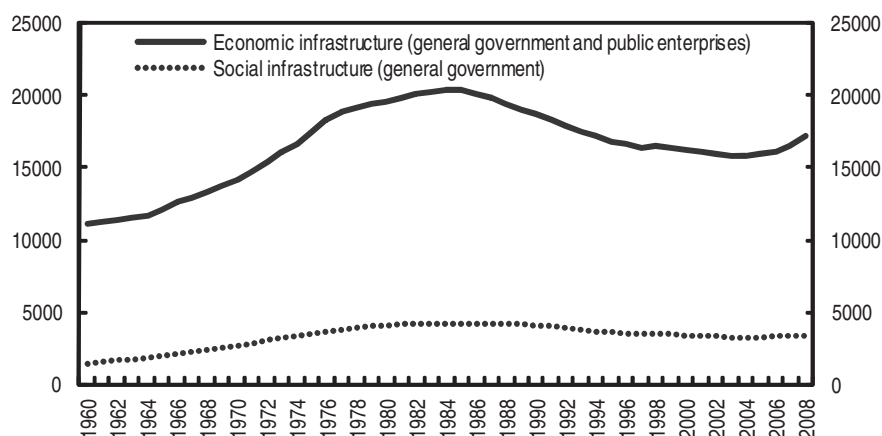
The 1970-2000 period saw a strong decline in investment in economic infrastructure (Perkins *et al.*, 2005). Investment fell from 8.1% of GDP to 2.4% of GDP, below the international benchmark of 3-6% that is identified by Kessides (1993). This resulted in a 72% fall in investment in per capita terms.

Yet, there is considerable empirical evidence pointing to a strong productivity impact of economic infrastructure in South Africa. Fedderke *et al.* (2006) find that a 1% increase in infrastructure investment increases the fixed capital stock by 1.4%, while a 1% increase in the fixed capital stock increases GDP by 0.06%. Electricity generation affects GDP with an elasticity of 0.2. Similarly, Fedderke and Bogetić (2009) examine the impact of infrastructure on productivity, as measured by both labour and total factor productivity, for a panel of 24 South African manufacturing sectors between 1975 and 2000. They find that aggregate infrastructure investment affects labour productivity and total factor productivity positively, and economically meaningfully. In terms of specific measures of infrastructure, electricity, railway, air transport and in particular roads impact labour productivity at statistically significant levels. The results for total factor productivity are broadly consistent.

Given this background, the evidence from the 2000s regarding economic infrastructure investment is reassuring (Figure 5.5). The decline in government spending on infrastructure development from the mid-1970s to the mid-1990s has been reversed. However, infrastructure expenditure remained essentially constant in real terms from 1995 through 2005. Since the early 2000s investment in infrastructure by public corporations has increased strongly and contributed to the rise in aggregate investment. By contrast, investment in social infrastructure has risen by much less.

Figure 5.5. Infrastructure indicators, 1960-2008

In millions of Rand, 2000 prices

Gross fixed capital formation**Public capital stock per capita**

Source: South African Reserve Bank and Statistics South Africa for mid-year population estimates.

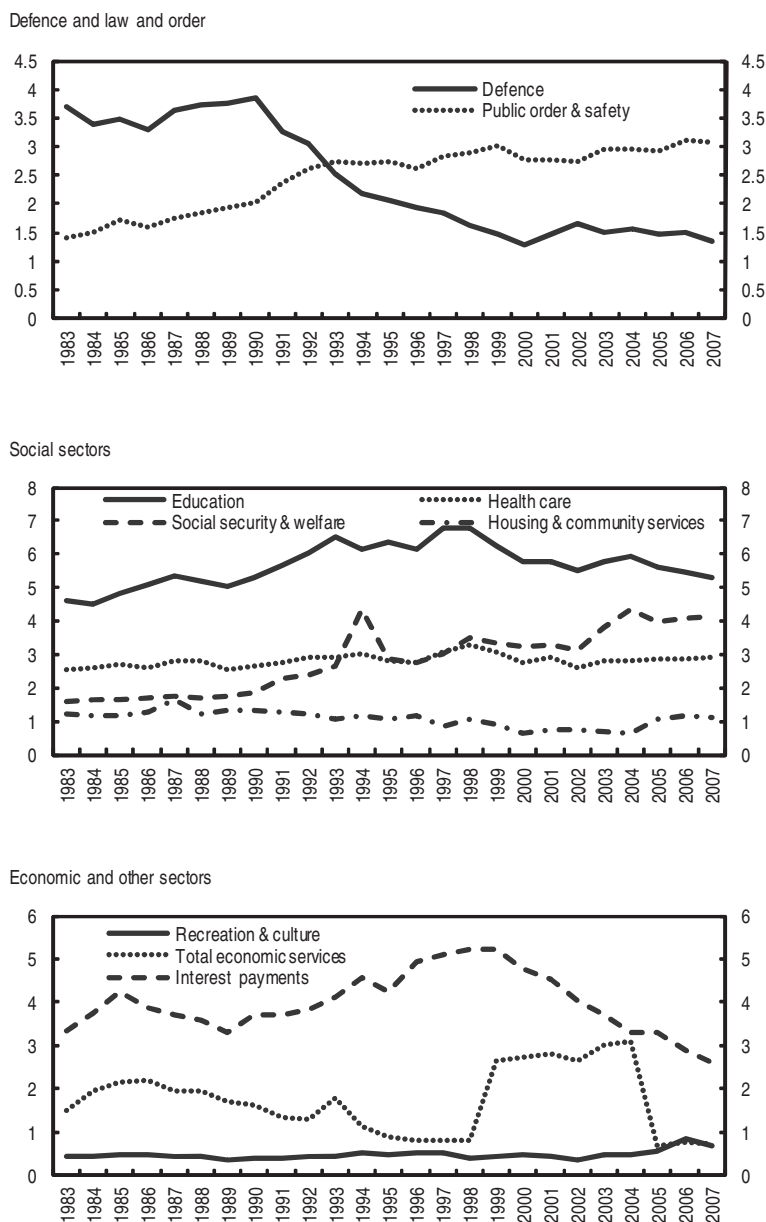
However, once corrected for population size, the recovery in infrastructure investment has only become evident since 2006-07. The increase in investment since 2000 has simply halted the decline in the capital

stock per capita from 1980, and remains below the peak of the 1980s. A similar story emerges when considering the percentage of GDP spent on either economic or total (economic and social) infrastructure. The decline from 1975 was halted in 2006, with a blip in 1998 due to aircraft purchases by the national carrier. The current level of 6% of GDP remains well below the 10% attained in the mid-1970s.

While rising government consumption may have contributed to falling public capital investment during 1975-90, this has not been the case since the 1990s because the level of government consumption has been constant at approximately 20% of GDP. Nor has there been an upward trend in aggregate government expenditure as a proportion of GDP. Instead, it is the composition of government expenditure that has changed (Figure 5.6). A dramatic increase in social security payments has placed South Africa amongst the countries with the highest levels of expenditure on social welfare in the world. Spending on public order and safety has also doubled as a proportion of GDP, reflecting a persistent, and as yet unresolved, problem of crime. Expenditure on education, while fluctuating between 6-7% of GDP over the early 1990s, has since declined significantly in relative terms. Outlays on health care and housing have been stable in proportion to GDP. Finally, defence expenditure has decreased dramatically, while fiscal prudence since 1994 has resulted in falling debt service outlays.

Figure 5.6. Government expenditure by function, 1983-2007

In per cent of GDP



Source: South African Reserve Bank.

It is notable that from a growth perspective, while there has been some recovery in the proportion of GDP spent on infrastructure, the increasing burden of social welfare has limited the increased infrastructure spending, and come at the expense of a falling proportion of GDP spent on education, together with little improvement in spending on health care. While a commitment to social development may be both understandable and laudable in the context of South Africa's history, it is worth asking whether it has taken place at the expense of long-term growth. A growing body of literature suggests that income inequality, and possibly even the incidence of poverty, has shown little signs of improvement and may even have worsened since the mid-1990s. If this is true, given the context of sharply rising social welfare payments, this outcome suggests either a remarkable policy failure, significant data problems or considerable inefficiency in government spending. The question of whether public expenditure has become overextended in favour of social welfare at the expense of growth-enhancing infrastructure or human-capital accumulation comes to the fore.

Market distortions and constraints

One possible explanation for the relatively poor growth performance of the South African economy is related to market structure. This question is dealt with by focusing on the structure of the country's product markets and its implications for productivity growth, labour market rigidities, and the size and performance of the services sector, particularly financial services.

Competitive pressure in product markets

There appears to be non-negligible pricing power in South Africa's manufacturing sector.⁷ Empirical evidence suggests that mark-ups are high in comparative terms, at a level approximately twice as high as that estimated for the United States. Recent empirical studies have pointed to a positive effect from product market competition on productivity growth, particularly at low levels of competition. Aghion *et al.* (2008) examine the South African manufacturing sector by using two industry-level and one firm-level data sets and find that a 10% increase in mean margins is associated with a 1.6 to 2.4 percentage point decrease in productivity growth at the industry and firm levels respectively, while for a second industry-level dataset, a 0.1 unit increase in the Lerner index is associated with a 1 percentage point decrease in productivity growth. Aghion *et al.* (2009) further extend these findings to an open economy model, in which the impact of trade liberalisation on innovation and growth is explicitly

modelled and controlled for in estimation. Not only is the negative impact of pricing power on productivity growth robust to controlling for trade liberalisation, but it is also quantitatively larger in both statistical and economic terms.

The negative impact of pricing power is not restricted to output growth. Fedderke and Szalontai (2009) report both negative investment and employment impacts from industry concentration (on the presumption that there is a link between industry concentration and pricing power), while Fedderke and Naumann (2009) confirm the negative investment impact using more recent manufacturing data.

Constraints in the labour market

The often negative trends in employment by sector that were evident in the 1980s and 1990s, began to reverse in the 2000s (Figure 5.7). This is particularly true for finance but is present even in mining, which accounts for the largest employment losses in previous decades. By contrast, the recovery in manufacturing employment remains sluggish at best.

The cost of labour is crucial in determining employment prospects. Banerjee *et al.* (2008) note that real wages would need to fall to clear markets and that this could be achieved through nominal wage restraint. Yet, real wages did not show any substantial changes over the 1995-2005 period, possibly because wage cuts were politically untenable and constrained by the unions.⁸ In addition, Fedderke and Hill (2007) derive a measure of flexibility of the labour market in manufacturing from a model that relates labour market institutions with rigidities in product markets. Regulations introduced during the 1990s resulted in greater rigidity in the labour market.

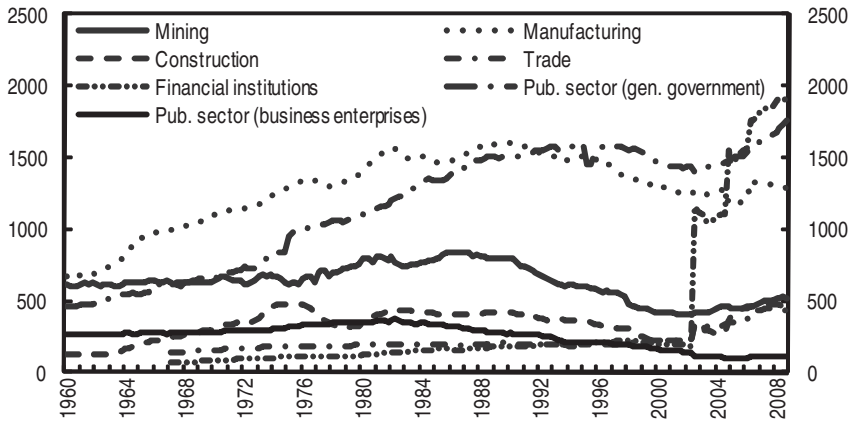
Of course, other factors also matter. Banerjee *et al.* (2008) mention, for example, the ineffectiveness of job search; poor job creation in the informal sector, which they attribute to the likely impact of crime and high start-up costs; and possible impacts of the social security system and education on workers' reservation wages. However, none of these factors contradicts the importance of wage flexibility and restraint.

By contrast, trade liberalisation, at least in manufacturing, has been associated with Stolper-Samuelson effects, resulting in higher demand for labour than capital. Fedderke, Shin and Vaze (2010) arrive at this conclusion on the basis of three separate empirical methodologies. The positive impact of trade liberalisation on labour markets is further confirmed by Fiandeiro and Rankin (2008). Of course, this is not to deny that globalisation may also be associated with labour-saving technological change. Fedderke, Shin and Vaze (2010) separate these out from the demand effects of globalisation.

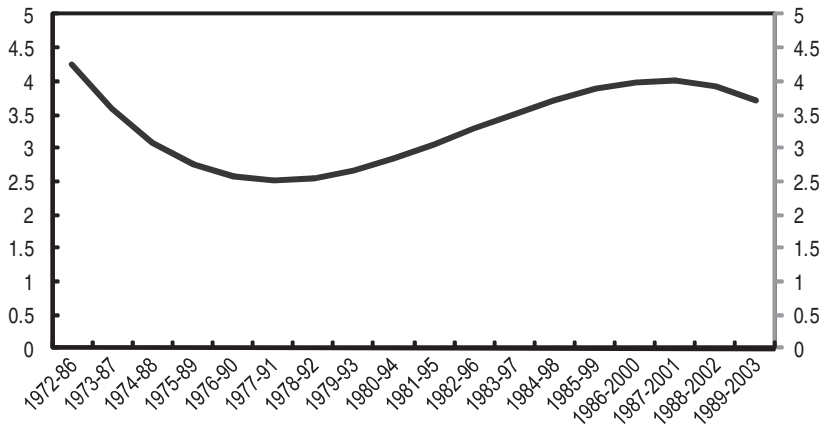
However, trade liberalisation does not appear by itself to have harmed employment in South African manufacturing.

Figure 5.7. Labour market indicators

Employment, in thousands



Labour flexibility Index (a high score in the labour flexibility index indicates greater rigidity)



Source: Fedderke and Hill (2006).

While the introduction of a wage subsidy⁹ in order to address high unemployment may not be ideal, at least it has the merit of acknowledging that labour costs constrain the effective functioning of the labour market.

The affordability of this intervention in fiscal terms is a separate, if important, policy question.

Policy implications

What are the policy implications that arise from these findings for an emerging economy with a history of poor industrial and labour market policies, combined with a high degree of natural resource dependence? For most emerging-market economies, the domestic economy is simply too small to allow for domestic demand-based growth. Some reliance on export markets is therefore unavoidable to sustain long-term growth.

Where industrial structures are shaped by policy intervention that favours import substitution and the development of large national champions, the domestic market may be dominated by firms that are sufficiently large to foster competition, but insufficiently large to reap the benefits of economies of scale, which would allow them to compete in world markets. The problem is complicated when labour market distortions constrain access to jobs and maintain high wages for insiders. The obvious policy response in such an environment is to liberalise the economy in order to foster competition in product and labour markets.

So how far has South Africa come in reforming its economy in order to raise competitive pressure? It is not clear it has constrained the pricing power of South African producers (see the discussion of Edwards, 2005).

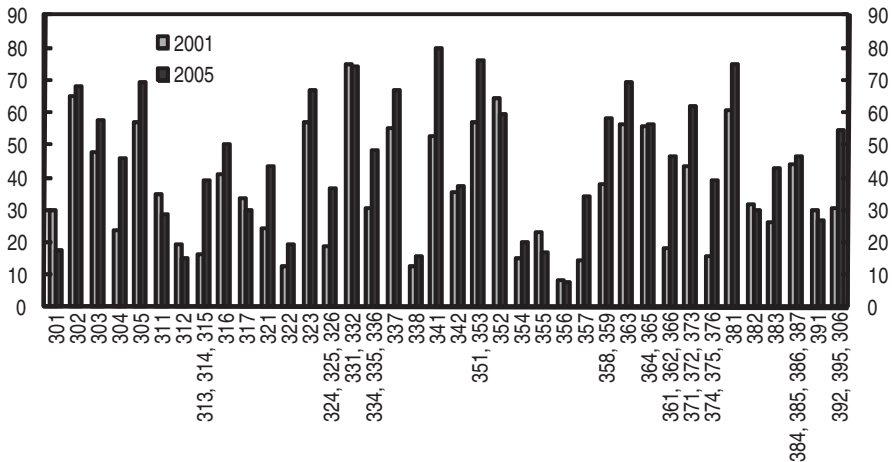
Provided that there is a link between concentration and pricing power, which appears to be supported by the empirical evidence reported in Fedderke, Kularatne and Mariotti (2007), there are arguably positive developments for South African manufacturing industry over the course of the 2000s. Fedderke and Naumann (2009), using data for three-digit manufacturing sectors, show that concentration declined across virtually all industries from 1996-2001, after a long period of steady increase during 1972-96. Unfortunately, however, this finding must be qualified, since the data collection methodology changed dramatically from 1996-2001, thereby undermining comparability. For this reason the CR4 and CR10 firm concentration ratios are reported for output in three-digit manufacturing sectors during 2001-05 (Figure 5.8). The striking finding from the data is that the 2001-05 period saw a further strengthening of market concentration, at least as measured by these concentration ratios, as there was an increase in the proportion of output due to the 4 largest firms in 28 sectors, against a decrease in only 10 sectors. For the proportion reflecting the largest 10 firms, the result was even more marked, with an increased share in 31 sectors, against a decrease in only 7. Given the result reported in Fedderke, Kularatne and Mariotti (2007) of a strong association

between pricing power and industry concentration, the rising industry concentration during the 2000s is undesirable from the point of view of fostering the competitive pressures that Aghion *et al.* (2008) and Aghion *et al.* (2009) identify as important contributors to productivity growth.

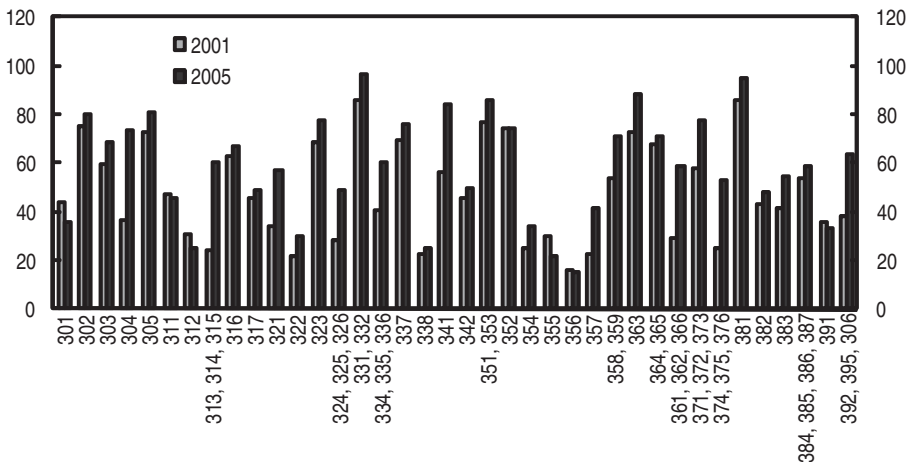
Figure 5.8. Output concentration: CR4 and CR10 ratios, 2001 and 2005

In per cent of output

Relative contribution of four largest firms (CR4), 3-digit manufacturing sectors



Relative contribution of ten largest firms (CR10), 3-digit manufacturing sectors: 2001 vs 2005



Source: Statistics South Africa (Manufacturing Industry: Large Sample Survey, 2001 and 2005).

Growth, innovation and human capital

Modern growth theory has placed innovation and human capital at the heart of productivity growth. Certainly there is empirical evidence to suggest that human capital is important for growth in South Africa. Fedderke (2006b) estimates a Schumpeterian growth model, which incorporates both the impact of research and development (R&D) and human capital on output growth, and shows that R&D expenditure has a more than proportional impact on real output growth in South African manufacturing. Indicators of the quality, rather than the absolute quantity, of human capital are most closely associated with productivity growth, as measured by total factor productivity (TFP). In addition, openness to trade is found to have a positive impact on productivity growth, and industry concentration has a negative impact. These results are consistent with the findings in the previous sub-section.

In the case of South Africa, while the proportion of GDP spent on R&D is comparable to that of other middle-income countries, but the number of R&D scientists per million of population is lower (Table 5.1). South Africa fares unfavourably in terms of R&D performance even with respect to China, which has a considerably lower level of per capita GDP. More recent data indicate further improvements, but even so R&D spending has not yet reached 1% of GDP and is certainly far from the 2-4% of GDP level reported by countries with a strong reliance on innovation in growth.

Table 5.1. R&D indicators: International comparisons

	Researchers in R&D (Per million people)		R&D expenditure (% of GDP)	
	1990-99	2000-05	1990-99	2000-05
Brazil	-	344	0.82	0.99
China	432	625	0.70	1.21
Russian Federation	3532	3399	0.99	1.18
India	138	-	0.69	0.85
South Africa	665	307	-	0.76
Low income countries	-	-	0.66	0.73
Middle income countries	716	703	0.60	0.77
High income countries	3449	3741	2.33	2.46
South Africa			2005/6	2006/7
R&D expenditure (million Rand)			14149.2	16520.6
R&D expenditure (% of GDP)			0.92	0.95
Civil R&D expenditure (% of GDP)			0.86	0.89
R&D personnel			28798	30986
Researchers			17303	18572
Researchers (headcount)			39264	39591
R&D personnel (per 1000 workers)			2.4	2.5
Researchers (per 1000 workers)			1.5	1.5

Source: World Bank (World Development Indicators) and HSRC (2009:4).

Given the increasing reliance of South African growth on gains in TFP, the continued weakness of R&D expenditure remains a sign of fragility. Equally worrying is the fact that the education system, and the schooling system in particular, continues to deliver poor outcomes in mathematics and science, which Fedderke (2006b) reports as being the key drivers of long-run productivity growth. The dramatic downward trend in both the proportion of graduates in mathematics and the share of university degrees in the natural, engineering and mathematical sciences is a source of concern. Improvements in performance have been limited, despite an already high level of expenditure on education (Simkins, 2005a and 2005b; Van Den Berg, 2009). As a result, skills are likely to remain in short supply for some time, especially since further increases in expenditure on education are likely to be constrained.

Starting to address the significance of the service sector

The structure of South African output is unusual, in that the contribution of services is considerably higher than in comparator emerging-market economies and arguably more akin to the structure of developed economies. More research is therefore needed on this sector's performance and contribution to growth. After a long period of fairly substantial external deficits in services during 1970-2000, exports have been growing faster than

imports since 2000. This trend raises important questions as to whether or not South Africa has comparative advantages in services, rather than in manufacturing, especially given the labour costs that are faced by South African producers.

This section focuses on the financial sector for three reasons. *Firstly*, the financial sector is particularly large in South Africa by international comparison. *Secondly*, the process of international reintegration of the South African economy may well have had the most significant impact on the financial sector. *Thirdly*, the interaction between financial deepening and long-run growth is not only pronounced, but also appears to assume a somewhat unusual structure in South Africa. Kularatne (2002) finds that both credit and stock market liquidity have a positive effect on per capita GDP. Crucially, however, the impact is indirect, via the investment channel, with equity market performance stimulating investment in physical capital and credit fuelling the development of the equity market. Thus, credit appears to foster liquidity in the stock market, rather than increasing investment in physical capital stock directly. One possible explanation for the absence of a direct association between financial intermediation and the real sector may be that firms find it difficult to raise working capital from financial intermediaries for investment projects, indicating the presence of credit rationing within the South African economy.

International financial integration

Under the approach taken by Obstfeld (1994), agents share their idiosyncratic risks by trading in the world capital market, with the consequence that consumption will become correlated with world consumption because trade in assets will cancel out country-specific shocks (Leiderman and Razin, 1994). The empirical prediction concerning the correlation of international consumption depends on the ability of agents to engage freely in the trade of assets, on the completeness of markets and also on the verifiability and insurability of events on which an asset returns depend. When this occurs, differences in consumption growth rates across countries are uncorrelated with any random variable on which contingent contracts can be written. All idiosyncratic or country-specific consumption risks that relate to a verifiable random event will be traded away through the appropriate insurance markets. Under these conditions, differences in consumption growth rates would be a function of non-verifiable events only.

The most immediate test of this hypothesis is to estimate the correlation between changes in consumption in any given country, and changes in world consumption or in consumption in a country with a financial market of relevance (such as the United States), such that:

$$\Delta \log(C_{it}) = \alpha + \beta \Delta \log(C_{wt}) + \varepsilon_{it} \quad (1)$$

where C_{it} and C_{wt} denote domestic and world consumption in period t and country i , respectively.

Perfect financial integration implies that $\beta = 1$. There is evidence of partial diversification of domestic consumption risk (partial financial integration) if $0 < \beta < 1$.

A weaker result, albeit still consistent with increasing financial integration, would be of $\partial \beta / \partial t > 0$ over sub-periods. While not providing evidence of perfect financial integration (which requires $\beta = 1$), this finding would still suggest increased financial integration, while allowing for domestic consumption risks to be in part uninsurable, precluding perfect risk diversification.

One problem with the interpretation of β is that, if changes in the growth rate of world output are correlated with changes in the growth rate of domestic output, and changes in the growth rate of domestic output are also correlated with changes in the growth rate of domestic consumption, β might reflect the impact of output growth convergence rather than of rising consumption risk diversification. This would be plausible if output growth rates were converging at a faster rate than consumption growth rates. To allow for the possibility that variations in the growth rate of consumption are brought about by external shocks to output, rather than variations in the growth rate of world consumption, the following equation is estimated:

$$\Delta \log(C_{it}) = \alpha + \beta \Delta \log(C_{wt}) + \gamma \Delta \log(GDP_{wt}) + \varepsilon_{it} \quad (2)$$

Given the impact of multi-collinearity on the statistical significance of β and γ , the relevant question here is whether $\Delta \log(C_{wt})$ or $\Delta \log GDP_{wt}$ has the strongest impact, and hence whether $\beta > \gamma$ or $\beta < \gamma$, corresponding to increasing diversification of consumption risk due to financial integration and the impact of shocks to world output affecting domestic output and, in turn, domestic consumption.

Equation (2) can be estimated using the log difference of per capita consumption. National income and population data come from the Penn World Table (Version 6.1), as compiled by Heston, Summers and Aten (2002). All variables are measured at 1996 international prices and in real per capita terms. The measurement of GDP, from which all other components are derived, is a fixed base index where the reference year

is 1996. Per capita consumption is weighted by population using $C_{wt} = \sum_{i=1}^N n_{it} C_{it}$, where n denotes country i 's share in "world" population at time t . The aggregates of consumption used in the study are for "world" (World), augmented "OECD" (OECD) as defined by the original Obstfeld study and "emerging market" (EM) groupings.

Changes in the correlation coefficients between changes in the log of real consumption in a range of emerging-market economies and changes in the log of real consumption for the various country aggregates over the 1960-79 and 1980-99 periods support the hypothesis of rising financial integration for emerging-market economies as a whole, and for South Africa in particular. For South Africa, changes in the correlation coefficient are generally positive over the two sample periods, indicating that there is increased financial integration with respect to the world and to emerging-market economies, and also with respect to the following countries: Brazil, Chile, Hong Kong China, Indonesia, Malaysia, Mexico, Philippines, Singapore and Thailand. Evidence of decreased financial integration emerges with respect to the OECD area and Argentina, Chinese Taipei and South Korea.¹⁰ However, it is also important to note that the correlation coefficients between consumption changes are not equal to unity, suggesting that while financial integration has increased, it remains incomplete.

Although there is little evidence to suggest that $\beta = 1$ in equation (1) over the full sample, evidence of perfect financial integration would increase where the β coefficient is close to zero in the first sub-period and close to unity in the second sub-period (Table 5.2, Panel A). This appears to be the case in three countries: Chile, Singapore and Thailand. By contrast, for Chinese Taipei $\beta = 1$ cannot be rejected in either sub-period. Most estimates nevertheless have large standard errors and therefore low precision.

Table 5.2. Domestic consumption correlations, 1960-79 and 1980-99

Panel A: Domestic consumption growth regressed on world consumption growth													
	Argentina	Brazil	Chile	Hong Kong, China	Indonesia	South Korea	Mexico	Malaysia	Philippines	Singapore	Thailand	Chinese Taipei	South Africa
1960-79													
$\Delta \log(\text{Cw})$	0.12 (0.80)	0.72 (0.88)	0.80 (2.07)	1.68* (0.91)	-2.61* (1.00)	1.18* (0.54)	0.25 (0.34)	-0.29 (0.45)	-0.40 (0.51)	3.41 (3.46)	0.20 (0.54)	0.87* (0.29)	0.10 (0.31)
Adj. R ²	-0.05	-0.02	-0.05	0.12	0.24	0.17	-0.03	-0.03	-0.02	0.00	-0.05	0.30	-0.05
1980-99													
$\Delta \log(\text{Cw})$	3.03 (1.90)	2.79 (1.70)	4.13* (2.21)	0.40 (1.36)	-3.80 (2.50)	0.66 (1.52)	0.59 (1.50)	2.23 (2.43)	0.24 (1.09)	1.75* (0.98)	3.10* (1.68)	1.43* (0.70)	0.58 (0.89)
Adj. R ²	0.07	0.08	0.12	-0.05	0.06	-0.04	-0.05	-0.01	-0.05	0.12	0.11	0.15	-0.03
Panel B: Domestic consumption growth regressed on world consumption growth and world GDP growth													
	Argentina	Brazil	Chile	Hong Kong, China	Indonesia	South Korea	Mexico	Malaysia	Philippines	Singapore	Thailand	Chinese Taipei	South Africa
1960-79													
$\Delta \log(\text{Cw})$	-0.32 (2.30)	-2.81 (2.35)	-9.31* (5.35)	-0.74 (2.87)	-0.13 (3.15)	0.51 (1.53)	-0.30 (0.98)	-1.53 (1.25)	0.57 (1.46)	19.20 (10.31)	-1.13 (1.51)	0.61 (0.83)	-1.32* (0.81)
$\Delta \log(\text{GDPW})$	0.39 (1.91)	3.14* (1.95)	8.99* (4.44)	1.72 (1.93)	-1.76 (2.12)	0.59 (1.27)	0.49 (0.81)	1.10 (1.03)	-0.87 (1.21)	-11.21 (6.93)	1.18 (1.25)	0.23 (0.69)	1.27* (0.68)
Adj. R ²	-0.11	0.06	0.11	0.11	0.23	0.13	-0.06	-0.02	-0.05	0.09	-0.05	0.26	0.08
1980-99													
$\Delta \log(\text{Cw})$	2.17 (2.91)	4.33* (2.57)	1.05 (3.25)	2.45 (1.98)	-4.57 (3.82)	0.28 (2.33)	1.04 (2.30)	6.10 (3.51)	0.80 (1.67)	1.15 (1.54)	3.88 (2.57)	0.28 (1.00)	1.19 (1.35)
$\Delta \log(\text{GDPW})$	0.85 (2.12)	-1.51 (1.87)	3.02 (2.37)	-2.01 (1.44)	0.76 (2.79)	0.37 (1.69)	-0.43 (1.68)	-3.78 (2.55)	-0.56 (1.21)	0.58 (1.14)	-0.77 (1.87)	1.13* (0.73)	-0.60 (0.98)
Adj. R ²	0.03	0.06	0.15	0.00	0.01	-0.10	-0.10	0.05	-0.10	0.08	0.07	0.22	-0.07

Source: Author's estimations.

There are several countries for which the coefficient on world consumption growth is significantly different from zero in the first sub-period, but not in the second, including Hong Kong China, Indonesia and South Korea. This finding is difficult to explain, as it is hard to argue that these countries have experienced a substantial decrease in their international integration. The result for Hong Kong China could be due to increasing financial integration with China at the expense of the rest of the world.

The remaining countries show no particular trend in their coefficient estimates over time. However, Argentina, Brazil, Malaysia, Mexico, Philippines and South Africa show an increase in the partial correlation coefficient estimated under equation (1), with only Indonesia reporting a decrease. In the case of South Africa, where the sample period is split into four decades, the estimated coefficient is now significantly different from zero in the 1990s, thereby confirming the increased integration of South Africa into world financial markets.

Finally, we also report results from the estimation of equation (2), which accounts for the possible impact of growth convergence on the partial correlation estimated by equation (1) (Table 5.2, Panel B). As world consumption growth, $\Delta \log(C_{wt})$, and world output growth, $\Delta \log(GDP_{wt})$, are strongly collinear, the estimates of β and γ are not expected to be significant.

Abstracting from statistical significance, the results show that in the first sub-period, growth convergence dominates financial integration, with $\beta < \gamma$, in Argentina, Brazil, Chile, Hong Kong China, South Korea, Malaysia, Mexico, South Africa and Thailand. Only for Chinese Taipei, Indonesia, Philippines and Singapore does $\beta > \gamma$, suggesting the preponderance of financial integration during 1960-79. By contrast, over the second sub-period, the reverse is true for the majority of countries, with $\beta > \gamma$, suggesting the primacy of financial integration over growth convergence in Argentina, Brazil, Hong Kong China, Malaysia, Mexico, Philippines, Singapore, South Africa and Thailand. Growth convergence only dominates in Chile, Chinese Taipei, Indonesia and South Korea.

The findings reported above are consistent with the evidence presented for the developed world by Obstfeld (1994). Financial integration appears to have improved in emerging-market economies. Furthermore, controlling for the potential impact of growth convergence strengthens the evidence in favour of increased financial integration in the case of South Africa, particularly during the 1990s. Nevertheless, integration remains incomplete.

The size of the financial sector

The financial sector is relatively large in South Africa, even in comparison with developed countries. For example, financial sector output never rose above 10% of GDP in the United States over the 1850-2007 period; yet in South Africa it accounted for about 18% of GDP during 2005-09, approximately twice the size of the sector in the United States. This ratio has been trending upwards in South Africa since the mid-1960s, in particular during the early 1980s and since 1995. The period from 1985 to 1995, while still characterised by growth, showed a more muted rate of increase in the size of the financial sector.

The key policy questions are therefore related to the factors that might account for the financial sector's relatively large size in South Africa and their implications for the performance of the economy in the longer run? According to the methodology proposed by Philippon (2008),¹¹ financial globalisation is not regarded as an explanatory variable in the United States, given that the country (unlike, say, the United Kingdom) is not a large exporter of financial services and is a net importer of such services. In addition, since financial globalisation is a recent phenomenon, it cannot account for the growth of the financial sector throughout the post-war period. Evidence for South Africa is symmetrical. The net trade balance in both direct and non-direct investment income has been negative for the past 15 years. Indeed, it is only in net travel receipts that South Africa has maintained a net positive trade balance. As such, South Africa continues to be a net importer of financial services, at least at this level of aggregation of the data. Furthermore, South Africa's reintegration into the world financial system took place in the 1990s and 2000s, and therefore cannot account for the steady rise in the share of the financial sector since the mid-1960s.

Standard explanations for the growth of services rest on the elasticity of substitution between goods and services, and a rapid rise in productivity in the manufacturing sector. However, provided that financial services do not enter the objective function of agents but their budget constraints instead, these theoretical explanations for the growth in financial services cannot apply. Empirically this is borne out by low correlations between productivity growth in the manufacturing sector and the share of the financial sector in GDP in the United States. For South Africa, the correlations between the share of financial services in GDP and real GDP (-0.22), real per capita GDP (-0.06), real output per worker (0.04) and real output per worker in the manufacturing sector (-0.02) are also relatively low.

The overlapping-generations general-equilibrium model developed by Philippon (2008) includes agents who choose to work either in the financial

or the real sector, as well as corporate finance and monitoring in response to moral hazard. In the non-financial sector agents face heterogeneous investment opportunities and levels of productivity, and the limits moral hazard places on borrowing, such that agents with low cash flow and good investment opportunity cannot necessarily invest, although the financial sector lowers the borrowing constraint. In equilibrium, the market for corporate financial services clears, and agents are indifferent between working in the financial and real sectors.

The main findings of the model are that, on the supply side, efficiency gains in finance reduce credit rationing and increase (reduce) the size of the financial sector when the sector is inefficient (efficient). On the demand side, demand for finance is high when young firms/industries have better investment opportunities than large/established firms/industries (and vice versa). The intuition is that demand for financial services rises when firms have low cash flows and plentiful investment opportunities. Technically, the result is driven by the joint distribution of current productivity and investment opportunities that drives aggregate demand for financial services, such that low macro demand for financial services may emerge even when moral hazard is severe at the micro level (since firms do not face cash flow constraints).

Efficiency gains in finance have an ambiguous effect on the size of the financial sector. Efficiency gains imply that a given level of monitoring can be performed by a smaller sector, but the fall in the price of financial services raises demand for intermediation. Where the financial sector is small, the demand effect dominates the supply effect. On the other hand, if the efficiency of the financial sector becomes sufficiently large, the supply effect becomes dominant. Under balanced growth, the share of finance in output remains constant. The issue is thus the response of the financial sector to the distribution of investment opportunities (across firms facing differential cash-flow constraints).

The crucial relations in the model are given by equations (21) and (22) in Philippon (2008):

$$\frac{\mu}{\pi} = \left(\frac{\bar{\alpha}}{\pi V} + 1 - F^\theta(\alpha_l) \right) m(\alpha_l) - \int_{\alpha_l}^{\alpha_h} m(\alpha) dF^\theta(\alpha) \quad (3)$$

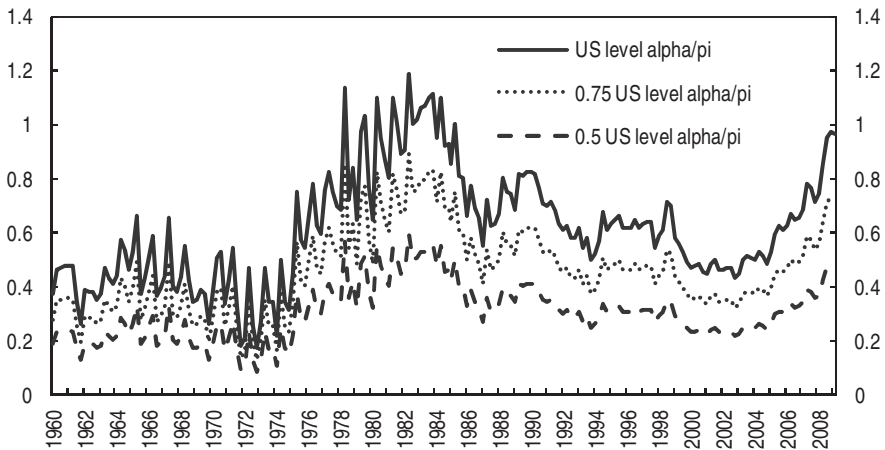
$$\mu(1-n) = \pi \int_{\alpha_l}^{\alpha_h} m(\alpha) dF^\theta(\alpha) \quad (4)$$

where n denotes the mass of agents in the real sector, with $(1-n)$ in the financial sector; $\pi \equiv \Pr(\theta = \tilde{\theta})$ denotes the probability of an agent having an investment opportunity $\tilde{\theta}$ in the real sector; α denotes the relative

productivity shock of the agent in his/her first period of life, with $E[\alpha] \equiv \bar{\alpha}$ being the unconditional mean of α , given that α and θ are correlated; $F^{\theta}(\alpha)$ denotes the cumulative distribution function of α conditional on $\theta = \theta$; $\alpha_h = 1 - (\theta - z)/(r + \delta)$ denotes a threshold level of productivity that triggers financing without monitoring, while α_l denotes the threshold below which financing is not available, such that $\alpha_h - \alpha_l$ denotes the productivity range for which financing with monitoring is profitable and under which financial constraint is present; z denotes the proportion of units of capital an agent can steal at time $t+1$, such that z/θ captures the severity of the moral hazard problem; r denotes the interest rate and δ the depreciation rate of capital; μ denotes the units of monitoring each agent in the financial sector generates; and m denotes the monitoring units produced by the financial sector, such that monitoring reduces the proportion of units of capital an agent can steal to $(z-m)$; finally v denotes the net present value of the project gross of intermediation costs.

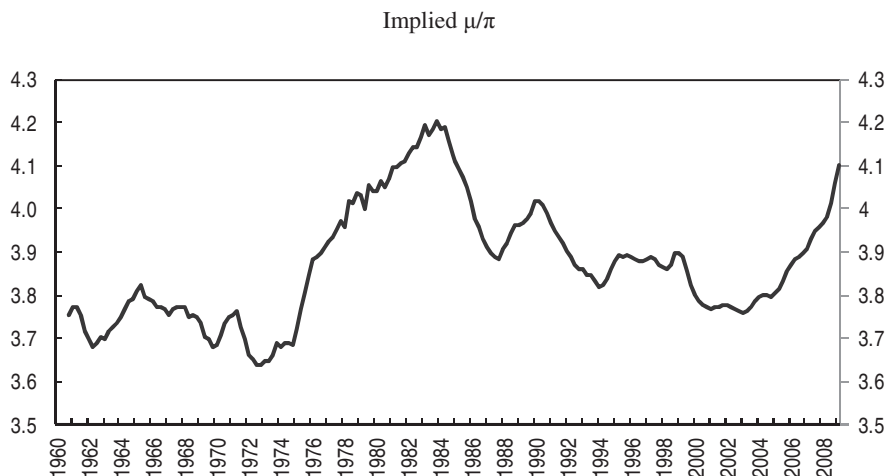
Then, μ/π can be thought of as the efficiency of the financial sector, while $E[\alpha]/\pi = \bar{\alpha}/\pi$ is a technology parameter characterising production in the real sector. In calibrating the model to South Africa, the moral hazard intensity z/θ is estimated at 0.75. Under the assumption of an identical ratio of market-to-book value of 2 and given that the real interest rate implied by yields on 10-year government bond averages 0.75, the moral hazard intensity is only marginally above that of the United States. For a market value to book ratio of 1.5, the level assumed by Philippon (2008) for the United States, the moral hazard intensity coefficient is 0.83. Similarly, while Philippon (2008) sets $\alpha_h = 0.5$, the average parameter over the sample period, given the real interest rate, is only marginally above 0.5 for South Africa.

The implied proportion of firms that have access to financial intermediation, $1 - F(\alpha_l)$, is sensitive in level terms to the technology parameter of production in the real sector, $\bar{\alpha}/\pi$, although this is not true for the trend structure. Figure 5.9 reports the implied proportion of firms with access to financial intermediation under the assumption that South African real sector productivity is 1, 0.75, and 0.5 times the level of the United States. The empirical evidence is that credit rationing has been a persistent feature of the South African economy, although with differential intensities over time. While the period corresponding to the gold-price boom of the early 1980s increased the proportion of firms with access to intermediation (and the trend increased over the late 1990s and 2000s), the 1970s, 1980s and 1990s were characterised by relatively severe credit rationing. Even with the improvement of the 2000s, if South African productivity is 0.75 of the level of the United States, at least 30% of firms are credit constrained. With productivity at 0.5 of the US level, the proportion of credit-rationed firms rises to approximately 50%.

Figure 5.9. Credit rationing indicators, 1960-2008Implied $1-F(\alpha_i)$ 

Source: Author's simulations.

The trends in the proportion of credit-rationed firms are mirrored by the implied estimate of the efficiency parameter of the financial sector, μ/π , which rose during the 2000s, following a period of protracted losses in the 1980s and 1990s (Figure 5.10). However, the marked increase in the size of the financial sector corresponds to the efficiency gains implied by Figure 5.10.

Figure 5.10. Implied efficiency of the financial sector, 1960-2008

Source: Author's simulations.

One of the reasons why South Africa continues to maintain its “dual economy” structure is that potential investors are unable to access credit markets due to credit rationing. However, the rising efficiency of the financial sector implies that further financial deepening could be a source of competitive strength for the economy. An obvious policy implication is that the efficiency of the financial sector requires further improvement and that access to finance by new firms merits attention.

Conclusions

The analysis developed above suggests that the main constraints to sustainable growth in South Africa are:

- Uncertainty surrounding investment projects, which hampers both domestic capital accumulation and foreign capital inflows. The role of institutions, particularly the security of property rights, is especially important in this regard. The predictability of policy actions is a further requirement.
- Infrastructure investment, while improving over the past decade, continues to fall short of the country's capital-deepening needs.
- Market distortions continue to be a feature of the South African economy. Productivity growth is hampered in product markets by

insufficient competition. While nominal import tariffs have come down since 1994, concentration at the firm and industry levels continues to suggest the presence of significant pricing power despite trade liberalisation.

- The functioning of labour markets is also constrained by rigidities, resulting in continued high unemployment.
- Inadequate human capital and R&D activity constrain the ability of the economy to switch to a TFP-intensive growth path.
- The role of the financial sector merits special attention. The financial sector is unusually large in South Africa, in part due to the continued presence of credit rationing and the need for firms to obtain financial monitoring services in the face of moral hazard. It also reflects the presence of potential efficiency gains in financial intermediation during the 2000s.
- An aspect of South African public finances that deserves more attention in technical analysis and policy debate is the distribution of public expenditure. South Africa has opted for the development of a strong social security system relatively early in its development, which is understandable given the country's history. The question is whether this is going to constrain the budget's ability to sustain the level of infrastructure and human capital expenditure that is needed to improve the country's growth prospects.

Notes

1. See Fedderke (2002), Arora and Bhundia (2003), Arora (2005), Du Plessis and Smit (2009) and Eyraud (2009).
2. There are at least 11 recent studies on investment in South Africa. For a comprehensive review see Fedderke (2009).
3. See Fielding (1997, 2002), Kularatne (2002), Mariotti (2002), Romm (2005), Fedderke & Luiz (2008a).
4. See Fielding (1999, 2000), Fedderke (2004), Fedderke and Szalontai (2005) and Fedderke and Naumann (2005).
5. Both the political instability and the property rights variables stem from Fedderke, De Kadt and Luiz (2001).
6. The only exception to the predominance of portfolio investment stocks in the post-1990 era was between 1999 and 2001, a period during which FDI stocks seem to have grown much faster than portfolio investment stocks. However, as noted above, this increase in FDI was not due to new FDI inflows, but rather to the fact that four of South Africa's largest multi-national corporations moved their listing from the Johannesburg Stock Exchange to the London Stock Exchange. The South African plants of these firms thus became part of South Africa's FDI stocks, inflating the growth of FDI stocks.
7. See Fedderke, Kularatne and Mariotti (2007) at the three digit manufacturing level, with the latter result finding further support from Edwards and van De Winkel (2005), Fedderke and Hill (2007), and Aghion et al (2008).
8. It should be noted that the conventional view of the wage elasticity of employment in South Africa centres on 0.7, which explains why the anticipated decrease in the nominal wage required for appreciable increases in employment are viewed as potentially large. However, it is not clear that the estimated elasticity is correct. When the labour force is disaggregated by skills type, wage elasticities are often greater than 1 in absolute terms especially for unskilled labour. For the manufacturing

sector, labour usage equations which control for the relative price of capital to labour, also report price elasticities of labour usage well above unity.

9. As proposed in the 2010 State of the Nation, and Budget, for instance.
10. Care must be taken in interpreting this evidence, however. First, note that consideration of correlation coefficients between countries and country aggregates over four subperiods, the 1960s, 1970s, 1980s and 1990s, indicates that for South Africa the increased correlation during the 1990s is centred on the OECD and the world as a whole. This evidence is consistent with the notion that the South African economy reintegrated with its traditional trading partners in the OECD during the course of the 1990s, rather than with emerging market economies. Second, recall that OECD for this study denotes an augmented grouping of countries, defined by the original Obstfeld study.
11. The overlapping generations general equilibrium model developed by Philippon (2008) includes agents who choose to work either in the financial or the real sectors. In the non-financial sector, agents face heterogeneous investment opportunities and levels of productivity, and, because of moral hazard, agents with low cash flow and good investment opportunity cannot necessarily invest, though the financial sector weakens their borrowing constraint. In equilibrium, the market for corporate financial services clears and agents are indifferent about choosing between working in the financial and real sectors.

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Growth and Sustainability in Brazil, China, India, Indonesia and South Africa

Growth and Sustainability in Brazil, China, India, Indonesia and South Africa is based on the proceedings of a conference, organised by the OECD, on the growth performance of these large emerging-market economies. The book brings together contributions from distinguished policy makers and scholars. It discusses the growth experiences of these countries, including how they have fared in the wake of the recent global financial crisis. It also examines these countries' prospects for sustaining strong growth over the long term.

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