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SOUTH-SOUTH TRADE IN GOODS

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ABSTRACT

The empirical analysis presented in this paper indicates that trade between developing countries (South-South trade) offers a wide scope for specialisation and efficiency gains. The first part of the paper takes an *ex-post* perspective and employs the gravity methodology to contribute to understanding past trends in world goods trade with a special focus on South-South trade. Analysis shows that far from experiencing a "death of distance", South-South trade is still severely constrained by distance-related trade costs and that reducing South-South tariff barriers can have a major impact on trade flows. The second part employs a computable general equilibrium model in a forward looking assessment of the balance of gains from multilateral trade liberalisation with a special focus on South-South trade. This analysis suggests that, from a development point of view, South-South liberalisation is at least as important as tariff-free market access to Northern markets.

Keywords: South-South trade, gains from trade, distance, tariff barriers, gravity model, computable general equilibrium model

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SOUTH-SOUTH TRADE IN GOODS[1]

Executive Summary

Over the period 1985-2002, South-South trade in goods has expanded rapidly but unevenly. Detailed econometric analysis, involving over 400 individual regressions and nearly 1.5 million lines of data, is used to examine this important, yet not very well understood, phenomenon. The puzzling nature of the expansion of South-South trade stems from the following key observations:

1. Trade barriers affecting South-South trade are still much higher than those affecting other trade: 11.1% on average, compared with 4.3% for North-North trade.
2. Analysis shows that far from experiencing a "death of distance", South-South trade is still severely constrained by distance-related trade costs: whereas a 10% increase in distance tends to reduce North-North trade by about 10%, the comparable figure for South-South trade is 17% (keeping all other factors constant). In both cases, the figures for 2002 are barely different from those for 1985.
3. Econometric modelling also suggests that reducing South-South tariff barriers can have a major impact on trade flows: on average, a 10% tariff cut is associated with a 1.6% increase in exports. This translates to an additional USD 5.7 billion in export earnings per year (based on 2002 data). Interestingly, data indicate that an equivalent reduction in North-North or North-South tariff barriers does not result in an equally significant impact on trade flows.

That South-South trade has evolved in the way it has in spite of these difficulties suggests there are potentially significant gains to be reaped from a more pro-active and facilitating policy stance. The results of this study suggest that further tariff liberalisation at the multilateral level, combined with efficiency gains in transport and trade-related services—including through concerted efforts at the multilateral level—would constitute critical moves to help South-South trade maintain its momentum, and spread its benefits more evenly across the countries involved.

The main findings of the ex-post part of the observed trends in world trade are:

- Since the early 1990s, South-South trade has expanded at a more rapid rate than either North-North or North-South trade, though starting from a much lower base.
- Growth patterns in North-North, North-South and South-South trade are not perfectly in phase with one another.
- South-South trade has come to account for an increasingly large part of overall trade involving the South. However, North-South exchanges still account for the major part of Southern trade.
- South-South trade involving Low Income countries has generally grown more slowly than South-South trade involving Upper- and Lower-Middle Income Countries.

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1. This paper has been co-authored by Przemyslaw Kowalski (OECD Trade Directorate) and Ben Shepherd (Groupe d'Economie Mondiale, Sciences Po and consultant to the OECD Trade Directorate). Parts of it have been incorporated into Chapter 5 of Trading Up: Economic Perspectives on Development Issues in the Multilateral Trading System, *OECD Trade Policy Studies*, OECD, 2006. The paper has benefited from statisical assistance provided by Karine Logez. The authors gratefully acknowledge assistance in aggregation of MacMap database by David Laborde and comments from Raed Safadi and Marco Fugazza.

- Trade growth patterns amongst the different income groups making up South-South trade are not perfectly in phase. However, they seem more in phase than growth patterns in North-North, North-South and South-North trade.
- Aggregate figures mask considerable heterogeneity in importance of South-South trade across commodity groups.
- There are significant differences in product composition of South-South as compared to North-South and North-North trade.
- South-South trade is generally subject to much higher barriers than North-South or North-North trade.
- Geographical distance tends to impact South-South trade—regardless of the income group involved—more strongly than North-North trade. The distance effect is also noticeably stronger for trade amongst Low Income countries and between Low Income and Lower-Middle Income countries, than for others.
- Available evidence suggests that policy barriers are a significantly more important determinant of South-South trade than other trade flows. This suggests a considerable scope for trade policy to boost trade between (and potentially welfare of) Low and Lower-Middle Income countries.
- Given that tariffs facing South-South trade are, on average, much higher than those facing other types of trade, there is considerable scope for reductions in protection to bring about further growth in South-South trade. This is particularly true since South-South trade appears to be more sensitive to tariff reductions than are other trade flows.

The main findings of the forward-looking CGE analysis are:

- The scenario of complete removal of tariffs worldwide results in total welfare gains of approximately USD 68 billion of which around USD 29 billion accrue to countries in the North and approximately USD 39 billion to countries in the South.
- North-North liberalisation accounts for around 14% of the global gains.
- The North can gain twice as much—approximately 28% of global welfare gains—from liberalisation by the South.
- Approximately 57% of global gains from tariff removal accrue to countries in the South of which as much as half (28% of global gains) are obtained from South-South liberalisation.
- This means that while substantial gains can be obtained by the South from liberalisation by the high income countries, South-South tariff liberalisation is indeed at least as important a scenario for the countries in the South.
- South-South liberalisation contributes yet a higher share (57%) to the gains by low and middle income countries from removing agricultural tariffs.
- North-South manufacturing liberalisation is relatively more important than South-South liberalisation for the South as a group.
- Gains from South-South manufacturing liberalisation are still quite significant and amount to approximately 11% of world gains form tariff reduction on all merchandise products.
- Half of the gains from South-South tariff liberalisation are captured by low and middle income countries in Asia.

- Most of the gains (68%) from South-South liberalisation in Asia are realised on a regional basis (*i.e.* countries benefit most from liberalisation by their neighbours).
- One prominent exception to this rule is China which actually gains more than double as much from liberalisation of trade with Latin American, MENA and Sub Saharan countries than from liberalisation with other Asian countries.
- The picture is slightly different in Latin America and Sub Saharan Africa where regional gains account for respectively 45% and 39% of gains from South-South trade—almost all the remaining gains can be attributed to trade with low and middle income countries in Asia.
- Only a part of gains from South-South trade could be realised through regional agreements, mainly in Asia. More generally, many low and middle income countries benefit most from freer trade with similar countries in other regions. This points to multilateral negotiations as an important vehicle for realising the gains from South-South trade.
- Overall, the aggregate results from the CGE analysis suggest that, from a development point of view, South-South liberalisation is at least as important as tariff-free market access to Northern markets.

1. Introduction

1. The question of furthering trade integration between low- and middle-income countries – referred to in the literature as South-South[2] trade – is at the heart of the Doha Development Agenda (DDA) negotiations. Rapid economic expansion in a number of countries of the South (*e.g.* WTO, 2003; World Bank, 2005), as well as evidence of the relatively high trade barriers faced by intra-South trade, suggest that further opening by the South, particularly on a non-discriminatory basis, can contribute substantially to meeting the development objectives of the DDA. Welfare gains from South-South integration are also likely to be associated with less pronounced relative price changes and thus less severe structural adjustment (*e.g.* Fontagné *et al*., 2004). This can open up possibilities for learning by doing and developing economies of scale to break into the North's markets for more technologically advanced products (Otsubo, 1998).

2. A rationale for trade integration of South-South goods and services can be made under both inward and outward-oriented development paradigms (*e.g.* Otsubo, 1998). Under the former, South-South trade is viewed as an alternative to North-South trade that would enable the South to reduce its dependence on the technologically dominant markets of the North and, through protection of "infant industries", break into higher value product markets. A political manifestation of this concept can be traced back to the mid-1970s and the beginnings of the Global System of Trade Preferences among Developing Countries (GSTP).

3. Under the outward-oriented development paradigm, South-South trade integration is seen as complementary to North-South trade as Southern markets, with their high growth potential, may offer attractive export opportunities. This type of South-South integration can be achieved through non-discriminatory integration in the multilateral GATT/WTO system or through non-discriminatory regional trade agreements. Indeed, rules-based South-South integration is undoubtedly one important reason for increasing the participation of low- and middle-income countries in the GATT/WTO.

4. Still, until they were suspended in July 2006, the DDA negotiations (*e.g.* in the Negotiating Group for Non-agricultural Market Access – NAMA) had been very much aligned along the North-South divide. The North, with its generally lower trade barriers, had been urging ambitious commitments on the part of the South. At the same time, the South had continued to seek derogations from WTO rules and commitments on the grounds of their development needs. The reasoning is that their liberalisation may disproportionately burden these countries with additional short-term costs. It is also argued that, despite already low levels of protection in the North, the market shares of these countries and the associated potential for technology spillovers suggest that further liberalisation by the North would generate substantial gains in the South even without significant liberalisation by the South. Does this situation reflect a missed opportunity for development through expanded South-South trade or a coherent position given the potentially minimal gains from such trade?

5. Economic theory does not give a clear answer, as different assumptions provide rationales both for gains from North-South and South-South integration. The balance of gains is ultimately an empirical matter. Perhaps surprisingly, notwithstanding the statistics on the expansion of markets in the South and shares of South-South goods trade – the evidence on South-South services trade is negligible – the literature offers very little in terms of analysis of underlying causes. As a result some of the most complex questions remain unanswered. They include: To what extent has the apparent surge in South-South trade

[2] The definition of "South" is not a stable one. This chapter uses the World Bank's classification of low- and middle-income countries with per capita gross national income not exceeding USD 9 075 in 2003 (see Table 5.A.1). This definition is quite an objective one but it is also possible to conduct a similar study using other indicators of economic development such as the share in world GDP or trade, human development indices, etc..

been driven by macroeconomic growth, lowering of trade barriers, the evolving role of trade costs, and cultural and other factors? Is the impact of trade costs and trade policy barriers on North-South trade different from those on South-South trade? If so, why? What are the potential gains from unrealised South-South trade and how do they compare with North-South trade?

2. South-South trade in the literature

Theory

6. Inquiries into the development potential of trade between low- and middle-income countries have to be seen as a sub-theme of research on the causes and effects of international trade. In recent years, this theme has re-emerged in the context of the economic effects of the proliferation of regional trade agreements (RTAs), on the one hand, and, on the other, the potential benefits that developing countries might obtain from the Doha round of multilateral trade negotiations.

7. It is worth noting at the outset that South-South trade does not clearly have a vast development potential. At the theoretical level, the notion of comparative advantage indicates that the potential for trade and welfare improvements is higher for trade between countries that are relatively dissimilar in terms of endowments or technology. Within this paradigm, North-South trade would achieve higher gains. Similarly, the transfer of technology linked to trade in capital goods with more technologically advanced countries may hold better prospects for developing countries than trade with less advanced countries.

8. However, the so-called "new trade theory" emphasises the existence of scale economies and differentiated products and posits that gains can be obtained from an exchange of varieties of similar products by similar countries. Moreover, the theory suggests that gains from intra-industry trade (IIT) (*e.g.* among similar low-income countries) may be realised through less significant adjustments of factor rewards that imply less marked structural adjustment than inter-industry North-South trade. If the conditions for South-South intra-industry trade exist or can be developed, such trade could offer an opportunity for learning by doing in a less competitive market environment and for developing externalities or economies of scale to break into the North's markets for more technologically advanced products (Otsubo, 1998). Yet, the potential for trade based on economies of scale among the relatively small and poor economies of the South is uncertain. Additionally, some analysts argue that certain forms of integration between developing countries may result in divergence, not convergence, of per capita incomes (*e.g.* Venables, 1999).

9. At a more practical level, field research reveals that many developing country products are more diverse and complementary than normally assumed. These countries spend large amounts on importing goods from the North even though many of these products are available in other developing countries, often in the same region, on competitive conditions of price and quality (Agatiello, 2004). Indeed, the current structure of tariff barriers (see Tables 12-13 for a broad picture) suggests that, notwithstanding the progress achieved through unilateral, preferential or multilateral liberalisation, there is great potential for reforming developing countries' trade policies, even those regarding tariffs alone. Additionally, as compared to North-South trade, trade costs seem to be much higher for trade between developing countries. This suggests that, under certain conditions, there is significant potential for expanding South-South trade and for capturing associated welfare gains. The relatively higher growth rates in developing countries, which are likely to persist, add to the importance of South-South trade, although the prominent shares of developed economies in world trade indicate that developed countries' trade policies still play a central role.

Empirical evidence

10. The empirical evidence on South-South trade is dominated by descriptive statistics on its evolution relative to other types of trade (*e.g.* Otsubo, 1998; WTO, 2003; DFAT, 2004; Fontagné et al., 2004; UNCTAD, 2004). These contributions establish the so-called "stylised facts" about South-South trade – phenomena that have been observed in several contexts and are widely understood to be empirical facts which theories must take into account (see below) – but they do not attempt a more rigorous empirical analysis of the underlying causes. Over the last two decades, the literature has established the following "stylised facts":

- the share of South-South trade in world trade has increased
- economies of the South have grown much faster than those of the North
- tariff barriers have gone down in the major developing countries
- the bulk of the observed expansion in South-South trade has been intra-regional (though not necessarily as part of an RTA)
- manufacturing trade has played a leading role in South-South trade and now accounts for two-thirds of such trade.

More generally it is known that advances in information and telecommunications technology have affected certain trading costs including, perhaps, the costs of South-South trade.

11. However, these studies do not indicate whether the observed trends are linked through a causal relationship and, if so, what the parameters of such relationships are. For example, they cannot distinguish whether, or to what extent, the observed surge in South-South trade was driven by declining tariffs, the diminishing role of geographical distance or simply exogenous economic expansion of certain economies.

12. The two methods most commonly used in related quantitative research and which have as their objective to establish causality are the computable general equilibrium (CGE) and the gravity model approaches. The former is based on economic theory and employs detailed information on the structures of selected economies as well as policy instruments and integrates them in a multi-country, multi-sector, market-clearing framework with a sophisticated representation of demand and supply relations. This approach is used for ex ante predictions of the future effects of a set of economic policies and enables a rich analysis of various trade liberalisation scenarios at both aggregate and sectoral levels. In addition, in contrast to the gravity approach, CGE analysis enables a direct assessment of welfare effects of trade reforms. Each result can be traced back to theoretical assumptions and the structural characteristics of analysed economies and as such is an implication of theory rather than an empirical verification.

13. The gravity approach that underlies the analysis of goods trade in the first part of the paper is also to some extent an implication of theoretical assumptions (see Section 4 and Technical Annex). Nevertheless, in contrast to the CGE approach, it uses historical data to validate statistical significance and estimate the magnitude of the hypothesised causal relationships between trade and the various potential determinants predicted by the theory, including the effects of trade policy changes.

14. The basic version of the gravity model relates the volume of bilateral trade flows to the economic size of trading countries as well as to measures of economic distance as captured by indicators of various trade costs. The attractiveness of the gravity models stems from their consistency with both the classical and new trade theories as well as their relatively high empirical explanatory power. This approach can help to understand historical trends and in particular to separate the impact of trade policy changes from other factors affecting trade volumes. Its shortcoming is that it is not directly useful for assessing the welfare

implications or distributional aspects of trade policy changes: estimated trade impacts are only broad proxies for potential welfare effects.

15. While the current study is, to our knowledge, the first application of gravity methodology to the theme of South-South trade, it has in the recent past been employed in the assessment of trade potential and its impediments in selected low and middle income countries and regions.

16. Subramanian & Tamirisa (2001), for example, employed a gravity model to assess the extent of Africa's trade integration with particular focus on intra-African trade and the role of various RTAs. The results of the estimated augmented gravity model indicate that only Francophone Africa is "marginalised", in the sense that it trades less than expected given its size, trading costs and other characteristics. The extent of this marginalisation is reported to have worsened over time. Interestingly, this region is "undertrading" more with the North than with the South**,** which, the authors believe, is an indication of relatively higher growth potential associated with North-South integration.

17. In a more recent application of the gravity model, Coulibaly & Fontagné (2003) measure the impact of geographical impediments on trade. They attempt to explain the low levels of intra-Sub-Saharan-African trade, with a particular focus on the West African Economic and Monetary Union (WAEMU). The results point to geographical factors as important determinants of trade integration. Language ties, road infrastructure, transit costs and colonial ties also significantly influence the level of trade. Sea distance is an important factor for heavy products like agriculture, mining and forestry. The investigation by Coulibaly & Fontagné (2003) does not include an estimation of the importance of trade policy variables, such as tariffs.

18. Another related contribution is Cernat (2003), where a gravity model is applied to analyse *ex post* the trade effects of seven South-South RTAs (AFTA, CAN, CARICOM, COMESA, ECOWAS, MERCOSUR and SADC). The Andean Community and MERCOSUR are found to have reduced trade with countries outside the agreements, but they are exceptions. All other examined RTAs have not only been trade creating among members but have also resulted in increased trade with third countries.

19. By and large, the literature does not offer a comprehensive analysis of the factors behind the observed growth of South-South trade, nor does it offer a thorough assessment of the potential benefits of future trade policy reforms from multilateral, regional or unilateral liberalisation. In particular, it is uncertain to what extent the observed upsurge in South-South trade was driven by these economies' macroeconomic growth and to what extent it was driven by trade policy changes.

20. The analysis presented in the current paper attempts to fill this gap by using a large number of gravity models—around 400 individual regressions—to take a comprehensive look at the bilateral trade flows of approximately 180 countries over the period 1985-2002, covering all income groups.

3. Stylised Facts on South-South Trade

21. Before turning to the discussion of the results of formal, model-based analysis, it is useful to set out the main "stylised facts" to be explained. The aim is not to provide an exhaustive description of South-South trade and its evolution over the last two decades but to give a broad picture of the following categories of information:

- absolute levels of South-South trade over the period 1985-2002
- South-South trade as a percentage of total trade over the period 1985-2002
- comparative growth rate of South-South trade over the period 1985-2002

- comparative commodity composition of South-South trade over the period 1985-2002.

22. To get an idea of what the data say about the relative evolution of South-South trade, the analysis starts from an aggregate level and a breakdown of total world trade by North-North, South-South or North-South.[3] Table 3 presents the raw numbers and percentages, while Figures 1 and 2 display the same information graphically.

Since the early 1990s, South-South trade has expanded at a more rapid rate than either North-North or North-South trade, though starting from a much lower base.

23. Table 3 makes clear that South-South trade has expanded considerably over the 1985-2002 period, albeit from a very small base: from 3% in 1985, it now makes up around 6% of world trade. Table 5.A.4, which presents average annualised growth rates, confirms this increase. Over the full sample period, South-South trade grew on average at the impressive rate of 12.5% a year, compared with 7% and 9.75% for North-North and North-South trade, respectively.

Growth patterns in North-North, North-South and South-South trade are not perfectly in phase with one another.

24. However, Table 4 reveals considerable heterogeneity over the nearly two decades considered. First, in the period 1985-90, South-South trade grew much more slowly than either of the other two flows. Yet, the pattern changed dramatically over the period 1990-95, with South-South trade growing at over 20% a year on average, compared with 15.25% for North-South trade and 5.75% for North-North trade. In the following period, South-South trade continued to grow more quickly than either North-North or North-South trade, even expanding comfortably in the period 2000-02 when North-North trade contracted mildly. The same is true when South-South trade is divided into more refined income groups. The fact that the three growth patterns are to some extent out of phase suggests that external factors affecting the other two groups of countries are unlikely to be the principal factors behind the development of South-South trade.

South-South trade has come to account for an increasingly large part of overall trade involving the South. However, North-South exchanges still account for the major part of Southern trade.

25. Table 5 shows that between 1985 and 2002, South-South trade has become relatively more important as a share of total trade involving the South, rising from less than 10% to around 14%. Yet, North-South trade still accounts for the bulk of total goods trade involving the South.

When we are talking about South-South trade, we are mostly talking about trade involving Upper- and Lower-Middle Income countries.

26. Even more refined data[4] presented in Tables 6-7 and Figures 3-4 suggest that discussions of South-South trade mostly concern trade involving upper-middle- and lower-middle-income countries while low-income countries play a lesser role. As before, we consider levels and percentages first, before moving on to look at growth rates. It is evident that North-South trade flows primarily concern the Upper- and Lower-Middle Income countries (25%-35% of total world trade). Trade between the North and the Low Income countries is significantly less, making up only 3% or 4% of total world trade. Table 7 shows that for South-

[3] North-South includes both Northern exports to the South, and Southern exports to the North.

[4] These tables present the same information as was discussed in the preceding paragraphs, but this time the South is split up according to the World Bank country income classification: Upper Middle Income, Lower Middle Income and Low Income. Once again, when we refer to (for example) "Upper Middle-Low", it includes trade in both directions.

South trade the situation is not dissimilar, with trade between Upper- and Lower-Middle Income countries accounting for between 3% and 5% of total world trade; exchanges involving Low Income countries make up barely 1% of total world trade. The story comes out even more clearly from Table 7: Upper- and Lower-Middle Income countries account for the lion's share of South-South trade, with Low Income countries playing a considerably lesser role.

South-South trade involving Low Income countries has generally grown more slowly than South-South trade involving Upper- and Lower-Middle Income Countries

27. While the overall growth rate of South-South trade has been impressive over the last two decades, it has nonetheless been quite heterogenous across Southern income groups (Table 8). Considering first average annualised growth rates over the full sample period, we see that the main engines of growth both in North-South and South-South trade were the Upper- and Lower-Middle Income countries. Trade flows involving the Low Income countries tended to grow less quickly than those involving the other groups; Table 10 sets this out explicitly for South-South trade. But once again, it is important to recognise that this experience was not entirely homogenous over the different sub-periods under consideration. For instance, in 2000-2002 South-South trade involving Low Income Countries grew noticeably more rapidly than for the other Southern income groups.

Trade growth patterns amongst the different income groups making up South-South trade are not perfectly in phase. However, they seem more in phase than growth patterns in North-North, North-South and South-North trade

28. Finally, from Tables 8 and 10 we can see that just as changes in the growth rates of North-North, North-South and South-South trade were found to be somewhat idiosyncratic, rather than following the same general pattern, so too do changing growth rates in the components of South-South trade not always move together. For instance, all groups except Lower Middle – Lower Middle experienced considerably slower growth in 1995-2000 than in 1990-1995; but Lower Middle – Lower Middle actually grew at a faster rate in the second period than in the first.

Aggregate figures mask considerable heterogeneity in importance of South-South trade across commodity groups

29. Commodity decomposition of world trade flows adopted in the description of trends and the gravity analysis that follows is based on the 1-digit UN Standard International Trade Classification (Revision 1).[5] Aggregate figures mask considerable heterogeneity in importance of South-South trade across commodity groups. For some commodities (*e.g. Beverages and Tobacco, Chemicals*) this share has increased from around 2% in 1985 to around 6% in 1990, largely in line with total trade (see Tables 11 and 12 and Figures 5-24). Nevertheless, in certain sectors the share of South-South trade was already higher at the beginning of the investigated period and continued increasing. For instance, the shares of South-South trade in *Food and live animals* increased from 5% at the beginning of the period to above 10% in 2002. *Animal and vegetable oils and fats* were characterised by exceptionally high shares of South-South trade staring from 15% in 1985 and ending up at 34% in 2002. The lowest shares of South-South trade were observed in *Machinery and transport equipment* (an increase from 0.8% in 1985 to 3.6% in 2002) and *Miscellaneous manufactured articles* (an increase from 0.7% in 1985 to 2.8% in 2002).

[5] This classification distinguishes between the following product categories: Food and live animals; Beverages and tobacco; Crude materials, inedible, except fuels; Mineral fuels, lubricants and related materials; Animal and vegetable oils and fats; Chemicals; Manufactured goods classified chiefly by material; Machinery and transport equipment; Miscellaneous manufactured articles; Commodities and transactions not classified according to kind.

There are significant differences in product composition of South-South as compared to North-South and North-North trade

30. There are also significant differences in the product composition of South-South trade as compared to North-South and North-North trade. This presumably indicates differences in both supply- and demand-side factors.[6] Compared to North-North and North-South trade, South-South trade seems to be relatively more concentrated in certain less-processed products such as *Food and live animals*; *Crude materials, inedible, except fuels*; *Mineral fuels, lubricants and related materials; Animal and vegetable oils and fats*; but also *Manufactured goods classified chiefly by material*. South-South trade is relatively less concentrated in *Machinery and transport equipment* and *Miscellaneous manufactured articles*. Shares of *Chemicals* and *Beverages and tobacco* in South-South trade are higher than in North-South trade but lower than in North-North trade.

South-South trade is generally subject to much higher barriers than, North-South or North-North trade

31. Finally, as pointed out with reference to Tables 13-14[7], South-South trade is generally subject to much higher barriers than North-South or North-North trade. Concretely, the barriers facing South-South trade are almost three times higher than those facing North-North trade. Table 5.A.2 nuances this analysis by showing that tariff rates are far from homogenous across the South. Speaking approximately, there is an inverse relationship between importer income level and average protection level. There is also a tendency – albeit a weaker one – for protection levels to increase as the exporter's income level decreases, although low-income exporters constitute an exception, as they generally face lower protection levels than other Southern exporters.

4. The Gravity Model Approach to Modelling South-South Trade in Goods

32. Each of the "stylised facts" listed above prompts one or more questions. What has given rise to the heterogeneity among developing country income groups in terms of their participation in South-South trade? Have higher tariffs had a significantly negative impact on South-South trade? Have globalisation and possible decreases in transport costs favoured the dynamism of South-South trade? Which of the determinants of South-South trade are shared with North-South and North-North trade, and which are of particular importance for intra-South trade?

33. Variations on the theme of gravity represent the most common approach to analysing these sorts of questions from an *ex post* perspective. According to Leamer & Levinsohn (1995), "[gravity models] have produced some of the clearest and most robust empirical findings in economics". In this paper, the gravity model is used as the basis for a formal empirical investigation of the determinants of South-South trade in comparative historical and spatial perspective. This section briefly outlines the model in non-technical language. For further details, see the Technical Annex.

34. The basic idea behind a gravity model of trade is that the value of one country's exports to another country is directly proportional to the economic size of the two countries – since this determines supply and demand – and inversely proportional to the distance between them – since trade costs probably

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6 Explanation of these differences is suggested as a promising avenue for future research.

7 Tables 13-14 provide matrices of simple average protection rates for trade flows by development group (North, South) and World Bank income group, for the year 2001. The data are sourced from the MAcMap database assembled by the International Trade Centre and the CEPII research centre (Bouët et al., 2004), and take into account not only applied bilateral tariff rates, but also selected non-tariff barriers such as tariff-rate quotas and anti-dumping duties. Importantly, the database also takes full account of the complex network of regional and preferential trade agreements currently in force.

increase with distance. The term "gravity model" reflects the fact that this idea bears some similarities to the Newtonian law of gravity, in which the force of attraction between two objects is inversely proportional to the square of the distance between them, but directly proportional to the mass of each.

35. This insight has given rise to innumerable gravity specifications in the empirical trade literature over the last 40 years. Analysts have commonly included a variety of explanatory variables in addition to distance, based on their beliefs about the probable determinants of bilateral trade. More recently, Anderson and Van Wincoop (2003, 2004) have shown that it is possible to derive a gravity-like model from some fundamental, and reasonably general, propositions about the structure of consumer preferences and expenditure. Their "theoretical" gravity model is rapidly becoming accepted as a benchmark. Its principal innovation is, roughly speaking, to properly take account of the fact that it is relative prices and tariffs that matter for trade, not just prices and tariffs of one particular importer or exporter.

36. The approach adopted in this paper closely follows Anderson & Van Wincoop (2003, 2004). The basic specification used here—referred to as the "Benchmark Model" in the Technical Annex—explains exports using bilateral distance, and a series of dummy variables designed to capture the impact of GDPs and prices as well as particular cultural or historical links, such as a common language or a colonial past. This set of explanatory variables, while not exhaustive of all possibilities, is nonetheless well supported by the existing gravity literature. (For a full description of variables and sources, see Table 1.)

37. First, a separate model is estimated for each year in the sample (1985-2002). The sample is then split up into different groups according to trading countries' classification as South or North based on World Bank income groups, and the process is repeated.[8] This approach makes it possible to gauge the evolution of each estimated coefficient in the trade equation over time, so as to see whether, for example, the elasticity of trade with respect to distance decreased from 1985 to 2002. Moreover, one can also investigate whether, for example, the elasticity of South-South trade with respect to distance is greater than the same elasticity for North-North trade.

38. Finally, additional models are estimated for the year 2001 only which add detailed bilateral tariff information (including information on tariff preferences) to the explanatory variables previously used; this group of regressions is referred to as the "Tariff Model". The tariff information comes from the ITC-CEPII MAcMap database (Bouët *et al*., 2004), which unfortunately is only available for one year; historical comparisons are therefore impossible. But the richness of the database more than compensates for this limitation: it includes applied tariffs, some non-tariff measures and, most importantly, takes account of the complex web of bilateral and multilateral preferences that now govern world trade. Estimation even over a single year makes it possible to see whether (for example) the elasticity of exports with respect to partner trade policy is the same for North-North as for South-South trade, or whether it is the same for exports of manufactured goods and agricultural products.

39. The approach is applied to both aggregate and sectoral export data at the SITC 1-digit level to see whether there are significant differences in the determinants of South-South trade at the sector level; these estimations are referred to as "Sectoral Models". This enables comparisons not only across time and income groups, as discussed in the previous paragraph, but also across industries. In other words, it is possible to gauge whether (for example) the elasticity of trade with respect to distance is the same for manufactured goods as for agricultural products.

[8] For technical reasons, the number of explanatory variables used in this second set of models had to be reduced (hence, these are referred to as "Trimmed Benchmark Models"), but there is no suggestion that this has a major impact on the results obtained.

40. The analysis undertaken in this paper uses econometric methods to analyse an enormous amount of data. When aggregate trade flows across all exporters, partners and years are considered, over 230,000 lines of data are involved. When trade flows are disaggregated at the sectoral level, the number rises to nearly 1.5 million lines.

Results

All Countries

41. Tables 15 and 16 present estimation results for the Benchmark Model estimated for all countries over the period 1985-2002, using data on aggregate exports. To get a better idea of how the estimated coefficients change over time, Figure 35 presents the same information graphically, with time on the horizontal axis and coefficient estimates on the vertical axes.

42. In statistical terms, the estimated Benchmark Models are strong performers: they explain a reasonable proportion of observed variation in trade flows (R^2s of 70-75%), most coefficients are significant both from economic and statistical points of view, and the estimated parameters have signs and magnitudes that accord with basic theory. Although diagnostic tests revealed some potential statistical problems, extensive robustness testing revealed that they appear to have little impact on the estimated parameters, which are of primary interest here. For further details, see the Technical Annex.

43. It is tempting to conclude from Figure 35 that the estimated coefficients have indeed undergone substantial change over the period in question. However, it is necessary to keep in mind that each of the coefficients has been estimated by statistical means, and so knowledge of it is inherently uncertain. When 95% confidence intervals are put around the parameter estimates, the story becomes considerably less clear (see Figures 36-42, with the upper and lower bounds of the confidence intervals marked as "high" and "low" respectively). To take the distance coefficient as an example, it can be seen that the "best guess" estimate seems to fall slightly (*i.e.* it becomes more negative) in the late 1980s before rising sharply, fluctuating around -1.42 and then falling considerably from 1998 onwards. But when these developments are considered against the breadth of the estimated confidence intervals, it can be seen that—statistically speaking—whatever systematic changes have taken place in the distance coefficient might in fact be more moderate. While it could perhaps be argued that the impact of distance has indeed become more strongly negative since the early 1990s, its current level is nonetheless very similar to what it was in the mid 1980s. In any case, there is no "smoking gun" evidence in favour of the so-called "death of distance" hypothesis, namely the idea that the 1980s and 1990s saw a very large, and fundamental, fall in the cost of moving people, objects and ideas around the globe (cf. Disdier & Head, 2004).

44. A similar analysis pertains to the same country and colony indicators, which appear to fall slightly over the sample period in terms of the mean coefficient estimates; but once account is taken of the relevant confidence intervals, the effect appears much more mitigated. By contrast, some of the other coefficients have indeed undergone significant changes over the 1985-2002 period. The indicators for a common language, border and colonial past appear to jump upwards (*i.e.* become more strongly positive) during the early to mid-1990s. Even once the confidence intervals are added, the effect remains substantial for the common border and common coloniser indicators, but is considerably weakened for common language.

Differentiating Amongst Income Groups

45. Ideally, the fully specified Benchmark Model from the previous section would also be used to investigate the way in which the various coefficients might change when considering country income groups separately. However, as noted above, technical constraints in this case require a number of

variables to be "trimmed", leaving only distance and common language in the set of explanatory variables.[9] Robustness checks suggest that this change has no major impact on the parameters of interest; in other words, the impact of omitted variable bias appears to be quite minor.

46. Figures 43-44 present results from the Trimmed Benchmark Models disaggregated by income group, and plotted as above with time on the horizontal axis. Initially, trade flows are disaggregated to the level of North-North, North-South, South-North and South-South; by convention, a reference in this part to "North-South trade" means exports from the North to the South only.

47. Although there is some evidence that a common language impacts more strongly on South-South trade than on any of the other trade flows, the most striking results are in terms of the estimated distance coefficients. While a 1% increase in bilateral distance causes North-North trade to drop by around 1%, a similar increase for any of the other trade flows brings about a fall in trade of 1.5% to 1.7%. The effect is strongest for South-South trade. Moreover, there is no particular indication that it has weakened at all over the nearly twenty-year period we are studying. This suggests that distance-related trade costs—*e.g.* transport costs—have not significantly decreased, and still have a comparatively greater impact on South-South trade than on North-North trade.

48. Figures 45-48 present additional results, this time disaggregating the South into its constituent income groups (Upper-Middle, Lower-Middle and Low Income). In light of the stylised facts presented above, it is quite surprising that, even at a disaggregated level, the gravity models should disclose so little evidence of any major change in distance-related trade costs having taken place. Only in a few cases—trade amongst Lower Middle-Income countries, exports from Lower-Middle Income to Upper Middle-Income countries and perhaps exports from Upper Middle-Income countries to Low Income countries—is there any noticeable decrease in the absolute value of the distance coefficient; in other words, only in those cases have reductions in distance-related trade costs apparently played a noticeable role in driving trade growth. In most other cases, the distance coefficient remains approximately constant over the full period. In a few cases—trade amongst Low Income countries, exports from Low Income to Lower Middle-Income countries and exports from Low Income countries to Upper Middle-Income countries—the coefficient even increased noticeably in absolute value.

49. A useful contrast can be made between these findings and Figure 47, which shows the evolution of the distance coefficients for trade flows other than those classified as South-South. We can see that the High-High distance coefficient is comparatively stable, and lower in absolute value than for other directions of trade, confirming the previous discussion using more aggregated data. The only coefficients that change markedly over the sample period are for trade between High-Income and Low-Income countries: in both directions, the coefficient falls in absolute value terms. At the end of the sample period, coefficients for trade in both directions are broadly comparable to those for other types of North-South exchange, even though they both started from considerably higher absolute values.

50. From all of the above, we conclude that the expansion of South-South trade observed between 1985 and 2002 was not driven to any major extent by declines in distance-related trade costs. The growth rates observed must therefore have been due either to GDP growth, trade policy factors, or a combination thereof. We now turn to a consideration of policy factors, in order to investigate that possibility in greater detail.

[9] When the sample is split into sub-samples indicators of certain country characteristics become collinear and need to be dropped.

The Role of Trade Policy

51. Table 19 shows the results for the Tariff Model estimated on total trade with all countries pooled together, for the year 2001 only (as discussed above). It can be seen that the estimated coefficients are only slightly different from those reported for the 2001 Benchmark Model (Table 16), suggesting that the impact of any omitted variable bias in other Benchmark Models (*i.e.* covering years for which no protection data is available) is likely be very minor. Once again, the regression appears to be well specified, with all coefficients statistically significant at conventional levels and carrying the expected signs. Of particular interest is the estimated trade policy coefficient, which suggests that a 1% decrease in tariffs is associated with a 0.05% increase in total trade.

52. Once the distinction is drawn between North-North, North-South and South-South trade flows, some significant changes take place in the estimated coefficients (see Table 20)**.** As expected, in light of results using the Benchmark Model, it is found that the estimated distance coefficient varies significantly depending on the type of trade flow under consideration: South-South trade once again is found to have substantially stronger distance-related costs than either North-North or North-South trade. Similar heterogeneity is apparent for the trade policy coefficient as well: somewhat surprisingly, it is statistically insignificant for North-North, North-South and South-North trade, but strongly negative (and statistically significant) for South-South trade. Concretely, a 1% decrease in South-South tariffs is associated with a 0.16% increase in South-South trade.

53. Tables 21-22 present results at a more detailed level of disaggregation, in which we break up the South into its component parts (*i.e.* income groups). The results are in line with those found in the previous paragraph, namely that the distance effect tends to impact South-South trade—regardless of the income groups involved—more strongly than North-North trade, although it is approximately on a par with what is found for North-South trade. Given that the main expansion in South-South trade in recent years has involved Upper- and Lower-Middle Income countries, it is interesting to note that the distance coefficients for trade flows between those two groups are by no means exceptional compared with other South-South coefficients. In other words, the structure of distance-related trade costs has not unusually favoured such flows.

54. The trade policy coefficient also exhibits considerable heterogeneity across income groups. Estimates are generally negative, statistically significant and substantially greater in absolute value than the corresponding estimates for North-North and North-South trade. Again, there is no particular evidence that the coefficients for trade amongst Upper- and Lower-Middle Income countries are substantially different from those governing other types of South-South trade. It is clear, however, that trade amongst Low Income countries is subject not only to the highest average tariffs in our sample (see the "stylised facts" above), but is also more elastic with respect to tariffs than the other flows under consideration. This is a straightforward implication of the fact that a given percentage tariff cut translates into a more pronounced price change the higher the initial tariff. The relatively high elasticity of trade with respect to tariffs estimated for low and middle income countries suggests considerable scope for trade policy to boost trade between (and potentially welfare of) Low Income countries.

55. Tables 23-42 present the results of Tariff Models estimated separately for each of the ten SITC commodities for all countries pooled together and individually for North-North, North-South and South-South trade. Results pertaining to all countries confirm the consistently negative impact of distance-related trade costs. *Mineral fuels, lubricants and related materials*, *Chemicals* and *Manufactured goods classified chiefly by material* record highest sensitivity to such costs with 1% increase in bilateral distance causing trade to drop by around 1.5-1.9%.

56. The tariff policy coefficient also exhibits considerable heterogeneity across commodities. The impact of tariffs on trade is most pronounced for *Animal and vegetable oils and fats*, *Mineral fuels, lubricants and related materials* and *Beverages and tobacco* where 1% decrease in tariffs is associated with around 0.11-0.17% increase in trade. It is worth recalling the high shares in world trade as well as high concentration of South-South trade in the first two of these product categories.

57. Indeed, when estimated sector-level Tariff Models distinguish between North-North, North-South and South-South trade (Tables 23-41), it is clear that South-South trade is substantially more sensitive to tariff-related costs than either North-North or North-South trade.

58. With the exception of *Manufactured goods classified chiefly by material* (see Table 32) where a 1% decrease in tariffs is associated with 0.10% increase in trade, North-North trade is estimated not to be affected by tariffs in any significant way. The tariff policy coefficients estimated for exports from North to the South are negative and statistically significant for *Food and live animals*, *Mineral fuels, lubricants and related materials Chemicals,* and *Manufactured goods classified chiefly by material.* Exports from South to North are impeded by tariffs in *Beverages and Tobacco; Crude materials, inedible, except fuels* and *Animal and vegetable oils and fats.*

59. The estimated impact of tariffs on South-South trade is, with exception of *Mineral fuels, lubricants and related materials,* consistently negative across all products, statistically significant and substantially greater in absolute value than the corresponding estimates for North-North and North-South trade. Most tariff–sensitive products include *Beverages and tobacco, Food and live animal, Animal and vegetable oils and fats* where 1% decrease in South-South tariffs is associated with up to 0.29% increase in trade. The sectoral results reiterate the conclusion already drawn from aggregate estimations: the high elasticity of South-South trade with respect to South-South tariffs suggest a considerable scope for trade policy to boost trade and welfare of countries in the South.

5. Welfare gains form removing South-South tariffs

Introduction

60. While the first part of the paper focused on the gravity methodology and applied it to an investigation of causal relationships underlying the historical trade flows, the reminder of the paper presents a forward-looking computable general equilibrium (CGE) simulation of welfare effects associated with a multilateral trade liberalisation scenario that focuses specifically on gains originating in and accruing to developing countries. As already pointed out, the CGE approach builds on the achievements of economic theory and applied economics and assumes certain functional forms to mimic the behaviour of economic agents and to represent their constraints. To do so it integrates the theory with the detailed information on the structures of selected economies as well as policy instruments and integrates them in a multi-country, multi-sector, market-clearing framework with a sophisticated representation of demand and supply relations. This approach enables users to gain an approximate view of the impact of trade-related changes on the economy and has been often used for ex ante predictions of the future effects of various trade liberalisation scenarios at both aggregate and sectoral levels. As a major improvement on the gravity approach, CGE analysis enables a direct assessment of welfare effects of trade reforms.

61. Because the DDA negotiations have not yet reached a consensus on formulas for tariff cuts and the welfare effects of various generic tariff reduction formulas have been comprehensively assessed in OECD (2006), the trade liberalisation scenarios considered here do not concentrate on specific formulas for tariff cuts, nor do they mimic specific proposals submitted by members for discussion in the WTO. Rather, they aim to be sufficiently broad to provide useful inputs to the discussion of the potential contribution of South-South trade liberalisation to gains from trade accruing to developing countries. In fact, the

worldwide non-discriminatory removal of tariffs on merchandise products is our benchmark liberalisation scenario. Within this scenario we distinguish among different source and destination regions of welfare gains in order to assess the importance of South-South trade in general as well as on a regional basis. Full removal of remaining tariffs is undoubtedly an unrealistically ambitious scenario which nevertheless helps us to estimate the outstanding potential gains from tariff liberalisation that can be ultimately achieved through multilateral negotiations and that are independent of, at this stage still uncertain, strict formulas for tariff cuts that may be agreed in the DDA.

62. The standard static, multi-region, multi-sector GTAP model reflecting an assumption of perfect competition and full employment is used.[10] The static nature of the exercise is determined by the fact that countries' primary factor endowments (land, capital stock and labour) are kept constant. A static approach also implies that estimates of gains from liberalisation are conservative. The standard GTAP trade elasticities that have recently been revised (Hertel *et al*., 2003) are used. The data are from Version 6 of the GTAP database, with a base year of 2001. Version 6 of the database covers 57 broad economic sectors and 92 countries and for the first time fully integrates the information on bilateral *ad valorem* tariffs (both MFN and preferential), *ad valorem* equivalents of specific tariffs (MFN and preferential), as well as tariff rate quotas from the CEPII/ITC Market Access Maps (MAcMaps) database.[11] The resulting *ad valorem* equivalent measure of applied protection is thus a comprehensive measure which fully covers tariff preferences in 2001 and is consistent across all bilateral trade flows. The protection data used in the current application are also consistent with the one used in the gravity model estimations in the first part of the paper.

63. The GTAP database contains 92 world regions. Thus, even in its most basic form there is some aggregation, especially with respect to the relatively small economies. However, the structure does permit a relatively close adherence to high/non-high income status. Since our focus in this paper is on trade between the countries in the South, *i.e.* low and middle income countries, and to facilitate the interpretation of the simulation results, countries are aggregated into 47 individual countries and regional groupings of which 5 are high income country groupings (the North) and 42 are medium and low income countries and country groupings (the South) (Table 43). The aggregation grouped high income countries with some degree of geographic and economic proximity and economic similarity. Industry categories are aggregated into ten sectors.

64. The sectoral aggregation is the same as the one implemented in OECD (2003) and OECD (2006). This structure makes it possible to distinguish agricultural products as primary or processed. The classification of industrial products according to their stage of processing is more difficult, because individual product categories include goods at different stages of production. Hence, aggregations for manufacturing industries aim to make it possible to focus on areas that have received particular attention in the post-Doha discussions or that are distinctive in terms of world trade volumes and protection patterns. All services sectors have been grouped into a single category.

Welfare gains from tariff removal and the role of South-South trade

65. As pointed out in several studies of trade liberalisation, it is widely accepted that countries benefit from an opening of their own markets and from gaining access to their partners' markets, especially if liberalisation is conducted in a non-discriminatory fashion. These benefits arise from changes in production structure that moves closer towards that indicated by countries' comparative advantages as well as changes in consumption patterns which evolve so as to reflect the actual tastes rather than the impact of trade policies. There are, however, a number of second-round effects such as changes of prices of

[10] This model is documented in detail in Hertel (1997).

[11] The dataset is documented in detail in Bouët *et al*. (2002).

intermediate inputs or the terms of trade shifts that make the welfare analysis of trade liberalisation more complex. Depending on their composition of trade, some countries gain from these changes and some lose. Additionally, as studied in detail by Kowalski and Lippoldt (2005), lowering of tariff barriers might result in market access and welfare losses if liberalisation implies erosion of trade preferences. This applies equally to developing countries enjoying preferential access to the OECD markets as well as some OECD members of preferential trading agreements such as NAFTA or the EU.

66. As spelled out recently by Polaski (2006), in a typical CGE setting the gains from trade arise because of the comparative advantages that are determined, in line with the Heckscher-Ohlin-Samuelson theory, by differences in countries' endowments in factors of production. From this point of view South-South trade, which could be described as trade between countries with relatively similar relative factor endowments to land ratios, may not offer as many opportunities for mutual gains as the North-South trade where the differences in relative endowments are more pronounced. Additionally, the sheer size of North markets suggests that North-South trade may bring higher benefits to developing countries. However, in practice, differences in relative factor endowments do exist even among countries at a similar level of development. Additionally, as was discussed in the first part of the paper, South-South trade is generally subject to much higher barriers than North-South or North-North trade. On balance, the size of the potential contribution to development of freer South-South trade is an empirical matter.

Importance of South-South liberalisation

67. While the existing applied trade literature rarely focuses on South-South trade per se, a consensus started to emerge that a substantial part of the gains that can be achieved in the DDA is associated with developing countries' own liberalisation (OECD, 2003; Fernandez de Córdoba, Laird and Vanzetti, 2004, Vanzetti and Fugazza, 2005[12]; Hertel and Winters; 2005; Anderson, Martin and van der Mensbrugghe; 2005). In the reminder of this section we contribute to the existing literature by undertaking a more detailed assessment of the role that multilateral South-South trade liberalisation may play in promoting growth and development.

68. As Table 44 indicates, the particular aggregation and the scenario of complete removal of tariffs worldwide results in total welfare gains of approximately USD 68 billion of which around USD 29 billion accrue to countries in the North and approximately USD 39 billion to countries in the South. These gains are somewhat higher than those reported in Chapter 1 of OECD (2006) (total gains of USD 42 billion). The differences stem from different aggregation of the database. Because of the broader focus of the OECD (2006) study, the estimates presented there are based on a relatively aggregated model where trade distortions across certain countries are averaged or their effects are netted out. In the current application with 42 separate developing country regions we allow for more heterogeneity in protection structures across developing countries and therefore the overall gains from liberalisation, especially by developing countries, are estimated to be higher.

69. The current estimates (these are presented graphically in Figure 49), reveal that North-North liberalisation accounts for around 14% of the global gains. This moderate estimate reflects the already relatively low tariff barriers facing North-North trade flows. In fact, the North can gain twice as much from liberalisation by the South (approximately 28% of global welfare gains).

70. Approximately 57% of the global gains from tariff removal accrue to countries in the South of which as much as half (28% of global gains) are obtained from liberalisation by the South. This means that while substantial gains can be obtained by low and middle income countries from liberalisation by the high

[12] One exception is Vanzetti and Fugazza (2005).

income countries, South-South tariff liberalisation is indeed at least as important a scenario as liberalisation of North markets for the countries in the South.

Sectoral aspects

71. A slightly different picture emerges when a sectoral perspective is adopted. If only tariffs on agricultural products are removed, global welfare gains are estimated at around USD 35 billion (Table 45). This is slightly more than one half of the gains from liberalisation of all merchandise trade. A large part of the total gains form agricultural liberalisation can be attributed to North-North liberalisation (35%), reflecting the extent of distortions in the agricultural sector in high income countries (Figure 29, Panel B). Still, the North can also benefit substantially from agricultural tariff removal in the South (24% of overall gains). Importantly, 56% of gains from the agricultural tariffs scenario accrue to the South and 32% of these gains are associated with South-South liberalisation itself. This indicates that South-South liberalisation of tariffs is yet even more important to the South in the context of liberalisation of agricultural tariffs.

72. Total gains from liberalisation of manufacturing tariffs amount to approximately USDD 33 billion or just under one half of the gains from total liberalisation. It has to be pointed out that North America is predicted to actually lose from liberalisation of manufacturing tariffs, mainly as a result of its own liberalisation. While this result may seem counterintuitive, as explained in Kowalski (2006), the negative gains from tariff removal predicted for North America are associated with unfavourable terms-of-trade effects in the motor vehicles, other manufacturing and services sectors as the prices of some of these products produced in North America tend to decrease.[13] This negative outcome for North America also produces a negative total result for the gains from North-North trade. While this negative result is only an estimate it might indicate that indeed the North is not expected to gain much from its own liberalisation of the manufacturing sectors. This is reflective of already low tariff barriers imposed on North-North trade in manufacturing products. In any case any potential losses from North-North manufacturing liberalisation are however more than compensated by gains from increased market access to Southern manufacturing markets.

73. Low and middle income counties capture close to USD 20 billion (or 60%) of net gains from manufacturing liberalisation with North-South and South-South liberalisation accounting for respectively 60% and 40% of this total. This result can be contrasted with that obtained from the agricultural liberalisation in the sense that, from the South's point of view, North-South manufacturing liberalisation seems to be relatively more important than South-South liberalisation. It has to be stressed however that gains from South-South manufacturing liberalisation are still quite significant and amount to approximately 11% of world gains form tariff reduction on all merchandise products.

74. Overall, the aggregate results from the CGE analysis suggest that, from a development point of view, South-South liberalisation is at least as important as tariff-free market access to Northern markets. This seems to be even more the case as far as agricultural products are concerned but gains from South-South manufacturing liberalisation are also substantial.

[13] Lowering of barriers to trade in services sector is not implemented in any of the considered scenarios. Nevertheless, trade policy changes in the area of merchandise goods result in changing demand/supply relations in the services sectors (*e.g.* because services are an important intermediate input in production of many goods) and hence in changes in their prices.

The Regional dimension

75. The importance of South-South trade has also a very visible regional dimension. First, more than one half of the gains from South-South tariff liberalisation (USD 11 billion) are captured by low and middle income countries in Asia. Within this region China is the largest beneficiary with almost USD 3.5 billion of annual welfare gains, followed closely by Malaysia, Singapore, Thailand and India. Latin America as a region gains around USD 3.3 billion and Sub Saharan Africa around USD 1.1 billion.

76. Most of the gains from South-South liberalisation in Asia (68%) are realised on a regional basis (*i.e.* countries benefit most from liberalisation by their neighbours). One prominent exception to this rule is China which actually gains more than double as much from liberalisation of trade with Latin American, MENA and Sub Saharan countries. The picture is slightly different in Latin America where the regional gains account for only 45% of gains from South-South trade—almost all the remaining gains can be attributed to trade with Asian low and middle income countries. A similar pattern is observed in Sub Saharan Africa where only 39% of gains from South-South trade are obtained on a regional basis and the reminder stems from trade with Asia.

77. Overall, the analysis of regional sources of gains from South-South trade suggest that only a part of these gains could be realised through regional agreements, mainly in Asia. More generally many low and middle income countries benefit most from freer trade with similar countries in other regions. This points to multilateral negotiations as an important vehicle of realising the gains from South-South trade.

Dynamic perspectives

78. It should be expected that in the future the shares of South-South trade will have expanded together with the potential for gains that can be achieved through reforms of low and middle income countries' trade policies. This issue is not addressed in this paper but will be addressed in a cross-cutting OECD project on growth and trade in Brazil and India. This will be achieved by constructing baseline scenarios where future growth rates are driven by exogenous factors such as productivity growth, population growth or changes in factor endowments. Distribution of welfare gains from trade policy reforms in the South and the North will then be assessed at different future time-points in order to highlight the likely evolution of stakes associated with multilateral trade liberalisation and South-South trade.

6. Conclusions

79. The conclusions following from this study can be summarised as follows:

- The recent growth in South-South trade does not appear to have been brought about by the "death of distance", as the impact of distance-related trade costs has not noticeably diminished over the 1985-2002 period. Such costs continue to exert a considerably more negative effect on South-South trade than on North-North trade.
- There is evidence that the importance of a common language increased markedly for South-South trade in the early-1990s, whereas it remained approximately constant for other trade flows. Hence, ethno-cultural links may have been one factor in the observed growth of South-South trade around that time.
- While it has not been possible to conduct a comparative assessment of the impact of trade policy over time, the evidence currently available suggests that policy barriers are a considerably more important determinant of South-South trade than of other trade flows, in the sense that the elasticity of South-South trade with respect to trade policy is greater (in absolute value) than is

the case for other flows. This suggests a considerable scope for trade policy to boost trade between (and potentially welfare of) Low and Lower-Middle Income countries.

- The above conclusions need to be nuanced to take into account the substantial differences observed amongst the various income groups that make up the South. Generalising at the level of individual income groups, it appears that:

  a. Distance-related trade costs have a substantial negative impact on trade across all income groups, but the effect is noticeably stronger for trade amongst Low Income countries and between Low Income and Lower-Middle Income countries, than for others.

  b. Trade policy barriers generally have a negative impact on trade at the income group level, but the magnitude varies considerably. The impact is particularly strong for trade amongst Low and Lower-Middle Income countries, and is considerably weaker for trade involving Upper-Middle Income countries.

- Given that distances facing South-South trade are broadly comparable (on average) to those facing North-North and North-South trade, there is considerable scope for increasing South-South trade by reducing distance-related trade costs to the level prevailing for other trade flows.
- Given that tariffs facing South-South trade are, on average, much greater than those facing other sorts of trade, there is considerable scope for reductions in protection to bring about further growth in South-South trade. This is particularly true since South-South trade appears to be more sensitive to tariff reductions than are other trade flows.
- Overall, the aggregate results from the CGE analysis suggest that, from a development point of view, South-South liberalisation is at least as important as tariff-free market access to Northern markets. This seems to be even more the case as far as agricultural products are concerned but gains from South-South manufacturing liberalisation are also substantial.
- Half of the gains from South-South tariff liberalisation are captured by low and middle income countries in Asia.
- Most of the gains from South-South liberalisation in Asia are realised on a regional basis (*i.e.* countries benefit most from liberalisation of their geographical neighbours). One prominent exception to this rule is China which actually gains more than two times as much from liberalisation of trade with Latin American, MENA and Sub Saharan countries than from liberalisation with other Asian countries.
- The picture is slightly different in Latin America and Sub Saharan Africa where the regional gains account for respectively 45% and 39% of gains from South-South trade—almost all the remaining gains can be attributed to trade with low and middle income countries in Asia.
- Only a part of gains from South-South trade could be realised through regional agreements, mainly in Asia. More generally, many low and middle income countries benefit most from freer trade with similar countries in other regions. This points to multilateral negotiations as an important vehicle of realising the gains from South-South trade.

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TECHNICAL ANNEX – THE GRAVITY MODEL

The Benchmark Model

The version of gravity model employed in this paper is based on the so-called "theoretical" gravity model developed by Anderson & Van Wincoop (2003, 2004). It takes the following form (for a single time period):

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

Our notation is as follows:
X_{ij} = Exports from country i to country j
Y_i = GDP of country i
Y_j = GDP of country j
Y = Aggregate (world) GDP
σ = Elasticity of substitution
t_{ij} = trade costs facing exports from country i to country j

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

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

ω_i = country i's expenditure share
ε_{ij} = random error term

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

The trade cost function, in line with much current work, is specified as follows:

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

where:

ρ = elasticity of exports with respect to distance
b_m = set of m constants
z_{ij} = set of observable bilateral determinants of trade costs

Putting (1) and (2) together gives our fully specified Benchmark Model:

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

While it is in principle possible to estimate (3a) directly using non-linear methods (Anderson & Van Wincoop, 2003), it is far simpler to use exporter and importer fixed effects. (Such an approach still produces consistent and unbiased estimates.) This is the approach taken here, leading to equation (3b) (with the deltas indicating fixed effects):

(3b) $$\log(X_{ij}) = \mu + \beta_1 \log(d_{ij}) + \sum_{m=1}^{M} \gamma_m z_{ij}^m + \sum_{i=1}^{N} \delta_i + \sum_{j=N+1}^{2N} \delta_j + \varepsilon_{ij}$$

As a robustness check—and more specifically, to deal with the criticism that GDP is endogenous in (3a)—terms can be rearranged to give an algebraically equivalent formulation that should not suffer from endogeneity bias when estimated econometrically. We refer to this as the *Relative Benchmark Model*, as it expresses exports relative to the combined (multiplicative) GDP of the two trading partners:

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

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

(5a) $$\log(X_{ij}^k) = \log(Y_j^k) + \log(Y_i^k) - \log(Y^k) + (1-\sigma)\left[\rho_k \log(d_{ij}) + \sum_{m=1}^{M} \log(b_m^k) z_{ij}^m\right] - \ldots$$
$$\ldots - (1-\sigma)\log(P_j^k) - (1-\sigma)\log(\Pi_i^k) + \varepsilon_{ij}^k$$

(5b) $$\log(X_{ij}^k) = \mu^k + \beta_1^k \log(d_{ij}) + \sum_{m=1}^{M} \gamma_m^k z_{ij}^m + \sum_{i=1}^{N} \delta_i^k + \sum_{j=N+1}^{2N} \delta_j^k + \varepsilon_{ij}^k$$

For (3b), (4) and (5b), exact empirical specifications depend on the observable determinants of trade costs included in z. There is no hard and fast rule for deciding which factors to include and which to exclude, so we take a pragmatic approach based on two considerations. Firstly, we wish to include enough variables—and experiment with enough different combinations of variables—so as to ensure that adequate account is taken of extraneous factors that might inadvertently impact our estimates of other, key parameters. Secondly, our research questions mean that we will be estimating the model repeatedly over different temporal and spatial samples, so it is important to try and ensure comparability across specifications. As a result, we will privilege those variables displaying adequate within-sample variation both in the full sample and in each spatial and/or temporal sub-sample.

The Tariff Model

Benchmark and *Relative Models* are reformulated to give the *Tariff* and *Relative Tariff Models* respectively:

(6a) $$\log(X_{ij}) = \mu + \beta_1 \log(d_{ij}) + \beta_2 \log(\tau_{ji}) + \sum_{m=1}^{M} \gamma_m z_{ij}^m + \sum_{i=1}^{N} \delta_i + \sum_{j=N+1}^{2N} \delta_j + \varepsilon_{ij}$$

(6b) $$\log\left(\frac{X_{ij}}{Y_i Y_j}\right) = \mu + \beta_1 \log(d_{ij}) + \beta_2 \log(\tau_{ji}) + \sum_{m=1}^{M} \gamma_m z_{ij}^m + \sum_{i=1}^{N} \delta_i + \sum_{j=N+1}^{2N} \delta_j + \varepsilon_{ij}$$

(τ_{ji} = tariffs imposed by country j on exports from country i.)

Following the same reasoning as above, we also specify a Sectoral Tariff Model:

$$(7)\ \log\left(X_{ij}^{k}\right) = \mu^{k} + \beta_{1}^{k}\log\left(d_{ij}\right) + \beta_{2}^{k}\log\left(\tau_{jik}\right) + \sum_{m=1}^{M}\gamma_{m}^{k} z_{ij}^{m} + \sum_{i=1}^{N}\delta_{i}^{k} + \sum_{j=N+1}^{2N}\delta_{j}^{k} + \varepsilon_{ij}^{k}$$

Estimation

All models are estimated using OLS with White heteroskedasticity-consistent standard errors. Diagnostic tests performed include the Jarque-Bera residual normality test, the White heteroskedasticity test (without cross-terms) and the Ramsay Regression Specification test (RESET) using second, third and fourth order terms. For reasons of space, only a selection of the most pertinent regression results is presented in full. The remainder are summarised graphically. Relative Models are not reproduced at all, since estimates differ only very slightly from those obtained with Benchmark Models, suggesting that endogeneity bias due to the presence of a GDP term on the right-hand side is minimal, and has no impact on inference. Full details for all regressions are available from the authors on request.

Given that most models exhibit some evidence of residual non-normality and heteroskedasticity, a simple percentile bootstrap methodology is used as a robustness check. (For recent surveys, see DiCiccio & Efron, 1996, Brownstone & Valletta, 2001, and Horowitz, 2001). The bootstrap estimates differ little from their standard OLS counterparts, suggesting that the impact of non-normality and heteroskedasticity on statistical inference is too small to be of any concern in this instance.

Most models also reject the null hypothesis for the RESET test, suggesting either empirical misspecification, non-linearities (Enders, 2004) or both. In a companion paper, Shepherd & Kowalski (2005), quantile regression is used to investigate this issue in greater depth.

ANNEX: TABLES AND FIGURES

Table 1. World Bank income groups

Low income	Lower middle income	Upper middle income	High income
Afghanistan, Angola, Azerbaijan, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Chad, Comoros, Congo, Dem. Rep., Congo, Rep., Cote d'Ivoire, Equatorial Guinea, Eritrea, Ethiopia, Gambia, The, Georgia, Ghana, Guinea, Guinea-Bissau, Haiti, India, Indonesia, Kenya, Korea, Dem. Rep., Kyrgyz Republic, Lao PDR, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Moldova, Mongolia, Mozambique, Myanmar, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Papua New Guinea, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, Sudan, Tajikistan, Tanzania, Timor-Leste, Togo, Uganda, Uzbekistan, Vietnam, Yemen, Rep., Zambia, Zimbabwe	Albania, Algeria, Armenia, Belarus, Bolivia, Bosnia and Herzegovina, Brazil, Bulgaria, Cape Verde, China, Colombia, Cuba, Djibouti, Dominican Republic, Ecuador, Egypt, Arab Rep., El Salvador, Fiji, Guatemala, Guyana, Honduras, Iran, Islamic Rep., Iraq, Jamaica, Jordan, Kazakhstan, Kiribati, Macedonia, FYR, Maldives, Marshall Islands, Micronesia, Fed. Sts., Morocco, Namibia, Paraguay, Peru, Philippines, Romania, Russian Federation, Samoa, Serbia and Montenegro, South Africa, Sri Lanka, St. Vincent and the Grenadines, Suriname, Swaziland, Syrian Arab Republic, Thailand, Tonga, Tunisia, Turkey, Turkmenistan, Ukraine, Vanuatu, West Bank and Gaza	American Samoa, Argentina, Belize, Botswana, Chile, Costa Rica, Croatia, Czech Republic, Dominica, Estonia, Gabon, Grenada, Hungary, Latvia, Lebanon, Libya, Lithuania, Malaysia, Mauritius, Mayotte, Mexico, Northern Mariana Islands, Oman, Palau, Panama, Poland, Saudi Arabia, Seychelles, Slovak Republic, St. Kitts and Nevis, St. Lucia, Trinidad and Tobago, Uruguay, Venezuela, RB	OECD: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Korea, Rep., Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States Non-OECD: Andorra, Antigua and Barbuda, Aruba, Bahamas, The, Bahrain, Barbados, Bermuda, Brunei, Cayman Islands, Channel Islands, Cyprus, Faeroe Islands, French Polynesia, Greenland, Guam, Hong Kong, China, Isle of Man, Israel, Kuwait, Liechtenstein, Macao, China, Malta, Monaco, Netherlands Antilles, New Caledonia, Puerto Rico, Qatar, San Marino, Singapore, Slovenia, United Arab Emirates, Virgin Islands (U.S.)

Source: World Development Indicators Database, World Bank.

*Note: Unless otherwise indicated, all regression output is based on OLS with heteroskedasticity-consistent standard errors à la White. Statistical significance is indicated as follows: * (10%), ** (5%) and *** (1%). Regression diagnostic tests are (in order): White heteroskedasticity test (without cross-terms), Ramsay's RESET test (number in brackets indicates the highest power of fitted values used) and the Jarque-Bera test for residual normality.*

Table 2. Variable definitions and sources

Variable	Description	Year	Source
$Trade_{ij}$	Bilateral exports from i to j (mirror data) in USD 000	1985-2002	Comtrade
GDP_i, GDP_j	Nominal GDP in USD	1985-2002	World Development Indicators
$Protection_{ij}$	Ad valorem tariff equivalent affecting exports from i to j, MAcMap weighting scheme	2001	MAcMap database
$Protection\text{-}tw_{ij}$	Ad valorem tariff equivalent affecting exports from i to j, trade-weighted	2001	MAcMap database
$Distance_{ij}$	Great circle distance from i to j	-	www.cepii.fr
$Distance\text{-}w_{ij}$	Distance from i to j, weighted by city-level population distribution	2004	www.cepii.fr
$Distance\text{-}cap_{ij}$	Great circle distance from the capital of i to the capital of j	-	www.cepii.fr
$Border_{ij}$	Dummy = 1 if i and j share a common border, else 0	-	www.cepii.fr
Common $language_{ij}$	Dummy = 1 for common language spoken by at least 9% of the population in i and j, else 0	-	www.cepii.fr
Common official $language_{ij}$	Dummy = 1 for common official language for i and j, else 0	-	www.cepii.fr
Common $coloniser_{ij}$	Dummy = 1 for common post-1945 coloniser for i and j, else 0	-	www.cepii.fr
Colonial $relationship_{ij}$	Dummy = 1 for colonial link between i and j, else 0	-	www.cepii.fr
Same $country_{ij}$	Dummy = 1 for i and j same country, else 0	-	www.cepii.fr

Table 3. Breakdown of total world trade, by aggregate income group, 1985-2002 (USD mln and *percentage*)

	North-North		North-South		South-South	
1985	1030622.65	*67.13*	456673.20	*29.75*	47961.08	*3.12*
1986	1178530.53	*71.62*	426028.31	*25.89*	40910.30	*2.49*
1987	1403160.36	*73.18*	470175.90	*24.52*	43977.26	*2.29*
1988	1639259.97	*73.40*	544295.70	*24.37*	49710.53	*2.23*
1989	1765727.66	*72.26*	618307.25	*25.30*	59541.40	*2.44*
1990	2010638.03	*72.12*	713047.55	*25.58*	64150.04	*2.30*
1991	2041777.84	*70.47*	788072.21	*27.20*	67370.75	*2.33*
1992	2015718.29	*67.49*	876171.93	*29.34*	94730.73	*3.17*
1993	2024834.86	*63.88*	1035814.36	*32.68*	108982.92	*3.44*
1994	2265137.98	*63.10*	1193385.13	*33.25*	130985.21	*3.65*
1995	2657577.01	*62.02*	1449030.83	*33.82*	178466.23	*4.16*
1996	2750173.64	*59.94*	1593665.71	*34.73*	244630.84	*5.33*
1997	2765668.31	*57.90*	1735381.46	*36.33*	275306.90	*5.76*
1998	2777798.41	*58.49*	1708404.55	*35.97*	263248.52	*5.54*
1999	3166493.66	*60.17*	1837534.77	*34.91*	258931.53	*4.92*
2000	3424812.85	*57.79*	2169624.36	*36.61*	331435.77	*5.59*
2001	3251804.04	*56.52*	2150747.03	*37.38*	350739.36	*6.10*
2002	3277613.28	*56.00*	2220746.06	*37.94*	354682.72	*6.06*

Table 4. Average annualised growth rates of trade, breakdown by aggregate income group, 1985-2002 (percentage)

	North-North	North-South	South-South
1985-1990	14.30	9.32	5.99
1990-1995	5.74	15.24	22.71
1995-2000	5.20	8.41	13.18
2000-2002	-2.17	1.17	3.45
1985-2002	7.04	9.75	12.49

Table 5. South-South trade as a percentage of total trade involving the South, 1985-2002

Year	Percentage
1985	9.50
1986	8.76
1987	8.55
1988	8.37
1989	8.78
1990	8.25
1991	7.88
1992	9.76
1993	9.52
1994	9.89
1995	10.97
1996	13.31
1997	13.69
1998	13.35
1999	12.35
2000	13.25
2001	14.02
2002	13.77

Table 6. Breakdown of total world trade, by income group, 1985-2002 (USD mln and *percentage*)

	North-North				North-South			
	High-High		High-Upper Middle		High-Lower Middle		High-Low	
1985	1030622.65	*67.13*	167177.83	*10.89*	222725.33	*14.51*	66770.04	*4.35*
1986	1178530.53	*71.62*	145946.36	*8.87*	219050.61	*13.31*	61031.35	*3.71*
1987	1403160.36	*73.18*	159535.63	*8.32*	247272.21	*12.90*	63368.05	*3.31*
1988	1639259.97	*73.40*	192945.68	*8.64*	288460.85	*12.92*	62889.17	*2.82*
1989	1765727.66	*72.26*	212639.43	*8.70*	334731.56	*13.70*	70936.25	*2.90*
1990	2010638.03	*72.12*	252813.32	*9.07*	380497.77	*13.65*	79736.46	*2.86*
1991	2041777.84	*70.47*	291606.35	*10.07*	414315.14	*14.30*	82150.72	*2.84*
1992	2015718.29	*67.49*	365049.76	*12.22*	432935.57	*14.50*	78186.61	*2.62*
1993	2024834.86	*63.88*	426847.74	*13.47*	523776.50	*16.52*	85190.11	*2.69*
1994	2265137.98	*63.10*	496295.90	*13.83*	610241.87	*17.00*	86847.36	*2.42*
1995	2657577.01	*62.02*	601488.00	*14.04*	729294.76	*17.02*	118248.07	*2.76*
1996	2750173.64	*59.94*	685902.06	*14.95*	775206.08	*16.89*	132557.58	*2.89*
1997	2765668.31	*57.90*	763870.42	*15.99*	828330.04	*17.34*	143181.00	*3.00*
1998	2777798.41	*58.49*	771620.60	*16.25*	797281.87	*16.79*	139502.09	*2.94*
1999	3166493.66	*60.17*	817729.56	*15.54*	872328.40	*16.57*	147476.81	*2.80*
2000	3424812.85	*57.79*	970505.56	*16.38*	1034093.62	*17.45*	165025.18	*2.78*
2001	3251804.04	*56.52*	936196.21	*16.27*	1050649.39	*18.26*	163901.42	*2.85*
2002	3277613.28	*56.00*	957430.49	*16.36*	1090915.86	*18.64*	172399.71	*2.95*

Table 7. Breakdown of total world trade, by income group, 1985-2002 (USD mln and *percentage*)

	South-South											
	Upper Middle-Upper Middle		Upper Middle-Lower Middle		Upper Middle-Low		Lower Middle-Lower Middle		Lower Middle-Low		Low-Low	
1985	4790.04	*0.31*	19073.53	*1.24*	3154.70	*0.21*	12232.05	*0.80*	7016.24	*0.46*	1694.52	*0.11*
1986	4321.43	*0.26*	16899.50	*1.03*	2644.25	*0.16*	10915.22	*0.66*	4635.11	*0.28*	1494.78	*0.09*
1987	4215.16	*0.22*	18216.67	*0.95*	2412.25	*0.13*	13003.03	*0.68*	4649.71	*0.24*	1480.44	*0.08*
1988	5391.25	*0.24*	21879.87	*0.98*	3060.05	*0.14*	13677.35	*0.61*	4683.49	*0.21*	1018.52	*0.05*
1989	5859.26	*0.24*	24305.04	*0.99*	2853.03	*0.12*	19083.40	*0.78*	5890.23	*0.24*	1550.44	*0.06*
1990	6445.49	*0.23*	25875.67	*0.93*	4198.16	*0.15*	18229.56	*0.65*	7123.90	*0.26*	2277.26	*0.08*
1991	7572.47	*0.26*	28220.83	*0.97*	4685.41	*0.16*	16458.44	*0.57*	8401.99	*0.29*	2031.62	*0.07*
1992	14897.83	*0.50*	41927.33	*1.40*	6106.61	*0.20*	20080.01	*0.67*	8564.74	*0.29*	3154.21	*0.11*
1993	20249.57	*0.64*	48586.82	*1.53*	6326.70	*0.20*	21467.83	*0.68*	9375.33	*0.30*	2976.67	*0.09*
1994	27645.45	*0.77*	57861.88	*1.61*	7580.36	*0.21*	25039.31	*0.70*	10389.72	*0.29*	2468.48	*0.07*
1995	35167.75	*0.82*	76253.76	*1.78*	12607.76	*0.29*	32695.13	*0.76*	15724.29	*0.37*	6017.54	*0.14*
1996	44786.45	*0.98*	115190.81	*2.51*	16489.81	*0.36*	40158.67	*0.88*	19376.85	*0.42*	8628.26	*0.19*
1997	51615.31	*1.08*	127519.64	*2.67*	18512.26	*0.39*	45164.51	*0.95*	23589.18	*0.49*	8906.00	*0.19*
1998	48519.61	*1.02*	123256.94	*2.60*	17969.16	*0.38*	41080.23	*0.86*	22968.92	*0.48*	9453.65	*0.20*
1999	46330.69	*0.88*	114493.21	*2.18*	17956.92	*0.34*	45891.68	*0.87*	23789.18	*0.45*	10469.85	*0.20*
2000	60401.40	*1.02*	151208.49	*2.55*	20858.29	*0.35*	61190.62	*1.03*	28876.02	*0.49*	8900.96	*0.15*
2001	64086.85	*1.11*	158165.96	*2.75*	20890.73	*0.36*	65490.31	*1.14*	33455.59	*0.58*	8649.92	*0.15*
2002	62398.96	*1.07*	156379.43	*2.67*	21944.40	*0.37*	67668.61	*1.16*	36463.63	*0.62*	9827.70	*0.17*

Table 8. Average annualised growth rates of trade, breakdown by income group, 1985-2002 (percentage)

	North-North			North-South				South-South		
	High-High	High-Upper Middle	High-Lower Middle	High-Low	Upper Middle-Upper Middle	Upper Middle-Lower Middle	Upper Middle-Low	Lower Middle-Lower Middle	Lower Middle-Low	Low-Low
1985-1990	14.30	8.62	11.31	3.61	6.12	6.29	5.88	8.31	0.31	6.09
1990-1995	5.74	18.93	13.90	8.20	40.40	24.13	24.60	12.39	17.16	21.45
1995-2000	5.20	10.04	7.23	6.89	11.42	14.67	10.59	13.35	12.93	8.14
2000-2002	-2.17	-0.68	2.71	2.21	1.64	1.70	2.57	5.16	12.37	5.08
1985-20002	7.04	10.81	9.80	5.74	16.30	13.17	12.09	10.59	10.18	10.89

Table 9. Breakdown of South-South trade by income group, 1985-2002 (percentage)

	Upper- and Lower-Middle Income	Low Income
1985	75.26	24.74
1986	78.55	21.45
1987	80.58	19.42
1988	82.37	17.63
1989	82.71	17.29
1990	78.80	21.20
1991	77.56	22.44
1992	81.18	18.82
1993	82.86	17.14
1994	84.40	15.60
1995	80.75	19.25
1996	81.81	18.19
1997	81.47	18.53
1998	80.86	19.14
1999	79.83	20.17
2000	82.31	17.69
2001	82.04	17.96
2002	80.76	19.24

Table 10. Average annualised growth rate of South-South trade by income group, 1985-2002 (percentage)

	Upper- and Lower-Middle Income	Low Income
1985-1990	6.97	2.77
1990-1995	23.31	20.36
1995-2000	13.61	11.29
2000-2002	2.47	7.88
1985-2002	17.55	14.70

Table 11. Breakdown of total world trade, by commodity and by aggregate income group, 1985-2002 (*percentage*)

	Food and live animals			Beverages and tobacco			Crude materials, inedible, except fuels			Mineral fuels, lubricants and related materials			Animal and vegetable oils and fats		
	North-North	North-South	South-South	North-North	North-South	South-South	North-North	North-South	South-South	North-North	North-South	South-South	North-North	North-South	South-South
1985	52.7	42.2	5.0	78.0	20.3	1.7	59.7	36.5	3.8	44.3	49.2	6.5	32.3	52.6	15.0
1986	54.6	40.8	4.6	79.8	18.6	1.6	62.0	33.9	4.1	48.5	46.7	4.8	35.9	49.7	14.4
1987	58.7	37.2	4.1	80.8	17.7	1.5	61.0	34.3	4.8	47.7	46.7	5.6	38.5	44.7	16.8
1988	58.8	37.1	4.1	82.7	15.9	1.4	60.5	34.7	4.9	48.8	46.2	5.0	33.9	50.1	16.0
1989	56.9	38.1	5.0	82.2	16.3	1.5	60.5	34.4	5.1	47.3	46.7	6.0	34.7	49.8	15.5
1990	59.1	36.4	4.5	82.6	16.1	1.3	61.0	33.9	5.1	48.4	46.0	5.6	38.8	44.8	16.4
1991	59.5	35.9	4.6	80.0	18.3	1.7	59.1	35.3	5.6	50.9	44.5	4.6	40.7	40.2	19.1
1992	57.7	36.3	6.0	76.0	21.6	2.4	56.0	35.9	8.0	44.0	47.8	8.3	37.0	43.2	19.8
1993	56.4	38.1	5.5	77.1	20.7	2.3	53.9	38.6	7.4	46.6	46.0	7.4	36.7	42.6	20.7
1994	54.5	38.9	6.6	77.9	19.3	2.8	53.6	38.1	8.2	47.1	44.6	8.3	35.4	41.1	23.4
1995	54.2	38.3	7.5	77.2	19.5	3.4	52.3	38.7	9.0	46.2	43.7	10.1	31.1	41.5	27.4
1996	51.3	38.4	10.3	71.5	22.7	5.8	49.8	39.6	10.6	44.2	42.1	13.7	34.7	36.7	28.6
1997	49.1	39.5	11.4	68.7	24.4	6.9	48.6	40.0	11.3	44.0	42.0	14.0	32.2	37.0	30.8
1998	49.7	39.0	11.3	69.7	23.4	6.9	48.9	39.7	11.4	42.9	42.6	14.5	30.6	37.5	31.9
1999	53.3	37.1	9.5	74.0	20.3	5.7	50.1	38.9	11.0	42.5	43.5	14.0	33.0	36.4	30.6
2000	52.1	38.1	9.8	73.1	21.0	6.0	47.7	39.8	12.5	44.9	42.0	13.2	34.2	34.9	30.9
2001	51.3	38.2	10.5	71.7	21.8	6.5	46.0	40.4	13.5	45.3	41.4	13.3	35.1	33.0	31.8
2002	52.0	37.4	10.5	72.8	21.0	6.2	46.5	39.9	13.6	44.6	42.4	13.0	33.2	32.4	34.4

Table 12. Breakdown of total world trade, by commodity and by aggregate income group, 1985-2002 (*percentage*) – continued

	Chemicals			Manufactured goods classified chiefly by material			Machinery and transport equipment			Miscellaneous manufactured articles			Commodities & transactions not classified according to kind		
	North-North	North-South	South-South	North-North	North-South	South-South	North-North	North-South	South-South	North-North	North-South	South-South	North-North	North-South	South-South
1985	73.9	23.2	2.9	72.6	24.9	2.5	80.4	18.9	0.8	81.6	17.7	0.7	68.7	30.3	1.0
1986	76.9	20.4	2.7	74.5	23.0	2.5	82.1	17.2	0.7	82.0	17.4	0.5	65.9	33.1	1.0
1987	76.4	20.8	2.8	72.7	24.5	2.7	82.9	16.4	0.7	80.0	19.5	0.5	72.9	25.8	1.4
1988	75.9	21.2	2.9	72.7	24.7	2.6	83.3	16.0	0.7	78.9	20.7	0.5	71.7	27.3	1.0
1989	76.0	21.1	2.9	71.2	25.7	3.1	82.5	16.8	0.7	75.6	23.9	0.5	74.0	25.1	0.9
1990	77.5	19.9	2.6	72.5	24.7	2.8	81.6	17.7	0.7	74.2	25.4	0.5	70.1	29.0	0.9
1991	75.7	21.4	3.0	69.9	26.9	3.2	79.7	19.6	0.8	69.6	29.8	0.6	64.3	35.0	0.7
1992	72.1	24.0	3.9	66.9	29.0	4.1	75.9	22.8	1.3	64.9	34.3	0.8	59.7	38.8	1.5
1993	71.0	25.0	3.9	60.2	34.0	5.8	71.6	26.9	1.5	58.6	40.3	1.0	65.2	32.5	2.3
1994	70.3	25.4	4.3	59.9	34.5	5.6	70.8	27.7	1.5	56.8	42.0	1.2	62.7	35.1	2.2
1995	68.2	26.6	5.2	58.8	35.2	6.0	69.5	28.9	1.6	55.7	42.9	1.4	67.5	30.4	2.1
1996	66.7	27.3	6.1	57.1	35.9	7.0	66.8	31.0	2.2	54.0	44.2	1.9	69.9	25.0	5.2
1997	64.7	28.9	6.4	54.8	37.8	7.4	63.9	33.5	2.6	51.4	46.4	2.2	71.5	22.8	5.7
1998	65.7	28.2	6.2	55.5	37.5	7.1	64.3	33.1	2.6	50.7	47.0	2.3	69.5	23.0	7.6
1999	69.1	25.5	5.4	57.1	36.9	6.1	65.9	31.9	2.2	51.8	46.2	2.0	73.2	20.9	5.8
2000	67.4	26.6	6.0	54.1	38.8	7.0	63.0	34.3	2.7	49.1	48.6	2.3	76.6	17.0	6.4
2001	67.4	26.5	6.2	52.9	39.5	7.5	61.2	35.5	3.4	47.8	49.5	2.7	71.2	20.6	8.2
2002	69.1	25.0	5.8	52.5	40.0	7.5	59.8	36.6	3.6	46.3	50.9	2.8	70.9	24.6	4.5

Table 13. Simple average tariff rates, 2001, by exporter and importer groups

Exporter \ Importer	North	South
North	4.3819	9.8733
South	4.9597	11.0653

Note: Calculated from MAcMap data

Table 14. Simple average tariff rates, 2001, by exporter and importer income groups

Exporter \ Importer	High	UpperMiddle	LowerMiddle	Low
High	4.3819	8.3864	9.7195	11.7312
UpperMiddle	5.9429	8.5162	11.8285	13.7275
LowerMiddle	5.5675	9.4899	11.0647	14.2759
Low	3.627	8.7221	10.0112	13.3798

Note: Calculated from MAcMap data

Table 15. Estimated Benchmark Models, 1985-1993 (full sample)

	1985	1986	1987	1988	1989	1990	1991	1992	1993
LOG(DIST)	-1.43922***	-1.436703***	-1.462731***	-1.457929***	-1.45515***	-1.473232***	-1.443808***	-1.407461***	-1.43683***
BORDER	-0.21427	-0.322812**	-0.421829**	-0.363215**	-0.109867	-0.186318	-0.245779*	0.119564	0.045785
COMLANG	0.410408***	0.325573***	0.349241***	0.398807***	0.397583***	0.373758***	0.531191***	0.517886***	0.534673***
COMCOL	0.590347***	0.474143***	0.552236***	0.641431***	0.723156***	0.670282***	0.735642***	0.67336***	0.724628***
COLONY	1.390747***	1.447409***	1.410742***	1.358764***	1.281628***	1.366522***	1.266416***	1.206392***	1.080584***
SMCTRY	0.978893***	0.953074***	1.040721***	0.996609***	1.014631***	1.122552***	1.09048***	0.720269***	0.784858***
C	23.02154***	22.31987***	23.77724***	19.27117***	19.50776***	19.24982***	20.07982***	21.86044***	20.33074***
Observations		8659	8556	8771	9024	9417	9618	10613	11575
R2	0.70879	0.732334	0.733954	0.743867	0.740877	0.750125	0.756401	0.744943	0.752762
Adj. R2	0.699911	0.724211	0.725913	0.736227	0.733341	0.743058	0.749659	0.738031	0.74643

Table 16. Estimated Benchmark Models, 1994-2002 (full sample)

	1994	1995	1996	1997	1998	1999	2000	2001	2002
LOG(DIST)	-1.399833***	-1.4363***	-1.413067***	-1.443851***	-1.43751***	-1.453958***	-1.466771***	-1.495649***	-1.501307***
BORDER	0.225076	0.430144***	0.47439***	0.454723***	0.405695***	0.377413***	0.571934***	0.48082***	0.369117***
COMLANG_ETHNO	0.53539***	0.511054***	0.538125***	0.475799***	0.457835***	0.558738***	0.523679***	0.496252***	0.464107***
COMCOL	1.011381***	1.04492***	1.015267***	0.917988***	0.975432***	1.017093***	1.020896***	0.916675***	0.917562***
COLONY	1.126075***	1.233595***	1.249661***	1.326065***	1.270466***	1.263975***	1.238253***	1.17663***	1.194097***
SMCTRY	0.782882***	0.600275***	0.652246***	0.625869***	0.579709***	0.485656***	0.442098***	0.488366***	0.558747***
C	20.03228***	20.84137***	20.56331***	21.60914***	20.46235***	20.9343***	20.99962***	21.82504***	21.61003***
Observations	11883	13838	15013	15753	16104	17265	18168	18346	17627
R2	0.753325	0.75017	0.748109	0.743622	0.744886	0.749934	0.749215	0.751872	0.755167
Adj. R2	0.74711	0.744426	0.74271	0.738305	0.73968	0.74503	0.744418	0.747187	0.750467

Table 17. Estimated Trimmed Benchmark Models, 1985-1993 (full sample)

	1985	1986	1987	1988	1989	1990	1991	1992	1993
LOG(DIST)	-1.448732***	-1.435825***	-1.464503***	-1.463516***	-1.488241***	-1.498356***	-1.463866***	-1.442278***	-1.483433***
COMLANG_ETHNO	0.678915***	0.57764***	0.608605***	0.664107***	0.668321***	0.654465***	0.808885***	0.77561***	0.79595***
C	23.10608***	22.24158***	23.71437***	19.22721***	19.74595***	19.34166***	20.14615***	22.03455***	20.57357***
Observations	8754	8659	8556	8771	9024	9417	9618	10613	11575
R2	0.704295	0.728113	0.729361	0.739462	0.736199	0.745459	0.75197	0.74125	0.749207
Adj. R2	0.695422	0.719996	0.721315	0.731817	0.728651	0.738374	0.745214	0.734341	0.742875
White (no cross)	6.512226***	5.691073***	5.32561***	5.955609***	5.949893***	6.324459***	6.349215***	6.361281***	6.492362***
RESET(2)	60.87498***	71.36412***	41.78504***	83.76251***	76.92608***	61.35023***	43.68838***	10.46303***	20.93445***
RESET(3)	171.8912***	162.5809***	164.7657***	151.6409***	167.3421***	186.2815***	174.9236***	194.8758***	212.908***
RESET(4)	139.4102***	134.9965***	131.077***	124.5275***	144.9177***	161.4912***	145.2738***	168.7599***	171.9991***
Jarque-Bera	564.2393***	666.0284***	861.3803***	769.1857***	766.4924***	653.8211***	568.9266***	771.2986***	1035.977***

Table 18. Estimated Trimmed Benchmark Models, 1994-2002 (full sample)

	1994	1995	1996	1997	1998	1999	2000	2001	2002
LOG(DIST)	-1.467893***	-1.521586***	-1.506288***	-1.526576***	-1.517993***	-1.528624***	-1.558162***	-1.576105***	-1.573514***
COMLANG_ETHNO	0.861765***	0.867212***	0.902473***	0.834304***	0.806201***	0.927195***	0.88949***	0.817962***	0.785474***
C	20.40645***	21.33665***	21.14664***	22.08613***	20.96939***	21.38091***	21.60337***	22.26559***	22.00319***
Observations	11883	13838	15013	15753	16104	17265	18168	18346	17627
R2	0.74785	0.743804	0.741717	0.737836	0.739058	0.744111	0.743174	0.746903	0.75035
Adj. R2	0.741586	0.737991	0.736253	0.732469	0.733802	0.739156	0.738319	0.742181	0.745617
White (no cross)	6.681205***								
RESET(2)	2.336821								
RESET(3)	229.5758***								
RESET(4)	186.5547***								
Jarque-Bera	891.2732***								

Table 19. Estimated Tariff Model, Total trade, 2001 (full sample)

LOG(TARIFF)	-0.054056***
LOG(DIST)	-1.456954***
BORDER	0.623879***
COMLANG_ETHNO	0.399903***
COMCOL	0.833933***
COLONY	0.897407***
SMCTRY	0.394867**
C	21.13717***
Observations	15835
R2	0.754079
Adj. R2	0.748958
White (no cross-terms)	8.607277***
RESET(2)	0.059829
RESET(3)	287.7199***
RESET(4)	236.0472***
Jarque-Bera	925.9353***

Table 20. Estimated Trimmed Tariff Models, Total trade, 2001 (by development group)

	North-North	North-South	South-North	South-South
LOG(DIST)	-1.175528***	-1.490507***	-1.535407***	-1.650303***
COMLANG	0.015024	0.617409***	0.496619***	0.761371***
LOG(TARIFF)	0.049969	-0.049059	-0.031351	-0.169636***
C	24.42596***	21.06742***	26.58049***	21.7467***
Observations	1050	3508	3679	7586
R2	0.834731	0.808766	0.776126	0.651884
Adj. R2	0.821271	0.800577	0.764942	0.640509

Table 21. Estimated Trimmed Tariff Models, Total trade, 2001 (by income group, South-South only)

	Low-Low	Low-LowMid	LowMid-Low	LowMid-LowMid	LowMid-UpMid	Low-UpMid	UpMid-Low	UpMid-LowMid	UpMid-UpMid
LOG(DIST)	-1.306534***	-1.377282***	-1.797093***	-1.563049***	-1.711652***	-1.587906***	-2.070951***	-1.756673***	-1.750284***
COMLANG	0.149863	0.162543	0.45655*	0.643203***	0.294233	0.19481	1.026949***	0.968571***	0.819316***
LOG(TARIFF)	-0.501081***	-0.139464	-0.217017*	-0.496638***	-0.208036**	-0.240435***	-0.075104	-0.192491	0.215637*
C	17.87236***	17.85121***	23.77878***	20.29469***	25.08958***	22.8947***	31.79435***	29.21388***	34.25376***
Observations	772	945	783	1063	989	845	619	833	737
R2	0.582521	0.573499	0.692173	0.677787	0.762846	0.589051	0.683556	0.740582	0.757937
Adj. R2	0.530107	0.527999	0.656604	0.649036	0.741096	0.541821	0.644432	0.715632	0.732896

Table 22. Estimated Trimmed Tariff Models, Total trade, 2001 (by income group, North-North and North-South only)

	High-High	High-Low	High-LowMid	High-UpMid	Low-High	LowMid-High	UpMid-High
LOG(DIST)	-1.175528***	-1.898593***	-1.353744***	-1.442672***	-2.016063***	-1.512587***	-1.573605***
COMLANG	0.015024	0.563865***	1.011855***	0.348789**	0.635314***	0.551603***	0.207004
LOG(TARIFF)	0.049969	-0.133567	-0.305306**	0.099859	-0.01116	-0.014121	0.042289
C	24.42596***	26.0034***	19.78538***	26.05959***	28.79378***	27.06207***	32.55531***
Observations	1050	1052	1286	1170	1244	1393	1042
R2	0.834731	0.796163	0.804831	0.856309	0.742698	0.787398	0.794623
Adj. R2	0.821271	0.780275	0.791701	0.846177	0.722854	0.773572	0.77959

Table 23. Estimated Tariff Model, Food and live animals, 2001 (full sample)

LOG(TARIFF)	-0.06***
LOG(DIST)	-1.19***
BORDER	0.85***
COMLANG_ETHNO	0.50***
COMCOL	0.82***
COLONY	1.24***
SMCTRY	0.33***
C	12.08***
Observations	10061
R2	0.63
Adj. R2	0.62

Table 24. Estimated Trimmed Tariff Models, Food and live animals, 2001 (by development group)

	North-North	North-South	South-North	South-South
LOG(DIST)	-1.27***	-1.47***	-1.26***	-1.41***
COMLANG	0.30*	0.75***	0.97***	0.62***
LOG(TARIFF)	-0.17	-0.16*	0.01	-0.22***
C	15.13***	13.63***	15.27***	14.33***
Observations	821	2485	2633	4120
R2	0.82	0.68	0.69	0.53
Adj. R2	0.80	0.66	0.67	0.50

Table 25. Estimated Tariff Model, Beverages and tobacco, 2001 (full sample)

LOG(TARIFF)	-0.11***
LOG(DIST)	-0.96***
BORDER	0.10
COMLANG_ETHNO	0.52***
COMCOL	1.05***
COLONY	0.87***
SMCTRY	0.90***
C	8.97***
Observations	5284

Table 26. Estimated Trimmed Tariff Models, Beverages and tobacco, 2001 (by development group)

	North-North	North-South	South-North	South-South
LOG(DIST)	-1.12***	-1.16***	-0.82***	-0.97***
COMLANG	0.19	0.66***	1.02***	0.67***
LOG(TARIFF)	-0.08	0.06	-0.07*	-0.29***
C	11.51***	9.69***	10.41***	7.87***
Observations	716	1698	1314	1556
R2	0.75	0.60	0.66	0.51
Adj. R2	0.72	0.57	0.61	0.44

Table 27. Estimated Tariff Model, Crude materials, inedible, except fuels, 2001 (full sample)

LOG(TARIFF)	-0.06***
LOG(DIST)	-1.28***
BORDER	0.82***
COMLANG_ETHNO	0.31***
COMCOL	0.90***
COLONY	1.11***
SMCTRY	0.39
C	8.91***
Observations	8163
R2	0.63
Adj. R2	0.62

Table 28. Estimated Trimmed Tariff Models, Crude materials, inedible, except fuels, 2001 (by development group).

	North-North	North-South	South-North	South-South
LOG(DIST)	-1.43***	-1.37***	-1.61***	-1.39***
COMLANG	0.52***	0.74***	0.21	0.46***
LOG(TARIFF)	0.01	-0.04	-0.06**	-0.08**
C	17.12***	9.58***	15.89***	9.45***
Observations	775	2213	3679	3362
R2	0.81	0.68	0.69	0.55
Adj. R2	0.79	0.66	0.66	0.51

Table 29. Estimated Tariff Model, Mineral fuels, lubricants and related materials, 2001 (full sample)

LOG(TARIFF)	-0.14***
LOG(DIST)	-1.90***
BORDER	0.76***
COMLANG_ETHNO	-0.08
COLONY	0.95***
SMCTRY	0.10
C	19.91***
Observations	3669
R2	0.56
Adj. R2	0.52

Table 30. Estimated Trimmed Tariff Models, Mineral fuels, lubricants and related materials, 2001 (by development group)

	North-North	North-South	South-North	South-South
LOG(DIST)	-2.90***	-2.31***	-2.19***	-1.68***
COMLANG	-0.06	0.27	-0.10	0.23
LOG(TARIFF)	0.01	-0.19**	-0.20	-0.10
C	34.75***	21.73***	28.76***	20.67***
Observations	459	1635	339	1236
R2	0.73	0.59	0.75	0.50
Adj. R2	0.68	0.55	0.64	0.41

Table 31. Estimated Tariff Model, Animal and vegetable oils and fats, 2001 (full sample)

LOG(TARIFF)	-0.17***
LOG(DIST)	-1.26***
BORDER	0.35*
COMLANG_ETHNO	0.29**
COMCOL	0.33*
COLONY	0.82***
SMCTRY	0.69**
C	10.66***
Observations	3449
R2	0.53
Adj. R2	0.49

Table 32. Estimated Trimmed Tariff Models, Animal and vegetable oils and fats, 2001 (by development group)

	North-North	North-South	South-North	South-South
LOG(DIST)	-1.40***	-1.45***	-1.35***	-1.22***
COMLANG	0.32	0.78***	0.17	0.33
LOG(TARIFF)	-0.12	-0.09	-0.21***	-0.20**
C	16.89***	9.74***	18.92***	12.63***
Observations	500	1355	610	984
R2	0.68	0.54	0.62	0.58
Adj. R2	0.63	0.49	0.55	0.47

Table 33. Estimated Tariff Model, Chemicals, 2001 (full sample)

LOG(TARIFF)	0.01
LOG(DIST)	-1.59***
BORDER	0.35***
COMLANG_ETHNO	0.51***
COMCOL	0.98***
COLONY	0.59***
SMCTRY	0.45**
C	12.85***
Observations	9172
R2	0.72
Adj. R2	0.71

Table 34. Estimated Trimmed Tariff Models, Chemicals, 2001 (by development group)

	North-North	North-South	South-North	South-South
LOG(DIST)	-1.26***	-1.45***	-1.58***	-1.67***
COMLANG	0.34**	0.69***	0.62***	0.74***
LOG(TARIFF)	0.00	-0.15***	0.00	-0.08**
C	16.86***	10.27***	16.12***	14.62***
Observations	866	2913	1602	3790
R2	0.84	0.78	0.74	0.62
Adj. R2	0.82	0.77	0.71	0.59

Table 35. Estimated Tariff Model, Manufactured goods classified chiefly by material, 2001 (full sample)

LOG(TARIFF)	0.02
LOG(DIST)	-1.58***
BORDER	0.72***
COMLANG_ETHNO	0.49***
COMCOL	0.77***
COLONY	0.77***
SMCTRY	-0.21
C	12.47***
Observations	10356
R2	0.74
Adj. R2	0.74

Table 36. Estimated Trimmed Tariff Models, Manufactured goods classified chiefly by material, 2001 (by development group)

	North-North	**North-South**	**South-North**	**South-South**
LOG(DIST)	-1.27***	-1.56***	-1.74***	-1.65***
COMLANG	0.06	0.80***	0.28*	0.76***
LOG(TARIFF)	-0.10**	-0.07**	0.02	-0.10**
C	12.13***	11.80***	17.44***	13.59***
Observations	838	2881	2031	4600
R2	0.87	0.78	0.81	0.66
Adj. R2	0.85	0.76	0.79	0.65

Table 37. Estimated Tariff Model, Machinery and transport equipment, 2001 (full sample)

LOG(TARIFF)	-0.06**
LOG(DIST)	-1.32***
BORDER	0.76***
COMLANG_ETHNO	0.47***
COMCOL	1.04***
COLONY	0.90***
SMCTRY	0.27
C	10.80***
Observations	9543
R2	0.76
Adj. R2	0.76

Table 38. Estimated Trimmed Tariff Models, Machinery and transport equipment, 2001 (by development group)

	North-North	**North-South**	**South-North**	**South-South**
LOG(DIST)	-0.99***	-1.25***	-1.38***	-1.44***
COMLANG	0.26	0.63***	0.34	0.88***
LOG(TARIFF)	-0.07	-0.10	-0.10	-0.17***
C	13.64***	9.59***	14.91***	11.27***
Observations	732	2970	1304	4535
R2	0.89	0.80	0.83	0.63
Adj. R2	0.87	0.80	0.81	0.61

Table 39. Estimated Tariff Model, Miscellaneous manufactured articles, 2001 (full sample)

LOG(TARIFF)	0.07***
LOG(DIST)	-1.45***
BORDER	0.81***
COMLANG_ETHNO	0.67***
COMCOL	0.68***
COLONY	1.03***
SMCTRY	-0.21
C	10.18***
Observations	9758
R2	0.77
Adj. R2	0.76

Table 40. Estimated Trimmed Tariff Models, Miscellaneous manufactured articles, 2001 (by development group)

	North-North	North-South	South-North	South-South
LOG(DIST)	-0.87***	-1.37***	-1.33***	-1.54***
COMLANG	0.02	0.93***	0.48***	1.02***
LOG(TARIFF)	-0.05	-0.13	0.06***	-0.13**
C	12.06***	9.10***	13.92***	12.21***
Observations	768	2885	1865	4239
R2	0.90	0.78	0.85	0.66
Adj. R2	0.89	0.77	0.83	0.64

Table 41. Estimated Tariff Model, Commodities and transactions not classified according to kind, 2001 (full sample)

LOG(TARIFF)	-0.03
LOG(DIST)	-0.92***
BORDER	0.69***
COMLANG_ETHNO	0.36***
COMCOL	0.51**
COLONY	0.99***
SMCTRY	-0.49
C	0.69
Observations	3487
R2	0.63
Adj. R2	0.60

Table 42: Estimated Trimmed Tariff Models, Commodities and transactions not classified according to kind, 2001 (by development group)

	North-North	North-South	South-North	South-South*
LOG(DIST)	-1.00***	-1.07***	-1.16***	-
COMLANG	0.28	0.61***	0.62***	-
LOG(TARIFF)	-0.10	0.00	-0.08	-
C	6.44***	2.60**	6.84***	-
Observations	586	1139	786	-
R2	0.81	0.63	0.71	-
Adj. R2	0.78	0.58	0.66	-

*Note: Estimation for the South-South category could not be performed due to data limitations.

Table 43. Regional aggregations

North	South					
Oceania	China	Mexico	MENA	Botswana	Rest of Europe	Rest of World
North & East Asia	Indonesia	Boliva		South Africa		
Japan	Malaysia	Colombia		Rest of SACU		
North America	Phillipines	Ecuador		Malawi		
Western Europe	Singapore	Peru		Mauritius		
	Thailand	Venezuela		Mozambique		
	Vietnam	Argentina		Tanzania		
	Bangladesh	Brazil		Zambia		
	India	Chile		Zimbabwe		
	Pakistan	Uruguay		Rest of SADC		
	Sri Lanka			Madagascar		
				Uganda		
				Rest of Sub Saharan Africa		
				Nigeria		

Panel B. Sectoral aggregations

Sectors	Original GTAP sectors
Natural resources	Forestry, Coal, Oil and Gas, Minerals neck
Primary agriculture	Paddy rice, Wheat , Cereal grains neck, Vegetables, fruit, nuts, Oil seeds, Sugar cane, sugar beet, Crops neck, Bovine cattle, sheep and goats, horses, Animal products neck, Raw milk, Wool, silk-worm cocoons, Fishing, Bovine meat products, Meat products neck
Processed agriculture	Plant-based fibres, Meat products neck, Vegetable oils and fats , Dairy products, Processed rice, Sugar, Food products neck, Beverages and tobacco products
Textiles, apparel and leather	Textiles, Wearing apparel, Leather products
Chemical, rubber and plastic products	Chemical, rubber, plastic prods
Wood products	Wood products
Motor vehicles and parts	Motor vehicles and parts
Other machinery and equipment	Machinery and equipment neck
Other manufacturing (not classified elsewhere)	Paper products, publishing, Petroleum, coal products, Mineral products neck, Ferrous metals, Metals neck, Metal products, Transport equipment neck, Electronic equipment, Manufactures neck
Services	Electricity, Gas manufacture, distribution, Water, Construction, Trade, Transport neck, Water transport, Air transport, Communication, Financial services neck, Insurance, Business services neck, Recreational and other services, Public Administration, Defence, Education, Health, Dwellings

Table 44. Sources and distribution of global welfare gains from worldwide tariff removal (equivalent variation) USD million

	Region taking liberalisation action								
	World	North	South	of which	Asia	Latin America	Rest of Europe	MENA	Sub Saharan Africa
gains accruing to:									
Oceania	2,442	2,074	368		414	93	23	-85	1
China	8,900	5,466	3,434		865	644	201	1,232	253
North & East Asia	18,222	12,428	5,795		4,011	894	132	238	139
Japan	8,873	4,818	4,056		3,434	396	-42	-24	9
Indonesia	1,030	484	547		411	50	9	52	66
Malaysia	2,830	165	2,665		2,512	74	35	21	21
Philippines	233	229	4		-11	22	-3	0	1
Singapore	1,773	382	1,391		1,054	98	19	18	86
Thailand	2,885	1,704	1,182		956	54	13	-5	95
Vietnam	1,794	833	961		941	50	61	-72	-4
Rest of World	1,595	1,772	-176		82	216	602	79	-44
Bangladesh	-206	-18	-188		-135	0	-9	-20	-6
India	1,856	685	1,171		869	94	6	-151	159
Pakistan	286	220	66		80	30	-4	-64	24
Sri Lanka	441	231	210		15	3	182	2	2
North America	-2,938	-3,157	218		1,270	-2,129	-91	373	-27
Mexico	-85	-1,248	1,163		-297	1,405	2	-56	-20
Bolivia	-54	-11	-43		-7	-34	0	0	-1
Colombia	-222	199	-421		-17	-411	2	-3	-3
Ecuador	500	459	42		18	8	8	6	-1
Peru	-101	8	-109		-77	-13	-7	-7	0
Venezuela	249	68	181		-12	221	6	-3	-12
Argentina	3,534	1,883	1,651		1,488	168	11	3	17
Brazil	3,440	2,717	723		603	-60	44	5	8
Chile	35	-66	101		-92	192	3	5	-3
Uruguay	129	162	-33		-10	-13	1	-7	-4
Western Europe	2,291	-6,550	8,842		1,965	2,791	489	910	702
Rest of Europe	1,087	309	778		-252	76	-261	400	30
MENA	3,930	1,222	2,708		1,187	-190	164	1,723	-22
Botswana	98	70	28		-11	0	-1	0	39
South Africa	1,189	357	831		363	15	7	23	452
Rest of SACU	509	489	21		-14	3	-1	-1	33
Malawi	107	74	33		5	6	19	0	4
Mauritius	547	511	36		6	-1	-1	-1	36
Mozambique	-12	-20	8		3	0	0	1	5
Tanzania	-64	-27	-37		28	-1	1	2	-67
Zambia	3	-10	13		-2	0	0	8	8
Zimbabwe	237	103	134		79	1	5	7	42
Rest of SADC	244	-10	254		6	-10	2	-2	272
Madagascar	-20	-8	-12		-1	0	0	-2	-6
Uganda	-39	-26	-12		6	-1	0	4	-21
Rest of Sub Saharan	-601	116	-717		159	-16	2	43	-875
Nigeria	718	59	659		154	-30	7	-2	567
Total	67,668	29,143	38,525		22,047	4,696	1,635	4,647	1,956
North	28,891	9,612	19,279		11,094	2,046	511	1,411	824
South	38,777	19,530	19,247		10,953	2,650	1,124	3,236	1,132

Source: Authors' calculations, GTAP model and version 6 of GTAP database.

Table 45. Sources and distribution of global welfare gains from worldwide tariff removal in the agricultural sectors (equivalent variation) USD million

				Region taking liberalisation action					
	World	North	South	of which	Asia	Latin America	Rest of Europe	MENA	Sub Saharan Africa
gains accruing to:									
Oceania	1,905	1,929	-24		-90	108	10	-60	7
China	2,711	-581	3,292		3,373	-12	-10	-29	-9
North & East	10,033	9,915	118		-136	8	25	99	24
Japan	2,088	1,730	358		452	-49	-15	7	13
Indonesia	220	-81	301		283	7	1	-1	19
Malaysia	1,370	-45	1,415		1,374	6	11	-2	7
Philippines	68	25	42		36	-3	0	11	0
Singapore	396	42	354		263	4	8	7	4
Thailand	1,303	1,259	45		-54	5	4	-13	70
Vietnam	212	39	173		181	0	-9	-1	-1
Rest of World	687	515	172		162	12	-5	1	-14
Bangladesh	-78	-43	-34		-30	-1	-2	1	-1
India	1,424	-111	1,535		1,522	2	-2	-17	16
Pakistan	234	148	86		95	-2	-3	-11	8
Sri Lanka	172	-7	179		-22	1	194	2	2
North America	3,106	1,234	1,872		760	190	47	612	62
Mexico	-109	-76	-34		-87	62	-1	-16	-3
Bolivia	-38	-10	-28		-8	-19	0	0	0
Colombia	113	148	-34		-2	-45	-1	2	0
Ecuador	453	438	15		11	-15	6	6	0
Peru	-129	-19	-110		-60	-37	-6	-4	-1
Venezuela	28	-15	43		11	48	-1	-3	-4
Argentina	3,309	1,776	1,533		1,460	32	10	-4	29
Brazil	3,406	2,478	928		756	-63	36	-27	2
Chile	-102	-106	4		-57	53	1	5	-4
Uruguay	176	169	6		-5	14	1	-8	-2
Western Euro	-1,362	-2,283	921		-14	154	543	-79	261
Rest of Europ	1,144	624	520		-71	27	340	78	9
MENA	583	151	432		236	-33	14	291	-24
Botswana	91	81	10		-1	0	0	0	11
South Africa	373	298	75		27	-1	6	5	42
Rest of SACU	486	480	6		-4	0	0	0	9
Malawi	106	81	25		4	7	19	-1	-4
Mauritius	515	516	-1		3	0	-1	1	-4
Mozambique	-8	-14	6		5	0	0	1	1
Tanzania	-19	-20	1		14	0	1	1	-15
Zambia	-1	-3	1		-1	0	0	0	2
Zimbabwe	241	105	136		81	0	5	7	42
Rest of SADC	101	-13	114		15	-2	-1	0	104
Madagascar	-16	-15	-1		2	0	0	0	-3
Uganda	-30	-24	-6		2	0	0	2	-9
Rest of Sub S	-23	143	-166		53	3	-23	-3	-187
Nigeria	235	33	202		82	-6	-1	3	131
Total	35,377	20,891	14,485		10,622	459	1,197	861	592
North	15,771	12,525	3,246		972	411	610	579	367
South	19,605	8,366	11,239		9,650	48	588	282	225

Source: Authors' calculations, GTAP model and version 6 of GTAP database.

Table 46. Sources and distribution of global welfare gains from worldwide tariff removal in the manufacturing sectors (equivalent variation) USD million

	Region taking liberalisation action								
	World	North	South	of which	Asia	Latin America	Rest of Europe	MENA	Sub Saharan Africa
gains accruing to:									
Oceania	576	175	401		508	-5	14	-28	-6
China	6,510	6,129	381		-2,305	644	214	1,305	264
North & East	8,416	2,618	5,798		4,246	887	109	148	113
Japan	6,752	3,071	3,682		2,985	432	-29	-30	-6
Indonesia	840	575	265		147	42	8	55	49
Malaysia	1,427	201	1,226		1,113	68	24	27	11
Philippines	192	214	-22		-32	25	-2	-9	1
Singapore	1,382	355	1,027		775	95	11	10	83
Thailand	1,700	530	1,170		1,035	51	10	8	28
Vietnam	1,613	790	823		794	50	69	-70	-3
Rest of World	906	1,314	-408		-73	205	596	71	-31
Bangladesh	-105	28	-133		-84	1	-8	-21	-5
India	368	801	-433		-724	94	8	-132	142
Pakistan	53	64	-11		-6	31	-1	-53	16
Sri Lanka	292	246	46		40	1	-2	0	0
North America	-5,890	-4,215	-1,674		475	-2,330	-139	-237	-84
Mexico	-1	-1,180	1,179		-228	1,344	3	-40	-17
Bolivia	-19	-1	-18		1	-17	0	0	-1
Colombia	-347	50	-397		-16	-374	3	-6	-3
Ecuador	39	20	19		5	18	2	-1	-1
Peru	32	31	1		-14	22	-1	-3	1
Venezuela	210	82	128		-27	170	7	-1	-8
Argentina	89	60	29		-43	135	-1	-4	-13
Brazil	201	344	-143		-156	67	9	24	8
Chile	134	38	96		-36	139	2	0	0
Uruguay	-48	-9	-38		-4	-26	0	1	-3
Western Euro	3,609	-4,297	7,906		1,985	2,644	-63	960	436
Rest of Europ	-40	-314	274		-182	52	-584	326	21
MENA	3,252	1,099	2,153		905	-156	148	1,365	-1
Botswana	2	-15	17		-10	0	0	0	27
South Africa	854	83	771		342	17	1	18	417
Rest of SACU	32	19	14		-11	4	0	-1	23
Malawi	13	1	12		0	-1	0	0	13
Mauritius	30	-5	36		2	-1	0	-3	39
Mozambique	-5	-6	1		-2	0	0	0	4
Tanzania	-49	-7	-41		14	0	0	2	-56
Zambia	4	-7	11		-2	0	0	8	5
Zimbabwe	3	3	-1		-4	0	0	0	3
Rest of SADC	146	8	137		-9	-9	2	-2	167
Madagascar	-3	8	-11		-3	0	0	-2	-3
Uganda	-9	-2	-7		5	-1	0	2	-12
Rest of Sub S	-638	-36	-603		103	-19	25	44	-733
Nigeria	460	22	438		69	-24	8	-6	422
Total	32,985	8,882	24,102		11,579	4,274	444	3,724	1,303
North	13,463	-2,649	16,112		10,199	1,628	-107	813	452
South	19,521	11,531	7,990		1,379	2,646	551	2,911	852

Source: Authors' calculations, GTAP model and version 6 of GTAP database."

Table 47. Sources and distribution of global welfare gains from lowering of trading costs (equivalent variation) USD million

	Region taking liberalisation action								
	World	North	South	of which	Asia	Latin America	Rest of Europe	MENA	Sub Saharan Africa
gains accruing to:									
Oceania	1,075	1,043	32		36	-2	-3	2	2
China	3,520	480	3,040		3,047	-2	-1	-9	1
North & East Asia	4,985	4,693	292		241	11	4	16	4
Japan	3,827	4,018	-191		3	-62	-67	-31	-17
Indonesia	492	11	481		483	0	0	-1	1
Malaysia	1,236	106	1,130		1,123	1	2	2	1
Philippines	567	69	498		500	0	-1	0	0
Singapore	1,633	196	1,437		1,408	5	7	7	2
Thailand	902	93	809		800	1	0	3	2
Vietnam	340	12	328		330	0	0	-2	0
Rest of World	2,582	-31	2,613		10	0	19	-3	-3
Bangladesh	139	8	131		133	0	0	0	0
India	859	34	825		816	-1	-4	9	2
Pakistan	170	13	156		152	0	0	4	0
Sri Lanka	99	8	91		89	0	0	1	0
North America	13,623	13,540	83		-13	165	-79	-6	-14
Mexico	1,747	221	1,526		-25	1,569	-8	-8	-2
Bolivia	19	-1	20		0	21	0	0	0
Colombia	142	-2	144		-1	145	0	0	0
Ecuador	87	4	84		1	81	0	0	0
Peru	107	4	103		0	104	0	0	0
Venezuela	238	-15	253		1	251	-1	-2	0
Argentina	317	-24	341		5	336	-3	2	1
Brazil	871	-15	886		-15	906	-7	0	-1
Chile	259	15	244		3	241	0	0	0
Uruguay	61	3	58		1	56	0	0	0
Western Europe	31,225	31,117	108		-145	-25	170	29	10
Rest of Europe	3,469	263	3,207		-23	-2	3,185	5	-1
MENA	3,095	-37	3,131		54	-6	2	3,093	3
Botswana	26	2	24		-1	0	0	0	25
South Africa	398	8	390		0	0	-2	1	394
Rest of SACU	41	2	39		0	0	0	0	40
Malawi	10	0	9		0	0	0	0	9
Mauritius	38	4	33		0	0	0	0	33
Mozambique	18	1	17		0	0	0	0	17
Tanzania	25	1	24		1	0	0	0	23
Zambia	17	1	16		0	0	0	0	17
Zimbabwe	26	0	26		1	0	0	0	25
Rest of SADC	76	-7	83		1	0	0	-1	84
Madagascar	13	0	13		0	0	0	0	13
Uganda	16	0	16		0	0	0	0	16
Rest of Sub Saharan	422	4	419		13	0	1	3	402
Nigeria	163	-28	191		6	2	-1	-2	187
Total	78,979	55,817	23,162		9,034	3,795	3,211	3,114	1,276
North	54,736	54,412	324		121	88	24	10	-14
South	24,243	1,405	22,838		8,913	3,708	3,187	3,104	1,291

Source: Authors' calculations, GTAP model and version 6 of GTAP database.

Figure 1. Total world trade, breakdown by aggregate income group, 1985-2002 (USD mln))

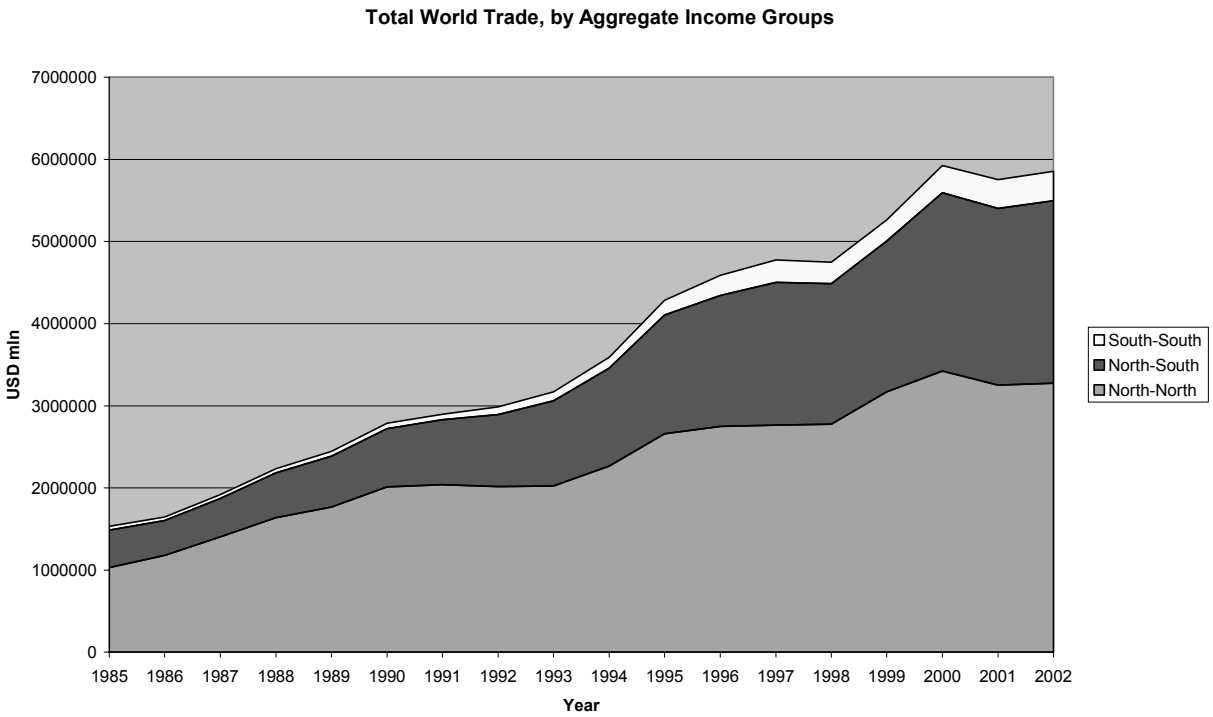


Figure 2. Total world trade, breakdown by aggregate income group, 1985-2002 (percentage

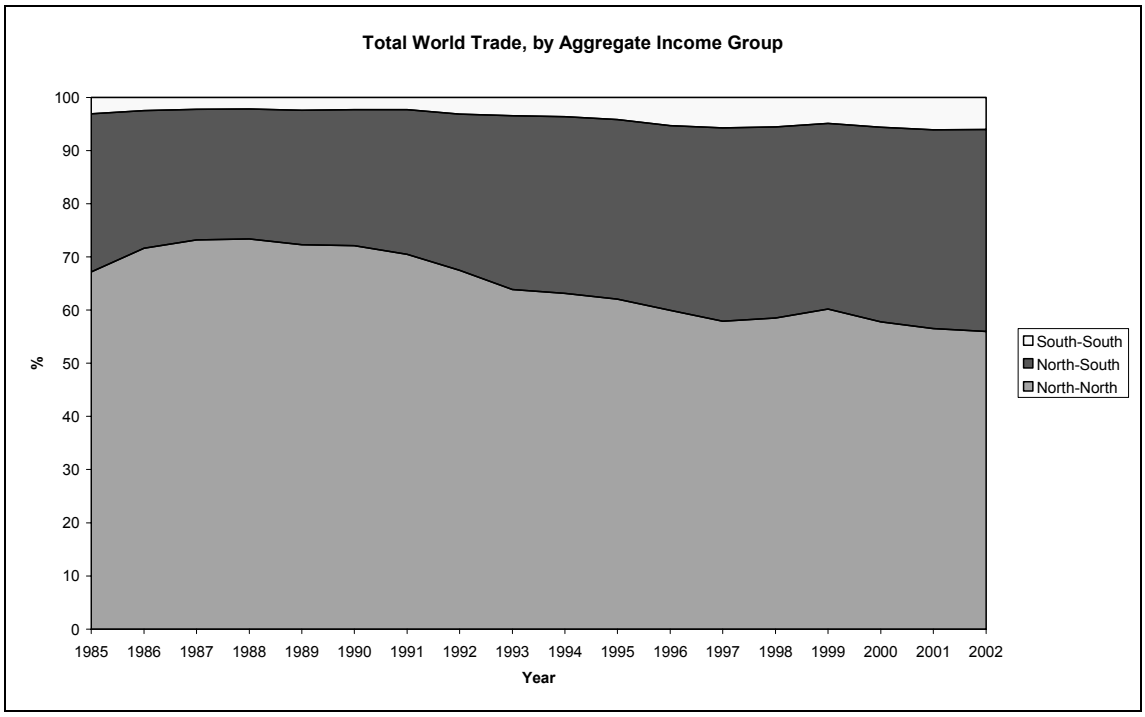


Figure 3. Total world trade, breakdown by income group, 1985-2002 (USD mln)

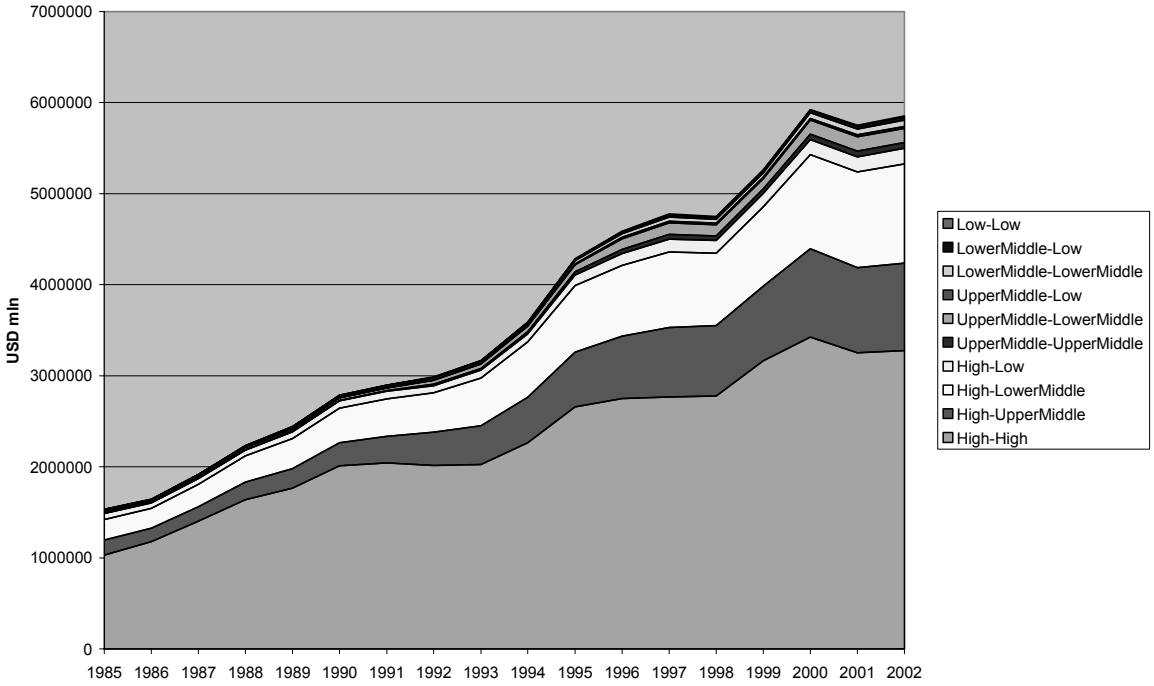


Figure 4. Total world trade, breakdown by income group, 1985-2002 (percentage)

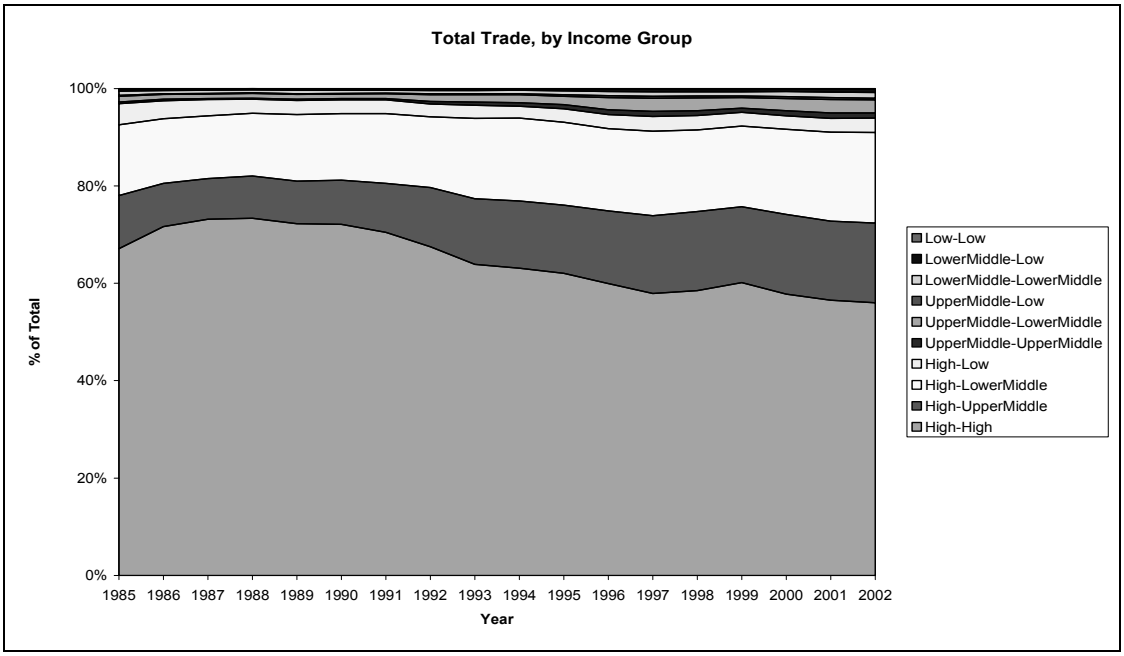


Figure 5. Food and live animals, breakdown by aggregate income groups, 1985-2002 (USD mln))

Figure 6. Food and live animals, breakdown by aggregate income group, 1985-2002 (percentage))

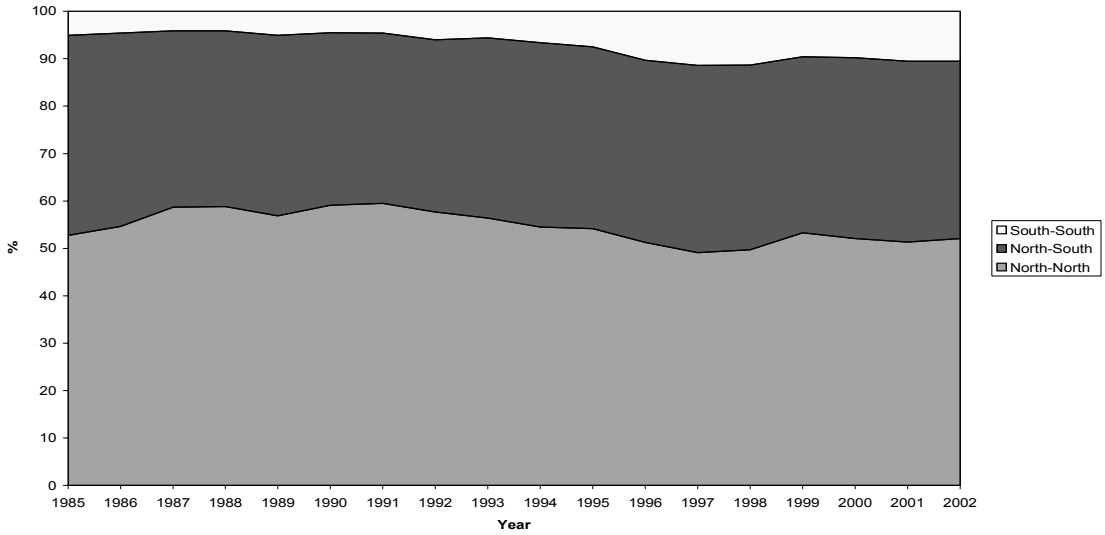


Figure 7. Beverages and tobacco, breakdown by aggregate income groups, 1985-2002 (USD mln))

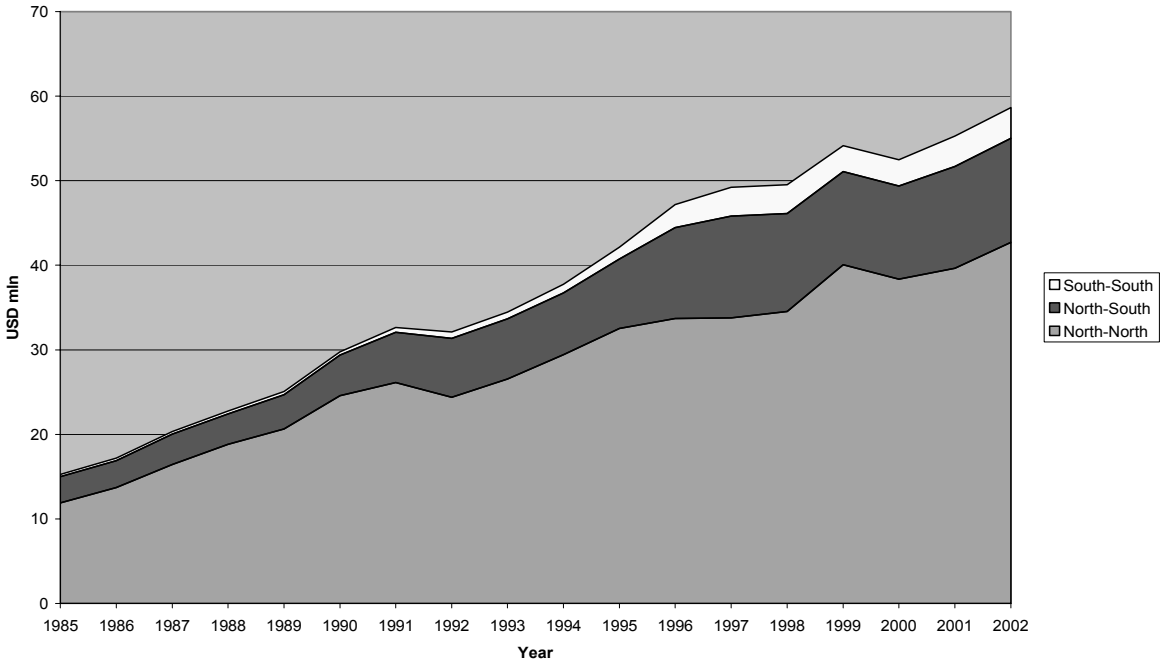


Figure 8. Beverages and tobacco, breakdown by aggregate income group, 1985-2002 (percentage))

Figure 9. Crude materials, inedible, except fuels, breakdown by aggregate income groups, 1985-2002 (USD mln))

Figure 10. Crude materials, inedible, except fuels, breakdown by aggregate income group, 1985-2002 (percentage))

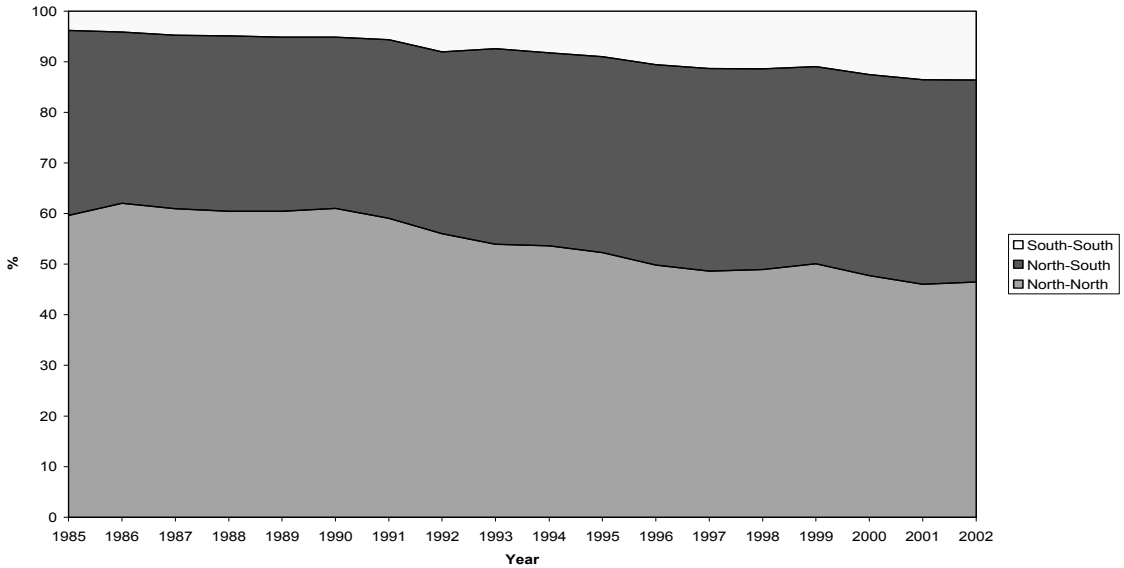


Figure 11. Mineral fuels, lubricants and related materials, breakdown by aggregate income groups, 1985-2002 (USD mln))

Figure 12. Mineral fuels, lubricants and related materials, breakdown by aggregate income group, 1985-2002 (percentage))

Figure 13. Animal and vegetable oils and fats, breakdown by aggregate income groups, 1985-2002 (USD mln))

Figure 14. Animal and vegetable oils and fats, breakdown by aggregate income group, 1985-2002 (percentage))

Figure 15. Chemicals, breakdown by aggregate income groups, 1985-2002 (USD mln))

Figure 16. Chemicals, breakdown by aggregate income group, 1985-2002 (percentage))

Figure 17. Manufactured goods classified chiefly by material, breakdown by aggregate income groups, 1985-2002 (USD mln))

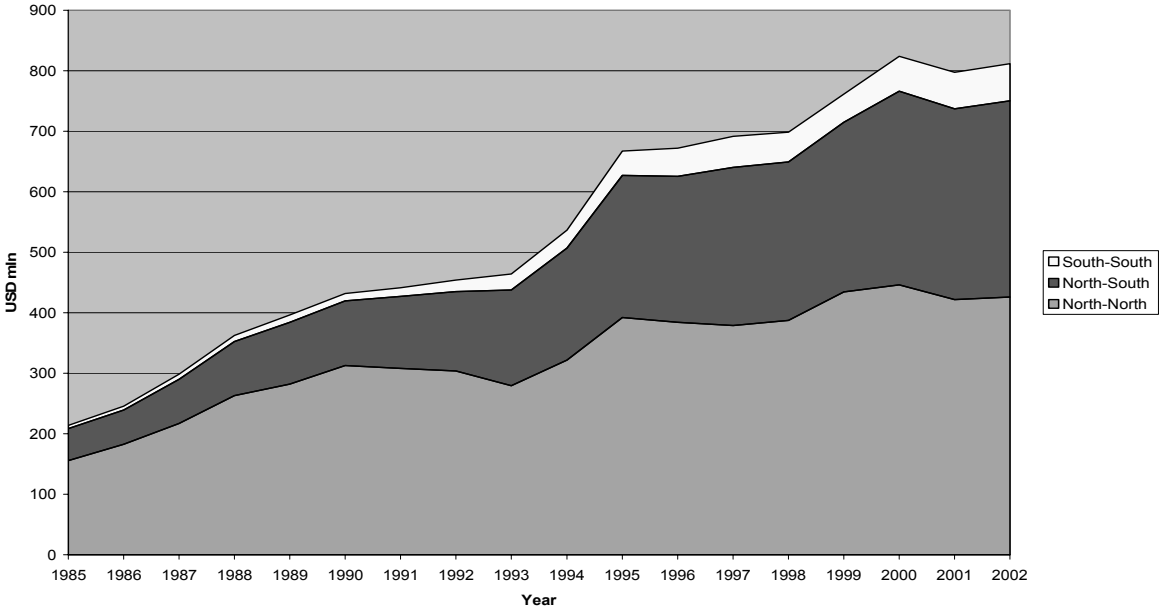


Figure 18. Manufactured goods classified chiefly by material, breakdown by aggregate income group, 1985-2002 (percentage))

Figure 19. Machinery and transport equipment, breakdown by aggregate income groups, 1985-2002 (USD mln))

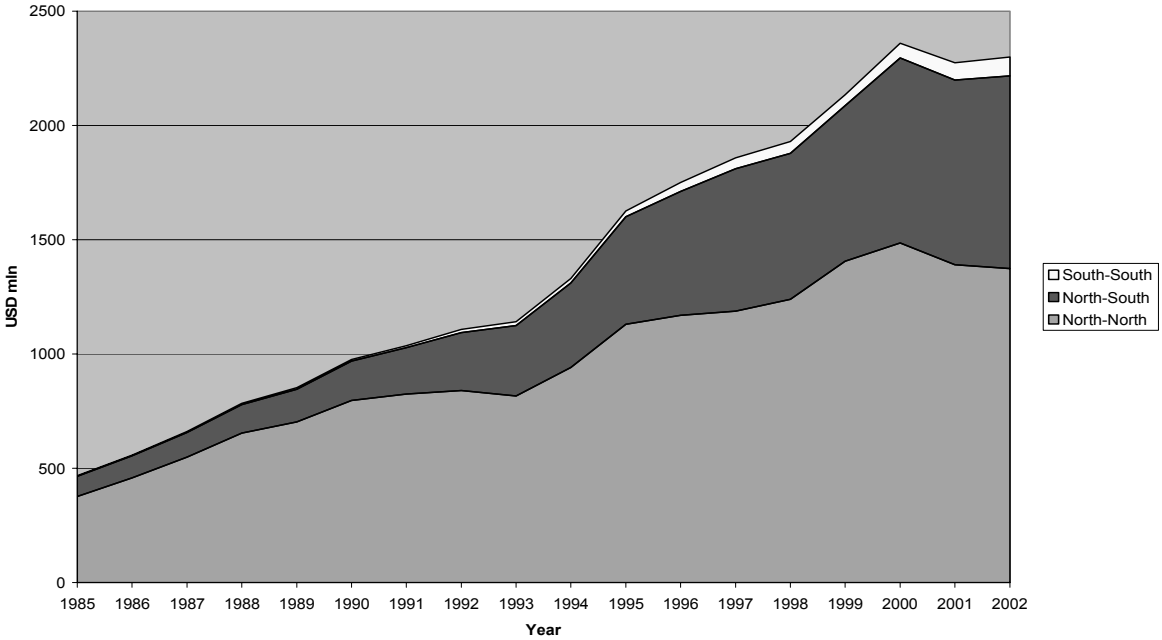


Figure 20. Machinery and transport equipment, breakdown by aggregate income group, 1985-2002 (percentage))

Figure 21. Miscellaneous manufactured articles, breakdown by aggregate income groups, 1985-2002 (USD mln))

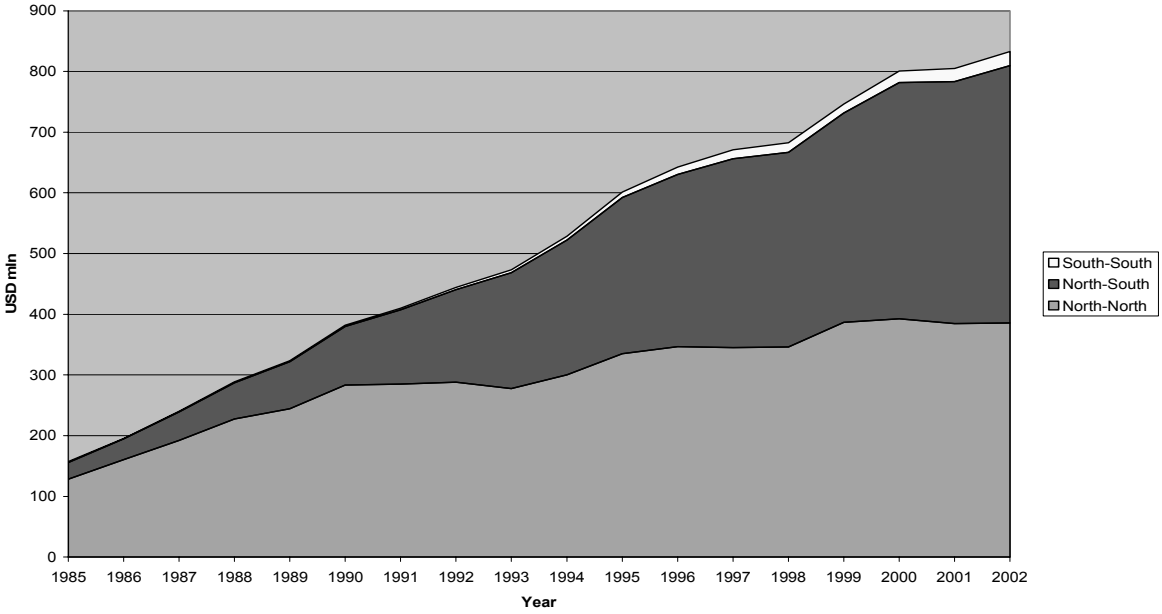


Figure 22. Miscellaneous manufactured articles, breakdown by aggregate income group, 1985-2002 (percentage))

Figure 23. Commodities & transactions not classified according to kind, breakdown by aggregate income groups, 1985-2002 (USD mln))

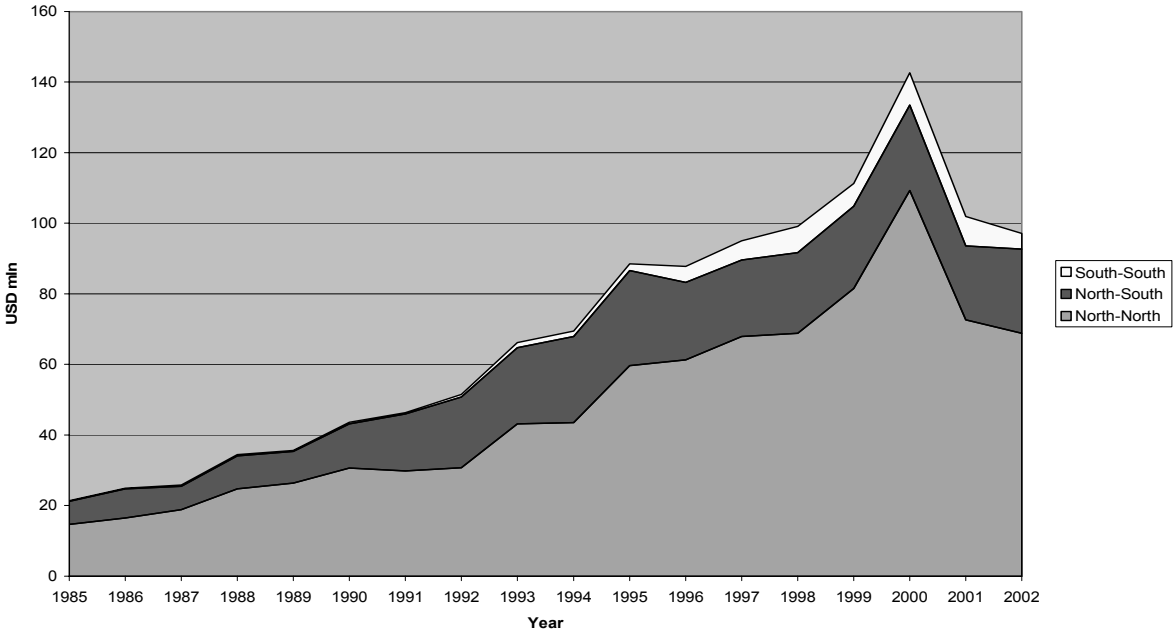


Figure 24. Commodities & transactions not classified according to kind, breakdown by aggregate income group, 1985-2002 (percentage))

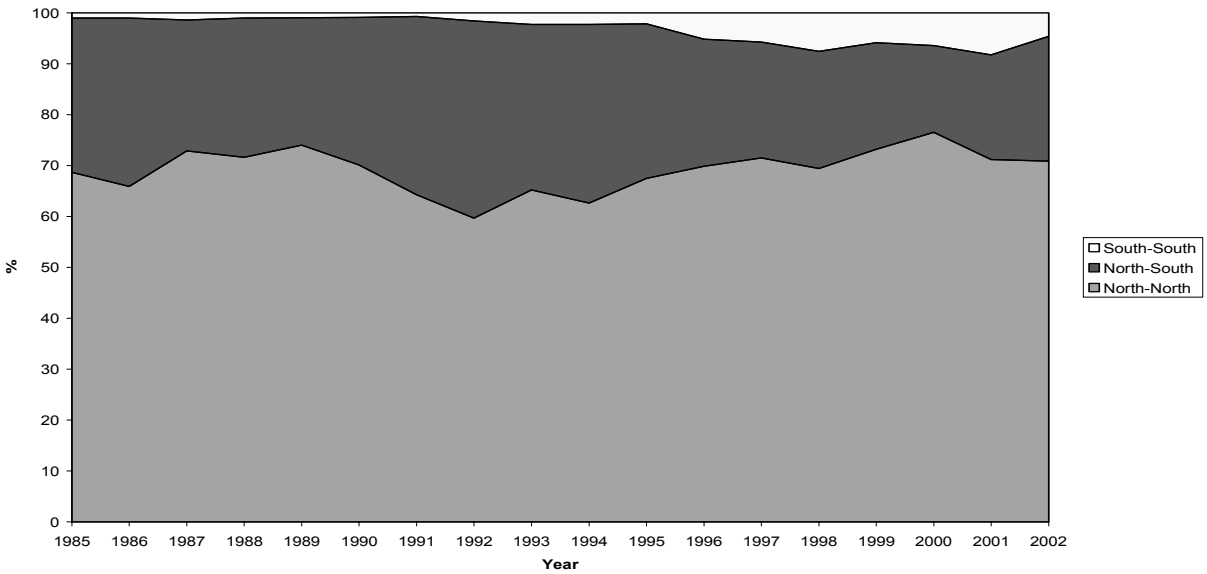


Figure 25. Food and live animals, sector share in total trade by aggregate income groups, 1985-2002

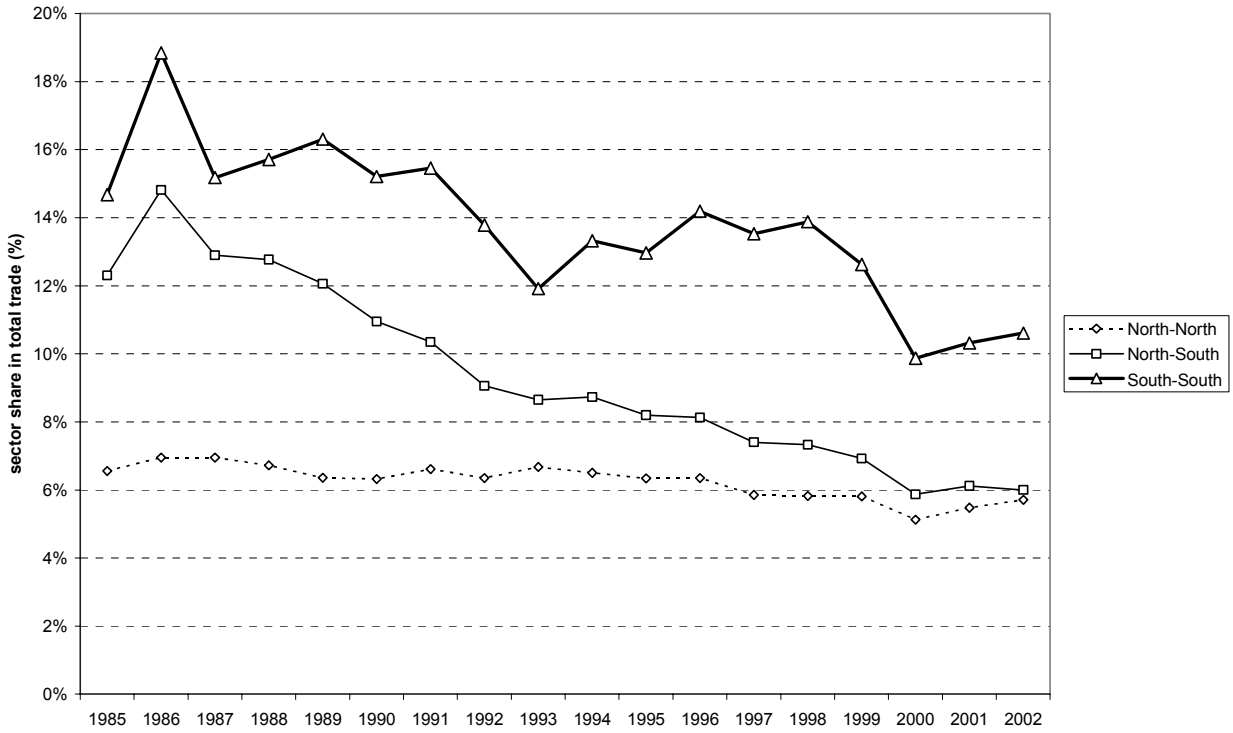


Figure 26. Beverages and tobacco, sector share in total trade by aggregate income groups, 1985-2002

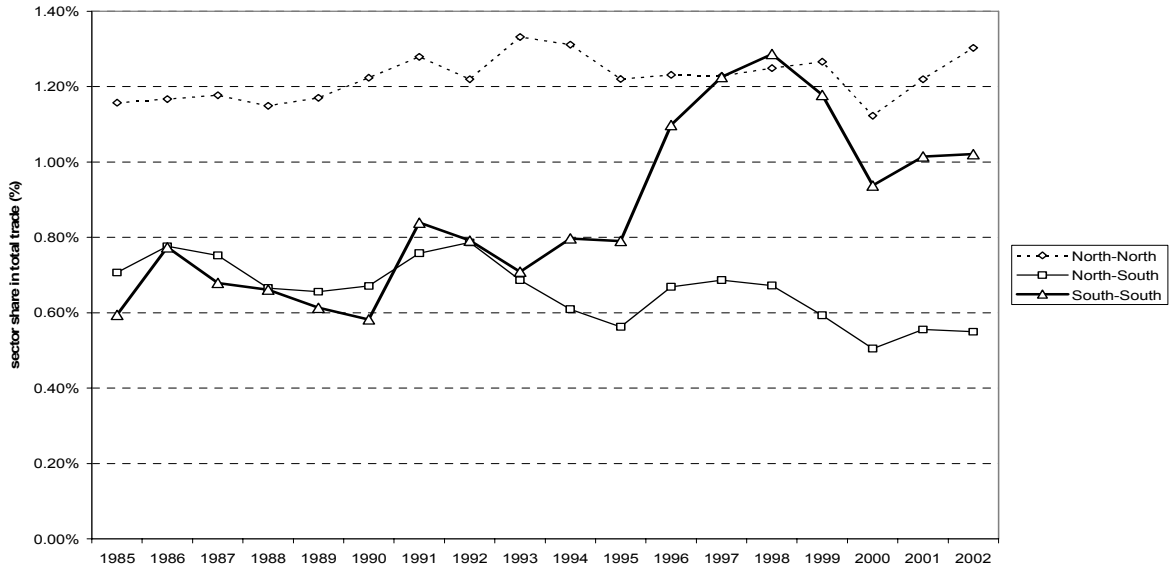


Figure 27. Crude materials, inedible, except fuels, sector share in total trade by aggregate income groups, 1985-2002

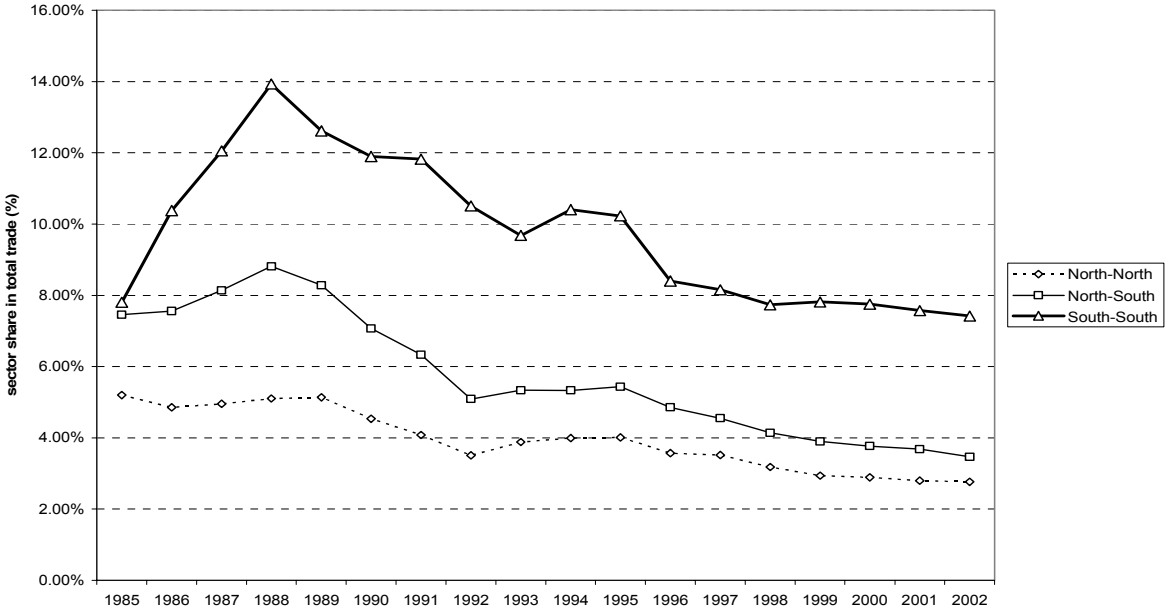


Figure 28. Mineral fuels, lubricants and related materials, sector share in total trade by aggregate income groups, 1985-2002

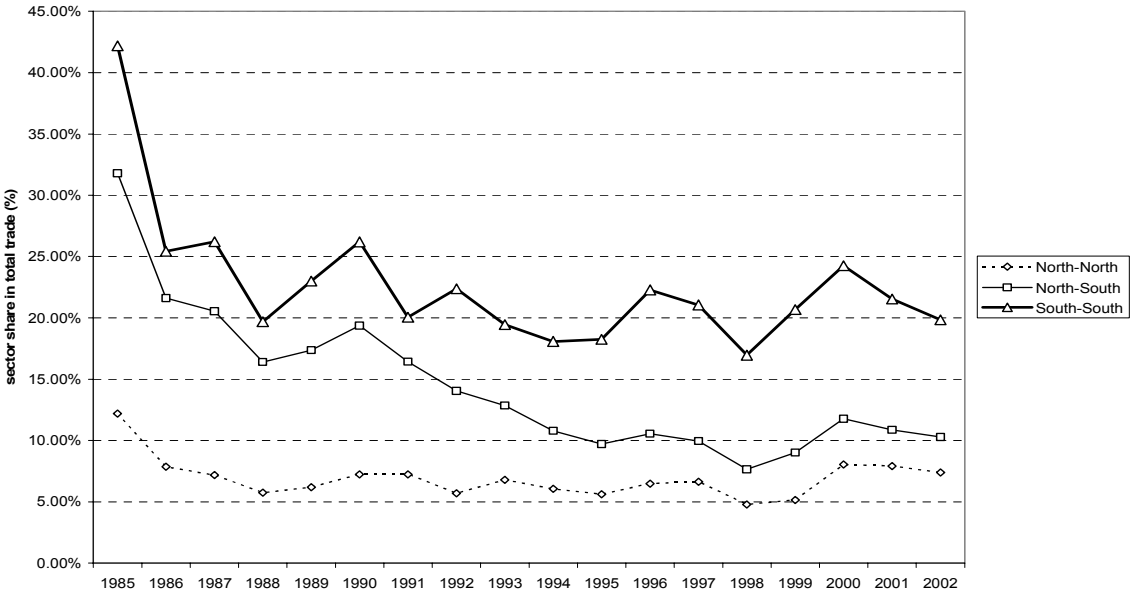


Figure 29. Animal and vegetable oils and fats, sector share in total trade by aggregate income groups, 1985- 2002

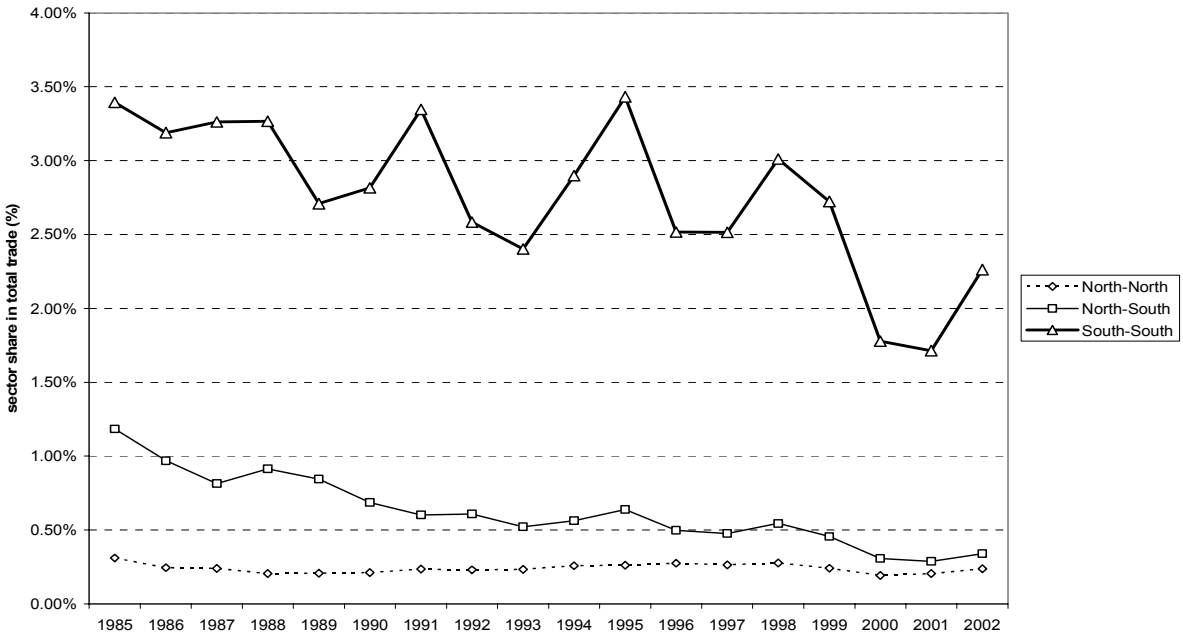


Figure 30. Chemicals, sector share in total trade by aggregate income groups, 1985-2002

Figure 31. Manufactured goods classified chiefly by material, sector share in total trade by aggregate income groups, 1985-2002

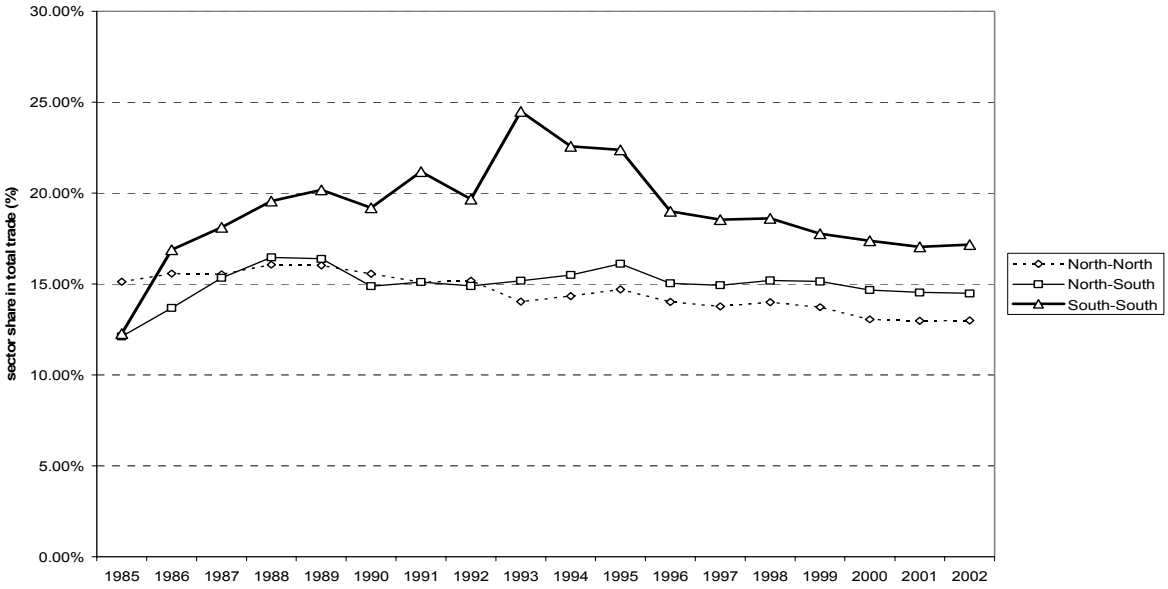


Figure 32. Machinery and transport equipment, sector share in total trade by aggregate income groups, 1985-2002

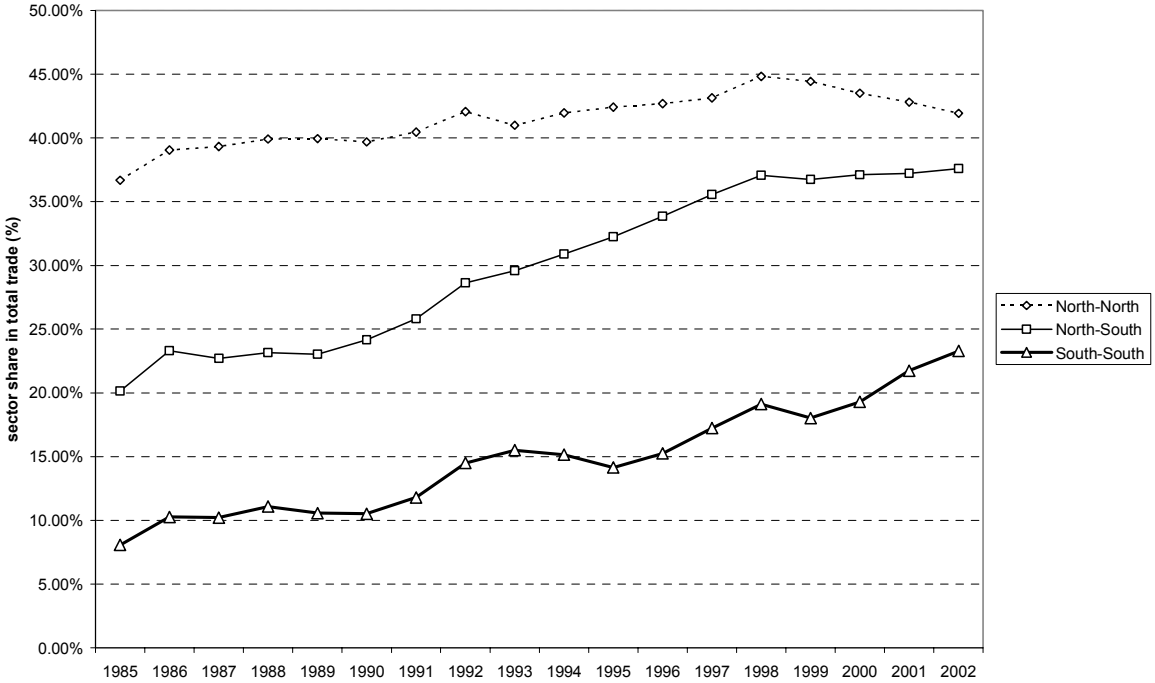


Figure 33. Miscellaneous manufactured articles, sector share in total trade by aggregate income groups, 1985-2002

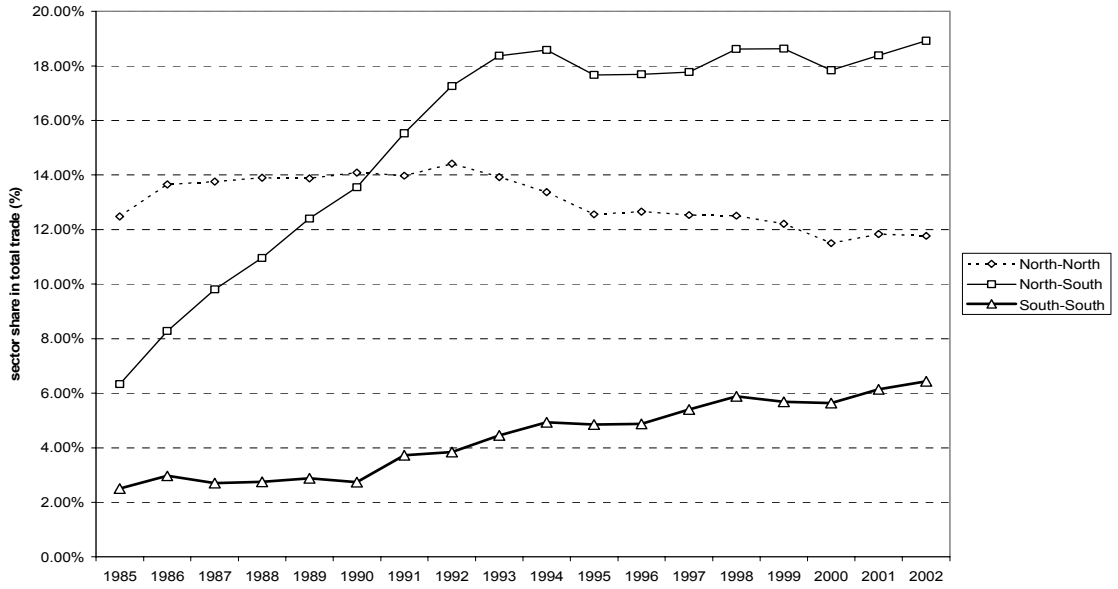


Figure 34. Commodities & transactions not classified according to kind, sector share in total trade by aggregate income groups, 1985-2002

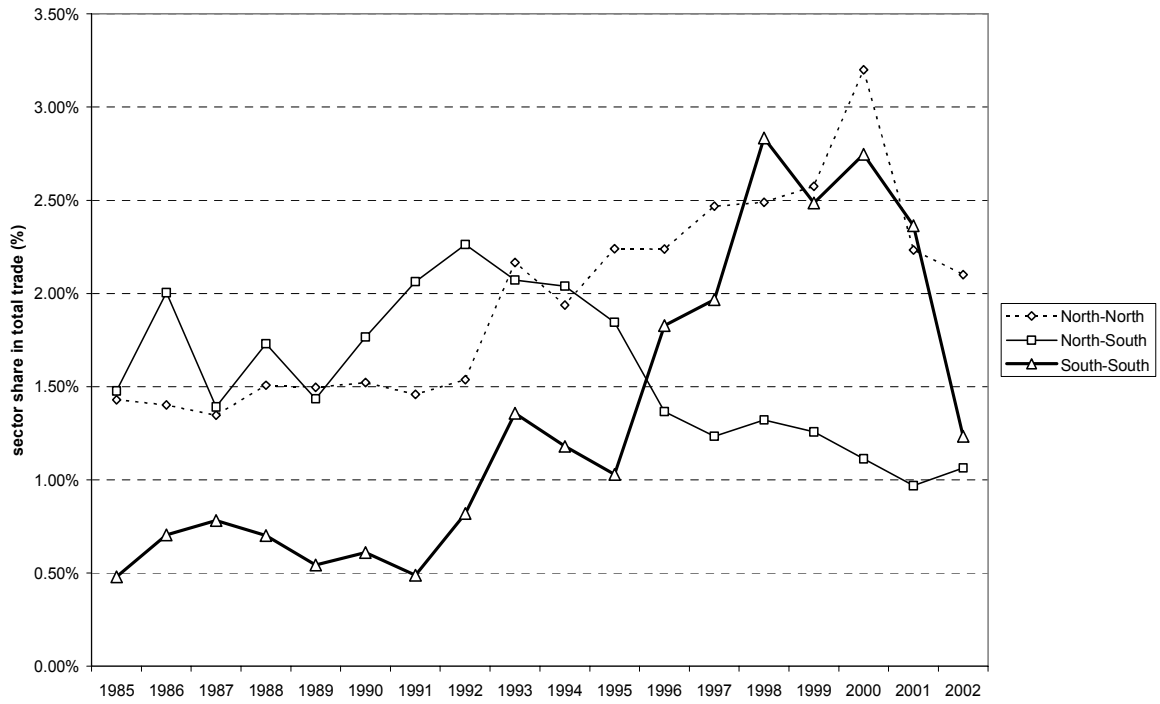


Figure 35. Estimated coefficients for the Benchmark Model (all countries), 1985-2002)

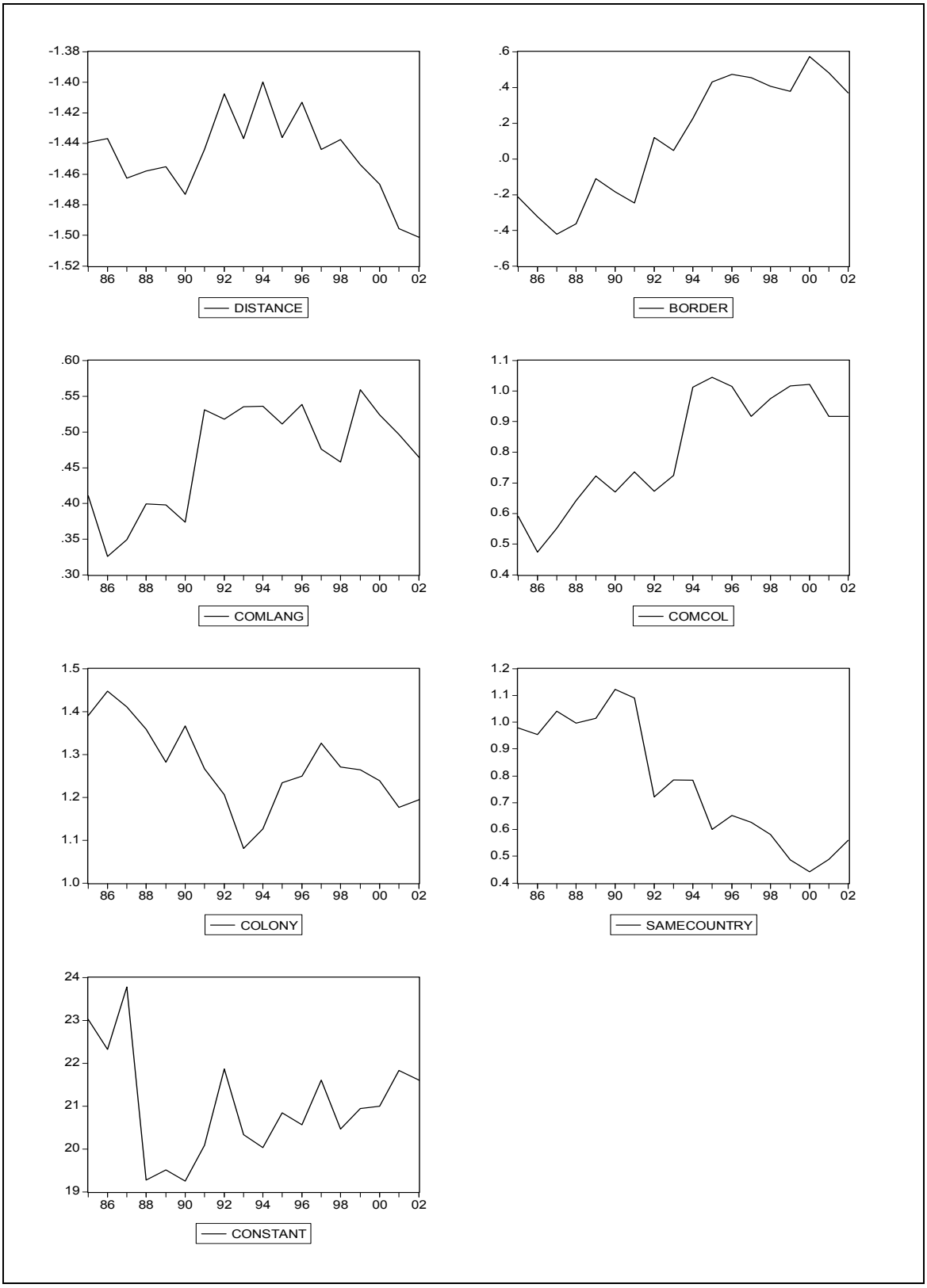


Figure 36. Estimated distance coefficients and 95% confidence interval for the Benchmark Model (all countries), 1985-2002)

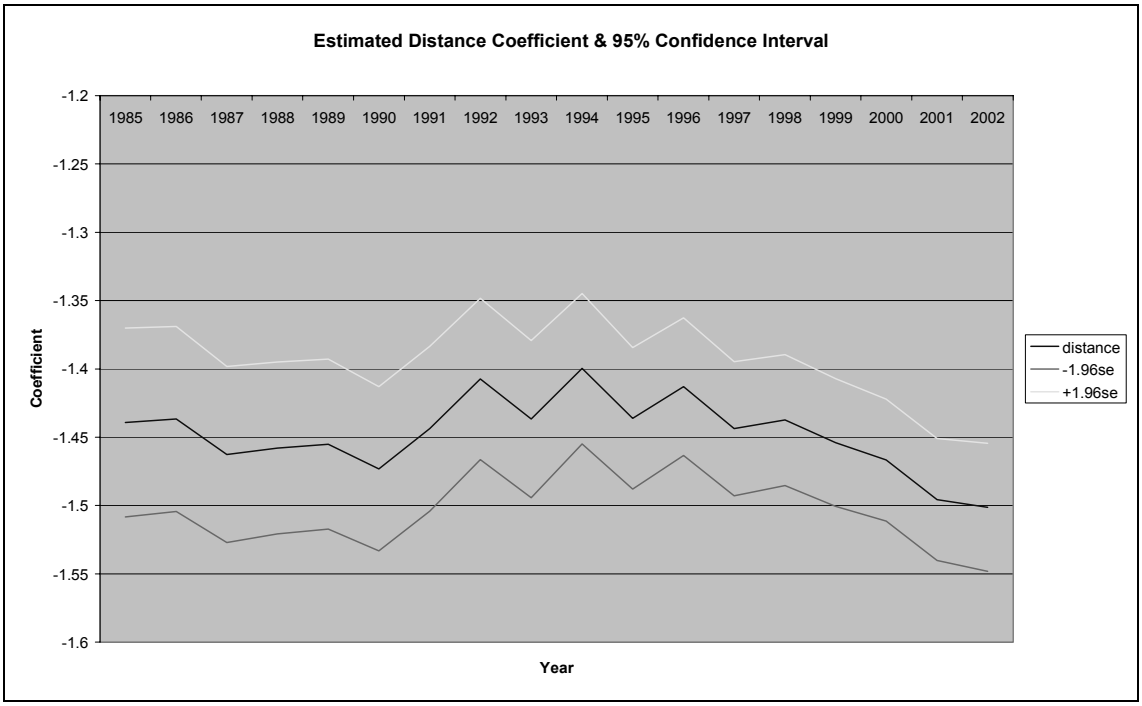


Figure 37. Estimated border coefficients and 95% confidence interval for the Benchmark Model (all countries), 1985-2002)

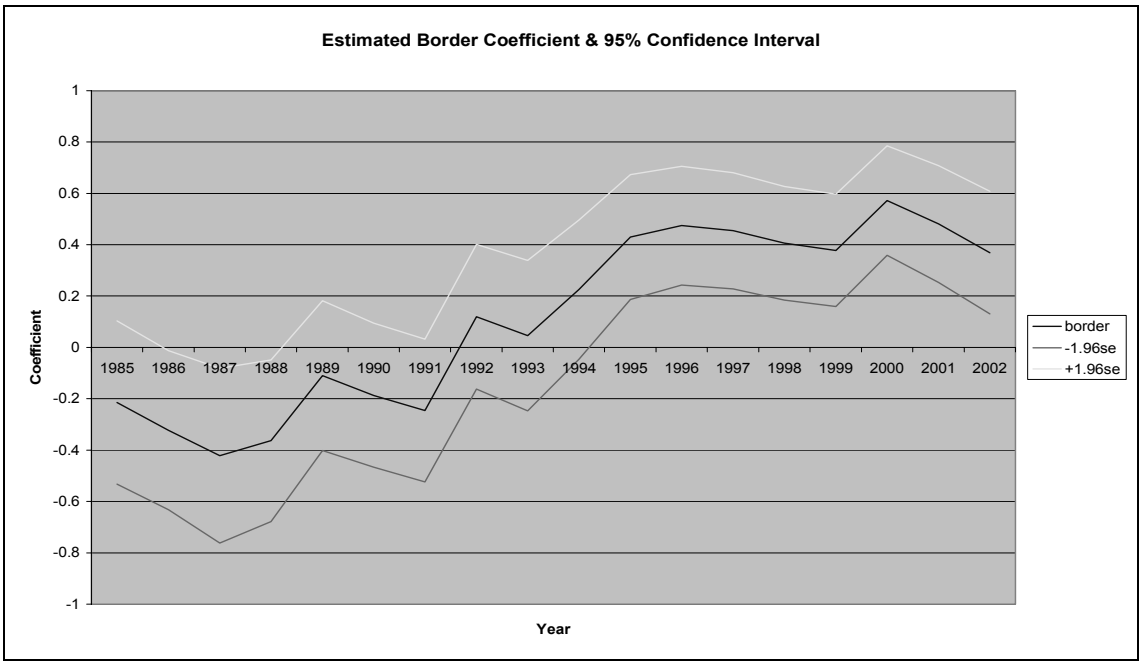


Figure 38. Estimated language coefficients and 95% confidence interval for the Benchmark Model (all countries), 1985-2002)

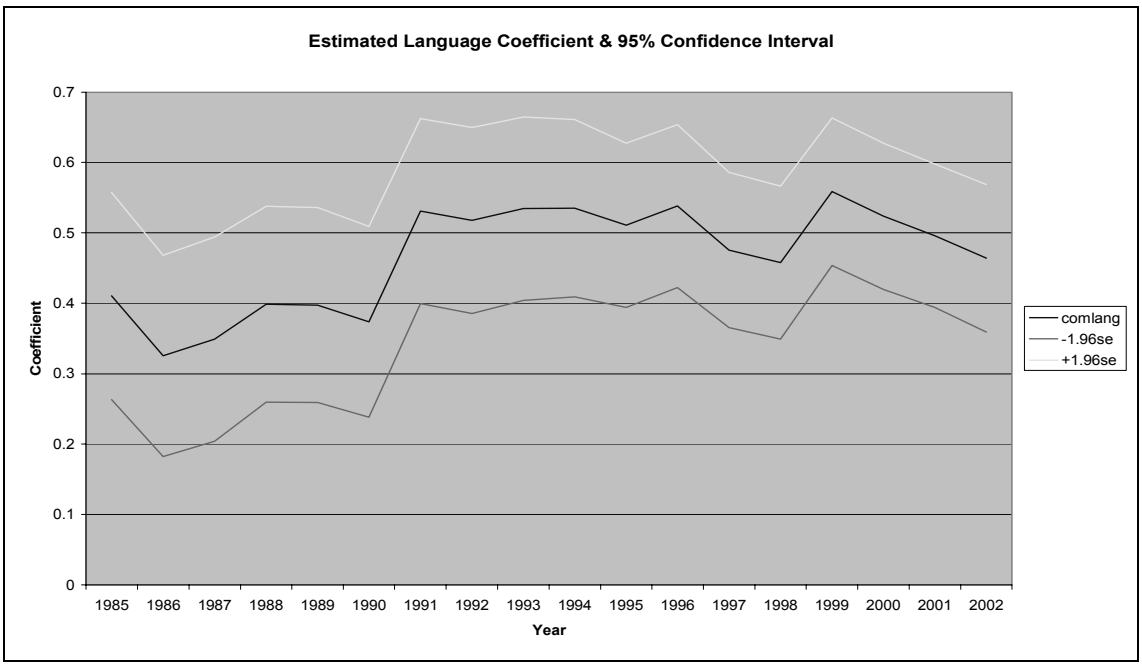


Figure 39. Estimated common coloniser coefficients and 95% confidence interval for the Benchmark Model (all countries), 1985-2002)

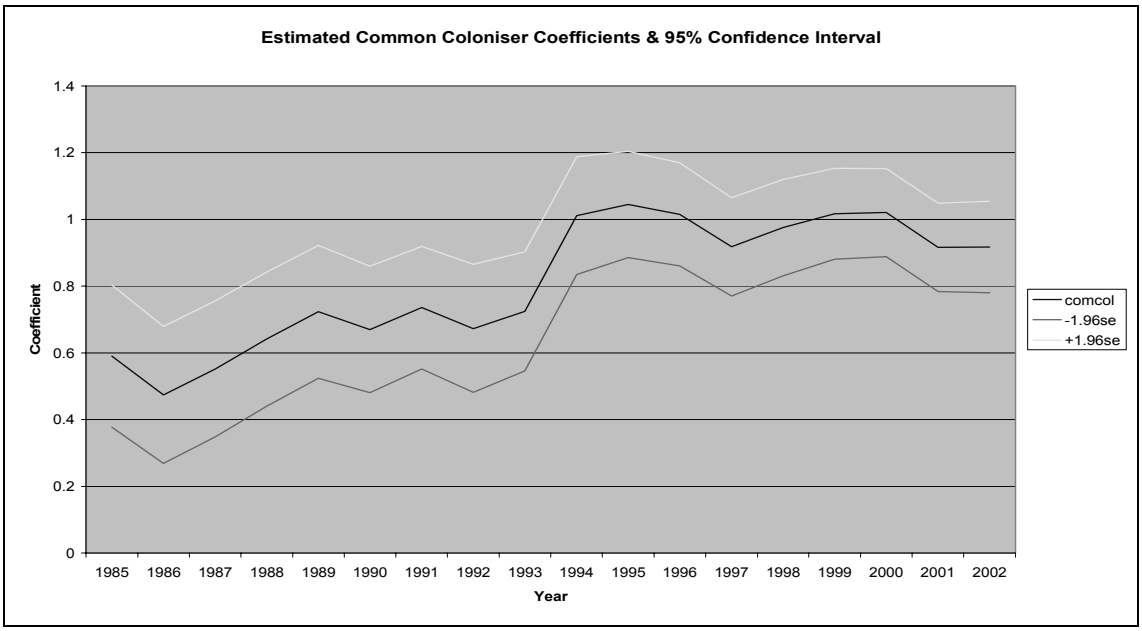


Figure 40. Estimated colony coefficients and 95% confidence interval for the Benchmark Model (all countries), 1985-2002)

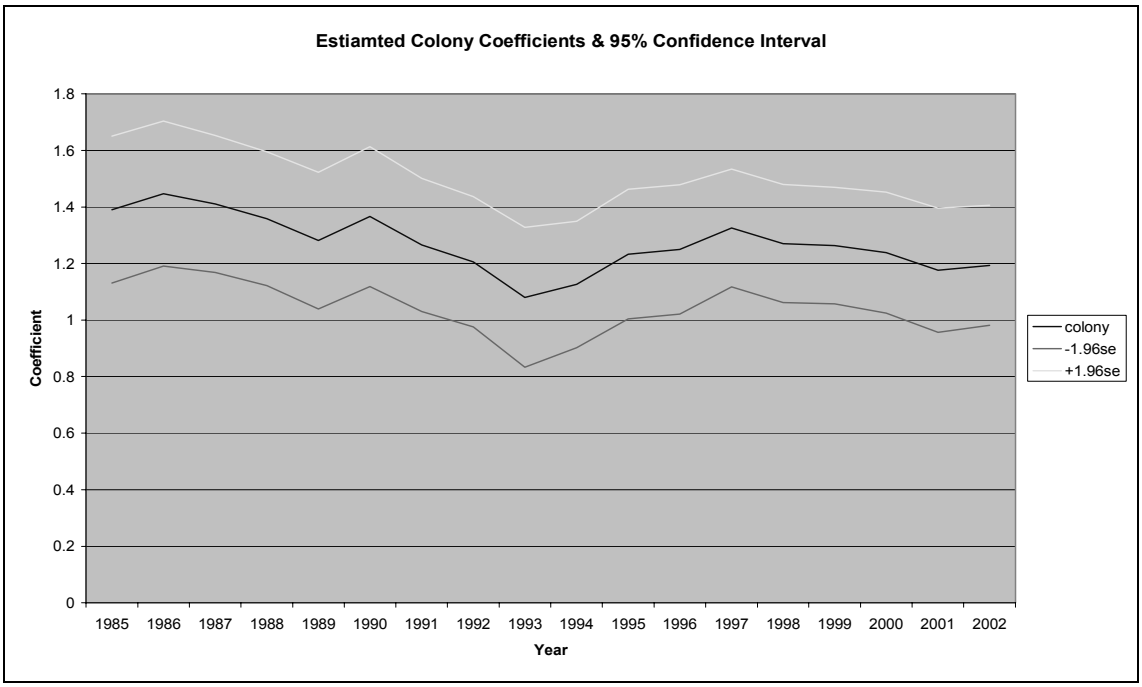


Figure 41. Estimated common country coefficients and 95% confidence interval for the Benchmark Model (all countries), 1985-2002)

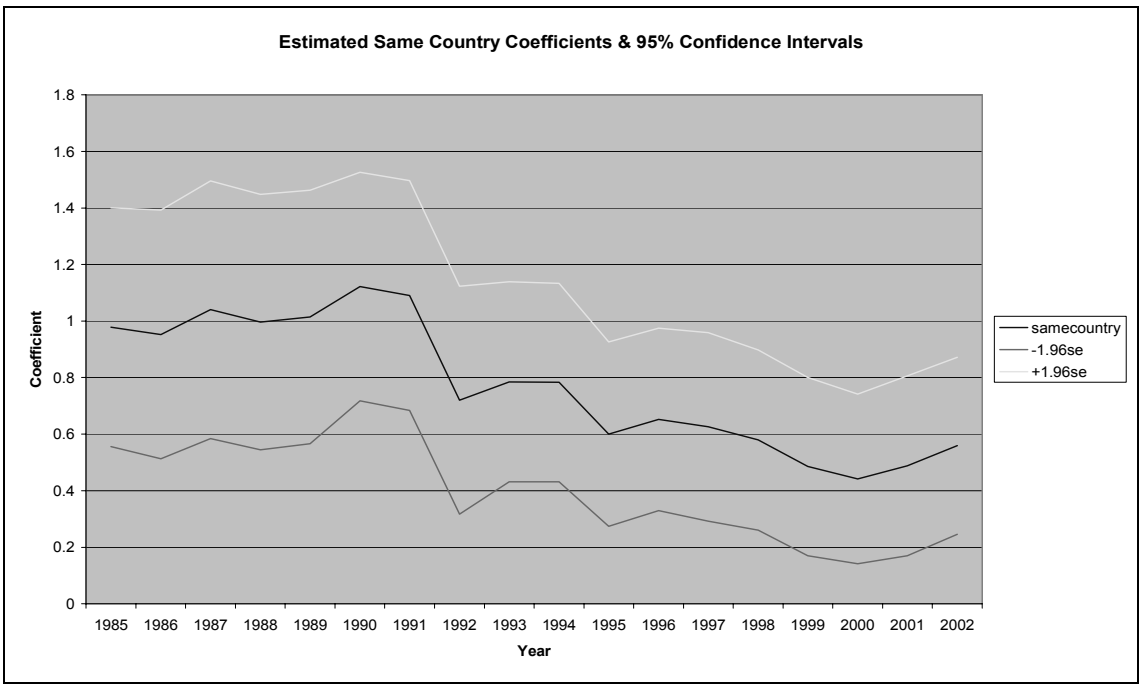


Figure 42. Estimated constants and 95% confidence interval for the Benchmark Model (all countries), 1985-2002)

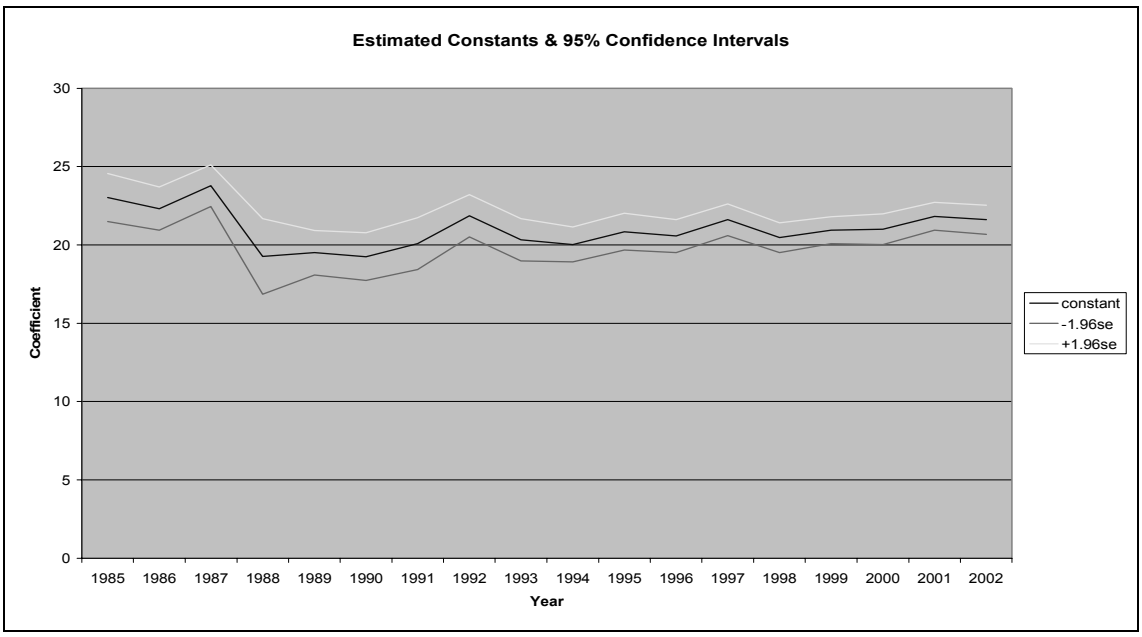


Figure 43. Estimated distance coefficients for the Trimmed Benchmark Model (by development group), 1985-2002)

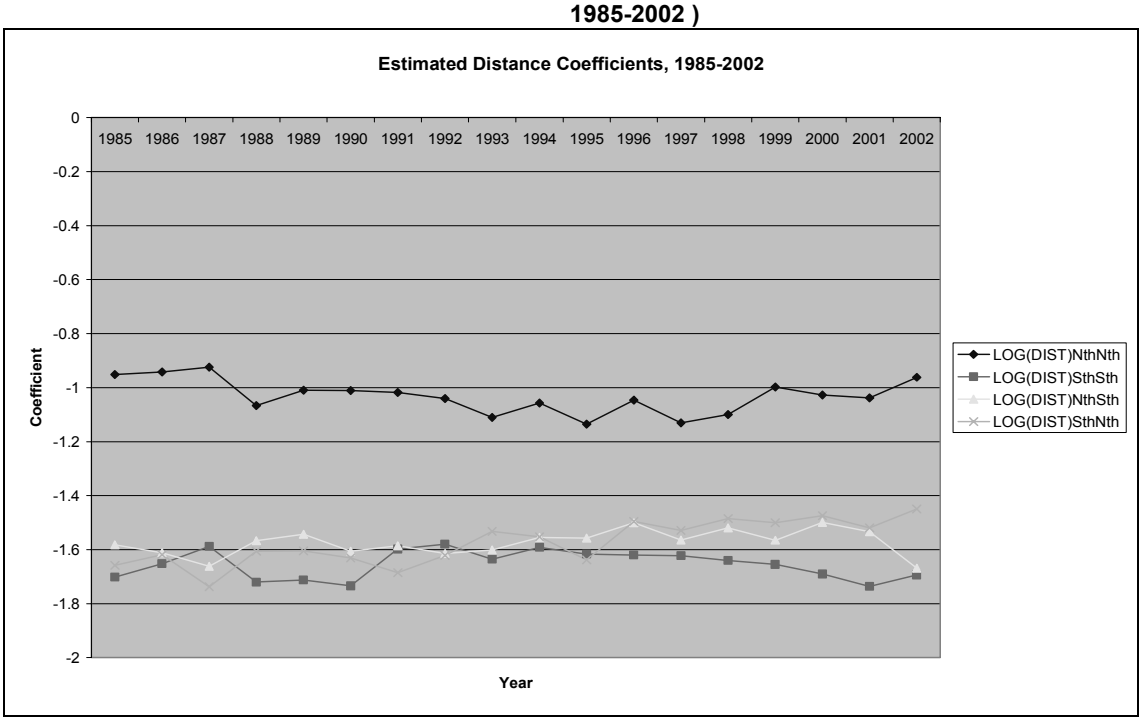


Figure 44. Estimated language coefficients for the Trimmed Benchmark Model (by development group), 1985-2002)

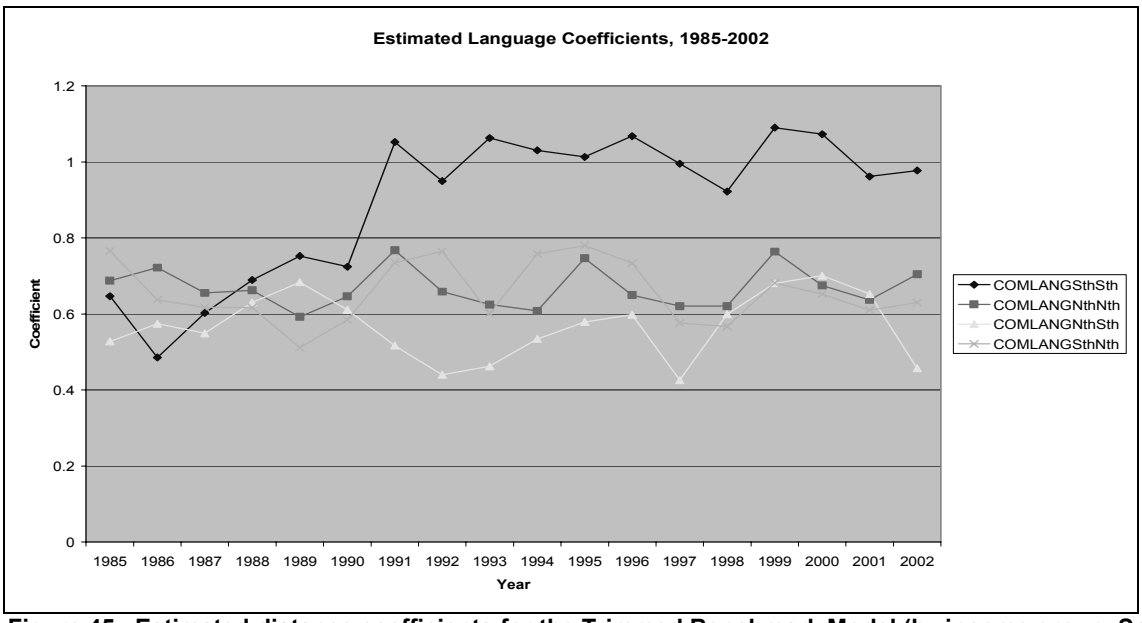


Figure 45. Estimated distance coefficients for the Trimmed Benchmark Model (by income group, South-South only), 1985-2002)

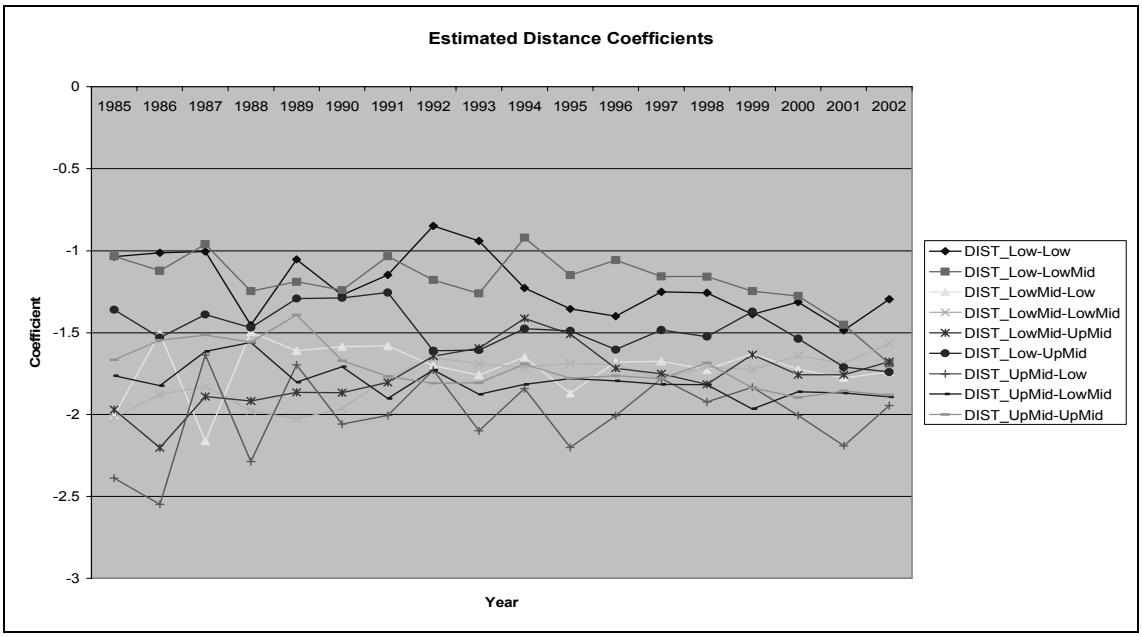


Figure 46. Estimated language coefficients for the Trimmed Benchmark Model (by income group, South-South only), 1985-2002)

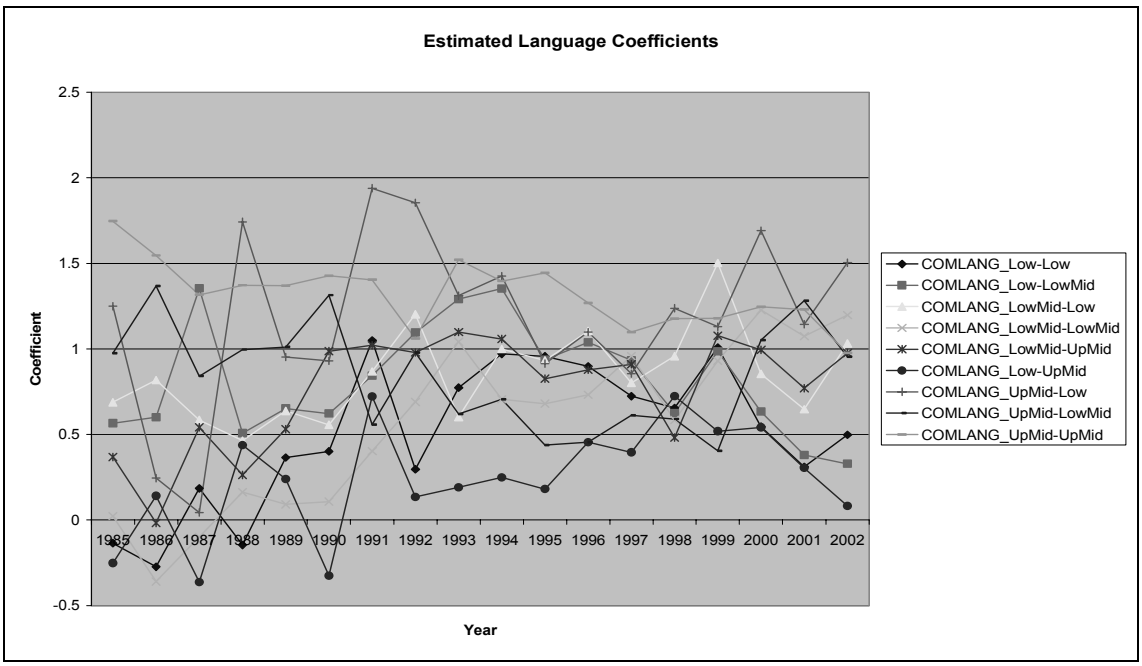


Figure 47. Estimated distance coefficients for the Trimmed Benchmark Model (by income group, North-North & North-South only), 1985-2002)

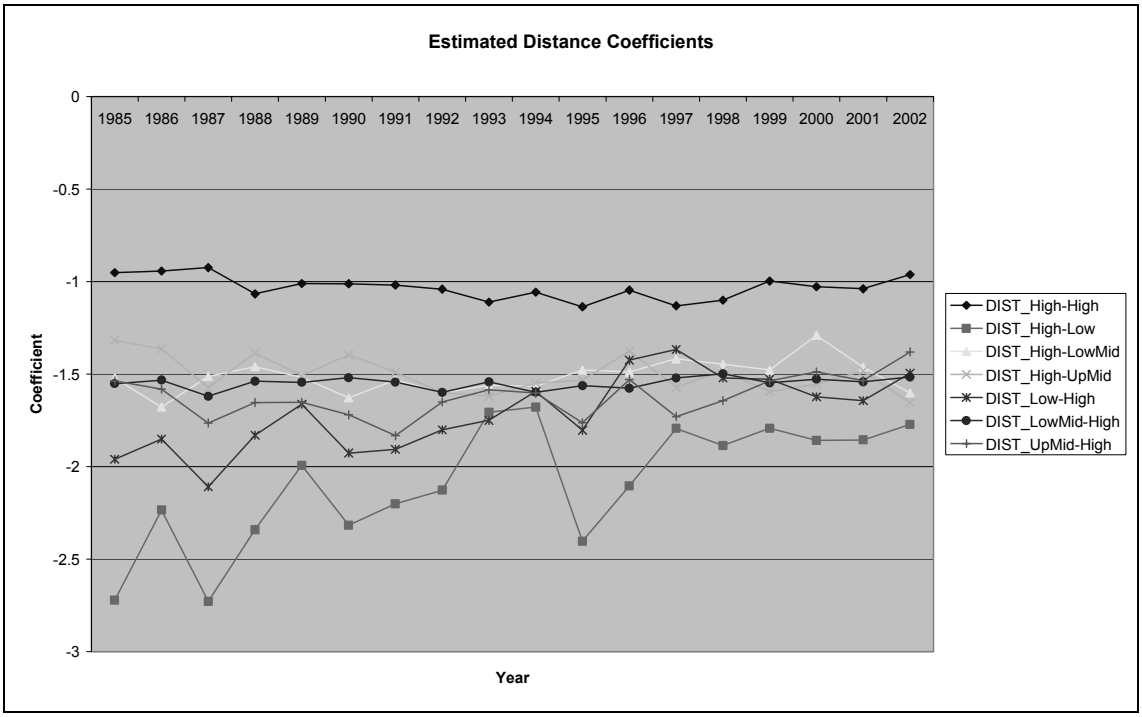


Figure 48. Estimated language coefficients for the Trimmed Benchmark Model (by income group, North-North and North-South only), 1985-2002)

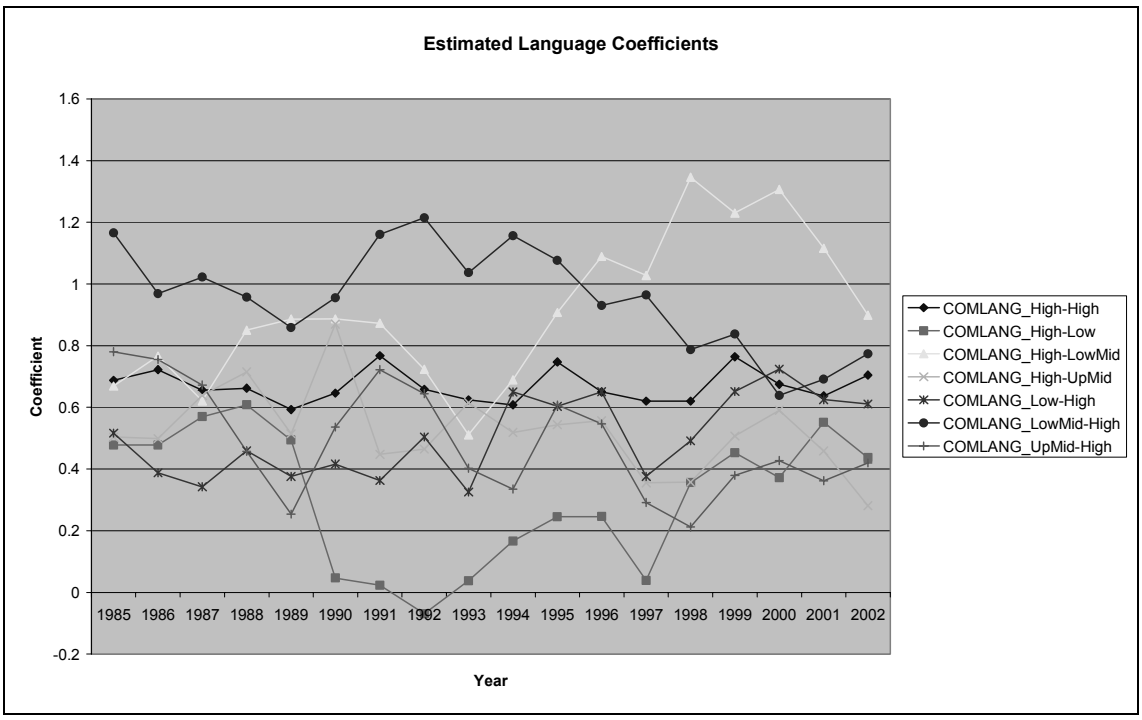
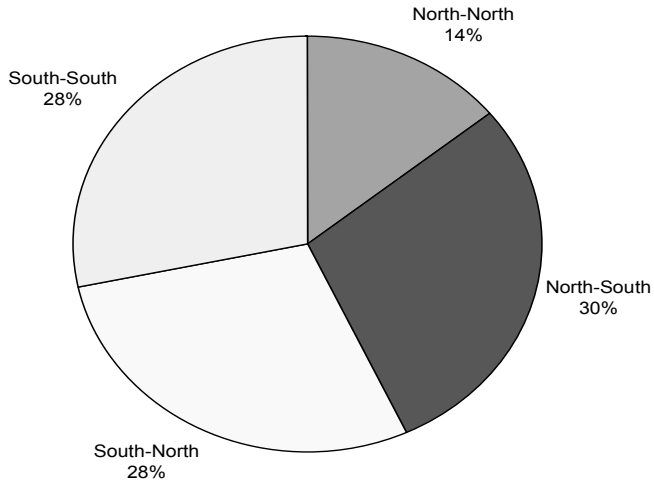


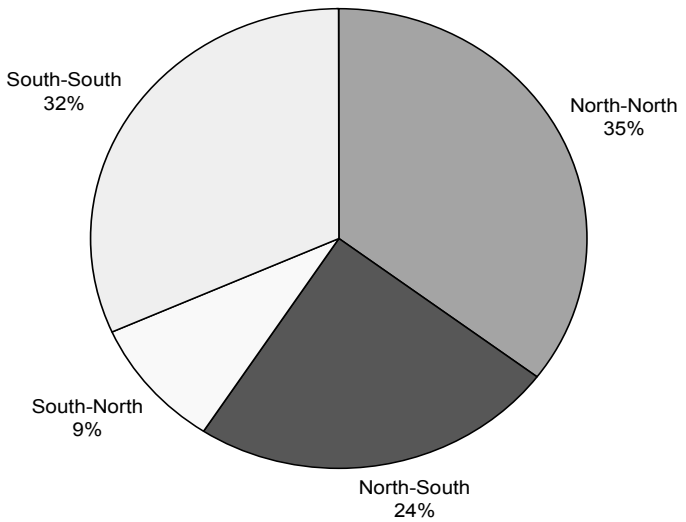
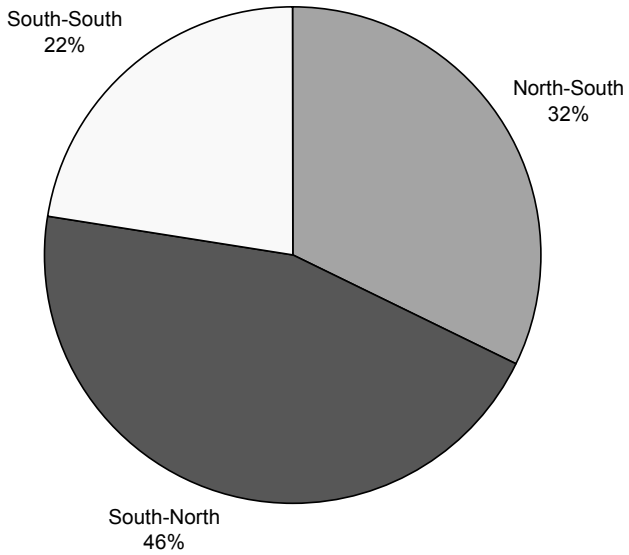
Figure 49. Distribution of welfare gains form a worldwide removal of tariffs

Notation: South-North indicates the gains that originate in liberalisation by the South and accrue to the North

Panel A. Total trade



Panel B. Agriculture



Panel C. Manufacturing