WORLD TRADE ORGANIZATION

WORLD TRADE REPORT 2004

Exploring the linkage between the domestic policy environment and international trade

FOREWORD

The World Trade Report 2004 is the second annual publication in the WTO Secretariat's new series. As I indicated last year, the World Trade Report seeks to deepen public understanding of current trade policy issues and to contribute to more informed consideration of the options facing governments. Like last year, the Report begins with a review of recent world trade developments. This is followed by three shorter essays – on trade preferences, the temporary movement of natural persons, and geographical indications. The main topic of the Report this year is coherence.

As far as trade developments are concerned, 2003 was not as bleak a year as many had feared. Trade grew in real terms by 4.5 per cent, a rate still somewhat below the average for the 1990s but above what many forecasters had anticipated. These results were largely a reflection of a pick-up in economic activity in the second half of the year. Prospects for 2004 look much better than the results for 2003.

The Fifth WTO Ministerial Meeting at Cancún was a disappointment to many and did little to bolster business confidence. I fully share what I believe is the widely-held aspiration that signs of renewed commitment to moving the Doha Development Agenda forward will lead to concrete results in the near future. A failure by governments to deliver on the promise of Doha would be a blow to the trading system and would do nothing to support, let alone improve upon, near-term expectations regarding the performance of the world economy. I strongly urge governments to transform intimations of a willingness to move forward into concrete outcomes.

Turning to the three shorter essays in WTR 2004, the work on preferences comes at a crucial time. Fears about the erosion of preferences among beneficiary countries have emerged on the negotiating agenda more forcefully and explicitly than ever before. But just as beneficiary governments are concerned to maintain their margins of preference, others would wish to ensure that MFN trade liberalization is not arrested. This essay evaluates preferences in terms of their role in supporting the trade interests of beneficiary countries. A mixed picture emerges.

While preferences have been used to good effect by some countries at particular points in time, the benefits have been attenuated by a number of factors. These include the continuing reduction of preferential margins and complexities associated with preference schemes that reduce their attractiveness. Utilization levels of preferences have been low in many instances. An additional concern is that preferences may draw resources into activities that cannot survive under normal conditions of competition. Where this occurs, countries may be unwisely investing in future adjustment challenges. The essay concludes that preferences cannot last forever, and that while beneficiaries may be well advised to make what constructive use of them they can in the short-term, a longer-term perspective needs to contemplate a world without preferences.

The second essay addresses another issue of great topical interest – the possibility of reaping additional gains from trade in services through the facilitation of movement of persons across national frontiers on a temporary basis. Mode 4 of the General Agreement on Trade in Services contemplates such transactions and provides the means for governments to make commitments aimed at augmenting this source of additional national income. The analysis in the essay focuses on temporary presence. Temporary sojourners can bring significant benefits by stimulating other kinds of trade, supporting technology transfer and human capital development, and smoothing out cyclical variations in the demand for labour. At the same time, temporary presence avoids the deeper economic and social problems associated with migration. Commitments under Mode 4 of the General Agreement on Trade in Services are markedly less than those under other modes of supply. Perhaps here we have an additional way of boosting the gains from trade to mutual advantage. The empirical literature suggests that these gains could be large.

The third essay focuses on an issue upon which Members hold opposing views. Geographical indications (GIs) are a form of intellectual property right that seeks to protect investments in reputation as well as to provide consumers with information regarding the characteristics of products associated with particular regions and quality-related traditions. The central issue is how strongly such property rights should be protected by governments – protection already provided under the TRIPS Agreement in respect of wines and spirits is the standard sought by the protagonists of strong GI protection, whereas others believe the mainstream provisions of the TRIPS Agreement in this area are sufficient.

The main theme of this year's WTR – coherence – deals with issues central to the ability of countries to reap benefits from trade policies underwritten by the WTO as a rule-making institution and forum for negotiations. The basic premise of the Report is that returns from sound trade and investment policies are dependent not only on those policies themselves, but also on the underlying environment in a range of related policy areas. Policies affecting macroeconomic conditions, infrastructure and infrastructural services, the functioning of domestic markets and the robustness of institutions are key determinants of the ability of countries to benefit from engagement in the international economy.

The concept of coherence is somewhat elusive, since it can mean different things in different contexts. In this Report, coherence refers to the general notion that mutually supportive policies need to receive adequate attention from decision-makers and pull in the same direction. Many of these policies fall largely or exclusively under the responsibility of national governments. In practice, governments pursue multiple objectives, not all of which are necessarily easy to render consistent. Moreover, no unique set of policy options can be defined to meet particular objectives. For these reasons, coherence is more of a guiding principle than a precise objective.

Each of the subsections of the coherence part of the WTR (Section II) is devoted to a particular policy area. The discussion on macroeconomic policy and trade policy shows how closely linked these two facets of government decision-making are, and in particular how poor macroeconomic management and macroeconomic instability can frustrate trade policy goals. The limited and ultimately ineffectual role of trade measures as an instrument of macroeconomic management is also emphasized.

The analysis of the role of infrastructure and infrastructural services in permitting economic agents to benefit from domestic and foreign market opportunities focuses on transport, telecommunications, financial services and business services. The point that the absence of efficient and competitively priced infrastructure and infrastructural services hampers development across the board, and not just in respect of trade, is beyond dispute. What governments do about infrastructure is a fundamental determinant of whether nations progress or assume the status of economic laggard. The Report also makes the important point that trade can sometimes play a decisive role in the supply of efficient infrastructural services.

The part of the Report dealing with domestic market structures explains why governments have a responsibility to ensure that private agents cannot frustrate market opportunities by rendering markets incontestable. This subsection also deals with the results (positive and negative) of economic activities that are not captured in normal market relationships. Once again, it falls to governments to address these externalities. The analysis uses the examples of negative environmental spillovers and positive knowledge spillovers to illustrate the nature of choices faced by governments as they seek to fashion a sustainable, pro-growth and pro-development policy framework.

The analysis of governance and institutions emphasizes the importance of high-quality institutions to a well-functioning economy. Without effective institutions, markets cannot operate properly. The analysis also shows that the better institutions are, the more far-reaching will be the benefits of trade openness in terms of integration into the world economy. In addition, the social acceptability of the need for adjustment to change, including as a result of trade reforms, will be significantly enhanced if institutions of good quality are in place.

Finally, Section II looks at the role of international cooperation in supporting policy coherence. International cooperation can help in many ways, and governments have a wide array of options for cooperation at different levels of binding commitment. In the field of trade, for example, the WTO offers coordination opportunities for trade liberalization that provide additional benefits to all parties. It provides a framework for reducing uncertainty in trade policy, lowering transactions costs, and enhancing information flows. The effectiveness of the WTO, however, requires that governments continue to show commitment by carrying through undertakings made at Doha to negotiate improved market access and better rules. I am confident recent signs of a willingness to move forward will translate into concrete results that balance the rights and obligations of all Members in a mutually beneficial manner. I urge governments to press ahead with this endeavour as a matter of priority.

Supachai Panitchpakdi

Director-General

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ABBREVIATIONS AND SYMBOLS

ACP	African, Caribbean and Pacific Group of States
AGOA	United States' African Growth and Opportunities Act
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of South East Asian Nations
AVE	*Ad valorem* equivalent
BEA	Bureau of Economic Analysis
BIS	Bank of International Settlements
BOP	Balance of Payment
CBI	United States' Caribbean Basin Initiative
CEPAL	Economic Commission for Latin America and the Caribbean
CGE	Computable General Equilibrium
CIA	Central Intelligence Agency
CIS	Commonwealth of Independent States
COMECON	Council for Mutual Economic Cooperation
COMESA	Common Market for Eastern and Southern Africa
CRS	Computer Reservation System Services
CTS	Consolidated Tariff Schedules
CUTS	Consumer Unity and Trust Society
EIA	Environmental Impact Assessment
ENTs	Economics Needs Tests
EPZ	Export Processing Zone
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FATS	Foreign Affiliates Trade in Services
FDI	Foreign Direct Investment
FSC	Forestry Stewardship Council
FSF	Financial Stability Forum
FTA	Free Trade Area
FTAA	Free Trade Area of the Americas
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GIs	Geographical Indications
GREEN	General Equilibrium Environmental Model
GSM	Global System for Mobile Communications
GSP	Generalized System of Preferences
GTAP	Global Trade Analysis Project
HIPIC	Heavily Indebted Poor Countries Initiative
H-1B	H-1B temporary worker: an alien admitted to the United States to perform services in "speciality occupations"
HS	Harmonized system of tariff classification
IBF	International Banking Facilities
ICT	Information Communication Technology
ICTs	Intra-corporate transferees
IDB	Integrated Database
IF	Integrated Framework
ILO	International Labour Organization
IMF	International Monetary Fund
IT	Information Technology
ITC	International Trade Centre

ITS	International Trade Statistics
ITU	International Telecommunications Union
JOM	Japanese Offshore Markets
LDCs	Least-Developed Countries
MDGs	Millennium Development Goals
MEAs	Multilateral Environmental Agreements
MERCOSUR	Southern Common Market
MERGE	Model for Exchanging Regionalised Geographic Entities
MFA	Multifibre Arrangement
MFN	Most-Favoured-Nation
MNC	Multi-National Corporations
MTN	Multilateral trade negotiation categories
NAFTA	North American Free Trade Agreement
NPR-PPMs	Non product-related processes and production methods
OECD	Organisation for Economic Co-operation and Development
OFC	Offshore Financial Centre
PPP	Purchasing power parity
QUAD	United States, Canada, European Communities, Japan
R&D	Research and Development
RTA	Regional Trading Arrangement
S&D	Special and Differential Treatment
SARS	Severe Acute Respiratory Syndrome
SIA	Semiconductor Industry Association
SPARTECA	Australia's South Pacific Regional Trade and Economic Co-operation Agreement
TFP	Total Factor Productivity
TPR	Trade Policy Review
TRAINS	Trade Analysis and Information Systems
TRIPS	Trade-Related Intellectual Property Rights
TVEs	Township and Village Enterprises
UEMOA	Union Économique et Monétaire Ouest Africaine
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
VOIP	Voice-over Internet Protocol
WDI	World Development Indicators
WHO	World Health Organization
WIPO	World Intellectual Property Organization

The following symbols are used in this publication:

...	not available
0	figure is zero or became zero due to rounding
-	not applicable
$	United States dollars
Q1,Q2,Q3,Q4	first quarter, second quarter, third quarter, fourth quarter
I	break in comparability of data series. Data after the symbol do not form a consistent series with those from earlier years.

Billion means one thousand million.

EXECUTIVE SUMMARY

The first Section of the World Trade Report 2004 discusses recent developments in the structure, value and volume of international trade in goods and services, and trade prospects for 2004. It also includes analyses of non-reciprocal preferences, the international movement of persons supplying services, and geographical indications. The second Section of WTR 2004 then examines the subject of policy coherence, stressing the importance of complementary national policies to enable trade liberalization to create larger benefits for society. It focuses on four important areas of economic policymaking. They are: i) the macroeconomy; ii) the state of infrastructure and infrastructural services, particularly in areas linked closely to trade performance (transport, telecommunications, financial services and business services); iii) market structure, with special emphasis on the level of competition and presence of externalities; and iv) the quality of institutions. The last part of the second Section of the Report then explores the international dimensions of coherence, identifying the role of international cooperation in supporting coherent policy formulation at the national level, particularly in the field of trade policy.

I. TRADE AND TRADE POLICY DEVELOPMENTS

Recent trends in trade

The growth of global trade and output strengthened in 2003.

In 2003, world merchandise trade grew by 4.5 per cent in real terms, a rate faster than in the preceding year but well below the average rate in the second half of the 1990s. The most dynamic trading regions in 2003 were Asia and the transition economies, which experienced double-digit import and export expansion in their merchandise trade. Import growth in North America exceeded the rate of global expansion and was again much higher than export growth. The volume of merchandise imports went up by 5.7 per cent in the United States, while exports rose somewhat less than 3 per cent, but the latter was the first annual increase after two years of contraction. In 2003, Western Europe's merchandise exports rose by less than 1 per cent, while imports edged up by nearly 2 per cent. Sluggish investment and consumer expenditure in the largest economies of the euro zone were the principal factors in Western Europe's disappointing trade performance. Sustained by a recovery in demand for many primary commodities, Latin America's exports rose by 4.5 per cent, although the region's imports stagnated. Africa as a whole recorded a trade surplus for the first time since 1991, but the continent's share of world exports (2.3 per cent) was still lower than ten years ago.

The global trade expansion was a consequence of improved economic growth, which strengthened considerably beginning in the second quarter of 2003. In the first quarter of the year, the appearance of Severe Acute Respiratory Syndrome (SARS) in East Asia and the build up of tensions that led to the military conflict in Iraq weakened consumer and business confidence in many regions. In OECD countries the composite leading (business) indicator hit its lowest level in March 2003 before improving from May 2003 onwards. The major stock markets showed a similar development, dropping until March but recovering thereafter and then expanding sharply until the end of the year.

Global growth was supported by expansionary monetary and fiscal policies in most regions. Fiscal deficits widened and interest rates declined or remained low. The fiscal deficit of the major developed economies rose to 4.9 per cent of GDP in the United States, to 2.7 per cent in the European Union and to 7.4 per cent in Japan. Interest rates decreased markedly, especially at the longer-term end in all developed markets.

Dollar prices of internationally traded goods rose by 10.5 per cent, due to a combination of higher prices for fuels and other primary commodities as well as the depreciation of the US dollar, in particular *vis-à-vis* the European currencies.

In 2003, higher dollar prices combined with stronger real trade growth led to the largest increase in the nominal value of international merchandise and services trade since 1995. The value of world merchandise exports rose by 16 per cent to $7.3 trillion, while that of commercial services trade rose by 12 per cent to $1.8 trillion.

In the case of merchandise trade, it is estimated that more than two thirds of the rise, in value terms, is attributable to dollar price changes.

In 2004, global trade is expected to grow twice as fast as output.

The strengthening of the global expansion in the second half of 2003 is projected to continue in 2004. Global GDP is expected to grow at 3.7 per cent in 2004, up from 2.5 per cent in 2003. In line with the economic recovery, global trade is expected to expand by 7.5 per cent in 2004, twice as fast as output. Most of the predicted acceleration in global output growth is attributable to North America, Western Europe and Latin America. Asia and the transition economies are expected to experience the same or weaker GDP growth in 2004 compared to 2003, but still above the world average. However, a number of risks are attached to these forecasts. Among these are a sudden correction in the United States current account deficit, a faltering of recovery in Western Europe and a sharp rise in energy prices.

Two medium-term developments in international trade highlighted in this Report are the above average trade growth in manufactured goods and other commercial services and the increased importance of processed agricultural goods in world trade.

Two notable developments in the structure of world trade are highlighted in the Report. The first is the varied trade performance of different categories of goods and commercial services since 1985. Manufactured goods and "other" commercial services experienced above average trade growth during this period. By contrast, agricultural and mining products, as well as transport services, saw a relative decline in their trade shares. The second medium-term development is a structural change in the composition of world trade in agricultural products, with processed agricultural goods becoming more important. This trend towards more processed goods in trade can be observed across countries and agricultural product groups throughout the 1990-2002 period. The question of how far trade policy may be responsible for these observed trends is a matter for further research.

Non-reciprocal preferences

Non-reciprocal preferences have assumed unprecedented significance in discussions on market access in the Doha Development Agenda.

Although not explicitly included in the Doha work programme, non-reciprocal preferences exert an important influence in the negotiating positions taken by a number of WTO Members. These Members are concerned that further multilateral liberalization will erode the preferential access they now enjoy in a number of important markets. Several proposals have been put forward in the current negotiations to address preference erosion, including a retention of preference margins, a delay in the erosion of preferences that will result from reductions in MFN tariffs, and compensation payments to preference beneficiary countries.

Non-reciprocal preferences are inconsistent with MFN, and while they may have benefited particular suppliers at certain times, they generally offer limited additional real market access and may not promote the long-term economic development of beneficiary countries.

Non-reciprocal preference schemes have been part of the multilateral trading system since the late 1960s. The experience with these schemes, however, has led to considerable uncertainty about their value and contribution to economic development. Since they are autonomous, preference-receiving countries have little or no control over their coverage and application. Nevertheless, these schemes continue to proliferate and regulations that govern their administration are becoming increasingly complex.

The initial concerns about introducing and legalizing non-reciprocal preference schemes remain valid today. These schemes are inconsistent with the fundamental principle of non-discrimination and are liable to lead to trade diversion. The degree of market access that is created by these schemes is often limited since the preference margins are quite small, and even in cases where they are significant, the utilization of the schemes is often low. Increasingly, they may threaten the progress of multilateral liberalization as preference-receiving countries seek to avoid an erosion of their margins. Ultimately, it is not clear to what extent preferences

promote development because of incentives for preference-receiving countries to specialize in products where they may not have long-term comparative advantage.

Knowing that complete erosion of preferences is a matter of time, beneficiary countries will need to formulate a strategy.

A number of developing countries who do not benefit from preferences are becoming increasingly concerned about the negative effects of preference schemes on their exports and have shown they are willing to take action through the dispute settlement machinery. These recent developments and the concerns noted above suggest that reliance on preferences is not a viable long-term strategy. One approach for dealing with the loss of preferential market access would be to make every effort to increase the utilization of preferences in sectors of export interest to preference beneficiary countries for as long as the schemes last. But such an approach would need to be mindful of possibly painful adjustments later. An alternative approach would be to address the situation directly, and prepare domestic industries for the adjustments ahead, recognizing that the elimination of non-reciprocal preference margins is ultimately inevitable.

Liberalization of trade in services through the temporary movement of persons

Liberalization of the temporary movement of natural persons would generate the same kind of gains as the liberalization of trade in goods and some of the gains from migration.

The temporary movement of natural persons is one of the four modes of supply foreseen in the General Agreement on Trade in Services. Liberalization of this mode of supply (Mode 4) means that people and not products would move across frontiers. Unlike migration, however, the movement of people under Mode 4 arrangements is temporary, not permanent. The movement of people can help to expand other types of trade thanks to personal contacts among people in different jurisdictions. Those movements can also represent a channel for technology transfer and the development of human capital. At the same time, the temporary movement of workers abroad does not constitute a "brain drain" from the originating country, and does not impose additional costs in terms of infrastructure and social and cultural integration in the receiving country. The movement of persons is also a way to reduce labour market pressures in both the originating and receiving country. To the extent that labour market shortages or surpluses are cyclical, the temporary movement of labour is more helpful in alleviating labour market pressures than permanent migration (which can create new labour market pressures if labour market conditions change).

The Report shows that special market access restrictions and discriminatory measures are being used quite intensively by WTO Members to limit competition between foreign and domestic workers. Liberalization of Mode 4 within GATS offers a greater level of flexibility to national governments by providing a higher degree of predictability and transparency in the temporary movement of natural persons than is the case with sector-specific arrangements in areas such as nursing and information technology, or under regional/bilateral schemes, which have frequently been used by national governments to solve labour market shortages.

The value of Mode 4 movements is potentially important for many countries and sectors, and is already significant for some...

One way of gauging the potential benefits from Mode 4 liberalization is to look at the value of transactions generated by Mode 4 movements. A cursory examination of the data may give the impression that the value is rather low, and some observers have concluded that Mode 4 liberalization is not important. But this value reflects the limited level of liberalization achieved so far. An analysis of specific bilateral and regional schemes liberalizing the movement of certain types of low-skilled workers shows that the value of Mode 4 movements can potentially be very large. Moreover, existing measurement methods are not very precise and are likely to understate the actual flows. This Report presents an alternative method of measuring such flows and shows that the estimated value of Mode 4 movements can change significantly when different measures are applied. The Report also confirms that the value of Mode 4 trade is already high for some countries and sectors, in particular if compared with the value of cross-border services trade.

...and liberalization under Mode 4 would also have a positive and significant effect on merchandise trade and other modes of trade in services.

The economic gains from Mode 4 liberalization are only partially measured by increased Mode 4 trade. Liberalization of Mode 4 is also likely to affect merchandise trade and trade in services under other modes. The Report shows that the effect of Mode 4 trade on total merchandise trade and other modes of trade in services is positive and significant.

Geographical indications

Geographical indications have become more important because of the expansion in global trade.

Geographical indications (GIs) are a form of intellectual property. They refer to the use of a region's name by producers from the area in order to protect their reputation or to safeguard the expectations of consumers who have come to associate certain qualities with a product's origin. With growing global trade, some countries have seen the need to cooperate internationally to preserve the role of GIs as conveyors of information for consumers and give support to their role as marketing tools. Although there are other related international agreements, the TRIPS Agreement is the first agreement to deal with GIs as such. Under TRIPS, the normal level of protection (afforded to all products) refers to Members' obligation to provide the legal means for interested parties to prevent the use of indications deceiving consumers as to the geographical origin of a good or constituting an act of unfair competition.

Additional protection is afforded to wines and spirits under the TRIPS Agreement. The current debate in the WTO centres on the question whether this stronger protection is to be extended beyond wines and spirits. There are also negotiations under way concerning the establishment of a multilateral system of notification and registration of GIs for wines and spirits. These negotiations have proven extremely difficult, in particular in regard to the possible legal implications of such a register.

The value of GIs for consumers emanates from the reduction of uncertainty about the qualities of a product.

GIs can have an important role to play in markets for differentiated products, especially in the presence of asymmetrical information. GIs are one way to help consumers to recognize a product that they wish to buy again. Repeat purchases and the mark-up that may be obtained give an incentive to producers to maintain particular product qualities even at higher production costs. In order for these market mechanisms to function, free-riding by third parties must be prevented that would inevitably destroy the information capital embodied in a distinctive sign. Under such conditions, markets of differentiated goods will, in general, be characterized by a larger product variety and higher product quality on average, to the benefit of consumers.

More research is needed on the effect of GI protection on product prices.

With the exception of wines, there have not been many econometric studies on the contribution made by regional origin to price. Moreover, hardly any studies have been carried out to examine specifically whether a price premium is obtained when GI legislation is introduced. Our study of Darjeeling tea does not suggest that the GI protection given to this term had a noticeable effect on price. These results may suggest that protection is not enough and that it must be coupled with strict enforcement and significant investments in promotion of the product if consumers are to attach value to the indication. There is a need for further empirical research in this direction covering a larger group of products.

II. COHERENCE

The contribution of trade policy to growth and development depends in significant measure upon a range of related policies...

Well designed trade policies aimed at gaining maximum advantage from engagement in the international economy can make a key contribution to growth and development. But the value of that contribution is influenced by a number of other policies. The notion of coherence has been deployed in this study to characterize a situation in which relevant policies are pulling together in a mutually supportive manner. In a world of multiple policy objectives and priorities, and one where no consensus exists on the ideal policy set, the concept of coherence cannot be given operational precision – rather it is indicative of the reality that policies are inter-dependent, and that poor policy or neglect in one area can undermine the efficacy of efforts in another. A coherent policy approach in the present context, then, would be one in which the benefits of sound trade policies are greater than they would be without supportive policies in other areas.

...policies affecting the macroeconomic environment, infrastructure, the structure of domestic markets and the quality of institutions are important for successful engagement in the international economy.

The Report seeks to demonstrate how in each of these areas – macroeconomic policy, infrastructure, the structure of domestic markets, and governance and institutions – policy stances that facilitate the attainment of trade policy objectives will form part of a coherent whole contributing to the realization of growth and development goals. Other policies could also have been chosen for a study of this nature, such as education and health, whose focus on human capital will also influence the quality of a nation's engagement in the international economy over the longer term.

International cooperation also has a role to play.

The Report also looks at ways in which international cooperation, supported by international institutions, can help to underwrite a coherent domestic policy framework. Coordinated approaches in various areas can help to avoid beggar-thy-neighbour policies, address international "spillovers", curb the abuse of market power, lessen transactions costs, reduce information asymmetries, and assist in capacity building. International cooperation can take many forms, some more binding than others, and international obligations are more effective when a shared perception exists that they yield mutual gain.

Macroeconomic policies

Trade and macroeconomic variables are intimately linked...

Trade affects the level and composition of activity in the economy, and influences stability and growth. Both exports and imports are determinants of income and employment in the economy. Economists still argue about the causal direction of the relationship between trade and growth, but empirical literature has generally found a positive correlation between the two. Just as trade affects macroeconomic outcomes, changes in national income, employment, the general price level, aggregate investment and consumption also affect trade flows. An expansionary monetary and fiscal policy, for example, may be inflationary, affecting the competitiveness of domestic firms with respect to foreign firms. Similarly, an expansionary policy will increase spending, including on imports, and influence the allocation of resources between tradables and non-tradables.

...and macroeconomic stability matters for trade.

The importance of macroeconomic stability for trade is underscored by studies of economic recessions. These studies have pointed to the direct and indirect effects of economic contraction on trade flows. The direct effects come from the decrease in demand for imports when aggregate demand is reduced, while the indirect effects originate in increased pressures from domestic firms for protection against foreign competition. Moreover, increased protection in one country may lead to retaliation and beggar-thy-neighbour responses from other trade partners. This underscores the significant risks for trade occasioned by sharp falls in domestic demand.

Both exchange rate and domestic price stability are strongly correlated with trade performance and external imbalances. Trading partners with low rates of inflation tend to trade more intensively with each other and are more integrated than countries that have experienced greater volatility in the rate of inflation. Countries that experience high exchange rate volatility also tend to be less integrated. Those enduring larger output volatility are also more likely to have lower average trade growth. These results confirm that macroeconomic instability can be detrimental to the growth of trade.

Balance-of-payments imbalances are a reflection of macroeconomic conditions and cannot be effectively addressed through trade policy.

The origins of balance-of-payments disequilibrium can vary, and governments must choose between finding ways of financing such imbalances or of adjusting out of them. The choice depends on whether the problem is perceived as temporary or long-term. If imbalances reflect longer-term realities, macroeconomic adjustment rather than borrowing is probably needed. Trade restrictions are not effective in solving balance-of-payments problems. Any immediate impact of trade restrictions on the trade balance is likely to be dissipated through shifts in demand from restricted to unrestricted imports and as a result of the harmful effects of import taxes on the cost of export products.

Infrastructure

The effects on trade of the quality, cost and reliability of infrastructure and infrastructural services are far-reaching.

Infrastructure and infrastructural services play a crucial role in supporting the flow of trade. Among key sectors in this regard are transport, telecommunications, financial services and business services. The ability of economic agents to respond to trading opportunities and to compete with imports often depends on the quality, cost and reliability of infrastructure and related services. In addition, the structure of trade will be affected depending on the relative importance of infrastructure and infrastructural services in different economic activities. Sectors that are "infrastructure-intensive" will be disadvantaged in comparison to those that are not in an environment of inefficient and costly infrastructure and infrastructural services.

Many infrastructural services display non-competitive characteristics that call for government intervention, but market-oriented policies can also make infrastructural services more efficient and industries more competitive.

Market imperfections such as network externalities, scale economies and coordination failures are prevalent in the case of some infrastructure services. Judicious regulatory intervention by governments, sometimes involving international cooperation, can be important in such circumstances. On the other hand, technological changes over the past decade or so have changed the competitive environment of some services, particularly telecommunications. Making infrastructural services more efficient therefore may require alternative policy measures, often different and more market-oriented than in the past. Moreover, the underlying infrastructure providing some of these services may have the characteristics of public goods, suggesting a role for government in the supply of physical infrastructure. Private as well as public investment may often be required, however, to improve physical infrastructure.

Opening to trade in infrastructural services can be an important way of increasing efficiency and competitiveness.

Infrastructural services support trade whether or not they themselves are traded. Increasingly, they are tradable and traded, and opening up to trade in these services is one channel through which their quality can be improved and costs reduced. In several of the transport service sectors, market opening can help to create competition in the industry, thereby increasing efficiency. For international transport services to work effectively, a degree of coordination is required. This may be partly assured through privately supplied business and logistics services, but international coordination of standard setting and trade facilitation also help to reduce costs and transit times for goods and services.

Efficient and well priced telecommunication services have a positive impact on the volume of trade and affect the pattern of international specialization. A good telecommunications system is crucial for cross-border trade in services and just-in-time delivery of goods. State-owned monopolies in some countries lack the financial and technical resources to upgrade infrastructure and services to meet the requirements of businesses and consumers. Reforms will generally involve at least some privatization as well as trade liberalization in order to ensure adequate service. Governments still have a regulatory role in guarding against anti-competitive practices affecting access to networks and in ensuring universal service.

Financial services play a crucial role in the process of transferring the ownership of products across borders and hedging risk associated with international trade flows. The pricing and quality of such services are key components of the transaction costs incurred by traders. Since sectors differ in their need for external finance, the cost of credit and the ability to access it also affect comparative advantage. Trade in financial services can improve the effectiveness of the financial system, although this sector faces particular challenges as trade liberalization, combined with liberalization of international capital flows and weak regulation, can contribute to a destabilized financial sector. While trade liberalization does not require openness on the capital account, meaningful liberalization requires a certain degree of openness to international capital flows. This openness would need to be safeguarded by appropriate regulation and international cooperation on supervision and surveillance. More generally, adequate prudential regulation, with or without foreign participation in the financial sector, is a pre-condition for macroeconomic stability.

The business services sector is growing rapidly, both nationally and in international trade. The possibility of acquiring specialized services from outside sources lowers costs, creates jobs and opens up possibilities for technology transfer. A particular benefit arising from an expanding business service sector is that the services offered allow small and medium enterprises to enter markets that would otherwise be inaccessible.

Market structure, externalities and policy intervention

The full gains from trade liberalization may not accrue to countries if markets are not functioning efficiently.

If domestic product markets, or capital and labour markets (factor markets), are functioning poorly, the capacity of economic agents to adjust and take advantage of new trading opportunities will be impaired. The source of market malfunction may relate to anti-competitive behaviour, aspects of government policy or to external factors (externalities) that markets are unable to account for fully. Corrective policies may therefore be required to increase the contestability of markets and address positive and negative externalities.

Competition policies are often needed to secure the gains from liberalization.

Competition and trade policies share the objective of promoting competition and achieving efficiency. International trade and investment liberalization increase the competition that domestic producers face from foreigners. In this sense, a small trade-dependent economy with open trade and investment policies may be able to use links with the outside world to ensure competition. But liberal trade and investment regimes are not always enough to secure competitive markets. Other impediments to contestability may necessitate a regulatory response from governments.

Two examples are considered to show how openness requires complementary competition policy in order to secure the full benefits of trade liberalization. One concerns cross-border mergers and the other international cartels. First, while mergers can bring economic benefits from economies of scale, sharing of know-how, and so on, anti-competitive effects can arise from reduced rivalry in the market. In these cases, the regulation of mergers would limit the impact of anti-competitive behaviour on international trade and increase the benefits for consumers. Second, foreign exporters may be members of a cartel that aims to reduce output and raise prices. Then even if trade barriers are low or non-existent, the benefits of open trade will not be passed on to consumers because the cartel colludes to keep prices high. Available evidence indicates that significant shares of developing country imports were affected by international cartels prosecuted in the 1990s.

The question of how best to deal with the international effects of anti-competitive behaviour has been hotly debated. Three broad approaches have been considered: harmonizing national competition laws and practices (convergence), improving cooperation amongst national competition authorities and creating a multilateral framework. Whatever option or combination of options is chosen, the need for some degree of international cooperation is not in doubt, and such cooperation is likely to intensify and actively involve a growing number of countries over time.

Regulatory or fiscal policies to address externalities are part of a coherent framework for growth and development...

Externalities refer to the consequences of economic decisions that are not mediated through the marketplace. Although externalities can have important effects, their benefits (in the case of a positive externality) or costs (in the case of a negative externality) are not reflected in market prices. Hence, consumers and producers, whose behaviour depends on these market-determined signals, are unable to take these additional costs and benefits into account.

...and policies to address the challenges of environmental degradation are a good example.

In the case of trade and the environment, the presence of negative externalities may cause trade liberalization to produce unwanted outcomes. Since producers and consumers do not face the full cost of their actions and treat environmental resources as free goods, one possibility is that trade could result in a greater than optimal scale of economic activity and produce environmental damage.

One way to correct negative externalities is to apply a tax on the activity causing the externality at a rate equal to its marginal environmental damage (the Pigouvian tax). The fundamental principle is that the Pigouvian tax should be applied directly to the activity which generates the negative externality. Despite the centrality of this proposition in economic theory, governments do not make widespread use of environmental taxes. Most prefer to pursue environmental objectives through command and control measures, such as performance standards or mandated technologies, licences, permits, zoning regulations, registration, or other regulations. The preference for direct intervention arises from distributional concerns, uncertainty about the costs and benefits of abatement, and the costs of monitoring and enforcement. Irrespective of the specific measures used (whether emission taxes or command and control measures), coupling trade liberalization with appropriate environmental measures leads to higher incomes and improved environmental quality. Trade liberalization creates economic gains from exploiting a country's comparative advantage. If some of these gains are accompanied by increased emissions or pollution, mitigating measures to curb these effects help to preserve the gains from liberalization.

The use of trade measures to address environmental externalities is only a second-best response.

But what if coherence is lacking in national policies and countries do not correct for environmental externalities? Could not trade measures be used to correct the environmental damage? The use of a trade measure, whether applied by an importing or an exporting country, to address the environmental problem would constitute a second-best policy response. The first-best option is still to apply a corrective measure to the source of the externality. This conclusion holds even in the case of an externality that has a transboundary or global nature. Moreover, where environmental risks affecting the global commons are a symptom of poverty and underdevelopment, financial transfers or technical assistance would be far more effective instruments of policy than restrictive trade measures.

Knowledge creation is critical to growth and knowledge externalities transcend national borders...

Knowledge creation is central in explaining the long-term growth path of countries. Its importance can be seen from the fact that productivity is often the single most important source of growth, explaining on average a little over 40 per cent of GDP growth in OECD countries.

Knowledge externalities exist because the consumption of knowledge is non-rival – in other words, once knowledge is discovered, its use by some does not lead to a reduction in the ability of others to use it for a similar or different purpose. Furthermore, the positive spillover associated with knowledge and knowledge creation does not stop at a country's borders. There are a number of possible conduits for the international transmission of knowledge, including international trade, the movement of natural persons (particularly but not limited to scientific personnel) and cross-border direct investments.

...and open trade and investment policies, investments in education, and intellectual property protection and standards help countries to capture the spillover effects.

The need for public policy to encourage knowledge creation and diffusion arises because left on their own, firms will tend to underinvest in research and development (R&D). This is because they are not able to appropriate the benefits that spill over to other firms from their R&D efforts. Technology spillovers can have both national and international dimensions. Public interventions aimed at promoting the transfer and diffusion of technology might include public funding of basic research, whether in government institutions or universities, patent protection laws and R&D tax credits.

For countries seeking to capture spillover effects, receptiveness to foreign direct investment is an advantage, combined with the creation of a climate conducive to knowledge transfer and diffusion. Policies that encourage competition in domestic markets can increase the pace of technology transfer from multinational enterprises. Improving the educational levels and skills of the domestic labour force, and ensuring appropriate intellectual property protection and standards are also likely to encourage higher technology transfers and increase positive spillovers.

Open trade allows countries to benefit from the role of international exchange as a conduit for knowledge-related externalities. Countries not only derive (static) benefits from trade liberalization through increased efficiency in resource allocation – they also obtain the (dynamic) benefits of higher productivity which increases the rate of economic growth.

Governance and institutions

The quality of institutions is a primary determinant of how well markets function...

The notion of an institution embodies several elements – formal and informal rules of behaviour, ways and means of enforcing these rules, procedures for the mediation of conflicts, sanctions in the case of a breach of the rules, and organizations supporting market transactions. The quality of institutions has long been recognized as an important component of a well-functioning market. The state of institutions will therefore likely affect the amount of trade and welfare generated by trade liberalization. Moreover, the level of social acceptance of trade reform may be affected by a country's institutions.

Well developed institutions will help to reduce transactions costs for market participants and thus increase the efficiency of markets. If institutions are working effectively, they i) channel information about market conditions, products and participants; ii) reduce risk by defining and enforcing property rights and contracts; iii) circumscribe arbitrary interventions in markets by politicians and interest groups; and iv) safeguard competition in markets. The availability of information and the assessment of risk are particularly important concerns for foreigners trading with a country. Even if a country lowers its trade barriers, outsiders may be reluctant to trade with the country if, for instance, they do not believe contracts can be enforced or are not sure whether payments will be made.

...and a positive relationship exists between the quality of institutions and openness.

The Report demonstrates the existence of a strong positive relationship between the quality of institutions and openness. The quality of institutions is measured by three indicators – government effectiveness, the rule of law and control of corruption. The better the quality of institutions, the greater the difference it makes

whether a country has high or low tariffs. If the composite variable used to measure corruption indicates that this problem is sufficiently severe, lower tariffs may have no effect on openness.

The quality of public institutions influences the degree of social acceptance of trade liberalization during the process of adjustment and its aftermath.

The social acceptance of trade liberalization is important during the period of adjustment to reform and also after the economy has adapted to the new situation. The adjustment burden of trade liberalization is likely to be concentrated in the import-competing sector and may lead to resistance against reform, even though reform is beneficial for the economy as a whole, and also in the long-run for many of the workers employed in the import-competing sector. There are two main approaches to increasing the social acceptance of trade reform. One approach focuses on the creation of "winners" from trade reform as quickly as possible in order to counterbalance pressure against trade liberalization. This can, for instance, be achieved by policies that increase the quantity and quality of information about new export markets available to potential exporters. The other approach focuses on keeping the losses of those who will suffer from adjustment to the minimum, for instance through the introduction of (well-targeted and temporary) social safety nets.

Even in the aftermath of successful trade liberalization, governments may need to respond to any long-term negative effects that some economic agents experience. These include distributional effects and an increased exposure to external risk. The distributional effect of trade liberalization can be in the direction of more or less income inequality, depending on the comparative advantage of the liberalizing country, its pattern of protection before liberalization and the functioning of the labour market. In cases of increased total uncertainty or increased inequality, social acceptance of trade reform could be undermined. This can be avoided if public institutions intervene more intensively in the provision of insurance (against unemployment, for instance) where openness significantly increases a country's net exposure to risk (trade may also reduce exposure to internal risks), and in the redistribution of wealth where openness contributes to increases in inequality.

Policy coherence and international cooperation

International cooperation can help national governments in several ways to secure greater benefits from coherent policy structures at home...

In the field of trade liberalization, joint action among governments to reduce trade barriers helps lessen the risk that some countries can obtain terms-of-trade advantages at the expense of others, thereby creating an incentive for a mutually advantageous market opening that might not otherwise occur. Joint action to liberalize trade also generates greater domestic support for freer trade by engaging the interests of export industries that stand to gain from reduced barriers in other countries. Finally, international trade agreements help decision-makers to pursue trade-enhancing policies in a manner that makes them harder to challenge by domestic interest groups.

As noted above, cooperation is needed to deal with international spillovers in such areas as environment policy and the dissemination of knowledge. The discussion on competition policy in the Report identifies another instance where international cooperation produces shared benefits. Rules that require pre-commitment from governments in relation to policies they will pursue, as well as acceptance of a dispute resolution mechanism, reduce exposure to uncertainty. International cooperation also reduces transactions costs, provides economic agents and governments with a greater flow of information, and in some cases lessens risks of regulatory failure. International cooperation can also play a valuable role in augmenting infrastructure and human capital in low-income countries, thereby assisting the latter to take greater advantage of opportunities offered by the international economy.

...but cooperative arrangements at the international level can entail differing degrees of commitment...

Governments have to choose how far they want to tie their hands through international commitments and determine how far policy uniformity serves the national interest. At the lightest level of international cooperation, governments may do little more than exchange information. Consultation implies a slightly

stronger form of international commitment, while coordination can lead to agreement on the adoption of particular policy stances. Finally, governments may commit explicitly to a shared policy regime replete with enforcement mechanisms, such as the World Trade Organization.

...and from the perspective of coherence, the optimum level of international cooperation is not necessarily that which seeks the highest possible level of engagement.

A key pre-requisite for effective international cooperation is that the administering agencies charged with the relevant tasks possess both the necessary information and policy instruments to discharge their responsibilities. Secondly, governments may not be close enough in their perceptions of the benefits that will flow from international commitments in particular areas, or agree on how burdens should be shared, to reach useful agreement. Difficulties of this nature would argue for lighter forms of cooperation, and persistence in searching for fuller commitments could result in coercive and unstable relationships that may have negative welfare consequences over time. A third consideration is that governments may be tempted to avoid responsibility and blame by assigning policy challenges to an international context when real solutions lie at home.

The WTO's role in promoting international cooperation on trade matters has made a valuable contribution to economic governance.

Governments have repeatedly shown a commitment to cooperation in the WTO. The clearest evidence of this commitment is manifested through rounds of trade negotiations, continuing efforts to forge rules for the conduct of trade, broad-based observance of the dispute settlement system and a continually expanding membership. This forward progress in international cooperation under the WTO implies a common perception that the WTO is worth preserving – that is, there is more to be gained from maintaining the system through policy behaviour based on shared commitments than from independent national action. But at any point in time governments hold differing views on how much trade liberalization should be undertaken and by whom, what rights and obligations the rules should confer, and what subject areas they should cover. Such differences in interests and priorities reflect a high degree of variance among Members across several dimensions – including size, income levels, the degree of openness, development needs, and the capacity to absorb change and benefit from it. These differences will only be addressed if governments continue to see value in cooperation under the WTO system and demonstrate a willingness to pre-commit on agreed policies and rules of behaviour.

I TRADE AND TRADE POLICY DEVELOPMENTS

A RECENT TRENDS IN INTERNATIONAL TRADE AND POLICY DEVELOPMENTS

1. INTRODUCTION: RECOVERY OF GLOBAL OUTPUT AND WORLD TRADE

The expansion of global output and trade gained considerable momentum in the second half of 2003 resulting in an annual average increase of world GDP and world merchandise exports of 2.5 per cent and 4.5 per cent respectively. These changes represent stronger than expected improvements when compared with the preceding year although trade growth remained below the average rate recorded in the 1990s. These annual results were negatively affected by a combination of unusual, temporary factors and longer-term structural weaknesses in a number of major economies (in particular the state of the banking system in Japan and the labour markets in Western Europe). One of the influencing temporary factors was the emergence of the severe acute respiratory syndrome (SARS) in East Asia. Although SARS remained a limited epidemic relative to malaria and the acquired immunity deficiency syndrome (AIDS), it had a dramatic short-term impact on the movement of people and on the tourism industry in the region.[1] The build up of tensions resulting in the military conflict in Iraq weakened consumer and business confidence in many regions in the first quarter of the year. In OECD countries the composite leading (business) indicator hit its lowest level in March 2003 then displayed a trend increase from May 2003 onwards. The major stock markets showed a similar development, dropping sharply until March but recovering thereafter and then expanding sharply until the end of the year.

Once the SARS outbreak was under control and the open military action ended in Iraq the world economy strengthened in the third quarter. Trade in goods and services strongly rebounded in the third quarter in both the United States and East Asia.

The moderate growth in output of the global economy precluded an improvement in the employment situation in most regions. This is not an unexpected development since employment indicators typically lag in cyclical recoveries. It requires several quarters of strong and sustained output growth before employment gains and a reduction in unemployment rates can be observed.[2] Rapid growth in productivity in the US also contributed to the lack of improvement in employment levels.

Monetary and fiscal policies have been expansionary in most regions. Consequently, fiscal deficits widened and interest rates declined or remained low. The fiscal deficit of the major developed economies in 2003 over 2002 rose from 3.4 per cent to 4.9 per cent of GDP in the United States, from 2 per cent to 2.7 per cent in the European Union and from 7.1 per cent to 7.4 per cent in Japan. Interest rates decreased markedly especially at the longer-term end in all developed markets. A sharp increase in the monetary aggregates in the developed countries, together with gains in confidence in South American markets, contributed to an improved credit rating of many developing countries. Consequently, emerging-market spreads dropped sharply from late 2002 onwards, reducing the debt-servicing costs of many developing countries.

Exceptional exchange rate developments in 2003 comprise the rise of the euro and, to a lesser extent, that of other West European currencies and the yen *vis-à-vis* the United States dollar.[3] The direction of the exchange rate changes is generally considered a positive development given the current account imbalances prevailing in early 2003. However, some observers view the magnitude and pattern of exchange rate changes in 2003 as insufficient given the size and regional structure of current account imbalances. Despite the depreciation of the dollar, the US current account deficit still continued to widen in the course of the year, amounting to $542 billion in 2003 – a sum equivalent to 4.9 per cent of US GDP and nearly 6 per cent of world trade in

[1] According to WHO (2004), 8,096 people were infected of which 774 persons died of SARS during the period from 1 November 2002 to 31 July 2003.

[2] ILO (2004) reports a decline in unemployment in the transition economies and South East Asia. An increase in unemployment occurred, however, in Africa and the Middle East. In South Asia, the regional unemployment rate remained unchanged in 2003 from the preceding year. CEPAL (2003) indicates a small increase in the average unemployment rate for Latin America in 2003, while OECD (2003a) reports an average increase in unemployment rates for both North America and Western Europe in that year.

[3] Other appreciating currencies in 2003 comprise the Canadian dollar, the Czech kouruna, the Hungarian forint and the South African rand which all appreciated by more than 10 per cent *vis-à-vis* the dollar in 2003.

goods and services. Financing of the US current account deficit in 2003 went smoothly as is indicated by low US interest rates. In the course of 2003, this financing of the US deficit was increasingly shifted to a number of Asian central banks which increased their foreign exchange reserves rather than appreciate their currencies in relation to the dollar.

Having strongly supported international trade flows in the second half of the 1990s, global FDI flows remained almost flat in 2003, at the five-year low of approximately $600 billion recorded in 2002.[4] FDI inflows into developing countries, excluding China, decreased for the third year in a row in 2003, amounting to less than $100 billion for the first time in eight years. However, capital flows to the developing countries – other than FDI – increased in 2003. Private capital flows to emerging markets in the developing world are estimated to have increased mainly as a result of increased portfolio investments and credits from commercial banks and non-banks.[5] In the past, FDI inflows to the transition countries were generally directed to those economies which had been in the process of joining the EU. In 2003, however, FDI inflows expanded faster to the CIS countries than to those acceding to the EU in 2004. Debt relief under the enhanced Heavily Indebted Poor Countries Initiative (HIPC) made further progress, covering 26 countries at the end of 2003. Debt of these countries will be reduced over time by about $50 billion (measured on a present net value basis).[6]

Despite strong monetary expansion in developed and many developing countries, domestic inflationary pressures were kept in check by a moderate increase in global economic activity. Dollar prices of internationally traded goods, however, increased by 11 per cent in 2003, their strongest increase since 1995. Prices of fuels – up by 16 per cent – were boosted by temporary supply shortfalls linked to the conflict in the Middle East and by civil unrest in Venezuela. Several developments on the demand side also contributed to the strengthening of energy prices. China's oil demand rose by 11 per cent in 2003, amounting to more than one third of the estimated 2 per cent increase in global demand. Net-oil imports rose by 30 per cent and accounted for 38 per cent of domestic demand in 2003. In the United States, the combination of increased demand and falling domestic output resulted in a 7.5 per cent increase in crude oil imports.[7] In other words, the role of international trade in global energy markets continued to rise, sustaining the rapid expansion of fuel exports in recent years from Africa and the transition economies.

Prices of non-fuel commodities in 2003 rose on spot markets by 7 per cent on average, including a 12 per cent increase in metal prices. Prices of manufactured goods evolved quite differently by region in 2003 due to exchange rate developments. Dollar prices of manufactured goods exported by Germany and other European countries increased much faster than those of the United States or Asian countries.[8] On average it is estimated that these prices rose nearly 10 per cent, the first annual increase since 1995. One reason why price increases in manufactures were not as vigorous as in other sectors is that prices of electronic goods fell steadily in 2003.

Manufactured goods represent by far the largest share (about 75 per cent) in world trade of goods and services, although the manufacturing sector accounts for only about 20 per cent of world GDP. The most dynamic segment of international trade in manufactures throughout the 1990s had been trade in office and telecom equipment, with dollar values expanding at 10 per cent per annum or twice as fast as total trade in manufactured goods. In 2000, the share of office machinery and telecom equipment in world trade exceeded the share of agricultural products, chemicals or automotive products by 12.1 per cent. Since the burst of the IT bubble in early 2001, international trade in computers[9], semiconductors[10] and telecom equipment lagged

4 UNCTAD, Press Release 12/01/04, "Global FDI decline bottoms out in 2003".

5 Institute of International Finance, Inc, 15 January 2004, "Capital flows to emerging market economies".

6 Information based on World Bank, News, 23 January 2004.

7 IEA, Oil Market Report, 11 February 2004 available at www.oilmarketreport.org and US Department of Commerce News, US International Trade in Goods and Services, December 2003.

8 Germany's export price for manufactured goods went up by 20 per cent while those of the US and Japan increased by 0.4 per cent and 3.7 per cent respectively in 2003.

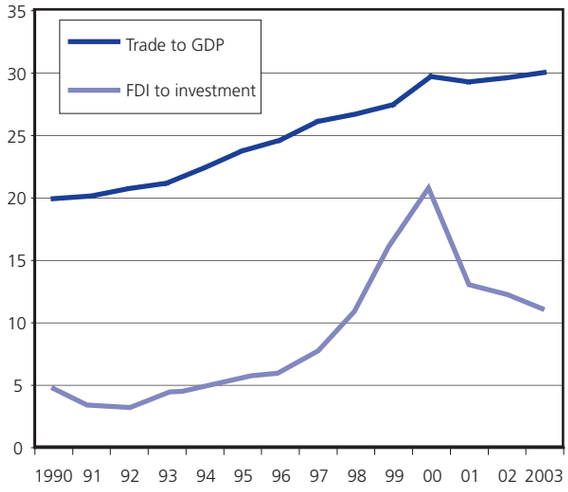
9 Gartner Dataquest, Press Release, 14 January 2004, reports that unit sales of personal computers rose by nearly 11 per cent to 168.9 million in 2003.

10 The Semiconductor Industry Association (SIA) announced on 2 February 2004 an increase in worldwide sales of semiconductors by 18.3 per cent to $166.4 billion in 2003. Global sales of semiconductors had peaked at $204 billion in 2000.

behind the expansion of world trade in manufactures. Despite a recovery in the global sales of computers, semiconductors and telecom equipment, the increase in the dollar value of trade in office and telecom equipment continued to lag behind overall trade expansion in 2003. It is partly because of the end of the IT boom that the volume of international trade expanded less than GDP in 2001, and that the typical excess of trade over output growth was unusually small in 2002 and 2003.

Globalization trends are often illustrated by an excess of trade (goods and services) over output growth and the faster increase in worldwide FDI flows compared to global fixed-investment expenditure. Since the recession in 2001 these two measures indicate – at least temporarily – a slowdown in the globalization process. The ratio of world trade to world GDP decreased in 2001 and increased only slightly thereafter. Foreign direct investment flows collapsed after the burst of the IT bubble and the stock market crashes in 2001. Due to the steep fall of FDI flows, the ratio of FDI flows to gross fixed investment decreased to 11 per cent, after a fivefold increase between the early 1990s (4 per cent) and 2000 (20 per cent) (Chart IA.1).

Chart IA.1
Ratio of world trade to GDP and ratio of global FDI flows to world fixed investment, 1990-2003
(Percentage)



Source: World Bank, World Development Indicators; UNCTAD, World Investment Report and WTO estimates.

A comparison of trade (exports plus imports) to GDP ratios by region reveals that the sluggishness of the trade output ratio over the last three years was widespread. The overall stagnation of many of these trade to GDP ratios originates from contrasting country developments. During the 2000-2003 period US exports fell while imports continued to rise in line with output, leading to a near stagnation in the total trade to GDP ratio. In MERCOSUR, exports expanded strongly while imports declined sharply relative to output, leaving the average trade to GDP ratio rather flat over the 1997-2003 period. The five Asian developing countries most affected by the financial crisis in 1997 recorded such strong export expansion between 1996 and 2000 that even a dull recovery in imports could not arrest the increase in their total trade to GDP ratios. The output decline of the IT sector in 2001 led to a temporary dip in both the exports and imports to GDP ratios. Following a sharp increase in EU export and import ratios between 1992 and 2000, the two ratios roughly stagnated between 2000 and 2003. Japan's export and import to GDP ratios dipped in 2001 but recovered moderately thereafter. In 2003, its overall trade to output ratio reached 10.5 per cent, exceeding the level of 2000 by one half of a percentage point. In contrast, China is the only country which continued to record a sharp increase in both export and import ratios over the 2000-2003 period, reflecting both the increased openness of the Chinese economy and its role in sustaining the global trade expansion over the last three years (Appendix Chart IA.1).

Major trade developments in 2003

A preliminary assessment of the major developments of international trade flows in 2003 reveals the following:

- After very sluggish growth in the first half of 2003, global trade expansion markedly accelerated in the second half and registered an average real increase of 4.5 per cent for the entire year.
- Trade acceleration in 2003 was much stronger in dollar values (or nominal terms) than in real terms. The dollar value of world merchandise rose by 16 per cent and average dollar prices rose by 10.5 per cent.

- Price developments in 2003 represented a marked reversal of the downward trend observed for trade prices since 1995. Nevertheless, despite the recovery in dollar prices in 2003 they averaged below the level observed in 1995.
- Price increases in 2003 are mainly attributable to higher commodity prices – in particular for fuels (16 per cent) and metals (12 per cent) – and exchange rate movements, particularly the rise of the euro *vis-à-vis* the dollar.
- In 2003 there were marked differences in the growth of merchandise trade flows by region. The highest year-to-year growth in export values was in the major fuel exporting regions such as the transition economies (CIS) and Africa. Merchandise exports in dollar terms of Western Europe, Asia and the Middle East slightly exceeded the global average. This similarity in the three regions hides quite divergent price and volume developments. While the expansion of exports from Western Europe is almost entirely due to exchange rate changes, more than two thirds of Asia's export growth can be attributed to volume changes. The nominal rise in the Middle East's exports, however, is mostly (two thirds) accounted for by higher oil prices.
- Lowest export growth in dollar values in 2003 was reported for North America and Latin America.
- Together with the Middle East, these two regions also recorded markedly weaker nominal import growth than all the other regions. The transition economies, Western Europe, Asia and Africa were the regions with import growth exceeding the global average. China's trade was again outstanding, with import growth of 40 per cent. For the first time in more than 50 years China's imports exceeded those of Japan. If imports and exports are combined then China's total merchandise trade almost matches that of Japan in 2003.
- Commercial services trade, which accounts for about one fifth of world trade in goods and services, expanded by 12 per cent in 2003 and thus less rapidly than merchandise trade. In the two preceding years (2001 and 2002) commercial services resisted the slowdown in the world economy better than merchandise trade.

2. REAL MERCHANDISE TRADE AND OUTPUT DEVELOPMENTS IN 2003

In 2003 the average volume increase[11] of world merchandise trade was 4.5 per cent, somewhat higher than in the preceding year but well below the rate recorded in the second half of the 1990s. This modest annual increase was the result of sluggish growth in the first half of the year and accelerated growth in the second half. Trade growth exceeded output growth by an atypically small margin. In the 1990s, average trade expansion was 6.5 per cent, approximately twice as fast as merchandise output growth. Most regions experienced a cessation in the rise of the trade to GDP ratio, which is a typical cyclical feature in a period of stagnation or recession (Table IA.1).

The most dynamic trading regions in 2003 were Asia and the transition economies, recording double-digit import and export expansion of their merchandise trade in real terms. Sustained by depreciated currencies and a recovery in demand for many primary commodities, Latin America recorded a sharp volume increase in its merchandise exports. However, the region's imports grew by less than 2 per cent. North America's import growth exceeded not only the global rate of expansion but was again much stronger than its own export growth. US merchandise imports went up by 5.7 per cent while exports rose somewhat less than 3 per cent, although this was the first annual increase after two years of contracting export volumes. In 2003,

Table IA.1
World trade and output developments, 1990-2003
(At constant prices, annual percentage change)

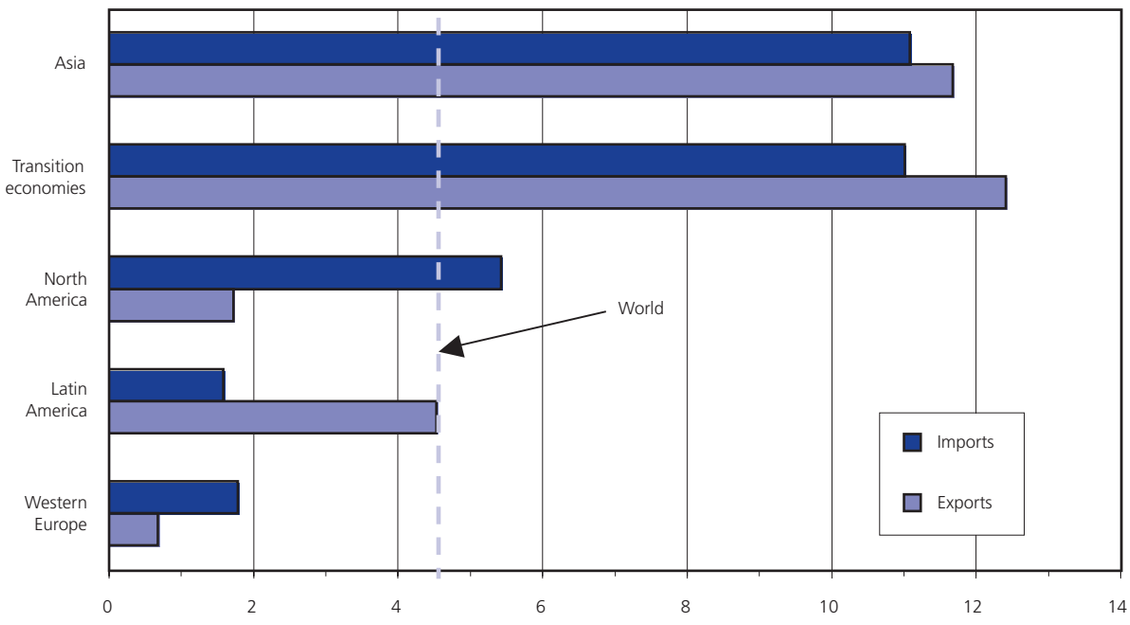
	1990-2000	2001	2002	2003
Merchandise exports	6.4	-0.5	2.8	4.5
Merchandise production	2.5	-0.7	0.8	...
GDP at market exchange rates	2.3	1.3	1.9	2.5
GDP at PPP	3.4	2.4	3.0	3.5

Note: GDP data are taken from IMF, World Economic Outlook except for 2003.
Source: WTO, IMF, World Economic Outlook, September 2003.

[11] The real or volume increase in trade is based on nominal trade values adjusted for price and exchange rate changes. It is not a measure for the physical quantity of goods traded internationally.

Western Europe's merchandise exports rose by less than 1 per cent while imports edged up by nearly 2 per cent. Sluggish investment and consumer expenditure in the largest economies of the euro zone were the principal factors in Western Europe's disappointing trade performance (Chart IA.2).

Chart IA.2
Merchandise trade volume growth by region, 2003
(Annual percentage change)



Source: WTO.

3. NOMINAL TRADE DEVELOPMENTS IN 2003

It is estimated that the value of world merchandise trade rose by 16 per cent, to 7.3 trillion dollars and that of world commercial services by 12 per cent, to 1.8 trillion dollars in 2003. For world merchandise trade, it is estimated that more than two thirds of the rise in value terms must be attributed to dollar price changes (Table IA.2).

Table IA.2
World exports of merchandise and commercial services, 2003
(Billion dollars and percentage)

	Value	Annual percentage change		
	2003	2001	2002	2003
Merchandise	7274	-4	4	16
Commercial services	1763	0	6	12

Source: WTO.

Nominal trade developments in 2003 were strongly affected by highly divergent price and exchange rate developments. At a global level, it is estimated that dollar prices for merchandise trade rose by 10.5 per cent. For a more detailed review at the product group level, trade prices of some major traders can provide additional information. Price changes of US imports in 2003 varied, ranging from a 22 per cent increase for mining products, a more than 4 per cent increase for agricultural products, and a stagnation in manufactured goods. Within the manufactured goods sector, the prices of office and telecom products decreased by 5 per cent while those of iron and steel products increased by 5.5 per cent.[12] These relative sectoral price developments on the import side are very similar to those reported for US exports. The US price data are likely to reflect global price trends since corresponding relative price developments were found for German and Japanese trade flows.

[12] Price data for US merchandise imports are based on the detailed import price statistics of the US Department of Labor aggregated by the WTO Secretariat to match the standard WTO product groups.

The major features of nominal merchandise trade in 2003 include the following:

- Six out of seven geographic regions identified in this report recorded a merchandise trade surplus (on a f.o.b.-f.o.b. basis), while the seventh region (North America) registered a trade deficit. Four out of these six regions increased their surplus position in 2003 while the North American deficit widened further. The US merchandise trade deficit (f.o.b.-f.o.b.) reached 550 billion dollars, corresponding to 7.6 per cent of world merchandise exports in 2003.
- In the transition economies, a combination of relatively strong regional output growth, favourable price developments and the appreciation of many currencies in the region contributed to the exceptional expansion of trade. The region's merchandise exports and imports rose by more than one quarter, the strongest growth of all regions in 2003.
- As in 2002, Latin America recorded the lowest import growth of all regions in 2003 while the lowest export growth was again reported for North America.
- Africa and the Middle East recorded a steep acceleration in merchandise export growth between 2002 and 2003, largely due to the sharp rise in oil prices.
- Western Europe's merchandise exports and imports both expanded faster than world trade in 2003, mostly driven by exchange rate developments which boosted its trade measured in dollar terms. German merchandise exports exceeded those of the United States for the first time since 1990.
- Asia's merchandise imports and exports expanded faster than world trade, driven strongly by the expansion of China's trade. Intra-Asian trade grew considerably faster than trade with the rest of the world. For the first time since 2000, Asia's merchandise imports rose faster than merchandise exports (Table IA.3).

Table IA.3
World merchandise trade by major region, 2003
(Billion dollars and percentage)

	Exports				Imports			
	Value	Annual percentage change			Value	Annual percentage change		
	2003	2001	2002	2003	2003	2001	2002	2003
World	7274	-4	4	16	7557	-4	4	16
North America	996	-6	-5	5	1552	-6	2	9
United States	724	-6	-5	4	1306	-6	2	9
Latin America	377	-4	0	9	366	-2	-7	3
Western Europe	3141	0	6	17	3173	-2	5	18
European Union (15)	2894	0	6	17	2914	-2	4	18
Transition economies	400	5	10	28	378	11	11	27
Africa	173	-6	2	22	165	4	4	17
Middle East	290	-8	1	16	188	5	3	9
Asia	1897	-9	8	17	1734	-7	6	18

Source: Appendix Table IA.1.

The dollar value of commercial services trade rose by 12 per cent to $1.8 trillion. Last year's increase was twice that of the preceding year and by far the strongest increase since 1995.

All seven major regions benefited from the strengthening of services trade, with higher export and import growth than in the preceding year. Western Europe's and the transition economies' commercial services trade was particularly buoyant, boosted by the strength of the regions' currencies *vis-à-vis* the US dollar. North America recorded the weakest export growth, at 4 per cent, while Latin America recorded the smallest import increase of all major regions, at 3 per cent. Partial data available for Africa points to strong expansion of the region's commercial services exports and imports in 2003. Despite the tensions prevailing in the Middle East, it is estimated that the region's services exports and imports recovered from their contraction in 2002. Services trade growth in Asia was modest compared to the preceding year. North America and Western Europe are

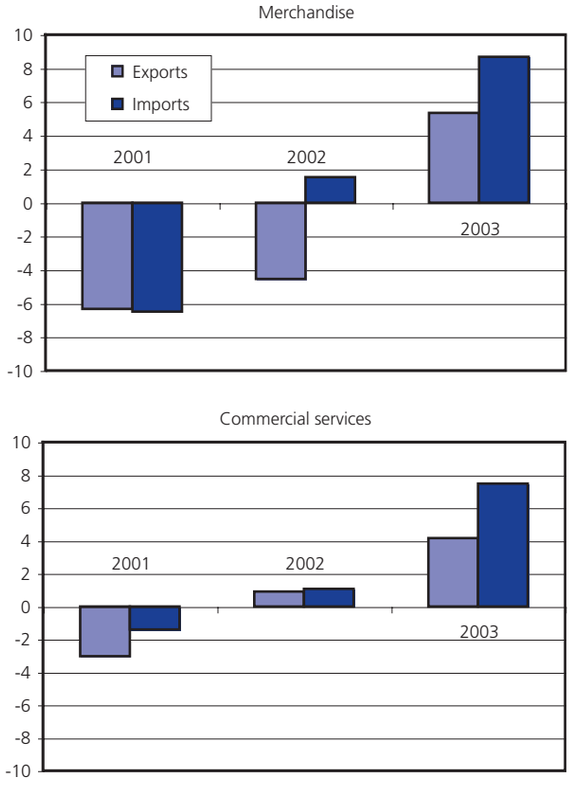
the two net exporters in world services trade. As the North American surplus diminished and that of Western Europe increased, both regions recorded a surplus of approximately $55 billion in 2003. After more than a decade, Western Europe's share again rose above one half of world commercial services exports.

Travel services continued to suffer as a result of increased security concerns (particularly affected areas were the Middle East and the United States) and the threat of SARS (mainly East Asia).[13] Although some tourist flows were diverted to other regions, global revenues from travel services again declined in 2003. Consequently, the share of travel services in total commercial services decreased further, reaching 29 per cent in 2003 compared to 34 per cent ten years ago.

4. OVERVIEW OF REGIONAL TRADE DEVELOPMENTS

North America's trade recovered in both value and volume terms in 2003 despite a pronounced weakness in the first half of the year. In nominal terms, the expansion remained below that of global trade expansion leading to a further erosion of the region's shares in world merchandise and services trade. Import growth for both merchandise and services trade continued to exceed export growth (Chart IA.3).

Chart IA.3
North America's merchandise and commercial services trade, 2000-2003
(Annual percentage change in value)



Source: Appendix Tables IA.1 and IA.2.

Canada's trade growth – in particular merchandise trade – expanded faster than US trade, partly due to the appreciation of the Canadian dollar. US merchandise imports rose by 9 per cent in dollar values, faster than US merchandise exports, which grew by 4 per cent, leading to a new record merchandise trade deficit (f.o.b.-f.o.b.) of $550 billion in 2003. Although half of the US merchandise trade deficit occurred in trade with Asia, the US also recorded an excess of imports over exports with all other major geographic regions. The US trade deficit has become an important element in sustaining global trade levels, corresponding to 6.7 per cent of world merchandise trade in 2003.

In 2003, US merchandise imports from the oil-exporting countries surged, increased quantities having to be paid for at significantly higher prices. US imports from China rose by 22 per cent and exceeded, for the first time, those of Mexico, becoming second only to those from Canada. Linked to the rise in imports from China is the decline of US imports from Japan and Hong Kong, China. Between 1991 and 2003, Japan's share was cut steadily by more than half (from 18.8 per cent to 9.3 per cent) while China's share in US imports tripled to reach 12 per cent in 2003. Asia's share in US imports decreased steadily over the last ten years by five percentage points, to 36.5 per cent. Most of the corresponding gains over the ten-year period accrued to imports from Mexico. Canada's share in US imports decreased for the second year in a row, and fell to their lowest level in more than 20 years. However, the steady rise of Mexico's share in US imports

[13] According to preliminary estimates by the World Tourism Organization the number of international tourist arrivals fell by 1.2 per cent in 2003, some 8.5 million less than in 2002. See http://www.world-/newsroom/2004/janvier/data.htm

for more than a decade was – at least temporarily – arrested in 2003. US imports from Western Europe went up by somewhat more than 8 per cent in 2003, and accounted for slightly more than one fifth of US imports, a share very similar to that at the beginning of the 1990s. US imports from LDCs recovered by 20 per cent, partly due to increased oil imports.

In 2003, the Latin American region started to recover from its recession. Rising import demand in Asia and the United States, combined with higher commodity prices, helped to sustain merchandise exports which increased by 9 per cent in nominal terms, having stagnated the previous year. Merchandise imports, on the other hand, only grew by 3.5 per cent, albeit from strongly negative growth in 2002. The pattern on the services side was similar, with strong export recovery and weak import recovery.

An important feature of the region's trade developments was the sluggish growth of Mexican trade in 2003. Mexico is the region's largest trader and recorded a significantly more dynamic trade performance in the 1990s than other countries in the region. The weakness of US import demand for automotive products and the lack of competitiveness of Mexican goods in its major market contributed to this lacklustre export performance. Brazil was particularly successful, expanding its merchandise exports by more than 20 per cent, partly due to commodity price increases and strong demand from China.[14] As imports recovered only marginally, the Brazilian trade surplus (f.o.b.-f.o.b.) rose to a record level of $25 billion in 2003. Central America and the Caribbean countries continued to record a large merchandise trade deficit, although exports expanded by about 10 per cent, much faster than imports (Table IA.4).

Table IA.4
Latin America's merchandise trade, 2003
(Billion dollars and percentage)

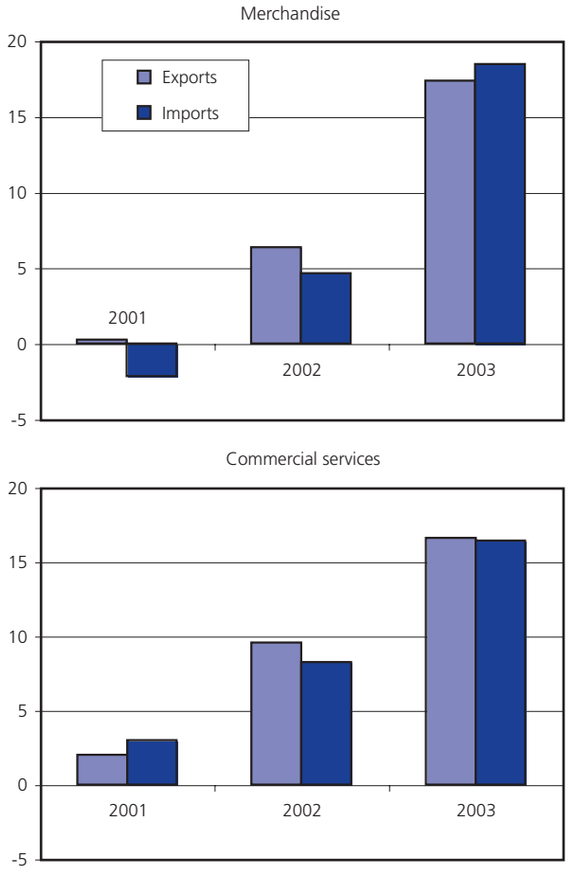
	Exports				Imports			
	Value	Annual percentage change			Value	Annual percentage change		
	2003	2001	2002	2003	2003	2001	2002	2003
Latin America	377	-4	0	9	366	-2	-7	3
Mexico	165	-5	1	3	179	-4	0	1
Central America (6)	14	-8	0	10	28	3	5	6
Caribbean countries (15)	16	-6	-6	11	28	0	-2	0
South America	181	-2	-1	14	131	-1	-18	7
Argentina	29	1	-3	14	14	-20	-56	54
Brazil	73	6	4	21	51	0	-15	2
Chile	21	-4	-1	14	19	-4	-4	13
Venezuela	24	-14	-11	-3	9	11	-34	-21

Note: For regional definitions see Technical Notes.
Source: WTO.

Western Europe's trade was principally shaped by two factors; weak economic growth in the region and the appreciation of European currencies, in particular the euro against the US dollar. Since Western Europe is the largest trading region in the world, the sluggishness of its economy was a retarding factor in the global recovery. Western Europe's GDP growth remained below even the disappointing growth performance in 2002, whereas all other regions recorded stronger growth over the previous year. Western Europe's real trade growth was the weakest of all regions (Chart IA.2). The picture of West European trade changes dramatically if one looks at these trade flows in dollar value terms. Merchandise and services trade both expanded at double-digit rates due to exchange rate changes (Chart IA.4). When measured in euro terms, both merchandise and services trade report a small decrease as compared with 2002.

[14] Brazil's shipments to China rose by 80 per cent to $4.5 billion in 2003.

Chart IA.4
Western Europe's merchandise and commercial services trade, 2000-2003
(Annual percentage change in value)



Source: Appendix Tables IA.1 and IA.2.

While the EU's overall merchandise trade growth is almost identical to that of Western Europe, the EU's imports from non-EU countries expanded somewhat faster than intra-EU trade. Trade growth diverged significantly among the EU member countries. While UK export and import performance was, in value and volume terms, much weaker than the EU average, the merchandise exports and imports of Germany, Spain, Sweden and Austria expanded by more than one fifth in dollar terms. German merchandise exports, driven by exchange rate changes, exceeded US merchandise exports in 2003 for the first time since 1990. The strongest merchandise trade performance in Western Europe, however, was recorded by Turkey which expanded its exports and imports by one third. One major element common to three of these dynamic European traders is their geographical proximity and the intensity of their trade links with the transition economies, the most dynamic global trading region in 2003.[15]

Ireland, Western Europe's most dynamic trader in the 1990s, recorded by far the weakest export and import expansion of all European countries in 2003 due to its sluggish trade in IT products. In contrast, the Balkan states which experienced difficult times in the 1990s recorded a strong trade expansion in 2003. The five successor states of the former Yugoslavia, and Albania, recorded an expansion of exports and imports by one quarter.

For the second year in a row, the transition economies recorded the most rapid output and trade growth of all major regions. Merchandise exports and imports expanded by more than one quarter and services by one fifth measured in dollar terms. Strong currencies and higher fuel prices contributed to this outcome as did strong regional demand. In particular, the recovery of the Russian Federation's GDP and trade had a stimulating effect on the neighbouring economies. Rising FDI flows and the steady deepening of westward integration of those economies that join the EU in May 2004, sustained the rapid overall trade growth of the region (Chart IA.5).

The recent impressive trade performance of the Russian Federation, and most CIS member countries, should also be viewed in a medium-term perspective, taking into consideration the poor performance of the 1990s. Much of the recent trade gains are linked to volume and price increases for fuels. Despite their rapid rise between 1999 and 2003, it was only in 2003 that the Russian Federation's imports regained the level reached before the outbreak of the financial crisis in 1997.

Economic growth in Africa and the Middle East again remained close to, or even below, population growth, with no improvement in the employment situation or the general standard of living. The rise in the price of fuels, the major export category for both regions, resulted in sharply higher regional export earnings in 2003.[16] In both regions, marked differences in output and trade performance can be observed at the country level, and this should be taken into account in any consideration of the aggregate regional numbers.

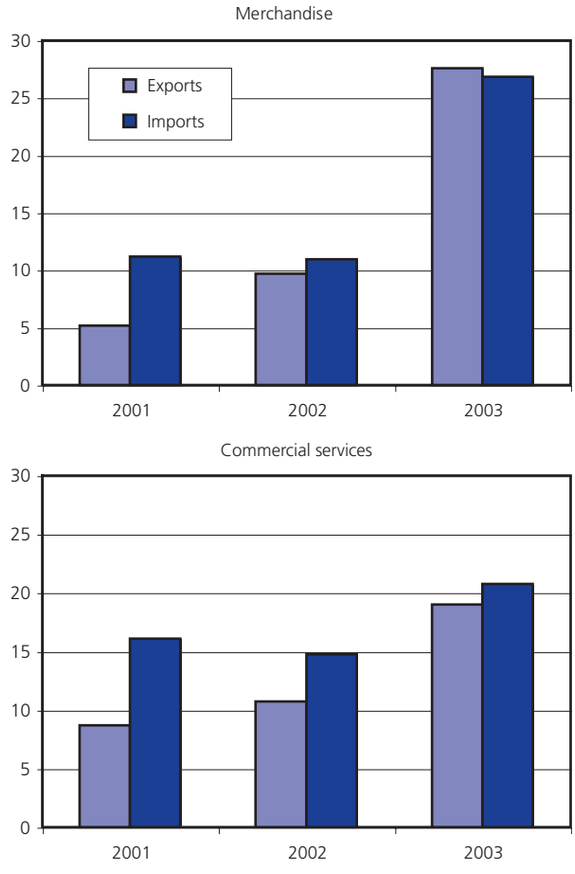
[15] The share of the transition countries in the merchandise exports of Austria, Germany, and Turkey is 13 per cent, 11 per cent and 11 per cent respectively, and more than twice the rate of the remaining EU Members combined.

[16] The share of fuels in merchandise exports of Africa and the Middle East was 49 per cent and 70 per cent respectively in 2002.

Africa's merchandise exports are estimated to have increased by more than one fifth, to $172 billion in 2003. For the first time since 1991, Africa recorded a trade surplus (f.o.b.-c.i.f.), as import growth was somewhat less strong than export growth, reaching $165 billion (Table IA.3). While the share of Africa in world merchandise exports increased in 2003, at 2.3 per cent it remained below the level recorded ten years ago.

South Africa's merchandise trade growth was particularly buoyant on the import side (30 per cent), while the seven major African oil exporters experienced a surge in their exports (also about 30 per cent). The strength of South Africa's trade (merchandise and services) measured in dollars can be largely attributed to increased appreciation of the rand.[17] The sharp rise of merchandise imports benefited the EU, Asia and oil-exporting countries in the Middle East, which increased their shipments to South Africa by more than one third in dollar terms. Exports and imports of other non-oil exporting countries in Africa are estimated to have increased by more than 10 per cent in 2003.

Chart IA.5
Transition economies' merchandise and commercial services trade, 2000-2003
(Annual percentage change in value)



Source: Appendix Tables IA.1 and IA.2.

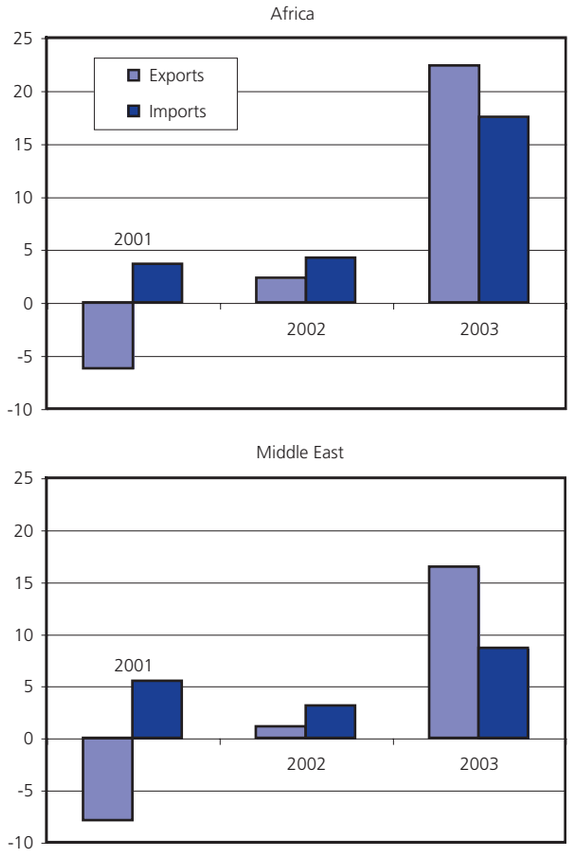
One of the various initiatives to boost Africa's participation in world trade is the US African Growth and Opportunity Act (AGOA). This non-reciprocal preference scheme for exporters from selected African countries has stimulated African shipments to the United States. In 2003, US imports from 37 African countries, beneficiaries of the scheme, rose by 43 per cent to nearly $25 billion. Although 70 per cent of these imports originate from five oil-exporting countries (Nigeria, Angola, Gabon, Congo and Cameroon), substantial increases are also reported for US imports from Kenya, Lesotho and Swaziland.[18]

Middle East trade developments in 2003 were strongly affected by political unrest in Israel and the Iraq war. The repercussions of these political developments on nominal trade flows have been partly tempered by increased regional oil output and by higher oil prices. The dollar value of the region's exports is estimated to have increased as fast as world trade, while merchandise import growth was less than 10 per cent (Chart IA.6). Consequently, the region's overall trade surplus is estimated to have risen to $100 billion, only partly offset by the region's traditional commercial services deficit, estimated to be in the order of $15 billion in 2003.

17 Measured in rand, merchandise exports and imports decreased by 12 per cent and 6 per cent respectively in 2003.

18 US imports from these countries nearly doubled between 2001 and 2003.

Chart IA.6
Merchandise trade of Africa and the Middle East, 2000-2003
(Annual percentage change in value)



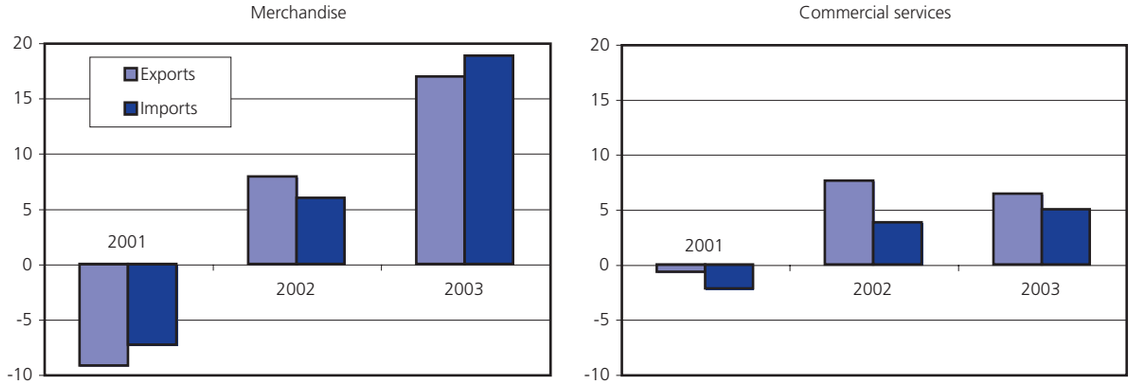
Source: Appendix Table IA.1.

Despite the outbreak of SARS in the first quarter of 2003, the Asian region achieved an unexpected acceleration in GDP growth, to 3.5 per cent in 2003.[19] The surprisingly strong recovery of non-residential investment, together with sharply higher net exports, have been the principal factors in Japan's GDP growth of 2.7 per cent in 2003. The Chinese economy continued its outstanding expansion and despite temporary weakness in the first half of the year, reported an annual increase in GDP of 9.1 per cent for 2003. India's strong GDP growth benefited from good weather conditions, which boosted agricultural output and stimulated consumption. The Republic of Korea's economy was sustained by the sharp rise in exports to China and recovery of the IT sector.

The accelerated growth in Asia's largest economies provided a major stimulus to regional trade expansion in 2003. Intra-regional trade was particularly dynamic, the negative impact caused by SARS in the first half of the year being more than offset by the large flow of capital goods to China. This was financed by strong FDI inflows related to the relocation of manufacturing assembly operations and to the recovery in the electronic goods industry. Merchandise exports and imports expanded by over 10 per cent in real terms, more than twice as fast as global trade. Asia's merchandise exports measured in dollars expanded by 17 per cent, again faster than world trade, but somewhat less rapidly than the region's imports (Chart IA.7).

Preliminary data point to a far less dynamic growth of Asia's trade in commercial services compared to the region's merchandise trade in 2003. The differences at country level also seem to be far more pronounced than those reported for merchandise trade.

Chart IA.7
Asia's merchandise and commercial services trade, 2000-2003
(Annual percentage change in value)



Source: Appendix Tables IA.1 and IA.2.

[19] GDP aggregated using market exchange rates. Measured at purchasing power parity, Asia's growth was about 5.5 per cent.

5. PROSPECTS FOR 2004

The accelerated growth momentum in the world economy over the second half of 2003 is projected to continue in 2004. Global GDP growth is expected to reach 3.7 per cent in 2004, up from 2.5 per cent in 2003.[20] Stronger global economic activity will lead to faster growth of world trade. In the OECD countries, for example, exports of goods and services expanded by 9 per cent in the second half of 2003 (Chart IA.8). Overall, global trade is expected to expand by some 7.5 per cent in 2004, more than twice as fast as projected GDP growth.

Most of the acceleration in global output growth can be attributed to expected developments in North America, Western Europe and Latin America. Asia and the transition economies are expected to record unchanged or weaker GDP growth in 2004 compared to 2003, but still above the world average.

US GDP growth is expected to expand by 4 per cent, again significantly faster than the GDP of other developed countries. In Western Europe, output is expected to pick up to almost 2 per cent in 2004, following a year with nearly stagnating output. Latin America's economy is expected to expand by some 3 to 4 per cent, driven by recoveries in Brazil and Mexico, the region's largest economies.

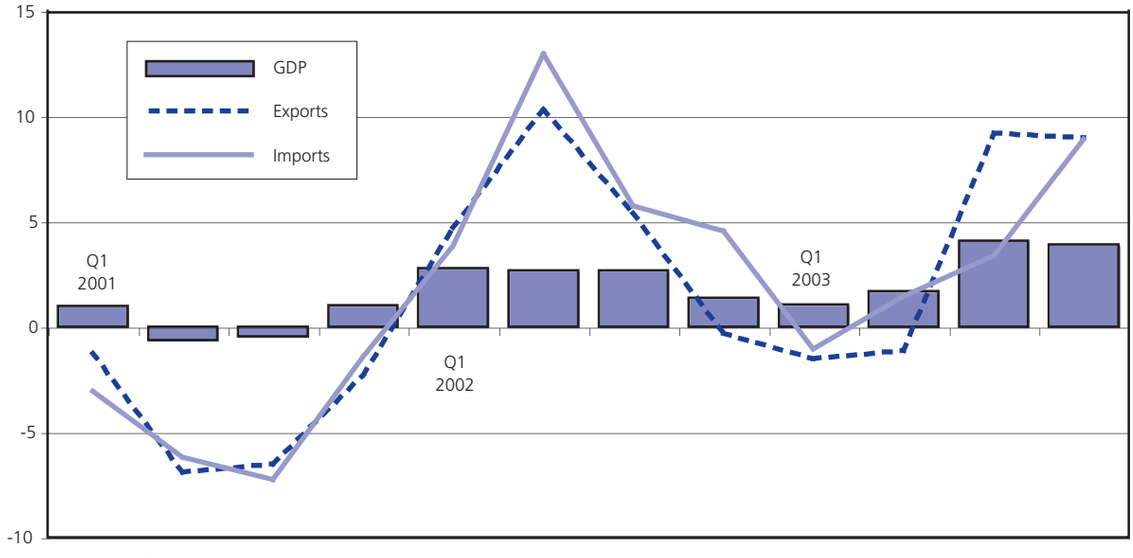
There are a number of risks associated with these output and trade projections. Among the risks are:

(a) The US current account deficit is projected to increase further in 2004, although its size is considered to be unsustainable in the medium-term. A stronger than expected rise in the US private savings ratio, provoked by a correction of house or stock prices, could lead to a slower than projected increase in imports, with negative repercussions on exports of countries dependent on the US market;

(b) Western Europe's demand recovery could falter. Growth in fixed investment could be dampened if the real appreciation of European currencies observed in the fourth quarter of 2003 and the first months of 2004 continues. Consumer expenditure could also be weaker if uncertainty about financial reforms in the pension and health systems lead to a marked rise in precautionary savings;

(c) most projections for world economic growth assume a fall in average oil prices in 2004. However, in the first months of 2004 oil prices remained stronger than most forecasters had expected.

Chart IA.8
Quarterly developments of trade and GDP in OECD countries, 2001-2003
(Quarterly percentage change in volume at annual rate)



Source: OECD, Olisnet and WTO estimates.

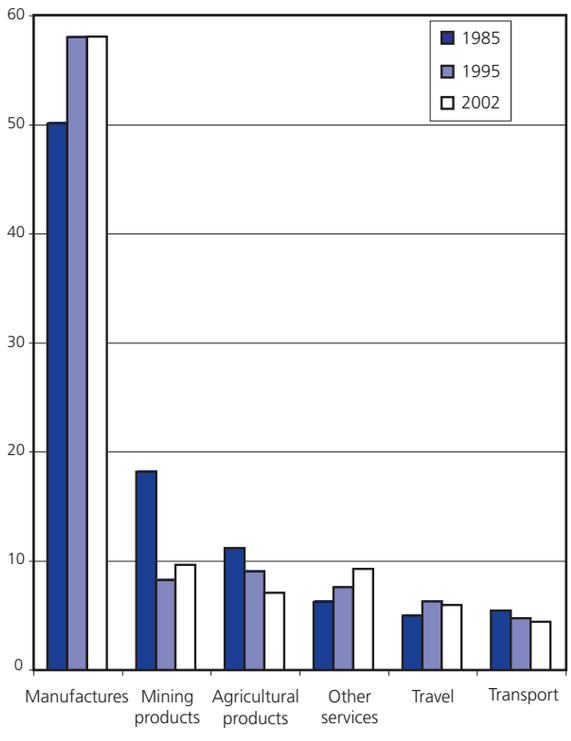
[20] Global output projections are based on those provided for the OECD countries and the transition economies in OECD (2003a) while those for the other developing countries are those provided by the World Bank (2003a).

6. SELECTED MEDIUM-TERM TRADE DEVELOPMENTS BY PRODUCT

The review of 2003 developments outlined above, prepared early in 2004, was based on preliminary and incomplete trade information which does not allow a more detailed global trade flow analysis by product group or by destination or origin.[21] Moreover, focus on a single year's changes is largely influenced by cyclical and temporary factors and may cloud longer-term trends. It would, therefore, seem useful to complement the preliminary estimates for 2003 with a broader review of some medium-term trade developments. As a first step, an overview of world trade developments (combining goods and commercial services) by broad categories is provided. Thereafter, agricultural trade flows are reviewed, reporting trends since 1990, including towards more processed goods in world agricultural exports.

There is a general perception that world commercial services trade is growing faster than trade in goods. Indeed, trade in commercial services expanded faster than goods trade in the second half of the 1980s, but thereafter the record is mixed. While at the aggregate level services and merchandise trade growth have evolved in a roughly similar way since 1990, developments are more varied at a disaggregated level. A summary of world trade developments by six broad sectors is provided in Chart IA.9 for the period 1985 to 2002.[22]

Chart IA.9
Share of major goods and services categories in world exports[a], 1985-2002
(Percentage)



[a] Goods and commercial services exports combined.
Source: WTO, International Trade Statistics, 2003.

This breakdown reveals that since 1985, one services category (transport) and two merchandise product groups (agricultural and mining products) expanded less rapidly than world trade. The share of the travel category rose between 1985 and 1995 but decreased thereafter. In contrast, trade in manufactured goods and in the "other" services category, was more dynamic, showing steadily increasing shares over the period. Among all product and services categories, mining products (including fuels) stand somewhat apart from other categories. The share of mining products shows the biggest variations owing to the impact of fluctuating oil prices throughout the 1985-2002 period. Overall, there is no indication that services categories in general have increased their share in international trade.

Within the fastest growing goods and services categories, a few subcategories play an important role in dynamic long-term growth. A further breakdown of world exports of manufactured goods reveals that the most dynamic product subcategory by far was office and telecom equipment, which expanded at twice the rate observed for total manufactured goods in the 1990s. Consequently, the share of this product group gained five percentage points between 1990 and 2000 and accounted for 12.1 per cent of

21 Such analysis is to be found in the WTO Secretariat's report International Trade Statistics, which is published in November each year.

22 The breakdown of goods into agricultural products, mining products and manufactured goods is based on customs statistics.

world merchandise and services exports. The gains of this group exceeded the gains made by all manufactured goods combined.[23] The crisis in the IT sector in 2000 arrested this trend, and the share of the sector in total manufactures has stagnated since then. Among the subcategories of manufactured goods which recorded below average trade growth in the 1990s are iron and steel products and textiles products, both showing a significant decline in their share in world trade over the 1990-2002 period.

Detailed statistics on commercial services trade are not yet systematically available. Improvements in coverage and reporting are made each year, but these may in some cases compromise the historic comparability of a country's services trade statistics.[24] Nevertheless, it appears that on the basis of a sample of large services traders, one can indicate a few subcategories of international services (other than travel and transportation) trade which report outstandingly strong export growth between 1995 and 2002. These subcategories comprise (in descending order of their estimated growth rate) computer and information services, financial services, insurance, personal, cultural, and recreational services; and royalties and licence fees.[25] An absolute decrease in trade values could be observed for trade in construction services between 1995 and 2002.

In summary, global trade flows have experienced major structural changes at the disaggregated product level over the last decade. The share of agricultural trade in world trade has decreased steadily in the longer term. Nevertheless, agricultural trade remains very important for many countries and exports of some agricultural products have also expanded strongly.

Selected medium-term developments in agricultural trade

Major highlights of agricultural trade[26] between 1990 and 2002 include the following:

- The volume growth of world agricultural trade during the 1990-2002 period was close to 4 per cent annually, roughly twice that of agricultural production. Taking a longer-term view, one observes that real trade growth in agriculture during the 1990-2002 period exceeded growth over the 1973-1990 period (2.4 per cent) and nearly matched the expansion recorded in the 1963-73 period.[27]
- The dollar value of world agricultural trade rose by 40 per cent between 1990 and 2002, to $583 billion. The growth in agricultural trade was less strong than total merchandise trade so the share of the former decreased, reaching 9.3 per cent in 2002. This medium-term relative decline of agricultural trade can also be observed over the longer term. In 1963, the share of agricultural products in merchandise trade stood at 29 per cent. However, a small recovery of the share of agricultural exports could be observed between 2000 and 2002 as the value of agricultural trade expanded by 5.5 per cent while that of world merchandise trade stagnated over that period (Chart IA.10).

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23 These gains are measured in value terms. As prices for office and telecom equipment declined sharply in the 1990s while those of other merchandise products remained roughly unchanged, the gains are even more pronounced if trade is measured at constant prices.

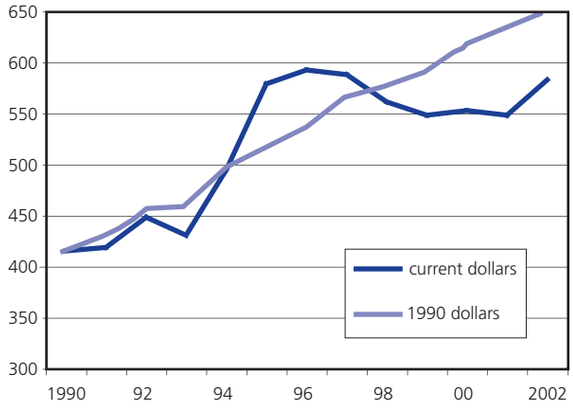
24 In addition BOP statistics only cover transactions between residents and non-residents and exclude important services flows covered under the GATS and delivered through commercial presence.

25 A major uncertainty associated with these estimates derives from the fact that detailed services statistics by subcategory are not available for US intra-affiliated company trade.

26 The definition of agricultural products in this report is that applied in WTO International Trade Statistics 2003, which differs from the definition applied in the WTO trade negotiations on market access in agriculture. One of the major differences is the inclusion of fish and fish products in the former but not in the latter.

27 The calculation of the shares and of nominal and real trade growth is based on WTO International Trade Statistics 2003, Appendix Tables A1 and A8.

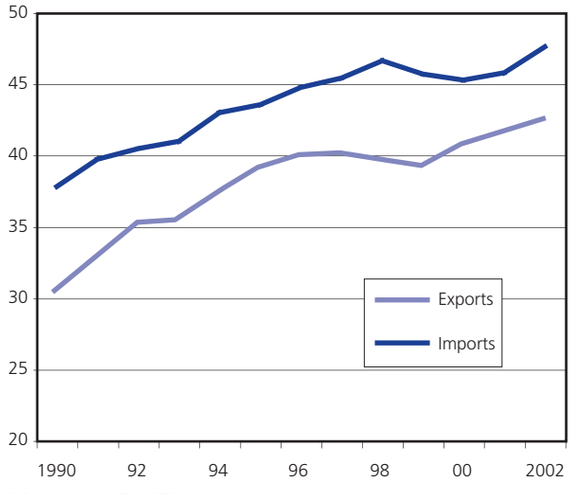
Chart IA.10
World exports of agricultural products[a], 1990-2002
(Billion dollars)



[a] Refers to WTO, ITS definition of agricultural products.
Source: WTO, International Trade Statistics, 2003.

- The steadily declining share of agricultural products in world merchandise exports in the 1990s could be observed in most regions. Only in Africa and the Middle East is it estimated that the share of agricultural trade in 2002 was roughly similar to that observed in 1990, at 15.8 per cent and 3.5 per cent respectively.
- In 2002, the share of agriculture in regional merchandise exports was highest in Latin America (19.3 per cent) and in Africa (15.8 per cent). Excluding Mexico from Latin American exports lifts the share of agricultural products in the region's trade to 29 per cent in 2002, still five percentage points less than in 1990.
- Agricultural products remain, for many countries, the mainstay of their merchandise exports. In recent years (1999-2001) agricultural exports accounted for more than one quarter of total merchandise exports in more than 55 countries (developed and developing). For 32 countries, agricultural exports exceeded one half of their merchandise exports.
- Only small changes were recorded in the regional shares of global agricultural trade between 1990-2002. Western Europe's and North America's share in world exports of agricultural products each recorded a decline of two to three percentage points. Western Europe's share shrank above all between 1990 and 1997 while that of North America decreased mainly between 1997 and 2002. The export share of Australia/New Zealand (combined) is about 4.5 per cent in 2002, unchanged from 1990. Latin America and the transition economies increased their share by about two percentage points between 1990 and 2002. Developing Asia recorded only marginal gains over the entire period, while the share of Africa is estimated to have decreased slightly as losses in the early nineties were partly offset thereafter. For the developing countries as a group, the share amounted to 30 per cent in 2002 compared to 27 per cent in 1990.
- The share of agricultural products in trade among the developing countries has decreased from 15.5 per cent in 1990 to 10.7 per cent in 2002.

Chart IA.11
Share of intra-trade in developing countries' exports and imports of agricultural products[a], 1990-2002
(Percentage)



[a] Refers to WTO, ITS definition of agricultural products.
Source: WTO, International Trade Statistics, 2003.

- The share of intra-developing country trade in developing country agricultural exports has increased from 31 per cent in 1990 to 43 per cent in 2002. Most of this increase occurred between 1990 and 1996.
- The share of intra-developing country trade in developing country imports of agricultural products is even larger than for exports. In 2002, nearly one half (47.6 per cent) of developing country imports originated from other developing countries, an increase of ten percentage points since 1990 (Chart IA.11).
- A breakdown of agricultural trade by 15 product groups[28] reveals that expansion rates among the groups differed sharply over the 1990-2002 period. High average annual growth rates are found for three groups: beverages, other agricultural products (including cut flowers), and fish. For three other product groups (natural fibres, hides and skins, and tobacco) the value

[28] Based on WTO, Committee on Agriculture (2000).

of trade is unchanged or lower in 2002 than in 1990. The two largest agricultural product groups (cereals, and meat and live animals) recorded an expansion in their trade value that was less than for agricultural products in general.

- Agricultural trade can be also analysed by grouping agricultural products by their stage of processing (or value-added content) rather than by sectors. Various analyses have been undertaken which reach the same basic finding that the most dynamic segment of world agricultural trade has been in processed agricultural goods.

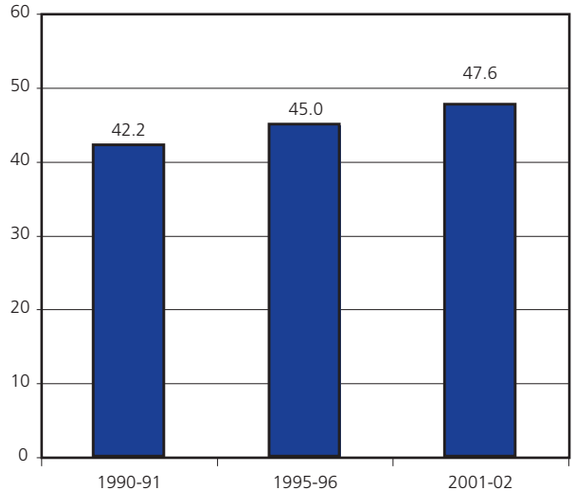
The rise of processed goods in world exports of agricultural products, 1990-2002

Available trade classifications under which international trade is recorded only allow for an approximate categorization of products by stage of processing. Out of the four available categorizations[29], the one applied in a previous WTO evaluation of GATT/MTN trade negotiations was retained in its updated version for this review.[30, 31]

The main finding of the review is that exports of processed agricultural products expanded significantly faster than those of semi-processed and unprocessed agricultural products between 1990 and 2002. The share of processed products showed a clear upward trend throughout the 1990s, rising from 42 per cent in 1990-91 to 48 per cent of global agricultural trade in 2001-02 (Chart IA.12).[32]

The trend towards more processed goods in world exports of agricultural products has been observed by Gehlhar and Coyle (2001) for the 1962-97 period and more recently by the OECD Secretariat (in respect of OECD countries). The empirical evidence of a shift from unprocessed to more processed agricultural products is consistent with a well-known trend in world trade – the shift to an increased share of manufactures at the expense of primary products. Two factors favour the expansion of processed goods over unprocessed goods. First, processed goods have a larger potential for intra-industry trade and offer more possibilities for product differentiation than unprocessed goods. Cocoa-producing countries will not see much bilateral trade in cocoa beans, for example, while chocolate-bar/snack producing countries can exchange their products, satisfying a broad variety of different tastes. Second, the potential to increase

Chart IA.12
Share of processed goods rises in world exports of agricultural products, 1990-2002
(Percentage)



Source: Appendix Table IA.3.

29 There are at least four categorizations of agricultural trade by stage of processing or value-added content. Gehlhar/Coyle (2001) distinguish between "bulk commodities", "processed intermediates", "produce and horticultural products" and "high value processed goods". OECD (2003b) is using three categories: agricultural commodities, agricultural raw materials and agricultural processed products. The WTO Secretariat used two classifications in the past. One distinguished high value added (mostly processed products) and medium and low value-added products (WTO 2000) which can be assimilated only roughly with stages of processing, and the second was used in past trade negotiations (GATT, 1980).

30 GATT, The Tokyo Round of Multilateral Trade Negotiations, Volume II, Geneva 1980. This classification distinguishes three categories: unprocessed, semi-processed and processed goods. The choice of the classification was also determined by the fact that the distinction by stages of processing is available for all products and is not limited to agricultural products as defined in GATT/WTO negotiations (which excludes fish and wood).

31 This review applies the standard WTO/ITS definition of agriculture and includes EU intra-trade in global trade flows. Limitations on detailed data availability reduce the global coverage. In particular, trade of the transition economies could not be included in the world aggregate. The trade flows of all excluded countries represent less than 10 per cent of world agricultural exports.

32 This observation remains valid if one excludes non-MTN agricultural products – fish and wood – and also if one excludes EU intra-trade. By excluding fish and wood, the share of processed agricultural products is always larger and by gaining five percentage points reaches 51 per cent in 2001. Conversely by excluding EU intra-trade, the corresponding ratios fall to lower levels but the gains in percentage points are very similar.

value added for a given consumer food product is, in general, far larger than for unprocessed foods.[33] As per capita income levels increase, consumers appreciate a larger variety of similar products and increasingly buy goods with a brand label. In developed countries, the trend to smaller household size and an increase in participation by women in the labour force strengthens consumption trends towards more processed food at the expense of unprocessed food.

Having observed a global trend towards an increased share of processed goods in agricultural trade, the question arises as to whether all regions and countries shared in this development. The general answer to this question is affirmative, with some noticeable exceptions. About three quarters of the countries for which data were available in the UN Comtrade database recorded an increase in the share of processed goods in their agricultural trade between 1990-91 and 2001-02. This observation holds for both exports and imports.[34]

At the country level, there was a marked increase in the share of processed products in total agricultural exports for the 14 major global exporters[35] with the exception of two Latin American countries (Brazil and Chile). The largest shifts to more processed agricultural products could be observed in Asian developing countries (China, Indonesia, Malaysia and Thailand, with gains in shares of processed over unprocessed agricultural exports of 14, 17, 28 and 11 percentage points respectively). Marked increases could also be observed for Canada and Mexico (13 and 21 percentage points respectively). The share of processed trade in agricultural exports in 2001-02 appears not to be as strongly related to income levels as one might have expected. Lower income countries such as Bolivia and Peru have a higher share of processed goods in their agricultural exports than New Zealand. While there is no strong overall link in the sample between income levels and the share of processed agricultural products, it appears that all countries with a very low share of processed goods in their agricultural exports (15 per cent or less) are low or low middle-income countries (e.g. Cameroon, Ethiopia, Honduras, Pakistan, Sri Lanka, Uganda and Zimbabwe) (Appendix Table IA.3).

On the import side the trend toward a higher share of processed goods is even more striking. Among the 38 traders shown in Appendix Table IA.3, only eight recorded a decrease in the share of processed goods. One notable exception to the general trend on the import side is China. China's agricultural imports recorded an average annual increase of 9 per cent in the 1990s, the highest rate among the major agricultural importers. China's imports of unprocessed goods surged ahead of processed products over the entire period.[36]

The increased share of processed goods in agricultural trade can also be reviewed by distinguishing 15 agricultural product categories at the global level. Not all these agricultural product categories have three stages of processing. Five have three processing stages, seven have two stages of processing and three are grouped within one stage of processing. The distinction among 15 categories enables us to see if the shift to more processing can be observed widely across categories or whether it is limited to a few sectors. It could also be that one single product group comprising processed goods expands strongly (or a group of unprocessed goods expands far less than the average), resulting in a structural shift in the aggregate of agricultural products to more processed goods.

Indeed, the data reveal that trade in beverages (which are considered 100 per cent processed) recorded an above average expansion in the 1990-2002 period (4.8 per cent annually) while natural fibres and hides and skins (which are considered 100 per cent unprocessed) recorded an absolute decrease or near stagnation in the observation period. In addition, wood products, which do not include a "processed stage" within our definition of agricultural products, recorded positive but less than average growth.

33 For unprocessed goods an increase in value added may be achieved by a shift to higher quality. It has been observed that in many cases prices for unprocessed goods may differ significantly from low to top quality products.

34 If one excludes fish and wood from the data, the results at the country level are very similar to the observations made above: four out of five countries in our sample increased the share of processed goods in agricultural trade.

35 Countries with exports of agricultural products exceeding $6 billion in 2002.

36 There was a strong increase in the share of processed products in China's agricultural imports up to 1996 followed by a marked decrease thereafter. Among the unprocessed products, import increases were particularly strong in oilseeds and wood (reporting tenfold and fourfold increases respectively between 1992 and 2001). The sharp rise in imports of oilseeds (unprocessed goods) went together with a sharp decline in imports of vegetable oils (a processed good) since 1997, which contributed significantly to the declining trend for processed goods at the end of the 1990s.

However, the more dynamic expansion of processed goods is not limited to the divergent performance of these four product categories. In eight other categories (with the potential to move from unprocessed and semi-processed to processed goods) there was a marked shift to more processed goods within the group (cereals and products, coffee, tea, cocoa and spices, fish, other foodstuff, meat and live animals, other agricultural goods (including cut flowers), tobacco and sugar and sugar products). A moderate decrease or stable share of processed goods was observed for the remaining categories (dairy products, eggs, fruits, vegetables and nuts and oilseeds, cakes and vegetable oil).

This leads to the conclusion that for the period under investigation, and on the basis of the data available, a shift to more "processed" agricultural trade on a global scale can be confirmed. This shift is broad-based, since it can be observed across most product categories, across regions and among a large majority of countries.

The widespread shift to the more dynamic category of processed goods does not necessarily imply that individual countries cannot achieve high export growth in unprocessed and semi-processed goods, as demonstrated by Chile. Chile's outstanding export expansion in agricultural products is not related to a structural shift to more processed goods. Chile's exports expanded at 9 per cent annually, while global agricultural trade rose 3 per cent annually in the 1990-2001 period. Chile's dynamic export performance was broadly based with strong growth across destinations, product categories, and stages of processing. Many distinct agricultural categories showed a strong expansion in their export value. Particularly strong growth was observed for beverages, fish and wood. The United States and Japan had been the two most dynamic export destinations for Chile in the 1990s, but Chile also gained market shares in the EU. Chile's exports to China rose from very low levels in 1990 to $376 million in 2001, thereby exceeding Chile's shipments to MERCOSUR countries.

To summarize, processed agricultural products have been a more dynamic component of international agricultural trade in the 1990s than unprocessed and semi-processed goods. This is true for a large majority of developed and developing countries across a wide range of products. Agricultural exports of developing countries to high-income markets also experienced this structural change. However, with respect to agricultural exports of low-income countries to the three major high-income markets, no shift towards an increased share of processed goods could be observed. This discussion has not addressed the possible influence of trade or other policies on structural shifts in agricultural trade. Interesting questions arise, such as what these statistical results reveal about the effects of tariff escalation. Further research would be needed, however, to address such issues.

Appendix Table IA.1
World merchandise trade by region and selected country, 2003
(Billion dollars and percentage)

	Exports						Imports					
	Value	Annual percentage change					Value	Annual percentage change				
	2003	1990-95	1995-00	2001	2002	2003	2003	1990-95	1995-00	2001	2002	2003
World	7274	8	5	-4	4	16	7557	8	5	-4	4	16
North America	996	8	6	-6	-5	5	1552	8	10	-6	2	9
United States	724	8	6	-6	-5	4	1306	8	10	-6	2	9
Canada	272	9	8	-6	-3	8	246	6	8	-7	0	8
Latin America	377	9	10	-4	0	9	366	14	9	-2	-7	3
Mexico	165	14	16	-5	1	3	179	12	19	-4	0	1
Latin America less Mexico	212	7	5	-3	-1	13	187	15	3	-1	-13	6
Brazil	73	8	3	6	4	21	51	19	2	0	-15	2
Western Europe	3141	7	2	0	6	17	3173	6	3	-2	5	18
European Union (15)	2894	7	2	0	6	17	2914	6	3	-2	4	18
Germany	748	4	1	4	8	22	602	5	1	-2	1	23
France	385	7	2	-1	3	16	388	4	3	-3	0	18
United Kingdom	304	5	4	-4	3	8	388	4	5	-3	4	12
Italy	290	7	1	2	4	14	289	3	3	-1	5	17
Switzerland	101	5	0	1	7	14	96	3	1	1	-1	15
Transition economies	400	13	7	5	10	28	378	12	4	11	11	27
Central and Eastern Europe	191	11	8	12	15	29	225	15	9	9	11	27
Russian Federation	135	-	5	-2	4	26	74	-	-6	20	12	24
Africa	173	1	6	-6	2	22	165	5	0	4	4	17
South Africa	36	3	1	-2	2	23	38	11	-1	-5	4	30
Africa less South Africa	136	0	7	-7	3	22	126	3	1	6	4	14
Oil exporters [a]	80	-3	12	-13	-1	30	42	3	0	17	6	19
Non oil exporters	56	5	1	1	7	12	85	4	1	2	4	12
Middle East	290	2	12	-8	1	16	188	5	4	5	3	9
Asia	1897	12	5	-9	8	17	1734	12	3	-7	6	19
Japan	472	9	2	-16	3	13	383	7	2	-8	-3	14
China	438	19	11	7	22	35	413	20	11	8	21	40
Six East Asian traders [b]	686	14	5	-12	6	14	615	15	2	-13	3	12
India	55	11	7	2	14	11	70	8	8	-2	12	23
Memorandum items:												
NAFTA (3)	1161	9	7	-6	-4	5	1730	8	11	-6	1	8
MERCOSUR (4)	106	9	4	4	1	19	69	22	2	-6	-26	10
ASEAN (10)	452	17	6	-10	5	11	387	17	1	-8	4	9
EU (15) extra-trade	1099	7	3	1	7	17	1114	4	6	-4	2	19
Euro Zone (12)	2422	7	2	1	7	18	2385	6	3	-1	4	19
EU accession countries (10)	198	-	8	11	14	28	233	-	9	6	11	25
LDC (49)	44	5	8	0	9	...	54	6	4	6	4	...
Developing countries	2178	10	8	-6	6	17	1963	13	5	-4	4	15
Developing Asia	1338	15	7	-7	10	19	1244	15	4	-7	9	20

[a] Algeria; Angola; Congo; Equatorial Guinea; Gabon; Libya; Nigeria and Sudan.

[b] Hong Kong, China; Korea, Rep. of; Malaysia; Singapore; Chinese Taipei and Thailand.

Source: WTO

Appendix Table IA.2
World trade of commercial services by region and selected country, 2003
(Billion dollars and percentage)

	Exports						Imports					
	Value	Annual percentage change					Value	Annual percentage change				
	2003	1990-95	1995-00	2001	2002	2003	2003	1990-95	1995-00	2001	2002	2003
World	1763	9	4	0	6	12	1743	8	4	1	5	12
North America	322	8	7	-3	1	4	266	5	9	-1	1	7
United States	282	8	7	-3	1	4	218	5	10	-2	2	6
Canada	39	7	9	-4	-2	8	48	4	6	-1	-2	14
Latin America	60	8	6	-3	-4	6	67	9	5	0	-9	3
Mexico	12	6	7	-7	-1	0	17	-2	13	-1	3	2
Latin America less Mexico	47	9	6	-2	-4	7	49	13	4	1	-12	3
Brazil	10	10	8	-3	1	9	15	14	3	2	-14	7
Western Europe	895	6	4	2	10	17	839	6	4	3	8	16
European Union (15)	802	7	4	3	10	16	782	7	4	3	8	16
Germany	112	8	2	5	15	12	167	9	1	3	3	12
United Kingdom	130	7	8	-5	12	5	112	7	9	-3	9	11
France	98	5	-1	0	7	14	82	5	-1	3	10	20
Italy	73	5	-2	2	4	23	74	3	0	3	10	21
Switzerland	33	7	2	-6	7	17	20	6	1	6	4	17
Transition economies	72	17	2	9	11	19	82	14	2	16	15	21
Central and Eastern Europe	40	23	1	6	5	21	38	18	4	7	12	28
Russian Federation	16	10	-2	17	20	18	27	11	-4	26	15	13
Africa	36	7	3	1	3	...	46	5	2	3	2	...
South Africa	6	6	1	-7	0	26	7	10	-1	-9	3	36
Middle East	33	7	11	-9	-4	...	49	2	5	-5	-1	...
Asia	345	15	3	-1	8	6	394	13	2	-2	4	5
Japan [a]	70	9	1	-7	2	8	110	8	-1	-7	0	3
China	45	26	10	9	20	13	54	43	8	9	18	...
Six East Asian traders [b]	156	17	3	-1	6	3	149	17	3	-3	4	4
India	25	8	21	19	12	7	20	11	15	16	-1	...
Memorandum items:												
NAFTA (3)	334	8	7	-3	1	4	283	5	9	-1	1	7
MERCOSUR (4)	15	11	6	-5	-11	12	20	16	3	-2	-24	8
ASEAN (10)	72	20	-1	-1	7	-1	89	22	2	-1	4	3
Euro Zone (12)	609	7	2	5	10	18	611	8	2	5	8	17
EU accession countries (10)	48	-	1	5	8	20	41	-	4	6	16	26
LDC (49)	7	10	3	0	6	...	17	5	3	11	2	...
Developing countries	377	14	5	0	5	6	419	13	4	0	2	6
Developing Asia	249	18	4	2	9	5	258	19	4	1	5	5

[a] The travel category is estimated according to the 2002 methodology.

[b] Hong Kong, China; Korea, Rep. of; Malaysia; Singapore; Chinese Taipei and Thailand.

Source: WTO

Appendix Table IA.3
World exports of agricultural products by stage of processing, 1990-2002
(Billion dollars and percentage)

	Billion dollars			
	Processed	Semi-processed	Unprocessed	Total
1990	150.1	30.8	182.6	363.5
1991	159.8	29.9	181.6	371.3
1992	177.9	32.9	188.2	399.0
1993	173.0	35.1	174.8	382.8
1994	196.0	40.3	201.8	438.0
1995	228.0	44.6	239.1	511.7
1996	235.3	45.2	238.5	519.0
1997	232.2	44.8	233.5	510.5
1998	226.0	40.3	218.5	484.8
1999	223.0	38.6	210.6	472.2
2000	215.6	36.5	215.2	467.3
2001	226.9	37.3	212.9	477.0
2002	237.6	40.0	216.7	494.3
	Percentage shares			
	Processed	Semi-processed	Unprocessed	Total
1990	41.3	8.5	50.2	100
1991	43.0	8.1	48.9	100
1992	44.6	8.2	47.2	100
1993	45.2	9.2	45.7	100
1994	44.7	9.2	46.1	100
1995	44.6	8.7	46.7	100
1996	45.3	8.7	46.0	100
1997	45.5	8.8	45.7	100
1998	46.6	8.3	45.1	100
1999	47.2	8.2	44.6	100
2000	46.1	7.8	46.1	100
2001	47.6	7.8	44.6	100
2002	48.1	8.1	43.9	100

Note: Agricultural products include fish and wood. EU intra-trade included.

Source: UN Comtrade database and WTO.

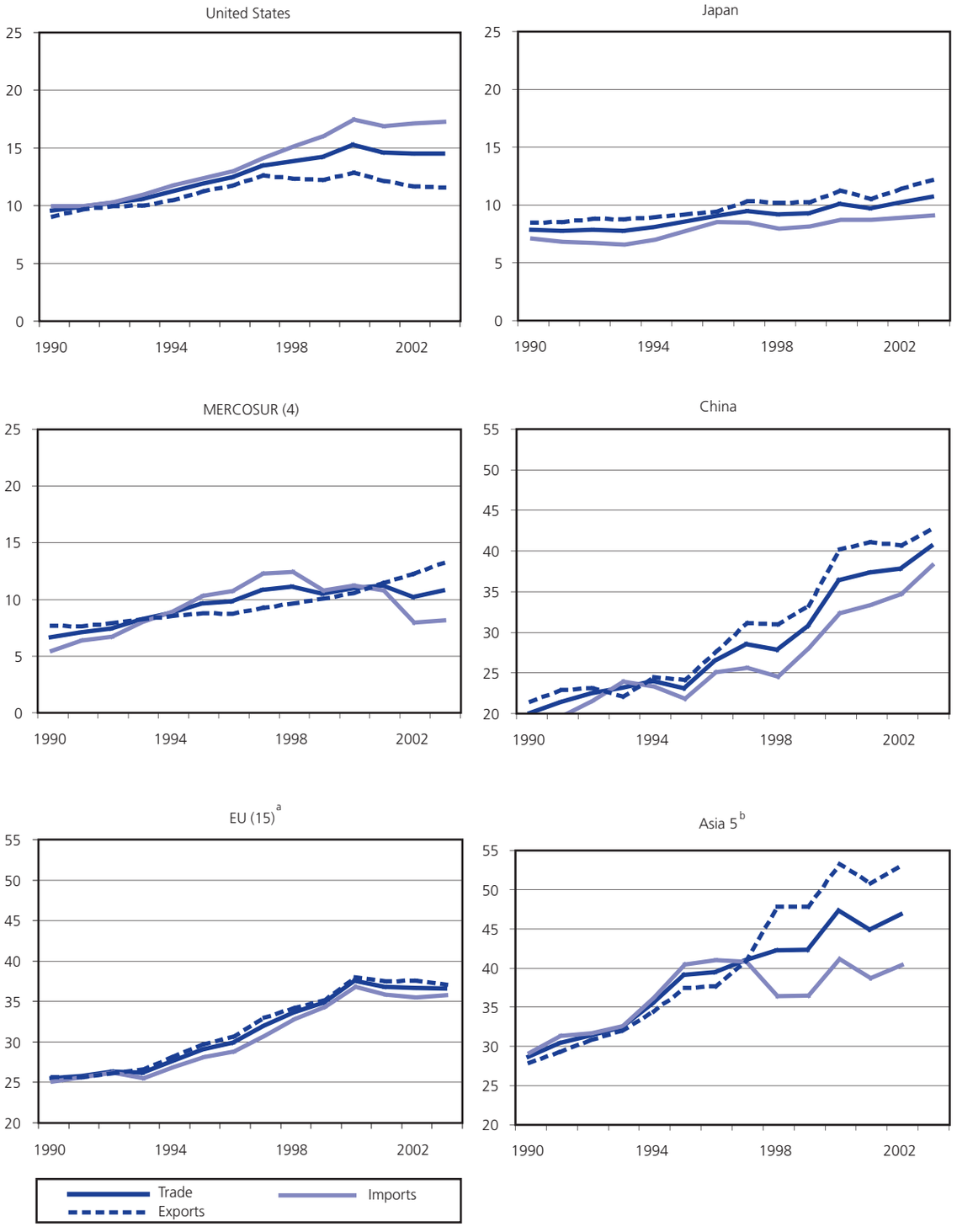
Appendix Table IA.4
Share of processed products in exports and imports of agricultural products in selected economies, 1990-91 and 2001-02
(Percentage)

	Exports		Imports	
	1990-91	2001-02	1990-91	2001-02
North and Latin America				
Argentina	*50*	51	*55*	46
Brazil	47	40	29	32
Canada	15	28	42	47
Chile	30	*29*	36	57
Colombia	*7*	19	*35*	39
Ecuador	6	20	28	50
Honduras	13	15	57	67
Mexico	21	42	39	45
Paraguay	19	29	94	75
Peru	*67*	61	*36*	45
United States	30	38	36	41
Western Europe				
EU 15	57	61	44	49
extra-trade	63	65	25	30
intra-trade	53	59	54	58
Iceland	8	26	50	48
Norway	18	14	37	43
Switzerland	76	80	41	50
Turkey	23	35	38	25
Africa and Middle East				
Cameroon	*4*	4	*48*	39
Israel	43	44	27	42
Jordan	27	54	34	42
Kenya	13	20	36	*53*
Oman	30	77	52	72
Saudi Arabia	...	...	*56*	50
South Africa	*24*	28	*32*	48
Tunisia	54	50	30	25
Zimbabwe	5	15	32	46
Asia				
Australia	37	43	48	60
China	*28*	42	*20*	19
India	18	19	20	*41*
Indonesia	21	38	19	24
Japan	60	48	27	40
Korea, Rep. of	26	47	16	31
Malaysia	36	64	35	38
New Zealand	52	62	49	61
Pakistan	3	6	40	34
Philippines	*41*	46	*47*	50
Sri Lanka	3	5	24	33
Taipei, Chinese	53	*27*	25	*37*
Thailand	29	*40*	21	*33*

Note: Country names in bold indicate a major net exporter of agricultural goods. Numbers in italics indicate that data of the nearest year available to reference years have been used.

Source: UN Comtrade database and WTO.

Appendix Chart IA.1
Trade to GDP ratios in selected countries and regions, 1990-2003
(Percentage, exports and imports of goods and services at constant 1995 prices)



[a] Including intra-trade.

[b] Countries most affected by the Asian financial crisis: Indonesia, Korea Rep. of, Malaysia, Philippines and Thailand.

Source: World Bank, World Development Indicators and WTO estimates.

B SELECTED ISSUES IN TRADE AND TRADE POLICY

1. NON-RECIPROCAL PREFERENCES AND THE MULTILATERAL TRADING SYSTEM

(a) Introduction

A non-reciprocal preferential arrangement exists when one country offers access to exports originating from another country on terms that are more favourable than the existing tariff, without requesting reciprocal market access. Such arrangements differ from the system of most-favoured-nation tariffs as embodied in the General Agreement on Tariffs and Trade, where Members of the World Trade Organization can benefit from the tariff applied by other Members to their most-favoured nation. They also differ from reciprocal preferential arrangements, such as regional trade agreements where market access is offered to signatories of such agreements on a reciprocal basis.[1]

The current system of non-reciprocal preferences has its roots in the trade politics of the 1960s and the search for ways to increase developing country participation in the trading system. Driven largely by the intellectual foundations of the discussions leading to the establishment of the United Nations Conference on Trade and Development (UNCTAD), the Generalized System of Preferences (GSP) was developed. The scheme allowed developed countries autonomously to grant non-reciprocal access to their markets for selected products from selected countries.[2] Since then, the concept of non-reciprocal preferences has expanded considerably to include schemes that target specific countries, such as those designated by the United Nations as least-developed countries (LDCs). The schemes can also be regionally based, such as the United States African Growth Opportunity Act (AGOA) or Australia's South Pacific Regional Trade and Economic Co-operation Agreement (SPARTECA).

Non-reciprocal preference schemes create a certain degree of tension in the multilateral trading system, which has triggered a vigorous debate on their overall value to developing countries. While generally welcomed on political grounds and by preference-receiving countries, they are also the subject of much criticism from non-preference-receiving countries concerned about trade diversion and academics concerned about their contribution to development. They are also criticized by those with systemic interests in the trading system who see such schemes as part of an erosion of the core principles of the multilateral trading system (Hudec, 1987).[3] These tensions have been further amplified by recent calls to stall the process of multilateral liberalization in order to protect margins of preference. In the midst of this debate on the value of preferences, a surprising development is that such schemes continue to proliferate in a variety of forms, including the expansion of existing schemes to a larger group of countries. In fact, the World Bank has recently called for a global non-reciprocal scheme where developed countries would provide duty-free and quota-free market access to all products originating from all developing countries (World Bank, 2003a).

This Section focuses on the current debate about the "development" value of preferences and their impact on the multilateral trading system. The next three subsections will examine the economics of preferences, the pattern of preferential arrangements, and the implications of such arrangements for the multilateral trading system. The Section then closes with some summary observations.

1 For more on the economics of regional trading agreements see Section IB.3 of WTO (2003a).

2 The autonomous nature also implies that donor countries have the discretion to decide the list of eligible countries.

3 Low (2003) summarises Hudec's views against preferences in a succinct manner: "Hudec believes that an MFN-based regime is the only genuine protection available to developing countries. This is not just an argument he makes for advanced developing countries who are most susceptible to protection-driven discrimination, but for smaller countries as well that are likely to face more uncertainty and unpredictable elements of discrimination under multiple preferential agreements."

(b) Economics and politics of non-reciprocal preferences

Countries are affected by non-reciprocal preferences depending on whether they are the granting countries, the beneficiary countries or the non-beneficiary countries. The analysis that follows discusses the costs and benefits of preferences to these three groups of countries. It should be noted at the outset that a preference margin exists only because of the imposition of a positive MFN tariff by a preference-granting country. The non-reciprocal and autonomous nature of preferences means that decisions on what preferences to offer and to whom are taken by the granting countries largely with national considerations in mind – they are not designed with a primary focus upon accommodating the interests of beneficiary countries. This suggests that the political economy analysis guiding MFN reductions should, for the most part, remain immune to the issue of preference erosion. However, as will be discussed in subsection (d) below, the dynamics of the current round of multilateral negotiations may have an impact on how preference-granting countries determine their MFN tariffs.

An original rationale for non-reciprocal preferences was that additional market access would assist developing countries through trade, instead of aid. The slogan "trade rather than aid" described a situation where a transfer was made from developed to developing countries, but not in overt financial terms as in the case of aid.[4] In the case of preferences, the transfer is from domestic producers and the government in importing developed countries to producers in beneficiary developing countries (Box IB1.1).

Box IB1.1: Rent transfer and non-reciprocal preferences

This box explores the basic economics of non-reciprocal preferences. Obviously, a country must have a tariff in place in order to grant a preference. This tariff raises the price of the protected good in the domestic market above the world price, thereby creating rents for domestic producers and revenue for the government. Preferential market access to imports originating from specified countries will result in a reduction in the rents obtained by domestic producers, some of which will be transferred to foreign producers in the preference-receiving countries. The government also stands to lose revenue.

The analytical framework used to investigate the impact of non-reciprocal preferences on preferential and non-preferential exporters is identical to that used to examine reciprocal preferences (Bora et al., 2002; Tangerman, 2002). In its simplest form, it is a three country framework with only a single traded good. One country imports the good while the other two are respectively the beneficiary and non-beneficiary of the preferential tariff rate. If it is further assumed that benefits accruing to the preference-receiving country depend only on the preference margin, because the preference does not affect the supply of the good at the world price, as the margin increases the price received by exporters will increase, as will the quantity they export and their welfare. Non-beneficiary exporters stand to lose, since the domestic price is still fixed by the world price. Their exports are "crowded out" by the exports benefiting from the preferences.

These general results can be modified by changing various assumptions, such as the responsiveness of supply to a given price change and the degree of substitutability between exports originating from beneficiary countries and those from non-beneficiary countries. Consider each of these in turn. First, the supply response. Increasing the preference margin would alter relative prices in favour of suppliers in preference-receiving countries. The extent to which they will be able to respond to the expanded market access will depend upon their supply response (the elasticity of supply). The higher the elasticity, the larger will be the response and correspondingly the larger will be the trade effect. This effect, however, is conditional on demand, which is captured by the cross-price elasticity of substitution (i.e. the degree of substitutability as relative prices change) between exports from preferred and non-preferred suppliers. The greater the substitutability, the greater will be the trade impact of the preference schemes. The more imperfectly substitutable the products, the lower will be the impact. At the extreme case, when products are not substitutable, then the granting of preferences will not have any trade diversion impact. This case, however, is highly unlikely.

[4] For more information on the development of the GSP within UNCTAD see WTO document WT/COMTD/W/93, 5 October 2001.

The principal intellectual proponents of preference schemes have tended to view them as part of an import substitution policy. Preferential market access has typically been combined, therefore, with appeals to retain protection in the domestic market of the preference-receiving country. Preferences, then, are often regarded not only as a mechanism to transfer real resources from developed to developing countries, but as a component of industrial policy. The underlying approach was to mitigate foreign competition in the domestic market at the same time as seeking an exporting advantage *vis-à-vis* competitive counterparts in developed (and other developing) countries.

In sum, the possible benefits of preferences to developing countries include better access to developed-country markets, increased export volumes and prices, improved economic welfare, more jobs, and more rapid economic growth. Although the benefits of preferences are difficult to quantify, available estimates of preference margins show that they can amount to significant shares of the value of exports from the developing country concerned. However, analysis has shown that welfare gains are usually smaller than the preference margins. In certain cases, such as when preference margins are applied within tariff-rate quota schemes, the rents may accrue to firms in the importing country and therefore decrease the benefits to beneficiary countries (Tangermann, 2002).[5]

Trade preferences may not be devoid of costs to beneficiary countries. They may induce a shift in the pattern of production in the recipient country that is not consistent with its comparative advantage. This risk is compounded by the lack of predictability related to preferences. Preference-granting countries decide the breadth and scope of preference schemes, and changes to such schemes will result in adjustment costs as exporters try to survive without preferences.

Depending on the preference margin and export supply response in the recipient country, preferences may depress prices in the granting country's market, thereby creating opposition from producers in non-beneficiary countries as well as in the preference-granting country. Non-reciprocal preferences can also impact the trade policies of the recipients. Recent research has shown that they delay trade liberalization – GSP recipient countries are less likely to lower their tariff barriers compared to non-beneficiary developing countries or those that have been graduated out of GSP schemes (Ozden and Reinhardt, 2003). The reason for this is that in a world of reciprocity, it is exporters who lobby their governments to reduce their own tariffs in order to gain market access. If preferences are granted in a non-reciprocal manner, this incentive is lost.

While the immediate effect of preferences on beneficiary countries will generally be positive, the impact on the granting country will depend on certain factors that could actually make the country worse off. The reason for this ambiguity is the trade-off between the foregone tariff revenue and loss in domestic production on the one side, and the gain that consumers receive from lower priced imports on the other. The overall effect depends upon the specifics of each granting country and the specific commodities that benefit from preferential access (Box IB1.1).

The political economy of non-reciprocal schemes is as complicated as the economics. As shown below, such schemes are selective with respect to the countries and products that benefit from the enhanced market access. One factor is that products of export interest to developing countries are often excluded from preference schemes, in part because of domestic lobbying pressure. However, in a number of cases, access is granted in sensitive product lines, but only to a select group of countries. This selective access creates an incentive for those that benefit to lobby against a reduction in the MFN tariff and the expansion of non-reciprocal preference schemes to other beneficiary countries. At the same time, resistance to a reduction in MFN tariffs in granting countries may come from domestic groups that face adjustment costs due to the liberalization.

[5] The distribution of rents in this case will depend on the system for allocating quotas.

Concern about preference erosion is not limited to the impact from MFN tariff reductions. Non-reciprocal preference margins can also be eroded through reciprocal regional trading agreements signed by a preference-granting country. A recent example was the request by Caribbean Basin Initiative (CBI) countries for market access parity into the United States, with Canada and Mexico. Canada and Mexico having previously been granted market access conditions under the North American Free Trade Agreement that were more favourable than those contained in the CBI.

The effect of non-reciprocal preference schemes on the third group of countries – non-beneficiary exporting countries – is fairly clear. Their exports are discriminated against by these schemes, causing them to lose trading opportunities.

Preferences also have implications for the multilateral agenda. They can exhaust negotiating capital, since developing countries have to balance their participation at the multilateral level with negotiating for preferences at the bilateral level. The result is that countries tend to pursue bilateral deals at the expense of participation at the multilateral level through the WTO (Brenton, 2003). Preferential market access may lower the incentive for developing countries to participate actively in multilateral negotiations, in part because they believe that they will not receive any further concessions in the multilateral process or because of concerns about preference erosion. This may create a conflict of interest between the recipients and the excluded developing countries.

Multilateral negotiations can also be affected through the exercise of power by preference-granting countries. Trade preferences could be used as a lever to obtain external support for their protectionist policies. Beneficiary countries have the incentive to support policies of granting countries and to lobby for the continuation of preferences. This can act as an impediment to efforts to advance the benefits of trade liberalization globally through the WTO (Topp, 2001).

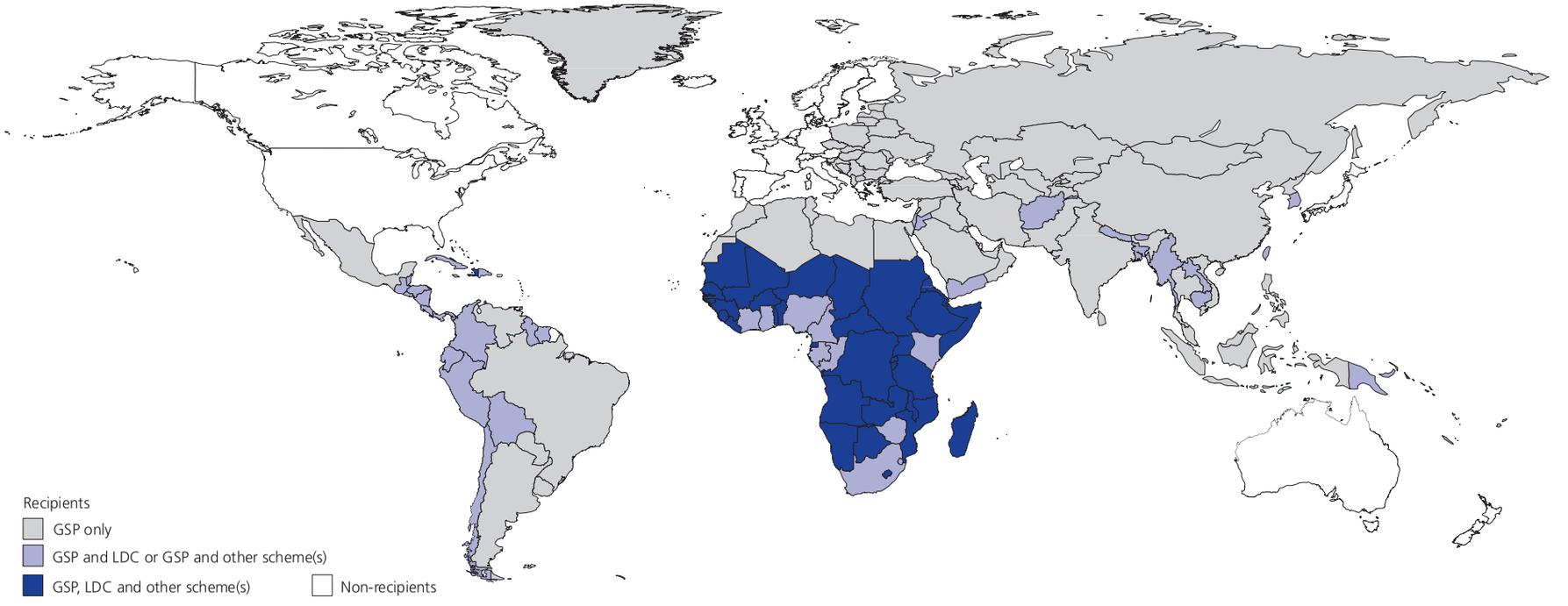
(c) The pattern of non-reciprocal preferences

The coverage and scope of non-reciprocal schemes have expanded since they were first initiated in the early 1970s.[6] Today, a number of more specialized schemes exist that either target specific groups of countries based on their level of development, such as the least-developed countries, or are based on particular regions.

As with reciprocal regional agreements, growing numbers of non-reciprocal preferential schemes have produced a complex web of arrangements. Examples of recent schemes include the system of preferences offered to the Africa, Caribbean and Pacific countries by the European Union (ACP preference scheme), and the United States' scheme offered to the Caribbean, known as the Caribbean Basin Initiative. Chart IB1.1 illustrates this complicated landscape. Developed countries are the only countries that do not benefit from any type of scheme. Most countries benefit from at least one type of scheme beyond the GSP scheme.

[6] Such preference schemes did not start with the GSP. In 1931 the United Kingdom offered non-reciprocal preferences to its colonies under the Commonwealth System of Preferences, which is still in place.

Chart IB1.1
Landscape of non-reciprocal preference schemes, 2002

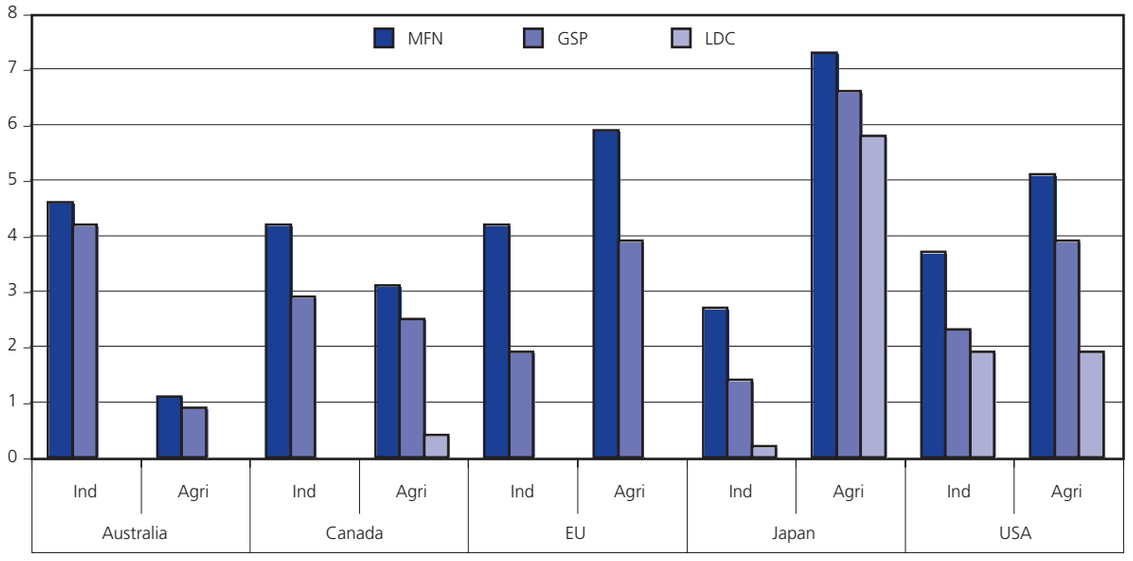


Note: For scheme coverage see Technical Notes.
Source: WTO, IDB.

(i) Enhanced market access?

Assessing the degree of enhanced market access arising from non-reciprocal preferences is a difficult task, since such schemes are selective in nature. They are rarely applied across the entire tariff schedule of a country, except in a few cases.[7] From an overall perspective, it is important to distinguish between what is already offered by the way of MFN access and what is offered on a preferential basis. Many preference-granting countries already have low overall levels of protection, although their tariff peaks are predominantly in areas of export interest to developing countries. Furthermore, caution should be exercised when selecting the method by which to measure market access.[8] Chart IB1.2 compares the average tariff rates for agriculture and non-agricultural products for a number of markets and a number of schemes. A discernable difference can be observed between the various schemes, which would indicate a positive degree of preferential market access for beneficiaries of the various schemes relative to the MFN tariff. There is also a cascading scale for preferences in favour of LDCs. The data presented in the Chart show that the overall level of market access for LDCs is better than that accorded to GSP recipients and relative to the MFN tariff values.

Chart IB1.2
Average applied tariff by tariff regime for major developed markets, 2002
(Percentage)



Note: As of 2003, LDC countries benefit from duty-free access to Australia for all products and to Canada for industrial products. Reference year for Australia's tariffs is 2001. See Technical Notes for calculation methodology.

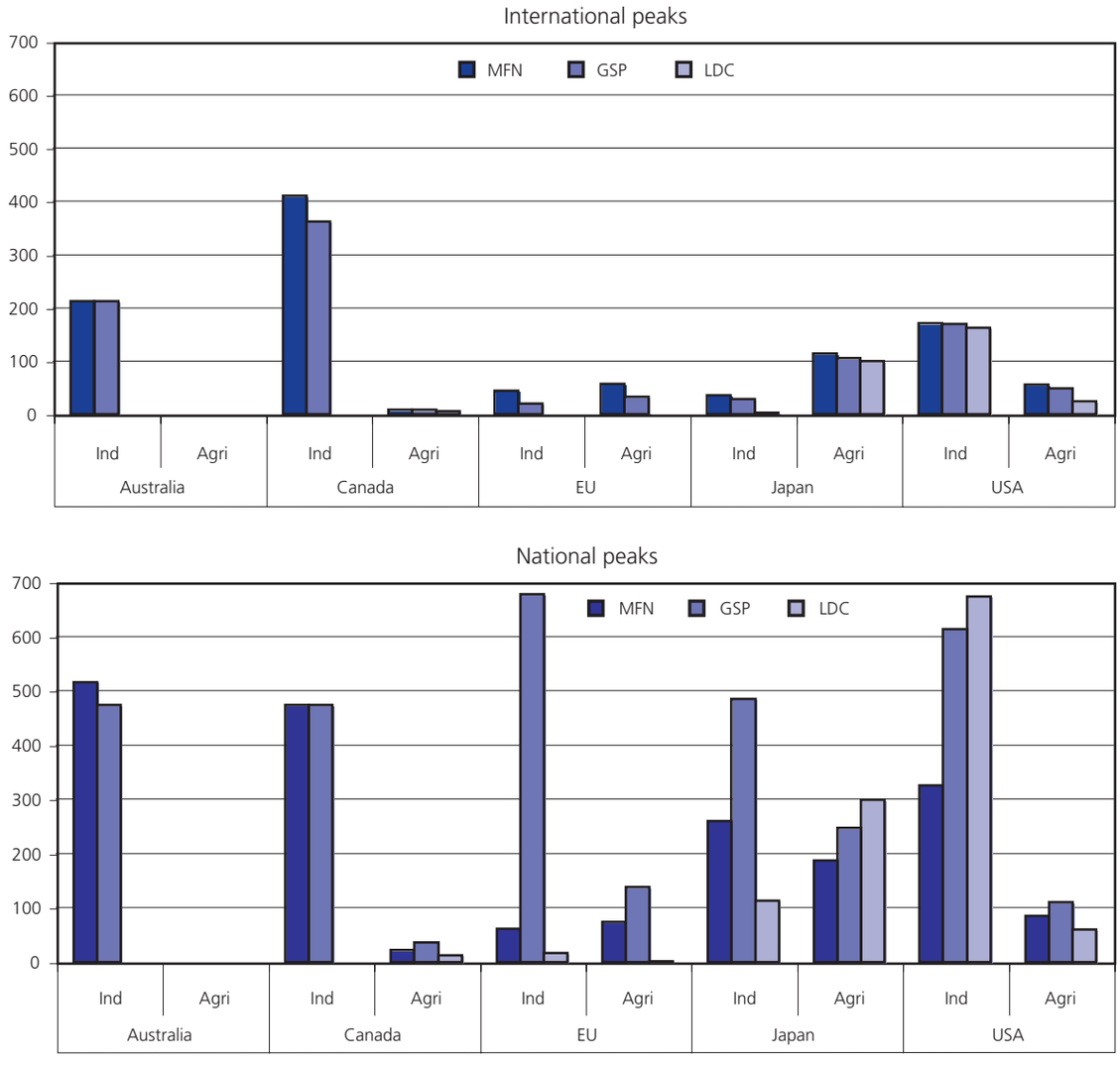
Source: WTO, IDB.

A reduction in the overall average tariff rate may not necessarily represent an increase in effective market access since developing countries, especially the LDCs, export a narrow range of products. Eliminating duties on products that beneficiary countries do not export will do very little to expand their trade. In fact, one of the problems with preference schemes is their tendency to exclude sectors that are politically sensitive.

[7] For example Australia, Norway and Switzerland offer complete duty-free and quota-free market access for products originating from LDCs. The EU programme for LDC market access provides enhanced market access for all products except arms and munitions. Canada's program exempts dairy, meat, poultry and eggs from its preference scheme for LDCs.

[8] For example, one could use the percentage of tariff lines that are duty free. However, a statement saying that 99 per cent of tariff lines are duty free may not give a true indication of market access. In reality a significant percentage of the imports originating from the targeted beneficiary countries could be classified in the remaining 1 per cent of tariff lines that are not duty free.

Chart IB1.3
Number of international and national peaks by tariff regime for major developed markets, 2002



Note: As of 2003, LDC countries benefit from duty-free access to Australia for all products and to Canada for industrial products. Reference year for Australia's tariffs is 2001. See Technical Notes for calculation methodology.

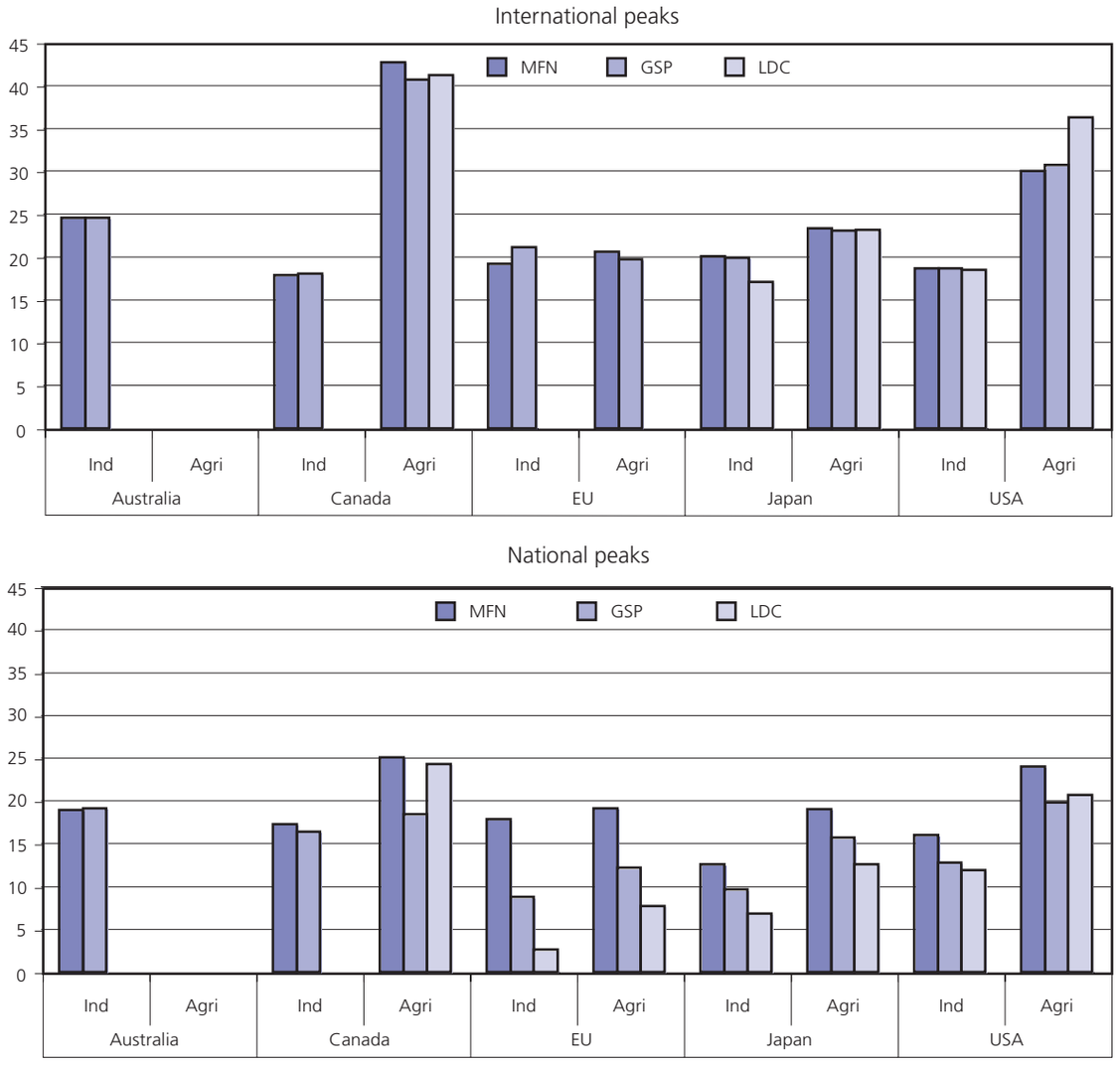
Source: WTO, IDB.

This point is illustrated in Chart IB1.3 and Chart IB1.4, which compare the frequency and average tariff rates of tariff lines that are either above 15 per cent (an international peak) or three times the national average (national peak). Chart IB1.3 shows that the number of international peaks is not significantly reduced in the various non-reciprocal schemes. Furthermore, given the methodology for calculating national peaks, this discrimination becomes more pronounced in Chart IB1.4 where the number of national peaks under the non-reciprocal schemes is higher than for MFN.[9] Taken together, the two Charts indicate that preference schemes, in general, increase market access but do little to reduce the level of protection in highly protected sectors.[10]

[9] As national peaks are calculated as three times the average of the tariff regime, for preferential schemes the value used is the average of the scheme in question, which is lower than the MFN average.

[10] Sensitive product lines are those with high tariffs as defined by national and international peaks.

Chart IB1.4
Average tariff for international and national peaks by tariff regime, major developed markets, 2002
(Percentage)



Note: As of 2003, LDC countries benefit from duty-free access to Australia for all products and to Canada for industrial products. Reference year for Australia's applied tariffs is 2001. See Technical Notes for calculation methodology.

Source: WTO, IDB.

Table IB1.1 provides an indicator of eligibility for preferences. The first column shows the share of total imports entering Canada, the European Communities, Japan and the United States duty free in 2002, both under MFN and various preference schemes. Thus, for example, the Table indicates that Japan had the highest percentage of imports entering duty free on a MFN basis, at 58 per cent of total imports. In contrast, the United States had the lowest value, at 43 per cent. Japan also had the highest level of total imports eligible for duty-free treatment overall (MFN duty free and duty free under preferential schemes), at 62 per cent. The shares for Canada, the European Communities and the United States were 51 per cent, 56 per cent and 46 per cent respectively. A factor influencing the potential for granting preferential access is obviously the degree to which trade is already MFN duty free.

Table IB1.1 also indicates the impact of each individual scheme on the duty free imports from the beneficiaries of that scheme. For example, consider the GSP scheme of the European Communities. Of total exports from countries eligible for GSP treatment, 49 per cent were eligible for MFN duty-free treatment, 19 per cent for GSP, 2 per cent for LDC treatment, and 2 per cent for ACP country treatment. This meant that 72 per cent of all exports from GSP beneficiary countries were eligible to enter the EC market free of duty. A key point

to note about this Table is that it does not take into account the utilization of preferences. As shown in Table IB1.1, the AGOA scheme of the United States is the most successful in providing additional MFN duty-free treatment to beneficiaries. An additional 60 per cent of the exports of beneficiary countries enter the United States free of duty, contributing significantly to the overall figure of 91 per cent of exports from these countries that receive duty-free access in the United States.

Table IB1.1
Duty-free imports by major developed markets, non-reciprocal scheme and beneficiaries, 2002
(Percent of total imports from respective group of countries)

	WORLD (MFN)	Group of countries eligible to selected non-reciprocal preferential scheme						
Duty Scheme		GSP	LDC	CCC	ACP	CBI	AGOA	ATPA
Canada								
MFN	50	56	64	90	-	-	-	-
GSP	1	6	2	3	-	-	-	-
LDC	*0*	*0*	3	0	-	-	-	-
Commonwealth Caribbean (CCC)	*0*	*0*	0	6	-	-	-	-
Total Duty Free	51	62	68	99	-	-	-	-
Total Trade	100	100	100	100	-	-	-	-
European Communities								
MFN	47	49	51	-	63	-	-	-
GSP	8	19	2	-	11	-	-	-
LDC	1	2	47	-	5	-	-	-
ACP	1	2	*0*	-	14	-	-	-
Total Duty Free	56	72	100	-	93	-	-	-
Total Trade	100	100	100	-	100	-	-	-
Japan								
MFN	58	49	18	-	-	-	-	-
GSP	4	9	3	-	-	-	-	-
LDC	*0*	*0*	17	-	-	-	-	-
Total Duty Free	62	58	39	-	-	-	-	-
Total Trade	100	100	100	-	-	-	-	-
United States								
MFN	43	39	8	-	-	27	25	38
GSP	2	13	2	-	-	9	5	9
LDC	*0*	3	45	-	-	*0*	*0*	0
Caribbean Basin Recovery Act	*0*	1	*0*	-	-	12	0	0
African Growth Opportunity Act	1	5	*0*	-	-	0	60	0
Andean Trade Preference Act	*0*	*0*	0	-	-	0	0	11
Total Duty Free	46	60	54	-	-	48	91	58
Total Trade	100	100	100	-	-	100	100	100

Note: Italicised zero means percentage value is greater than zero but less than 0.5 per cent. See Technical Notes for calculation methodology.
Source: WTO, IDB.

While imports benefiting from preferences may be small in relation to total imports, the preferences may still be important to particular exporters. In order to gauge this, the share of exports to selected markets that enter with the benefit of a positive preference margin was estimated for all countries. The top 25 countries, based on the importance to their exports, is listed in Table IB1.2. For obvious reasons, such as the structure of the preference regime, the identified countries vary across the different markets. In general, the listed countries are part of the larger group of ACP and LDC countries, although it should be noted that some larger developing countries, such as China and India, also figure prominently.

Table IB1.2

Top 25 preference beneficiaries as a share of total exports to major developed markets, 2002

(Milllion dollars and percentages)

Canada			European Communities			Japan			United States			Total		
Exporter	Exports eligible for preferences		Exporter	Exports eligible for preferences		Exporter	Exports eligible for preferences		Exporter	Exports eligible for preferences		Exporter	Exports eligible for preferences	
	Share of exports	Exports value		Share of exports	Exports value		Share of exports	Exports value		Share of exports	Exports value		Share of exports	Exports value
Central African Rep.	88	*0*	Maldives	99	35	Lesotho	100	*0*	Angola	98	3032	Mozambique	91	525
Antigua & Barbuda	85	1	Bangladesh	98	2944	Saint Lucia	100	*0*	Nigeria	98	5550	Tunisia	84	4509
Barbados	71	3	Macao, China	96	639	Mauritania	93	39	Gabon	94	1242	Senegal	82	316
Fiji	67	3	Bahrain	94	256	Latvia	87	15	Cameroon	82	134	Gabon	76	1321
Guinea Bissau	52	*0*	Mozambique	94	519	Senegal	78	9	Congo, Dem. Rep.	81	154	Niger	75	14
Panama	51	4	Trinidad & Tobago	91	376	Morocco	77	251	Congo	78	137	Gambia	74	17
Zimbabwe	49	3	Solomon Islands	89	1	Dominica	63	1	Mozambique	72	6	Morocco	70	4377
Kyrgyz Rep.	47	*0*	Pakistan	87	2317	Egypt	58	40	Malawi	66	45	Croatia	60	1392
Gambia	45	*0*	Myanmar	86	329	Zambia	56	37	Gambia	64	*0*	Namibia	59	244
Burkina Faso	39	*0*	Tunisia	85	4491	Bangladesh	55	61	Mauritania	64	*0*	Cyprus	58	297
Korea, Rep. of	38	1162	Senegal	83	306	Bahrain	53	84	Saint Kitts & Nevis	61	28	FYR Macedonia	58	295
Mexico	38	3062	Niger	82	13	Dominican Rep.	52	18	Zimbabwe	57	56	Bangladesh	57	3052
Haiti	36	2	Madagascar	81	363	Haiti	50	*0*	Saint Lucia	55	9	Albania	56	76
China	35	3517	Jamaica	76	355	Ecuador	45	82	Bolivia	51	78	Nigeria	56	6204
Lithuania	35	6	Morocco	75	4098	Zimbabwe	38	48	Georgia	49	8	Angola	55	3086
Niger	35	*0*	Namibia	75	240	Myanmar	37	41	Barbados	48	14	Kenya	54	538
Sierra Leone	35	1	Cuba	74	219	Czech Rep.	32	58	Armenia	47	14	Moldova	54	114
Armenia	32	*0*	Gambia	74	17	Gambia	32	*0*	Uruguay	46	71	Bahrain	53	395
Slovenia	32	11	India	73	8614	Kenya	31	9	Belize	44	32	Madagascar	53	369
Benin	30	*0*	Sri Lanka	72	866	Sri Lanka	30	50	Poland	44	474	Zambia	52	87
Saint Kitts & Nevis	30	1	China	70	52364	Niger	29	*0*	Czech Rep.	42	505	Malawi	51	48
Slovak Rep.	30	11	FYR Macedonia	68	290	Solomon Islands	29	6	Peru	42	805	Mauritius	51	726
Thailand	30	343	Moldova	68	113	Trinidad & Tobago	26	1	Slovenia	38	113	Guinea Bissau	49	3
Brazil	29	347	Suriname	67	69	Turkey	25	41	Slovak Rep.	36	90	St. Kitts & Nevis	49	32
Dominican Rep.	26	19	Kenya	66	517	Poland	24	21	St. Vincent & Gren.	35	6	Pakistan	46	2464
WORLD	5	9888	WORLD	17	135624	WORLD	6	21649	WORLD	3	33876	WORLD	8	201036

Note: Italicised zero means a value that is less than $500,000.
Source: WTO, IDB.

Table IB1.2 also indicates that in certain markets the preference dependency of exports is quite high. In some cases the value is 100 per cent, indicating a complete dependence on preferential access. Another interesting feature of the Table is that the preference dependency figure of the 25th ranked exporter varies across the markets. This suggests that the overall importance of preferences is greater in the European Union, for example, than in other countries, such as Canada. The share of preference-dependent exports in total exports of the country ranked 25th in Canada is 26 per cent (Dominican Republic). The comparable figure for the European Communities is 66 per cent (Kenya).

Not surprisingly, given the diversity of countries that benefit from non-reciprocal preferences, there is a considerable diversity in the types of products that benefit. Table IB1.3 identifies the main products that benefit from a positive preference margin across the countries that benefit the most in terms of total exports, from preferential market access. The principal products range from petroleum to labour-intensive products such as clothing and footwear. Resource-based products such as copper and iron are also present on the list.

Table IB1.3
Principal products of top 25 preference beneficiaries in major developed markets, 2002
(Million dollars and percentages)

Exporter to QUAD[a]	Exports eligible to preference (Value)	Eligible exports in total exports (Share)	Principal product (HS 2002)		
			Export (Value)	HS code	Description
Mozambique	525	91	405	760110	Aluminium (non-alloy), unwrought
Tunisia	4509	84	423	620342	Men's or boys' trousers, non-knitted, of cotton
Senegal	316	82	59	030759	Octopus
Gabon	1321	76	1232	270900	Crude petroleum
Niger	14	75	10	271111	Natural gas liquefied
Gambia	17	74	10	150810	Crude ground-nut oil
Morocco	4377	70	379	030759	Octopus
Croatia	1393	60	58	611011	Jerseys, pullovers, cardigans, waistcoats made of wool
Namibia	244	59	96	030420	Frozen fish fillets
Cyprus	297	58	48	870323	Motor vehicles (cylinder capacity > 1.500 cm³ but <= 3.000 cm³)
FYR Macedonia	295	58	31	720851	Flat-rolled products of Iron or non-alloy steel
Bangladesh	3052	57	526	610910	T-shirts, singlets and other vests of cotton, knitted or crocheted
Albania	76	56	10	640610	Footwear - uppers and parts thereof
Nigeria	6204	56	5224	270900	Crude petroleum
Angola	3086	55	2916	270900	Crude petroleum
Kenya	538	54	184	060310	Fresh cut flowers and flower buds
Moldova	114	54	18	721420	Bars and rods of iron or non-alloy steel
Bahrain	395	53	97	271019	Medium oils and preparations, n.e.s.
Madagascar	369	53	108	030613	Frozen shrimps and prawns
Zambia	87	52	37	740311	Refined copper
Malawi	48	51	40	240120	Tobacco, partly or wholly stemmed/stripped
Mauritius	726	51	185	610910	T-shirts, singlets and other vests of cotton, knitted or crocheted
Guinea Bissau	3	49	1	030749	Cuttle fish, frozen, dried, salted or in brine
Saint Kitts & Nevis	32	49	19	853650	Switches for a voltage <= 1.000 V
Pakistan	2464	46	167	620342	Men's or boys' trousers, non-knitted, of cotton

[a] Canada, European Communities, Japan and the United States.
Source: WTO, IDB.

Table IB1.4

Highest preference margins by product in major developed markets, 2002

(Ranked by descending average value of preference margin for the QUAD[a])

Product	HS 2002 code	MFN Duty Rate QUAD[a]		Highest preference margins									
				QUAD		Canada		European Communities		Japan		United States	
		Average	Max	Average	Max	Average	Max	Average	Max	Average	Max	Average	Max
Preparations of vegetables, fruit, nuts or other parts of plants	20	13.5	131.8	12.9	44.2	5.6	17.0	17.5	33.6	4.9	29.8	6.7	44.2
Footwear, gaiters and the like; parts of such articles	64	15.3	58.5	11.8	58.5	2.9	20.0	10.0	17.0	15.2	30.0	13.2	58.5
Tobacco and manufactured tobacco substitutes	24	36.1	350.0	10.8	74.9	7.1	13.0	41.8	74.9	0.0	0.0	5.8	46.8
Fish and crustaceans	03	6.8	23.0	9.1	23.0	0.5	5.0	12.2	23.0	0.5	10.0	0.9	15.0
Preparations of meat or fish	16	12.3	238.0	8.8	97.4	5.2	12.5	15.8	26.0	4.6	21.3	4.9	97.4
Ships, boats and floating structures	89	4.4	25.0	8.6	25.0	14.8	25.0	1.1	2.7	0.0	0.0	0.5	2.7
Miscellaneous edible preparations	21	13.7	102.4	7.2	80.0	6.5	12.5	8.4	14.7	8.3	29.8	6.1	80.0
Dairy produce	04	20.8	111.5	7.0	29.0	6.8	11.0	5.3	17.3	0.9	29.8	7.0	29.0
Articles of apparel and clothing accessories, not knitted or crocheted	62	12.2	29.0	6.5	29.0	1.6	19.0	11.9	12.4	10.6	14.2	3.1	29.0
Carpets and other textile floor coverings	57	7.4	15.5	6.5	15.5	12.3	15.5	8.0	9.2	7.5	10.1	0.7	4.8
Articles of apparel and clothing accessories, knitted or crocheted	61	12.4	32.5	6.4	19.0	1.7	19.0	11.9	12.4	10.2	12.1	2.0	21.9
Preparations of cereals, flour, starch or milk; pastrycooks' products	19	12.8	84.2	6.3	17.5	3.9	14.5	10.7	12.8	2.1	34.0	6.3	17.5
Ceramic products	69	4.5	29.4	6.2	29.4	4.2	8.0	4.8	12.0	1.2	3.5	6.2	29.4
Other made-up textile articles	63	9.6	21.5	6.2	12.4	3.8	18.0	10.1	12.4	6.6	12.1	2.6	11.7
Clocks and watches and parts thereof	91	4.3	29.9	5.9	29.9	3.5	14.0	3.9	6.0	0.2	10.0	5.9	29.9
Prepared feathers and down and articles made of feathers...	67	4.3	17.0	5.8	17.0	8.3	15.5	2.8	4.7	1.6	6.6	4.0	17.0
Miscellaneous manufactured articles	96	4.6	48.2	5.8	48.2	6.4	15.5	3.3	7.7	3.1	6.6	5.4	48.2
Edible vegetables and certain roots and tubers	07	5.7	29.8	5.8	29.8	2.6	19.0	8.9	15.2	1.0	12.8	5.5	29.8
Articles of leather; saddlery and harness...	42	7.9	20.0	5.7	20.0	7.7	15.5	5.0	9.7	6.5	18.0	6.0	20.0
Knitted or crocheted fabrics	60	8.5	19.0	5.5	12.6	1.6	16.0	8.7	8.8	7.8	11.8	1.9	12.6
Glass and glassware	70	4.2	38.0	5.5	38.0	2.5	15.5	4.9	11.0	1.3	8.0	5.5	38.0
Railway or tramway locomotives	86	3.3	14.8	5.3	14.8	5.8	11.0	1.8	3.7	0.0	0.0	4.7	14.8
Plastics and articles thereof	39	4.7	10.0	5.3	8.4	4.2	10.0	5.9	8.4	3.6	7.4	4.6	8.4
Tanning or dyeing extracts	32	4.4	9.2	5.2	9.2	3.2	7.5	5.4	6.5	3.1	4.4	5.1	9.2
Animal or vegetable fats and oils and their cleavage products...	15	5.0	29.8	5.1	19.1	5.1	11.0	6.0	16.0	1.2	12.8	3.8	19.1
Explosives or pyrotechnic products	36	5.0	7.5	5.0	7.5	7.1	7.5	6.3	6.5	4.7	6.4	3.0	6.5
Aluminium and articles thereof	76	4.3	10.0	5.0	10.0	3.4	6.5	6.3	10.0	3.3	7.5	3.7	6.5
Raw hides and skins (other than furskins) and leather	41	5.0	30.0	5.0	30.0	1.9	5.0	2.6	6.5	10.5	30.0	2.4	5.0
Edible fruit and nuts; peel of citrus fruits or melons	08	5.3	29.8	4.9	29.8	1.3	12.5	6.8	20.8	1.7	22.5	4.3	29.8
Man-made staple fibres	55	8.3	28.1	4.8	16.0	1.5	16.0	7.1	8.6	7.4	12.0	0.0	0.0

[a] Canada, European Communities, Japan and the United States.
Source: WTO, IDB.

Another way of identifying products that benefit from preferential margins is to examine the average preference margin across the various product classifications. Table IB1.4 presents data for the QUAD markets showing the average MFN duty rate and the average preference margin rate by the 2 digit level of the Harmonized System for product classification. The products are ranked in descending order on the basis of the average preferential margin across the four markets. Hence, prepared fruit and vegetables are listed first since they have the highest average preference margin – 12.9 per cent.[11] The list provides some indication as to the products that may be sensitive to an erosion of preferences and the degree of erosion that one might expect. The top ten products are predominantly products of export interest to developing countries, notably apparel, carpets, processed food, footwear and leather products.

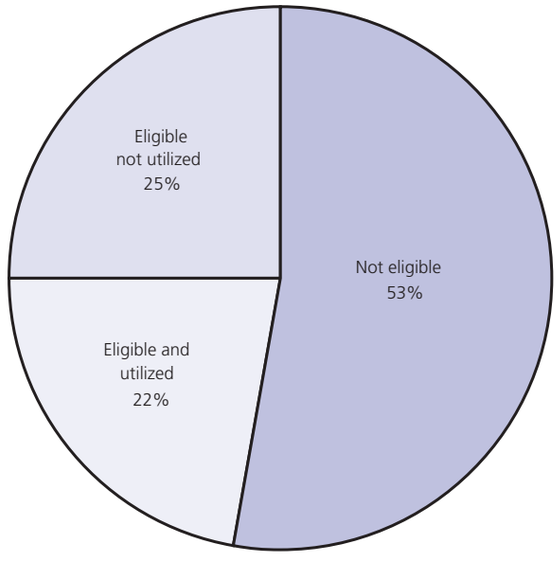
(ii) Limits to market access

The preceding subsection outlined the market access opportunities provided by preferential schemes. The analysis was conducted using tariff data. In reality, however, the granting of preferences does not automatically increase market access. A statutory preferential duty may not be applied at a customs point for a number of reasons, most of which relate to the inability of exporters to meet the required eligibility criteria. As a result, the "utilization" of preferences will not always be 100 per cent. In this context, the figures presented previously could be considered as the theoretical maximum in terms of preferential market access. The actual degree of market access could in some cases be considerably lower.

Unfortunately, accurate data on preference utilization is only available for certain markets. Nevertheless, one element of the implementation of the GSP program is the provision of data on GSP programmes to UNCTAD. As a result, reasonably accurate data on the use of the various GSP schemes are generally available. This is also true for other non-reciprocal preference schemes.

Despite the data difficulties, available information paints a picture of the efficacy of preference schemes and the limits of using only tariff data. Chart IB1.5 shows the results of allocating total GSP exports from 46 LDCs to Canada, European Union, Japan and the United States by type of treatment. Three types of treatment are assumed: those products originating from LDCs that faced a duty but were not granted preferential market access, products that were granted and received preferential market access and finally products that were granted preferential market access but, for a variety of reasons, did not enter the preference granting country at the preferential rate. The overall finding is that in 2001 only 22 per cent of the exports of 46 LDCs to QUAD markets benefited from preferential market access. A further one quarter of their exports were eligible for preferential market access, but did not receive this treatment. The Chart, therefore, indicates a utilization rate of less than 50 per cent.

Chart IB1.5
GSP exports originating from LDCs by type of treatment in QUAD markets, 2001
(Percentage)



Source: UNCTAD.

One of the most cited reasons for less than 100 per cent utilization of preferential rates is the "rules of origin" criteria that are used in the various schemes (Brenton and Manchin, 2003). Preferential schemes

[11] The preference margin is the absolute difference between the MFN rate and the preferential rate.

are discriminatory in nature and rules of origin are therefore required to differentiate between products from beneficiary countries and non-beneficiary countries. These origin rules have been criticized for being too stringent.

The way in which rules of origin are defined and applied plays an important role in determining the degree of protection they confer and the level of distortionary trade effects they produce. For example, in the textiles sector preferential rules of origin require "triple or double" manufacturing stages for a product to achieve the "substantial transformation" required for preference eligibility, while non-preferential rules of origin for the same products provides for goods to undergo assembly in a single country.[12] This, and other examples, have been used to suggest that rules of origin are being used as a strategic trade instrument: (i) to increase trade barriers towards non-contracting parties; and (ii) to attract investment into the market of the contracting parties.[13]

Rules of origin may be used to compensate local manufacturers for losses that are expected to arise following the implementation of trade liberalization (Hirsch, 2002). Local producers have an enhanced incentive to employ factors of production originating in the territories of the contracting states at the expense of foreign suppliers (i.e. trade diversion). The more restrictive the rules of origin, the more incentive producers will have to use local materials, thereby promoting local factors of production. If manufacturers outside the preferential arrangement face stringent rules of origin, they may change their investment strategy and shift their production lines into the preferential market in order to satisfy preferential origin rules.

A decision to relocate production lines or change sourcing would be determined by the gap between trade preferences accorded under alternative trade arrangements, the size of the preferential market, and the difference in production costs under the alternative patterns of production. When the difference in preference margins is large, there is more incentive for firms to relocate their production lines in order to meet preferential origin rules. The larger the preferential market, the greater the incentive to switch sourcing or investment patterns to comply with origin rules. This size of the market (in terms of purchasing power) explains the tendency for preferential arrangements involving the United States and the EU to have more stringent origin rules. Conversely, the smaller the gap between production costs, the greater the incentive to employ more factors from the preferential area and/or to transfer production lines into that area. Origin rules, therefore, may shift sourcing from low-cost intermediate goods producers from the rest of the world towards those in the preferential arrangement. In non-reciprocal preferential arrangements, this will be either to the preference-giving country or the beneficiary. In such a case, a donor country may use origin rules to protect its intermediate-good producers to the detriment of final-good producers. This may be achieved by donor-country content provisions.

Lesotho is a recent example of how relaxed rules of origin can improve the export prospects of a country. During the 1980s Lesotho enjoyed a number of advantages over South Africa in terms of trade agreements. Under the Generalised System of Preference scheme, manufactured goods from Lesotho enjoyed preferential duty regimes into Canada, the United States and other non-European countries. In addition, Lesotho was a signatory to the Lomé Convention, which allowed duty free-access of clothing into the EU. The rules of origin requirements for the European Union, however, required a "double jump" in processing when imported inputs are utilized. This means the conversion of imported fabric into sewn garments would not qualify as a product originating from Lesotho. As a result, Lesotho's garment exports do not benefit significantly from preferential market access into the EU.

In contrast to the EU rules of origin, the scheme applied by the United States in the context of AGOA allows a "single jump" in processing. As a result, Lesotho's exports of garments to the United States have increased

[12] See Inama (2002).

[13] See Hirsch (2002).

dramatically in the past three years.[14] Whether or not relaxing rules of origin in non-reciprocal schemes can be classified as "development friendly" is another point, which is not addressed in this paper. For example, Lesotho's newfound export success has had some impact on the export performance of some of its competitors who do not benefit from the rules of origin derogation. Mauritius, for example, is not eligible for the derogation, and its exports of garments to the United States have declined as those of Lesotho have increased.

Inama (2002) has argued that the rules of origin are excessively stringent and do not reflect the industrial capacity of beneficiary countries, especially LDCs. He cites the "triple jump" transformation and/or the "double jump" transformation rules in textiles and apparel products, instead of a simple change in tariff requirements, as an example of rules that do not take the level of development in beneficiary countries into account. He notes that most of the rules of origin were set when the GSP schemes were first established, and since then have remained unchanged and, therefore, may reflect an uncompetitive and inefficient industrial model by insisting on vertically integrated production chains. He also argues that the diversity of rules applied by preference-giving countries with respect to the basic criteria (e.g. process and percentage criteria) makes it difficult for beneficiaries to calculate the allowable and non-allowable costs incurred in production. This creates problems since products may qualify in one market and not in a neighbouring market. The schemes' complex and detailed origin criteria, direct consignment requirements, administration, documentation and verification imply substantial additional costs for GSP transactions, leading to lower utilization of the schemes.

With respect to standards, the principle issue is not the right to protect health, safety and the environment. Rather, the argument is that the benefits arising from preferences are reduced or nullified by the imposition of standards. While evidence shows that standards are affecting the market penetration of beneficiary exports in preference-granting countries, there is nothing to suggest that the application of strict standards is intended to nullify the benefits of preferences. The costs of developing and maintaining a certain level of quality, combined with testing and certification, can simply be beyond the capacity of many developing countries.

(iii) Empirical evidence

A large number of studies employ a broad range of methodologies that try to examine the trade impact of non-reciprocal preference schemes. The overall conclusion of this literature is that non-reciprocal preference schemes have a limited trade impact.[15] Whalley (1990) concludes that "special and differential treatment has had only a marginal effect on countries' economic performance, especially through GSP".[16] Another summary of the literature concludes that the GSP has led to "at best a modest increase in imports from beneficiary states" (Ozden and Reinhardt, 2003). Little has changed in terms of the scope of these schemes to alter such a conclusion, although one study by Rose (2002) concludes that GSP programmes have had a significant impact on trade.[17] An OECD (2003c) assessment of GSP schemes concludes that where they have had a positive impact "the countries that have benefited most from preferences have been high-income developing

[14] Mattoo et al. (2002) have estimated that Sub Saharan African exports to the US could increase by 8 -11 per cent due to the impact of AGOA. The overall increase in exports is expected to be $100-140 million. They estimate that the increase could have been higher if the scheme had not imposed stringent rules of origin on apparel imports and excluded certain items, which are considered sensitive, from its coverage. They estimate that overall non-oil exports would have increased by $0.54 billion without rules of origin restrictions. They argue that when the rules of origin are imposed on all beneficiaries in 2004, there will be an increase in transport and input costs due to switching input suppliers away from the cheapest source. They estimate that for Mauritius, between 2001 and 2004, AGOA will raise exports relative to the pre-AGOA period by 5 per cent. However, the increase in exports due to AGOA preferences would have been 36 per cent without the application of more stringent rules of origin. Madagascar is expected to witness more dramatic results, as during the 2001-2004 period exports are expected to increase by 92 per cent due to AGOA compared to the pre-AGOA period. However, during the 2005-2008 period, its exports will be lower by 19 per cent compared to the pre-AGOA situation, and if the less stringent rules of origin are applied the country is expected to experience growth that exceeds the current growth rates.

[15] This literature is summarized in Bora et al. (2002) and Ozden and Reinhardt (2003). Some of the key studies include Clague (1972), Karsenty and Laird (1987ab) and Baldwin and Murray (1977) on the EC, Japan and United States. Ahmad (1978) focuses specifically on Canada.

[16] The range of estimates of the increase in exports depends significantly on the modelling approach. On the upper end are estimates of a 20 per cent increase, while on the lower end the estimate is approximately 3 per cent. One general conclusion that can be drawn from the studies is that the scope for a positive effect on trade is limited to a few countries and a few sectors.

[17] These results are described as "brutally contrarian" by The Economist magazine, and more work would be needed to validate this unique finding.

countries with pre-existing supply capacity, and some agricultural exporters receiving high income transfers because of high tariff and non-tariff protection".

Many of these studies also focus on the source of the trade expansion. Here again, the estimates differ depending upon the modelling framework and assumptions. As indicated in Box IB1.1, one of the crucial assumptions is the degree to which products are differentiated. The more differentiated the product, the less trade will be diverted. Studies such as Ahmad (1978) assume a low degree of substitutability between beneficiary and non-beneficiary products, so the estimate for trade diversion is low.

(d) Implications for the multilateral trading system

Despite the irrefutable fact that non-reciprocal schemes are a deviation from one of the fundamental principles of the world trading system, the most-favoured-nation principle, they are still an essential part of that system. This is reflected in the legal framework, which was established to protect such schemes. Initially, legal protection was provided by special temporary waivers, as provided for under Article XXV of the General Agreement on Tariffs and Trade (GATT 1947). Legal cover for the GSP was later made permanent under the 1979 Enabling Clause.[18] Preferential schemes not covered by the Enabling Clause still require a waiver under the WTO agreements.

Although this was not a specific amendment to GATT Article I, since it was a decision made by the GATT Contracting Parties, it had a similar effect. Specifically, it allowed for contracting parties to accord differential and more favourable treatment to developing countries, without according such treatment to other contracting parties. Paragraph 2 of the Enabling Clause outlined four specific types of treatment that were covered from legal challenges. These included: GSP schemes, differential and more favourable treatment with respect to GATT provisions concerning non-tariff measures, reciprocal agreements amongst developing countries and special treatment for the least developed among the developing countries.

Taken together, the provisions of the Enabling Clause were specifically designed to encourage developed countries to undertake positive market access initiatives towards exports originating from developing countries.

Perhaps as a result of the lower level of tariffs and an overall increase in the competitiveness of global markets, developing countries are now becoming increasingly concerned about the negative effects of non-reciprocal schemes if they are not beneficiaries. This concern has been manifested in two recent developments.

In the first case, India won a dispute settlement ruling against provisions under the EU's non-reciprocal preference arrangements that grant developing countries combating illicit drug production additional trade preferences. The panel agreed with India that the special tariff preferences were inconsistent with the MFN obligation of the General Agreement on Tariffs and Trade (GATT Article I:1).[19] The case was appealed by the EU to the Appellate Body and the panel's finding was upheld, but on different grounds. The Appellate Body concluded that MFN was not applicable to the Enabling Clause and that preference-giving countries were entitled to make distinctions among beneficiaries on the basis of objective criteria that treated similarly situated countries similarly. The Appellate Body found that the EU arrangement lacked objective criteria with which to determine country eligibility for the additional trade preferences.[20]

The second instance occurred when the Philippines and Thailand decided to take action in the context of a waiver for Lomé preferences (Box IB1.2). Eventually, they agreed to the waiver, but not until they extracted a concession from the EU, the preference-granting country, for their exports of canned tuna, which were suffering from the disadvantage of not having preferential market access.

18 The formal title of the Enabling Clause is the "Decision on Differential and More Favourable Treatment, Reciprocity and Fuller Participation of Developing Countries". This decision was adopted under GATT in 1979.

19 WTO document WT/DS246/R.

20 WTO document WT/DS246/AB/R.

Non-reciprocal preferences are also an issue in the current round of negotiations and have implications for the type of deal that may conclude the round. As indicated in Table IB1.4, preference margins can be significant in some products of export interest to developing countries. It then follows that preference-beneficiary countries would have an interest in shielding these preferences from any erosion. Indeed, formal proposals along these lines have been made to the Negotiating Group on Market Access, which deals with non-agricultural market access issues and the Special Session of the Committee on Agriculture, which deals with market access for agricultural products.[21]

Three options for addressing preference erosion have been put forward: a retention of preference margins, a delay in the erosion of preferences beyond the agreed reduction of MFN tariffs, and compensation for preference-beneficiary countries. For example, a group of African countries requested that "measures and mechanisms" be established to deal with preference erosion "with the aim of either avoiding or offsetting this problem, or compensating the affected Members".[22] In addition to being "duly compensated" for a loss of preferences, Mauritius requested that a competitiveness fund be established on the basis of contributions from the international financial institutions.[23]

In response to the proposals on preference erosion, the Chairpersons of the negotiating groups dealing with agricultural and non-agricultural products proposed language for agreement by Members of the WTO in the lead up to the Fifth WTO Ministerial held in Mexico in September 2003. No agreement was reached at that Ministerial, hence no agreement was reached on how to handle the issue. The main thrust of the proposal in the agricultural negotiations was to delay the implementation of tariff reductions in products of significant interest to preference beneficiary countries.[24] The text on non-agricultural products took a different approach and left the issue open for further clarification.[25]

At this stage of the negotiations it is difficult to pre-judge the outcome. On the one hand, non-reciprocal preference schemes require a legal waiver to co-exist with the multilateral trading rules. A condition of this co-existence is that they do not "prevent" MFN tariff reductions. As such, while there is broad sympathy with preference-beneficiary countries concerning the adjustment challenges they may face, it is not clear that their proposals will find broad support.[26]

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21 For a summary of the proposals to these two groups see WTO documents TN/AG/6 and TN/MA/12.

22 Submission by Ghana, Kenya, Madagascar, Mauritius, Nigeria, Rwanda, Tanzania, Tunisia, Uganda, Zambia and Zimbabwe (TN/MA/W/40, 11 August 2003).

23 Submission by Mauritius (TN/MA/W/21, 7 January 2003).

24 "In implementing their tariff reduction commitments, participants undertake to maintain, to the maximum extent technically feasible, the nominal margins of tariff preferences and other terms and conditions of preferential arrangements they accord to their developing trading partners. As an exception to the modality under paragraph 8 above, tariff reductions affecting long-standing preferences in respect of products which are of vital export importance for developing country beneficiaries of such schemes may be implemented in equal annual instalments over a period of [eight] instead of [five] years by the preference-granting participants concerned, with the first instalment being deferred to the beginning of the [third] year of the implementation period that would otherwise be applicable. The products concerned shall account for at least [20] per cent of the total merchandise exports of any beneficiary concerned on a three-year average out of the most recent five-year period for which data are available. Interested beneficiaries shall notify the Committee on Agriculture, Special Session accordingly and submit the relevant statistics. In addition, any in-quota duties for these products shall be eliminated. The preference-providing Members shall undertake targeted technical assistance programmes and other measures, as appropriate, to support preference-receiving countries in efforts to diversify their economies and exports." (TN/AG/W/1/Rev.1)

25 "We recognize the challenges that may be faced by non-reciprocal preference beneficiary Members and those Members that are at present highly dependent on tariff revenue as a result of these negotiations on non-agricultural products. We instruct the Negotiating Group to take into consideration, in the course of its work, the particular needs that may arise for the Members concerned." (Job 03/150 Rev. 1).

26 An argument that is central to the issue of preference erosion is adjustment assistance. In this regard, some discussion has taken place in various WTO groups about the role of the International Monetary Fund and the World Bank. In response to these discussions, the Managing Director of the IMF and the World Bank President sent a letter on 21 August 2003 to the Director-General of the WTO to clarify the roles that could be played by their institutions to assist developing countries' concerns about the costs associated with adjusting to a more liberal environment (www.imf.org/external/np/sec/pr/2003/pr03140.htm).

Box IB1.2: Non-beneficiary concerns about preferential access: the case of canned tuna

An example of the concern of non-beneficiary countries about the consequences of preferences is the position that Thailand and the Philippines maintained at the Fourth WTO Ministerial Meeting in Doha in November 2001. These countries only agreed to join the consensus on the European Community request for a waiver to cover tariff preferences for African, Caribbean and Pacific states on the understanding that the EC would hold consultations with them on the impact of the scheme on their canned tuna exports. In specific terms, they wanted the EC to "examine the extent to which the legitimate interests of the Philippines and Thailand were being unduly impaired as a result of the implementation of the preferential treatment of canned tuna originating from ACP states".

The waiver granted to ACP exporters would continue their exemption from the 24 per cent MFN duty that was applied to non-beneficiary exporters. Despite the 24 per cent margin, exporters from Thailand and the Philippines managed to penetrate the EU market. In 2002, Thailand exported approximately 63,000 tons of canned tuna to the EU at a value of €75 million. This fact, they argued, was evidence of their competitiveness in the EU market. Eliminating the preference margin would, therefore, yield positive benefits to their domestic economy.

Three rounds of consultations between the three Members were held after the Doha Ministerial, but no agreement was reached on how to resolve the issue. As a result, the two countries jointly requested the Director-General of the WTO to mediate the dispute. The Director-General appointed a mediator who delivered his opinion on 20 December 2002 that the European Community should open an MFN-based tariff quota of 25,000 tons for 2003 at an in-quota rate of 12 per cent *ad valorem*.

The mediator's opinion was non-binding, which meant that the EC had the option to accept or reject it. In an expression of concern regarding the possibility that their preferential market access could be eroded, the ACP-EU Joint Parliamentary Assembly adopted a resolution on 3 April 2003 that called upon the EU to "refrain from adopting the mediator's proposal".

Despite this plea, the European Council decided on 5 June 2003 to accept the mediator's proposal, based on the recommendation of the European Commission. European Council regulation No. 975/2003 adopted a tariff quota with country specific shares to Thailand (52 per cent), the Philippines (36 per cent) and Indonesia (11 per cent), with other countries sharing the remaining 1 per cent. This action appears to be the direct result of an initiative of non-beneficiary countries acting on their own behalf to counteract the discrimination and trade diversion arising from non-reciprocal preference schemes.

(e) Conclusions: the prospects for preferences

The evidence presented in this Section argues that despite the proliferation of non-reciprocal preference schemes, questions remain about their effectiveness in enhancing the industrialization and integration of developing countries into the trading system. First, the degree of actual preferential access resulting from these schemes is limited. In many cases, preference margins are quite small since the overall level of MFN protection in preference-granting countries is low. Second, even in cases where preference margins are significant, utilization is often significantly below potential.

Moreover, where meaningful preferences are granted, the degree of trade diversion is a concern for non-preference receiving countries. Preferences no longer command general support among developing countries. Finally what preferences remain will steadily be eroded by efforts to reduce MFN tariffs through successive rounds of multilateral negotiations, as well as by regional arrangements that cut across the existing patterns of preferences.

Taken together these developments imply that reliance on preferences is not a viable long-term strategy. If governments accept that they cannot count on preferences for the indefinite future, what strategy should they adopt to deal with the new reality? One approach to dealing with the loss of preferential market access would be to make every effort to increase utilization levels on products of interest to developing countries for as long as the schemes last. But such an approach would need to bear in mind the adjustment challenges that are likely to emerge later. Another approach would be to address the situation directly, and prepare domestic industries for future adjustment. Under this scenario, governments would not expend negotiating effort in trying to improve preference schemes or preserve preferential margins.

2. THE LIBERALIZATION OF SERVICES TRADE THROUGH THE TEMPORARY MOVEMENT OF NATURAL PERSONS

(a) Introduction

Globalization has been characterized by increasing trade in goods and services and increasing cross-border flows of investments, accompanied by a surge in the international movement of workers. The reduction of transport and communication costs, and the greater availability and lower cost of imported goods from their homeland have made it easier for people to move abroad. Migrants can read online newspapers from their home country, use cheap phone cards to keep in touch with their relatives, find the ingredients to cook their homeland recipes and travel regularly back home at relatively low cost. Although permanent migration accounts for most of the movement of workers across countries in developed countries, the temporary movement of workers has been growing the most over the last decade.

Today many different barriers to the movement of people remain. These include: stringent visa requirements, quotas, the application of economic needs tests (for example, employers might be required to search for a national employee before employing a foreign one), and limits on the recognition of professional qualifications. In the current round of services negotiations in the WTO, a significant number of Members have expressed keen interest in further facilitating the temporary movement of natural persons to supply services – the so-called Mode 4[1] of the General Agreement on Trade in Services (GATS).

The negotiations on Mode 4, which began during the Uruguay Round, resulted in Members scheduling commitments mainly on intra-corporate transfers of high-level personnel and business visitors. In this current round of services negotiations, developing countries stress the desirability of expanding the coverage of these commitments to other categories of workers.

GATS Article I:2(d) defines Mode 4 as "the supply of a service by a service supplier of one Member, through presence of natural persons of a Member in the territory of any other Member". The Annex on Movement of Natural Persons Supplying Services under the Agreement specifies that two categories of measures are covered – those affecting natural persons who are "service suppliers of a Member" (i.e. self-employed suppliers who obtain their remuneration directly from customers), and those affecting natural persons of a Member who are "employed by a service supplier of a Member in respect of the supply of a service." These natural persons can be employed either in their home country and be present in the host market to supply a service or be employed by a service supplier in the host country. In the latter case, there appears to be room for interpretation on whether foreign workers employed by a locally-owned firm are included or not in the definition of Mode 4 under GATS.[2]

Moreover, only temporary movement of workers is covered by GATS, as the latter excludes "natural persons seeking access to the employment market" and "measures regarding citizenship, residence or employment on a permanent basis". Since "temporary" or "non-permanent" status in the host country is not specified in GATS, WTO Members have interpreted this notion differently in their schedules of services commitments, varying between three months and five years.

This Section first discusses the welfare consequences of the temporary movement of service providers, both for the originating and the receiving country, including the impact on merchandise trade and other modes of services supply. Second, it describes the barriers to Mode 4 exchange, and on the basis of multilateral commitments, assesses the degree of liberalization of Mode 4. Third, it provides new estimates on the magnitude of Mode 4 trade and compares it with cross-border services supply. The final subsection provides evidence on the patterns of Mode 4 movements.

[1] GATS identifies four modes for supplying services internationally. They are cross-border supply (Mode 1), consumption abroad (Mode 2), commercial presence (Mode 3) and the temporary movement of natural persons (Mode 4).

[2] The debate on the interpretation of this provision goes beyond the scope of this Section. See WTO document S/C/W/75.

(b) The economic impact of the temporary movement of service providers

Liberalization of Mode 4 trade can be expected to generate all the same types of gains as the liberalization of trade in goods. Indeed, the movement of natural persons is a mode for trading a service. It will increase global wealth, favour specialization and a more efficient allocation of resources, foster transfer of technology, encourage innovation, and offer consumers in each country a wider variety of services at lower prices. There are specific effects associated with the fact that it is people and not goods that are moving and that unlike migrations, the movement of people is temporary and not permanent.

(i) Direct welfare effects of Mode 4 movements

The economic consequences of liberalization of temporary movement of service providers are different for the originating country (exporter of services via Mode 4) and the receiving country (importer of services via Mode 4).[3]

Effects in the originating country

For the originating country, liberalization of Mode 4 movements generates benefits and costs. First, benefits can complement and facilitate trade under other modes. Direct personal contacts may help to expand trade in services under other modes by reducing information imperfections and enhancing the credibility of companies and individuals. For example, lawyers (self-employed or working for a law firm) moving abroad to provide their services can make themselves known and increase their credibility. This might then increase the services provided via other modes, such as online (cross-border activity, Mode 1), or may attract new clients who move abroad to purchase their services (consumption abroad, Mode 2). Alternatively, their movement abroad may trigger the idea of investing in the host country, or establishing an office abroad (commercial presence abroad, Mode 3).[4] All these complementarities will contribute to economic activity and national wealth.

Second, Mode 4 mobility is also a way to reduce the pressure on labour markets and wages resulting from a high level of unemployment or an economic slump. In developing countries Mode 4 mobility can be seen as a strategy to fight unemployment. When a worker moves abroad, he will not be part of the originating country's workforce for the period of his stay abroad and this will sustain wages and reduce unemployment. The fact that Mode 4 only refers to temporary movement of persons is not a limit to this policy, as a new person can move abroad when a worker returns home.

Third, Mode 4 is a channel of technology transfer and development of human capital. During their stay abroad, service suppliers accumulate knowledge and experience, both professionally and in terms of the market of the host country. Upon return, they will make their experience available to their home country. They will contribute to their country's growth and development.

Fourth, Mode 4 is a source of financial inflows. Income earned abroad is in large part repatriated and contributes to increasing national wealth. Remittances play an important role in the economy of developing countries both because they are significant in value and tend to be more stable than private capital flows. For example, in 2001 workers' remittances to developing countries were equal to 42 per cent of total FDI inflows to those countries (World Bank, 2003a).

[3] See also OECD (2003d).

[4] The relationship between Mode 4 and the other modes to supply a service is discussed further in subsection (iii). Some evidence on these linkages between modes is also provided.

Finally, from the point of view of individual firms, mobility of workers under Mode 4 is a source of flexibility. Intra-firm transfers may facilitate the spread of the know-how and the standardization of management within a firm. Moreover, Mode 4 movement facilitates outsourcing: companies send people to manage their outsourced operations and service suppliers of the outsourced activity come to the head office to acquire a better understanding of the needs of the company they work for.[5] Increased outsourcing opportunities help firms to adapt to demand fluctuations, reduce some of their costs and favour access to more qualified labour.

Movements of persons under Mode 4 also present some costs for the originating countries. First, if the person moving abroad is a skilled, dynamic and productive worker who is difficult to replace, the originating country faces a temporary production loss due to the lower average productivity of local workers. Second, for the period in which a skilled worker remains abroad, the investment in education undertaken by the individual or by the government is transferred abroad. Third, the originating country bears a cost in terms of forgone tax revenue.[6] Highly-skilled workers earn the highest income and, in consequence, are also the ones paying high taxes. Finally, skilled workers may be in short supply in developing countries. Their movement abroad, even if temporary, may create wage pressure on the home labour market[7] and in some cases greatly limit or effectively remove the supply of essential services.

It is worth noting that, unlike permanent migration, the temporary movement of skilled workers abroad does not constitute "brain drain" (loss of skilled workers) for the originating country, but rather it is a case of "brain circulation" or even accumulation of skills, as skilled workers who temporarily move abroad under Mode 4 will return to their country of origin with more knowledge and experience than before. However, it is possible that higher mobility under Mode 4 increases the probability that workers remain abroad for the long term. Temporary workers abroad may have their temporary work permits continually extended or converted into a permanent work permit.[8] To the extent that the liberalization of temporary movements of workers increases the likelihood of migration, Mode 4 liberalization would also contribute to the "brain drain" and reduce the overall level of human capital in the originating country.

In sum, the overall impact of liberalization of Mode 4 mobility on the level of human capital of a country is ambiguous. It will depend on whether the skills gained from the persons who return to their country of origin after a working experience abroad exceed the skills lost from those workers who permanently migrate abroad.

Effects in the receiving country

From the perspective of the receiving country, temporary labour mobility can be used as a means of dealing with shortages of labour supply in some sectors and increasing firms' flexibility. It may help to address problems generated by demographic specifics (such as insufficient population or ageing population), and to reduce illegal labour market activity.

Many countries recognize the importance of admitting foreign workers to meet labour shortages whether they are due to cyclical or structural factors, or both. The issues associated with labour shortage may be important because (i) human capital shortages can deter investment and thus have a negative effect on growth; and (ii) a lack of skilled workers when the demand for skilled workers is high will increase the latters' wages relative to those of unskilled workers. As a consequence, income inequality within the country will increase. Higher consumer prices may result in lower welfare for the unskilled labour force. Mode 4 mobility can help to alleviate these problems.

5 Note the latter refers to Mode 4 entrants to the home country.

6 The magnitude of this effect will depend on the specific tax treatment of Mode 4 related incomes.

7 This cost can be minimised through appropriate regulation. For example, taking into account that nurses in South Africa and the West Indies are in short supply, the British Government has established a code of conduct (though not binding) banning the recruitment of nurses from these countries (OECD, 2003d).

8 A recent survey carried out by the United Kingdom Home Office, for example, shows that only 28 per cent of the 308 individuals interviewed, who were high-skilled workers holding a work permit, did not intend to extend their permanence in the UK beyond the expiry date of their current work permit.

For example, due to the recent economic boom in the information technology (IT) sector, Western Europe faced a shortage of IT specialists. This shortage created strong wage pressures, resulting in wage increases for IT specialists of over 60 per cent per annum. European firms responded by increasing their outsourcing to non-Western European IT service providers.[9] To alleviate its shortage of technical workers, Germany, for example, initiated in 2000 a Green Card program that would allow (up to 20,000) IT experts from non-EU countries to work in Germany for up to five years.

As recognized above, liberalization of Mode 4 facilitates outsourcing. In particular, it makes a larger pool of service suppliers available to firms, reduces outsourcing costs and favours access to more qualified service suppliers. Outsourcing to self-employed service providers can help a firm to adapt to demand fluctuations. Therefore, it increases a firm's flexibility and favours a more efficient allocation of resources. This benefits the receiving country.[10]

Temporary movement of workers, including service suppliers, may help to alleviate problems caused by specific demographic challenges. For example, the phenomenon of an ageing population, characterizing most developed countries increases the demand for health and domestic services and poses risks to the sustainability of social security systems based on a "pay as you go" structure. The temporary movement of young foreign workers to developed countries may re-equilibrate the share of the working population.[11] Finally, to the extent that the temporary movement of service suppliers may represent an alternative to illegal immigration, liberalization of this mode of supply may reduce the size of the illegal labour market.[12]

One of the main concerns related to the liberalization of the temporary movement of workers, from the point of view of the destination countries, is that foreign workers would be in direct competition with nationals of the host country working permanently in the same occupations. The fact that Mode 4 relates only to "temporary" movements of workers weakens the argument only marginally, as various flows of temporary workers may follow one another. Connected to this is the fear of labour-recipient countries that Mode 4 mobility might be a preliminary step toward permanent migration[13], and that it can lead to higher unemployment.

Indeed, service suppliers moving under Mode 4 might replace domestic workers. Yet this negative effect may be offset by positive effects. First, the income of foreign workers generates wealth in the host country, including in the form of domestic consumption and tax revenue. Second, there is a positive competition effect. More efficient foreign workers may replace less qualified domestic workers, while the latter may specialize in sectors where they have a comparative advantage, thus becoming internationally competitive in that specialization.

In conclusion, the liberalization of trade in services under Mode 4 can generate gains both for the importing and the exporting country. However, it also imposes some adjustment costs, arising from factors such as the temporary unavailability of skilled workers in the labour exporting country and competition between domestic and foreign workers in the labour importing country. In both cases an appropriate regulatory framework would ensure that the benefits of liberalization are obtained and that the flow of workers responds to the needs of the economy, thus minimizing the risk of disruptions in the domestic labour market.

9 Including in the form of cross-border supply of the service (Mode 1) and consumption abroad (Mode 2).

10 A similar argument has been made for the originating country.

11 This argument also holds for permanent migration.

12 This point has been made, for example, by President Bush in the presentation of the US new temporary worker programme on 7 January 2004. Highlights of the presentation can be found in http://www.whitehouse.gov/news/releases/2004/01/20040107-3.html.

13 Permanent migration imposes additional costs in terms of infrastructure (such as schools and housing) and social and cultural integration.

Empirical evidence

Estimates of the economic impact of trade liberalization suggest the possibility of annual gains from Mode 4 liberalization ranging between $150 billion and $200 billion (Winters and Walmsley, 2002 and Rodrik, 2002).[14]

Gains are estimated to accrue both to developed and developing countries, and would come mainly from the movement of low-skilled workers rather than high-skilled workers. The reason is that low- skilled workers are employed in more sectors of the economy, and the cumulative positive effects of liberalization of movements of unskilled workers are larger. The source of these gains is the narrowing gap between wages in rich and poor countries. Therefore, since services prices and wage differentials between developed and developing countries exceed a ratio of ten, whereas for merchandise trade this ratio is equal to two, the gains from liberalization of temporary labour mobility in services are, in general, expected to be greater than those from further liberalization of trade in goods (Rodrik, 2002).

Existing empirical literature on the economic effects of Mode 4 movement is very limited and neglects some important factors. On the one hand, gains (but adjustment costs as well) would be lower if legislation in a country impedes an adjustment of wages downward. In addition, effective gains might be limited by the capacity of absorption of service suppliers by developed countries' labour markets. On the other hand, existing estimates do not take into account the positive spillovers that the returnees would generate for their home countries, such as transfer of experience and investment of money earned abroad. When included, these longer term considerations would further increase gains from Mode 4 liberalization.

(ii) The relationship between Mode 4 mobility and merchandise trade

There are various channels through which the stay of people in a foreign country, both permanently and temporarily, may enhance merchandise trade flows:

• *Preference effect:* The presence of migrants increases the demand for foreign products. Migrants prefer goods they were used to consuming at home. Some of these products might be very difficult to find abroad, and they will import them from their country of origin.

• *Information effect:* Migrants possess knowledge about their country of origin that makes it easier for them to acquire information about profitable international trading opportunities and helps to reduce informal barriers to trade. In other words, migrants can help to reduce demand and supply matching costs. For example, since migrants know consumer preferences in their country of origin, they can inform exporters in the destination country about whether their product could be successfully marketed or whether it needs to be adapted to importers' preferences. Also migrants can help reducing network search costs. Migrants have better connections with the local business network. They can help producers of consumer goods to find better distributors, assemblers to find the best component suppliers and investors to find joint-venture partners.

• *Enforcement effect:* Migrants facilitate a stronger enforcement of international contracts. International transactions are traditionally based on confidence, as delivery and payment may occur at different places. Since migrants have a better knowledge of local business law and practices, uncertainties connected with transactions are reduced.[15]

[14] Winters and Walmsley (2002) estimate the impact of an increase in developed countries' quotas on the inward movement of workers from developing countries equivalent to 3 per cent of the developed countries' total labour force. They find an aggregate gain of $150 billion. Rodrik (2002) estimates the impact of the creation of a temporary work visa scheme, with a quota set at 3 per cent of the developed countries' labour force. Under this scheme, skilled and unskilled workers from developing countries would be allowed employment in developed countries for 3-5 years, to be replaced by a new wave of inflows upon return to their home countries. This system is found to yield a gain equal to $200 billion annually.

[15] See also discussion in Section IID.

Overall, the information and enforcement effect suggest a positive impact of cross-border movement of people on both imports and exports, whereas the preference effect only concerns imports.

A link between immigration, imports, and exports has been found by a number of studies that have used a gravity equation[16] to analyse bilateral trade patterns. Most studies on the impact of labour mobility on trade flows base their empirical analysis on an augmented form of the traditional gravity model, where the effect of migration on trade flows is captured by adding a measure of the migrant stock to the conventional variables (GDP, distance, border, common language). All studies find a positive effect of migration on trade. Estimates of the impact of a 10 per cent increase in migrant population on exports range from 0.13 per cent to 2.5 per cent. The effect on imports range between 0.1 per cent and 3.1 per cent (see Table IB2.1 for an overview). Another recent study, using cross-province variations in international trade and immigration patterns for Canada, shows that the average new immigrant expands exports to his/her native country by 312 dollars per annum and expands imports by 944 dollars (Wagner et al., 2002).

Table IB2.1
Principal studies on the impact of migration on trade

Authors	Sample countries and period	Export elasticity	Import elasticity
Gould (1994)	US and 47 trade partners: 1970-86	0.02	0.01
Head and Ries (1998)	Canada and 136 partners: 1980-92	0.1	0.31
Dunlevy and Hutchinson (1999,2001)	US and 17 partners: 1870-1910	0.08	0.29
Girma and Yu (2002)	UK and 48 partners: 1981-1993	0.16[a]	0.10[a]
Combes et al. (2002)	95 French departments: 1993	0.25	0.14
Rauch and Trinidade (2002)	63 Nations: 1980, 1990	0.21[b]	0.21[b]
Wagner, Head and Ries (2002)	5 Canadian provinces and 160 partners: 1992-1995	0.08, 0.01	0.25, 0.09

[a] Trade with non-Commonwealth countries.
[b] Computed by Wagner et al. (2002) for homogeneous goods. Trade elasticity for differentiated goods is 0.47.
Source: Wagner et al. (2002).

Estimates obtained on the basis of dynamic models also support the prediction of a positive and significant effect of immigration on trade. One study shows that over time, a 10 per cent increase of immigrants to the United States will increase US exports to the country of origin by 4.7 per cent and US imports from the country of origin by 8.3 per cent (Gould as reported in Rauch 2001). Similar estimates for Canada show that a 10 per cent increase in immigrants from a given country increases Canadian exports to that country by 1.3 per cent and imports from the country by 3.3 per cent (Head and Ries, 1998). For the United Kingdom, an increase of 10 per cent in immigrants from a non-Commonwealth country has been estimated to increase UK exports (imports) by 5 per cent (1 per cent) in the long-run, while the effect is found to be insignificant for immigrants from Commonwealth countries (Girma and Yu, 2002).

It is worth noting that, although not very robust, there appears to be some evidence of a stronger link between movement of people and imports than between the movement of people and exports. The fact that information and enforcement effects affect both imports and exports, while the preference effect only affects imports might explain this finding. If this is the case, migration flows could be expected to be linked to a deterioration of the balance of payments.

[16] A "gravity equation" seeks to explain relationships in terms of particular characteristics of trading partners, such as income levels, geographical proximity, historical, linguistic or cultural ties, and so on.

Regarding the temporary movement of people, theoretical considerations suggest that the impact of Mode 4 mobility on trade may be different from that estimated by the literature on migration discussed so far. As far as imports are concerned, a worker moving abroad temporarily might have a higher propensity than a permanent migrant to import from his country of origin, as he or she has probably not yet adapted to local products (stronger preference effect). As regards exports, on the one hand a worker who temporarily works abroad might not stay long enough to acquire the appropriate knowledge of the local market (destination market) to set up new trade links (weaker information effect). On the other hand, (if he stays long enough) on his return to his home country, he might begin to import a product that he has discovered during his stay abroad. Or, a short stay abroad might be needed to establish links with foreign distributors and importers (stronger information effect). Overall, the final effect of Mode 4 mobility on exports may theoretically be higher or lower than that of migration. The question requires empirical analysis.

Existing studies on the impact of labour mobility on merchandise trade flows have measured labour mobility using data on migration. Since Mode 4 only refers to temporary movements of persons providing a service, these studies can only provide a rough indication of the impact of Mode 4 mobility on trade. They fail to capture both the "temporary" nature of this type of labour mobility and the fact that it relates only to movements of workers who provide a "service".

Using a gravity model of trade augmented for the temporary movement of workers, the impact of Mode 4 on bilateral merchandise trade for the United States has recently been estimated.[17] The study finds a positive and significant effect of temporary movements of service providers on merchandise trade. The results suggest that a 10 per cent increase in temporary movement of persons to provide services increases US imports by 2.8 per cent and exports by 2.5 per cent (Jansen and Piermartini, 2004). Both figures fall in the upper range of the estimates relative to migration flows, and there appears not to be a significant difference between the impact of Mode 4 movement on exports and on imports.

(iii) The relationship between trade in services under Mode 4 and under other modes of supply

Liberalization of Mode 4 is likely to affect services trade under other modes. The impact will depend on whether Mode 4 is a substitute or a complement for other modes of supply of a service, or if it is simply the only mode available to deliver the service. There are circumstances where a service can be provided under several modes. For example, a law firm can assist a foreign client by offering consultancy online (Mode 1), or it may request its client to travel for an appointment to the firm's headquarters (Mode 2). Alternatively, the firm may decide to open a partnership abroad (Mode 3), or it may temporarily send a lawyer abroad (Mode 4). In these cases, liberalization of trade under Mode 4 may be expected, other things being equal, to have a negative impact on trade under other modes. Trade under Mode 4 may replace trade under other modes, unless the other modes for supplying a service are also liberalized.

There are other circumstances when the physical presence of the service supplier is necessary to provide the service. The supply of restoration, repair, construction, most health and social services (e.g. midwives or nurses) are all examples where there is a need for proximity between the supplier and the consumer to supply the services. To the extent that the consumer is immobile, in these cases, there is not a clear direct relationship between Mode 4 and other modes to provide a service.

On the other hand, there are circumstances where temporary movement of people may actually complement trade in services under other modes. In these cases, a positive relationship between liberalization of temporary movement of persons who provide a service abroad and services trade under other modes can be expected. For example, direct preliminary contacts with a client might be needed for a lawyer to acquire credibility and establish a permanent business link which can eventually lead to other advisory work provided online (Mode 1) or can attract new clients to travel abroad to consult that lawyer (Mode 2).[18] Also, liberalization of Mode 4 facilitates

[17] Data on Mode 4 used in the study are obtained from national statistics as explained in Subsection IB2.d.(ii).

[18] The business visitor category in many WTO Members' schedules envisages precisely this type of movement.

offshore outsourcing by allowing firms to send people to familiarize themselves with their service suppliers and manage outsourced operations. The service will then be supplied online (Mode 1).

Similarly, it is plausible to expect complementarities between the temporary movement of persons who provide a service and commercial presence abroad (Mode 3). First, direct contacts established with clients in a foreign country via Mode 4 may provide the incentive to set up an affiliate there, or previous direct relationships with executive managers of a foreign company may be a prerequisite for decisions on acquisitions or mergers. Second, a company that has an affiliate abroad may need to send workers there (intra-firm transfer) to standardize the management, to spread know-how, or to provide some temporary assistance. Third, a local company may sign a construction contract with a foreign company, involving movement of workers (Mode 4), including unskilled workers, and the establishment of a commercial presence (Mode 3). Fourth, market access barriers to the movement of natural persons, such as visa conditions requiring that a commercial presence is established, can render Mode 3 and 4 complementary. Insofar as liberalization of Mode 4 increases temporary movement of persons who move to provide a service, it may also enhance trade under Mode 3 and vice versa.

The experience of the IT industry in India indicates that Mode 4 is associated both with more inward and more outward foreign investment. During the 1990s there was a large flow of Indian professionals to the United States, the bulk of whom were IT specialists. Over the same period, multinationals and non-resident Indian investment in the Indian IT industry has risen, and the share of US-based non-resident Indians' collaborations in India's IT sector has reached a significant 40 per cent. Many Indian IT professionals who have worked in the United States have had a significant influence on the decision of US multinationals to set up activities in India. At the same time, the large flow of knowledge and technology spillovers, including associated with Mode 4 exports, has facilitated the development of the IT industry in India. Subsequently, Indian IT companies, such as Wipro and Infosys, have established subsidiaries abroad or partnerships, thus engaging in Mode 3 exports (Rupa Chanda, 2003).

Overall, theoretical considerations suggest that the relationship between trade in services under Mode 4 and under other modes is ambiguous. The impact of liberalization of Mode 4 on trade in services under other modes is likely to differ across sectors and economic activities, and it will depend on whether substitution or complementary effects dominate. Whether the overall impact of liberalization of Mode 4 on trade under the other modes is positive or negative is therefore a question that requires empirical investigation.

A recent study estimates the relationship between trade in services under Mode 4 and under the other modes (Jansen and Piermartini, 2004).[19] Bilateral trade in services under the various modes is modelled on the basis of the traditional gravity equation augmented by a measure of temporary movement of workers. Table IB2.2 presents the results of these estimates. It is found that a 10 per cent increase in the temporary movement of people increases services imports (exports) under Mode 1 by 3.1 (2.9) per cent, and it is linked to higher foreign direct investment inflows (8.3 per cent) and outflows (3.5 per cent). These flows are taken as a proxy for trade in services under Mode 3. Lack of data makes it very difficult to establish causality between Mode 4 and FDI flows. The relationship between FDI and Mode 4 runs in two directions – larger temporary movement of persons leads to larger flows of FDI and vice versa. The large coefficient for the relationship between Mode 4 and Mode 3 reflects the fact that at present liberalization of Mode 4 is generally linked to commercial presence abroad. No significant relationship is found between services trade under Mode 2 and Mode 4.

Table IB2.2
The relationship between Mode 4 and the other modes of services trade

	Mode 1		Mode 2		Mode 3	
	imports	exports	imports	exports	imports	exports
Mode 4	0.31***	0.29***	0.18	-0.05	0.83**	0.35*

Note: ***, **, * denotes when the coefficient is significant at the 1, 5, 10 per cent significance level, respectively.
Source: Jansen and Piermartini (2004).

[19] Due to the lack of data, this study only refers to the United States and the United Kingdom.

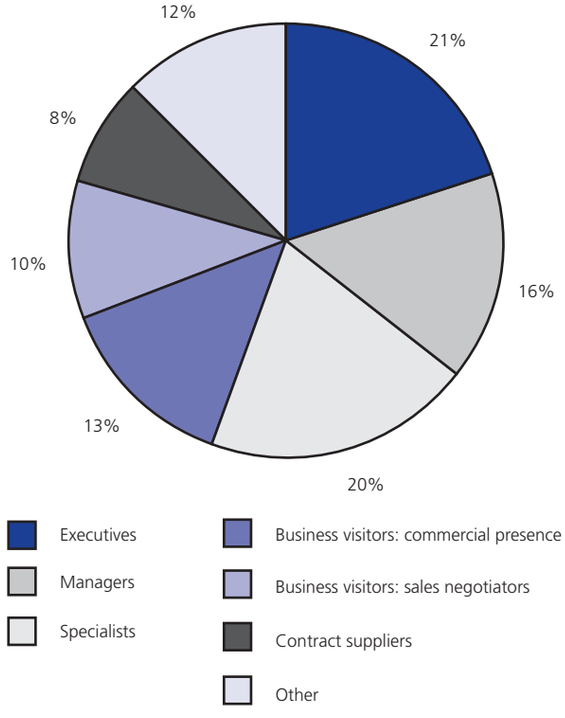
(c) Restrictions to the temporary movement of natural persons and liberalization efforts under GATS

Economic, social and cultural considerations have induced governments to intervene to restrict the mobility of workers across countries. There are a variety of measures that constitute barriers to Mode 4 trade.[20] With a view to protecting local labour markets, many countries have introduced quantitative restrictions on the movement of workers and/or economic needs tests. The latter imply that domestic employers have to prove that no domestic worker is available to do the relevant job in order to be able to employ a foreign worker. Such procedures are time consuming and costly for employers, making it significantly less attractive to hire foreign workers as opposed to domestic ones. The issuance and renewal of visas and work permits is often cumbersome and expensive, resulting in costs for both employers and foreign employees.

Double taxation burdens placed on foreign workers and the non-portability of pension and other social contributions lower the attractiveness of temporary employment abroad. Skilled foreign workers also often face difficulties to obtain appropriate recognition of their qualifications, educational degrees, training and experience.

In the Uruguay Round, Members undertook commitments to liberalize trade in services including on the movement of natural persons. The results of these negotiations form part of the General Agreement on Trade in Services (GATS). The structure of the GATS allows Members to specify the categories of persons (as service suppliers) in respect of which it wishes to grant access. Members decide in the course of negotiations whether they want to liberalize particular categories of temporary foreign labour supply and are entitled to do so partially or conditionally if they so wish. Any conditions attached to agreed liberalization measures are laid down in the so-called "national schedules of specific commitments."

Chart IB2.1
Mode 4 commitments: breakdown by categories of natural persons
(Percentage)



Note: Percentages are based on the number of entries by WTO Members that have made commitments on Mode 4 in the horizontal section of their GATS schedules.
Source: WTO.

The GATS thus provides Member Governments with a flexible mechanism to liberalize the movement of natural persons in the sense that it offers a wide range of tools to specify the exact contours of this liberalization. Commitments lead to a higher level of predictability and transparency in Mode 4 trade. Unilateral schemes of Mode 4 liberalization, for instance, have the disadvantage that they can be revoked whenever the receiving country wishes.

In 2004, 108 out of a total of 147 Members had made horizontal commitments for the liberalization of the temporary movement of natural persons.[21] A majority of these Members chose to specify certain categories of natural persons to which their commitment applied. Approximately 15 per cent of all schedules did not specify any categories but merely referred to general requirements for entry. The number of categories of natural persons referred to in the remaining 85 per cent

[20] See also World Bank (2003a).

[21] A horizontal commitment applies to a list of specified economic sectors. The remaining 39 Members have thus not made any commitment at all or only specific commitments, i.e. commitments limited to one sector.

of schedules is very limited and mainly refers to high-skilled workers. Categories include i) intra-corporate transferees (ICTs) who may be executives, managers, or specialists; ii) business visitors; iii) contract service suppliers; and iv) other high-level management officials/specialists not clearly indicated as ICTs. Chart IB2.1 illustrates how the total of 328 entries by Members is distributed over the different categories. Only a very small fraction of scheduled entries under GATS could be considered to refer to low-skilled workers.[22] The chart also reveals that intra-corporate transferees account for the highest proportion of commitments, at 69 per cent. This reflects a strong link between Mode 4 liberalization and wider FDI attraction objectives.

An interesting feature of the liberalization of temporary movement of natural persons under GATS is that the term "temporary" is not defined in GATS. Only about one third of the Members have specified maximum periods of stay for persons covered by Mode 4 in their schedules of commitments.[23] Specified periods tend to be longer for intra-corporate transferees, with 88 per cent of commitments allowing either at least 36 months or not specifying a time limit (Table IB2.3). On the other hand, business visitors are allowed to enter for considerably shorter periods: 60 per cent of commitments for this category restrict entry to less than three months. This is in line with the nature of the task to be performed.

Table IB2.3
Mode 4 commitments by allowed duration of stay and by category of natural persons
(Number)

Duration of stay	Intra-corporate transferees			Business visitors	Contract suppliers	Other
	Executives	Managers	Specialists			
Less than 36 months	10	10	13	58	12	0
36 months or more	28	29	30	1	0	1
Unspecified	42	58	58	34	0	16
Total	80	97	101	93	12	17

Note: Entries in GATS schedules containing Mode 4 commitments in the horizontal section on duration of stay, as of April 2004.
Source: WTO.

It has been mentioned above that Governments may impose a variety of restrictions on the movement of natural persons. In their schedules of specific commitments, Members are required to inscribe those regulatory measures that are either "market access" restrictions or discriminatory (national treatment inconsistent) measures. As the presence of each type of natural persons affects labour markets differently and, more generally, has different economic effects on recipient countries, limitations tend to be stated in terms of categories of workers.

As most commitments under Mode 4 refer to intra-corporate transferees, it is hardly surprising that this category contains the largest number of market access limitations. Pre-employment is the most common condition affecting intra-corporate movements. Frequently, commitments require that the transferee must have been working for the company for at least one year prior to his transfer to the host country. Domestic minimum wage restrictions, which prevent firms from paying lower wages to foreign workers, are also important. Normally these are tied to other similar measures related to domestic work conditions, such as working hours and social security regulations. These measures seek to avoid damaging effects in the host economy, like downward pressures on wages or increases in unemployment. They reveal that countries are willing to allow firms to move employees from abroad only where these are indispensable for strategic business reasons. Numerical quotas are also common in the category of intra-corporate transferees. References for establishing quotas include a firm's total or senior staff, or even a country's total workforce. Links with Mode 3 (commercial presence of firms in the host economy) also figure among the entry restrictions. Economic needs tests (ENTs) are also frequent for this category. It is interesting to note that for most Members maintaining ENTs, criteria for the application of the tests have not been specified. Technology transfer clauses are present

22 Definition of low-skilled workers as in WTO (1998a).

23 Note that this lack of definitional clarity makes it difficult to measure Mode 4 flows, as the definition of "not permanent" workers in national and international statistics on labour movements does not necessarily correspond to the one specified in Members' GATS schedules. See subsection (d) and (e) on the measurement of Mode 4 flows.

in around a quarter of commitments referring to this category. They suggest that some form of spillover or productivity effect is expected from the presence of foreign natural persons. Finally, some Members have specified that they reserve the right to suspend commitments in the event of labour-management disputes.

Table IB2.4
Entry restrictions by category of natural persons
(Number)

	Intra-corporate transferees			Business visitors	Contract suppliers	Other
	Executives	Managers	Specialists			
Economic needs tests	5	20	24	0	0	6
Pre-employment	39	37	40	6	0	1
Link to Mode 3	7	12	12	0	0	0
Numerical limits	20	20	25	4	0	8
Minimum wage	15	15	15	0	1	0
Absence of disputes	4	7	6	4	1	1
Technology transfer	8	9	13	0	0	2

Note: Entries in GATS schedules containing Mode 4 commitments in the horizontal section with market access limitations, as of April 2004.
Source: WTO.

The most common national treatment limitations scheduled by Members relate to fiscal measures. Most important is the restriction on the granting of subsidies only to domestic nationals, which particularly affects intra-corporate transferees and business visitors. Such limitations may act as important factors in discouraging foreign workers from working in the host economy. Real estate limitations restrict foreigners from buying property in the host economy. Mobility restrictions – geographical as well as sector-based – prevent multinational employees from moving between firms. Both aim at preventing international workers from staying for long periods, highlighting the temporary character of GATS Mode 4 commitments.

Table IB2.5
Discriminatory measures by category of natural persons
(Number)

	Intra-corporate transferees			Business visitors	Contract suppliers	Other
	Executives	Managers	Specialists			
Real estate	10	11	10	10	1	5
Subsidy	25	26	26	39	1	2
Foreign exchange	1	1	1	0	0	0
Borrowing	0	0	0	0	0	1
Taxation	4	6	7	2	0	1
Mobility restrictions	2	2	2	4	0	0

Note: Entries in GATS schedules containing Mode 4 commitments in the horizontal section with national treatment limitations, as of April 2004.
Source: WTO.

To sum up, the particularities and levels of Mode 4 liberalization under GATS vary across Members. Nonetheless, a number of common features can be extracted. The first main feature is the limited degree of liberalization overall. Current commitments refer to a limited number of specific and detailed categories of workers. Furthermore, Mode 4 commitments are characterized by a relatively high number of restrictions concerning market access and national treatment. The second main feature is the strong bias towards movement of skilled service providers. Only a small fraction of the categories of natural persons referred to in existing commitments can be identified as covering low-skilled workers. Last but not least, Mode 4 liberalization under GATS reflects a strong link with the wider objective of attracting foreign investment, as the highest number of commitments has been made for intra-corporate transferees.

(d) Importance of Mode 4 flows

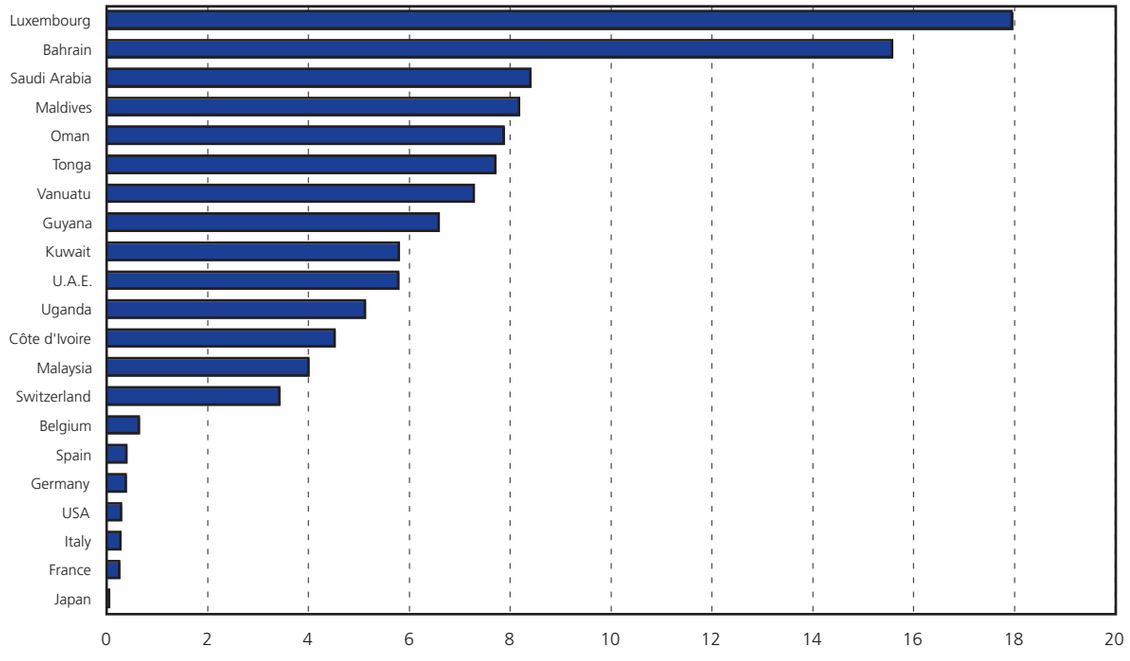
Since the entry into force of GATS in 1995, no comprehensive statistical framework for the measurement of the movement of natural persons has been developed. At present, there exists no systematic data collection by regional or international organizations for data on temporary labour movements. Countries follow different classifications and compilation methodologies, thereby hindering cross-country comparability. This lack of reliable and comparable international statistics makes it difficult to measure the importance of Mode 4 trade flows.

(i) Measuring Mode 4 trade with BOP data

The Balance-of-Payments (BOP) indicators "compensation of employees" and "workers' remittances" provide, for a large number of countries, internationally comparable quantitative information on the movement of workers across countries (for definitions, see Box IB2.1).

The ratio of the sum of payments of compensation of employees' and of workers' remittances to GDP sheds some light on the impact of the use of a foreign labour force on the economy (Chart IB2.2). For Luxembourg, this ratio reached 18 per cent of GDP in 2002, mainly due to compensation paid to its large number of border workers. Chart IB2.2 reveals that employing a foreign labour force is economically significant in Arab Gulf countries, where the ratio varies between almost 6 per cent for Kuwait and 16 per cent for Bahrain. It is worth noting that, in 2002, Saudi Arabia and the United Arab Emirates ranked second and third as world contributors of remittances. By contrast, in the United States, which is the leading source of remittances in the world, hiring of foreign workers represented a share of only 0.3 per cent of GDP.

Chart IB2.2
Ratio of compensation of employees' and workers' remittances payments to GDP, 2002
(Percentage)



Source: IMF (2004) and national statistics.

Box IB2.1: Balance of payments and Mode 4

The BOP current account indicators "Compensation of employees" and "Workers' remittances" cover labour-related income flows between the residents of an economy and the rest of the world, whereby a person is considered as resident when he or she stays for a year or more.

i) Compensation of employees comprises "wages, salaries, and other benefits, in cash or in kind, and includes those of border, seasonal, and other non-resident workers" (BPM5, p.169).

Limitations for measuring Mode 4:

- Temporary workers employed in any economic sector are covered (i.e., not specifically in the services sectors) thus overestimating Mode 4.
- Limited to workers staying abroad for less than one year, while Mode 4 covers employment of up to 5 years.
- Includes border workers.
- The country of origin of the foreign workers is rarely specified.
- Covers categories of workers excluded from Mode 4 (i.e., local employees of embassies).
- It does not distinguish whether a foreign worker is employed by a foreign or domestic company in the host country.

ii) Workers' remittances refer to current transfers of migrant workers who are employed in a foreign economy in which they are residents (BPM5, p.302).

Limitations for measuring Mode 4:

- Remittances represent only the portion of workers' compensation saved and sent back to the home country.
- Also covers transfers made by permanent migrants, which are excluded from Mode 4;
- A significant portion of remittances do not flow through official channels and may not be recorded in the figures at all.
- They relate to foreign workers employed in any economic sector, not specifically the services sectors.

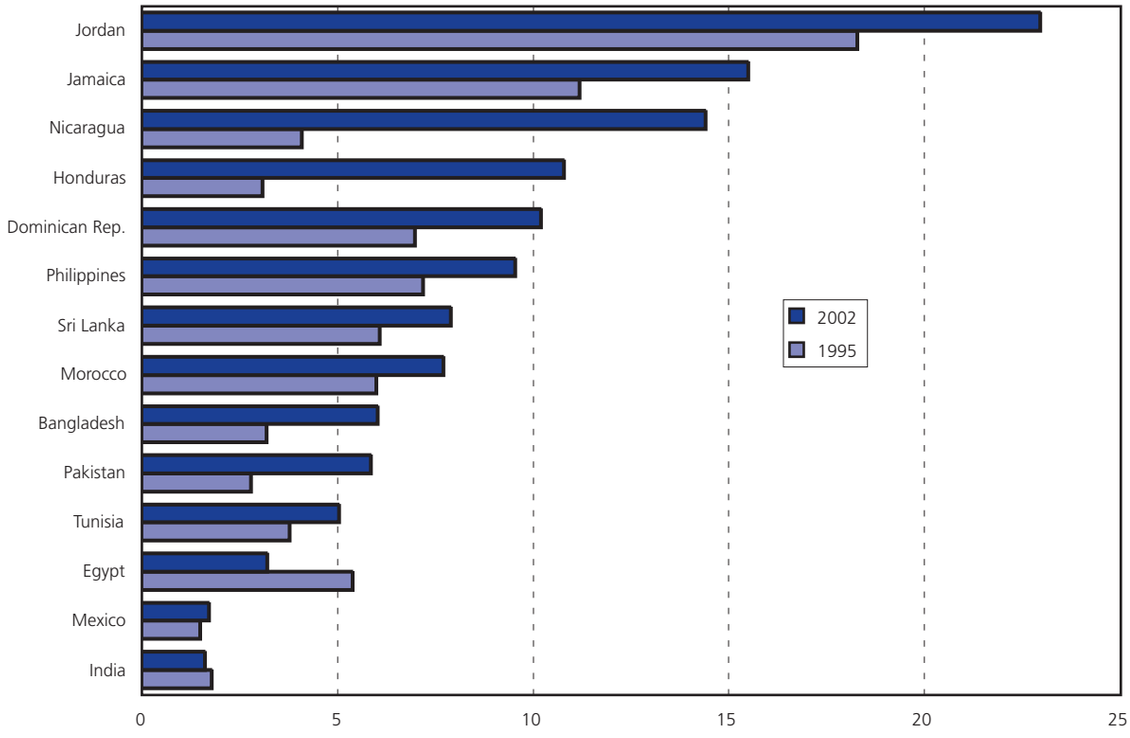
Within the BOP capital account *migrants' transfers*, covering the flow of goods and changes in financial assets associated with international migration, could also provide supplementary indirect information in relation to Mode 4.

Source: IMF, Balance of Payments Manual, 5th edition 1993 (BPM5).

Chart IB2.3 shows the growing importance of remittances and compensation of employees for selected developing countries in relation to their GDP. In general, in comparison to 1995, the ratio has increased for almost all the countries represented in the Chart.

In 2002, Jamaica's and the Dominican Republic's ratios to GDP peaked at 16 and 10 per cent, respectively. These ratios represented a contribution to GDP which is comparable to the weight of tourism in these countries. Compared to 1995 figures, these ratios have increased on average by 40 per cent. A marked upward trend can also be observed for other countries in Latin America. A similar scenario applies to several labour-exporting countries in Asia and Africa. In 2002, for Bangladesh and Pakistan, this ratio doubled (up to 6 per cent of GDP) and in the Philippines, Morocco and Tunisia it increased by 30 per cent.

Chart IB2.3
Ratio of compensation of employees' and workers' remittances receipts to GDP, 1995 and 2002
(Percentage)



Source: IMF (2004) and national statistics.

(ii) Measuring Mode 4 trade using national statistics

The BOP statistics on compensation of employees' and workers' remittances allow an international assessment of the impact of labour migration on the economy of major labour importing and labour exporting countries. However, these indicators do not provide specific information on foreign workers employed in services.

Labour, migration, and census statistics of selected countries often provide a higher level of detail on the employment of foreign workers. In some instances, they only contain the total number of foreign workers in services, mainly employees, and their distribution among various economic sectors. Others specifically identify foreign employment in services on a temporary basis. In some cases, it is also possible to gather information regarding the number of temporary foreign workers by economic activity and/or occupation, and their estimated average earnings, which makes it possible to estimate the size of a country's Mode 4 trade in services.[24]

For the present study, workers covered by the definition of Mode 4 of the GATS are considered to be those working in services industries or holding a service-related occupation both in domestically-owned and in foreign firms for a maximum period of five years.

For a restricted number of developed countries, the number of temporary work permits/visas granted in a specific year to foreign workers can help in assessing the magnitude of these transactions.[25] As most data available refer to 2000, this year is taken as a reference.

[24] When analysing national labour and migration statistics, it is important to note the distinction between "stock" and "flows". Stock data indicate the number of foreign workers in a country at a precise time of the year. Inflows cover, in a specific year, only newly arrived foreign workers but not those who had previously entered the country and continue to be employed.

[25] Data generally refers to visa or work permits granted, yet this might not reflect the true number of employed foreigners.

In the United States, the H-1B visa for "Professional workers in specialty occupation", such as computer specialists or fashion models from foreign countries, is also mentioned in the US schedules of GATS commitments within Mode 4. Initially, H-1B visas are granted for a period of up to three years, but can be extended for an additional three years. This analysis concentrates exclusively on H-1B visas granted for initial employment.

In 2000, some 136,800 new petitions were approved for initial employment, mainly in computer-related occupations.[26] The second largest group was electrical/electronics sector workers, industrial engineers, and architects, followed by specialized administrative occupations, such as accountants and specialist auditors in related services industries. According to Table IB2.6, the United States appears to have been affected by a lack of computer and information technology experts, a gap that was filled mainly by Indian temporary workers.[27] Additional information regarding foreign workers' occupations is contained in the Appendix Table IB2.1.

Although these data may present some limitations, statistics on occupations and average compensation earned by H1-B visa holders allow an estimate of the overall value of these inflows. US imports of services delivered by newly entered professionals in special occupations are estimated at about $6.5 billion in 2000, approximately 0.1 per cent of the GDP of the United States.[28] Of this amount, some $3.6 billion was generated by foreigners who were already living in the United States when they were granted the temporary employment visa (often previously students).

Table IB2.6
United States: Computer-related Mode 4 imports by major country, 2000[a]
(Numbers and million dollars)

	Approved H-1B petitions	Mode 4 imports (Value)
Total services	**136787**	**6500**
Computer-related (All origins)	74551	3730
India	50827	2540
China	5725	260
Philippines	1217	60

[a] Fiscal year.

Source: US Immigration and Naturalization Services (2002) and WTO estimates.

Although data on the number of foreigners working in the United Kingdom are available, estimated in 2002 at 1.4 million individuals, it is very difficult to determine exactly what proportion of these would be covered by the Mode 4 definition. In 2000, the United Kingdom granted some 64,500 new work permits and first permissions for up to five years to non-EU workers.[29] One third of them covered short-term employment of less than one year. The majority of the permits which may fall under the definition of Mode 4 were granted to workers in computer-related, management, and business services industries.

Estimates show that in 2000 services imports through the movement of this non-EU temporary workforce amounted to nearly $2.5 billion, equivalent to 0.2 per cent of the UK's GDP (Table IB2.7). Overall, newly arrived Indian workers created services worth nearly $550 million. More than half of this was generated by computer analysts and programmers. However, the impact of these inflows was not significant in terms of total employment, as newly arrived foreigners represented some 2 per cent of employees in the sectors concerned.

26 Data refer to fiscal year 2000 (1 October 1999 to 30 September 2000).

27 In fiscal year 2003, the number of H-1B petitions approved for initial employment was 105,314. The occupational breakdown is not yet available. In fiscal year 2002, petitions approved for initial employment in computer-related occupations continued to represent the largest group, however, their number declined significantly from 74,551 to 25,637. US Department of Homeland Security (2003a, 2003b).

28 WTO estimates.

29 It should be noted though that self-employed temporary workers are not included in this category of work permits. Work permit extensions, which are granted for an additional five years, or requests for changing employers are not included in this analysis. In 2000, some 13,500 extensions and 7,300 change of employment applications were approved. According to national sources, on average, a quarter of long-term work permit holders, have settled permanently in the United Kingdom. All categories of temporary entrants in the United Kingdom are allowed to apply for permanent settlement after four years of work in the country (UK Home Office, RDS, 2001).

By contrast, in selected Arab Gulf countries, foreign workers represent between 67 and 90 per cent of total employment in the private sector.[30] In 2000, in Saudi Arabia, Kuwait, Oman and Bahrain, the private sector employed some 3.4 million foreign workers, of which, on average, 80 per cent were engaged in services-related activities. Although statistics are not available for the United Arab Emirates, the high ratio of workers' remittances to GDP suggests the presence of a large foreign labour force.

Table IB2.7
United Kingdom: Computer-related Mode 4 imports by major country, 2000
(Number and million dollars)

	Temporary work permits	Mode 4 imports (Value)
Total services	**64574**	**2500**
Computer-related (All origins)	10470	460
India	5973	260
United States	1404	61
China	108	5

Source: Research, Development and Statistics Directorate, UK Home Office (2001).

In general, half of the foreigners present – originating primarily from India, Pakistan, the Philippines, and Arab countries – work in the region for less than five years. For example, a Filipino worker's average length of employment is two years. According to WTO estimates, in Saudi Arabia, Kuwait, and Bahrain this temporary workforce, which may fall under the definition of Mode 4, amounts to more than one million people. Its contribution to total employment is significant. In Saudi Arabia, some 700,000 Mode 4 foreign workers represent more than one third of total employment (national plus foreign) in private services industries, more or less evenly spread among different activities. In Bahrain, the estimated stock of Mode 4 workers accounted for 65 per cent of total employment in private services industries. Temporary foreign workers are concentrated in the wholesale and retail trade, and hotels and restaurants, accounting for over half of total services-related employment. Workers in the construction industry account for a further 23 per cent of that total. For details on the sectoral distribution refer to Appendix Chart IB2.1.

It is estimated that in 2000, the value of imports of commercial services through the temporary movement of persons exceeded $5 billion in Saudi Arabia, and $1.4 billion in Kuwait. These estimates represent 3 per cent of GDP for Saudi Arabia and 4 per cent for Kuwait. For Bahrain, imports of commercial services were estimated at some $700 million in 2001, amounting to about 9 per cent of the country's GDP and more than half of the remittances sent by foreigners to their home countries that year.

Table IB2.8
Stock of Mode 4 foreign workers in selected Arab Gulf countries, 2000

	Number of workers	Percentage of services employment	Mode 4 imports (million dollars)
Saudi Arabia	700000	35	5100
Kuwait	272250	...	1500
Bahrain[a]	81600	65	700

[a] Refers to 2001.
Source: WTO estimates based on national statistics.

(iii) The relative size of service trade via Mode 4 and Mode 1

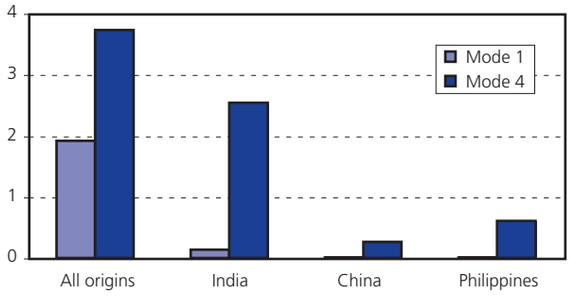
No trade in services data are available broken down by modes of supply. However, the recently-developed "Manual on Statistics of International Trade in Services" (European Commission et al., 2002) proposes, as a first step, a number of simplified rules which enable a rough approximation of trade in services to be made by modes of supply on the basis of available balance of payments and foreign affiliates trade in services (FATS) statistics.[31]

On the basis of this approach, the value of total US imports of computer services delivered through Mode 4 by newly arrived H-1B computer specialists is roughly double the size of the estimated cross-border delivered services (Chart IB2.4). This would suggest that Mode 4-created trade can be of considerable importance in specific services sectors.

[30] Saudi Arabia Department of Statistics; Kuwait Ministry of Planning; Kingdom of Bahrain, 2001; Oman Ministry of National Economy, 2002.

[31] Certain BOP services transactions can be allocated to more than one mode of supply, e.g. computer and information services, and other business services could be delivered through Mode 1 or Mode 4.

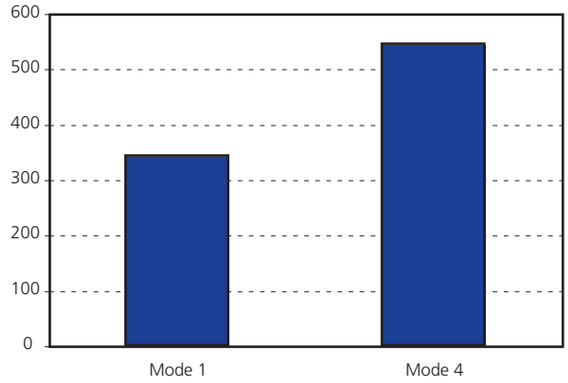
Chart IB2.4
United States: Computer services imports by mode of supply and selected country, 2000[a]
(Billion dollars)



[a] Refers to the fiscal year.
Source: IMF (2004) and WTO estimates.

An analysis of computer-related services flows between the United States and various developing countries appear to support this observation. In 2000, computer and information technology services imported cross-border by the United States from India reached only $135 million.[32] According to WTO estimates, the total imports of computer services delivered by Indian professionals amounted to some $2.5 billion. Similarly, United States cross-border imports of computer services from China and the Philippines were almost insignificant, at $9 million and $10 million respectively.[33] Estimated computer-related services delivered through Mode 4 in 2000 by Chinese and Filipinos are, respectively, some $260 million and $60 million. In 2000, total imports of commercial services of the United Kingdom from India were around $850 million.[34] A comparison by estimated modes of supply reveals that UK imports from India via Mode 1, which is estimated at some $340 million, were significantly lower than those through Mode 4 (Chart IB2.5).

Chart IB2.5
United Kingdom: Commercial services imports from India by mode of supply, 2000
(Million dollars)



Source: OECD (2003e) and WTO estimates.

In sum, the limited availability of data on temporary foreign workers allows estimates for service trade under Mode 4 for only selected labour importing countries and in some cases covers only a fraction of the foreign temporary working population. However, despite these limitations, estimates appear to contradict the common belief, at least for specific sectors, that commercial services trade through Mode 4 is small. In the case of the United States, for example, computer services imports through Mode 4 were in 2000 substantially higher than those estimated to have been delivered through Mode 1. The same finding applies to the exports of computer services of various developing countries to the United States.

Furthermore, the example of India has stressed that estimated commercial services exports through Mode 4 can be greater than cross-border trade (Mode 1). These preliminary conclusions point to the economic importance for developing countries of the movement of natural persons as a mode of supplying services internationally.

32 US Department of Commerce (2004), Bureau of Economic Analysis.
33 US Department of Commerce (2004), Bureau of Economic Analysis.
34 OECD (2003e).

(e) Who moves where?

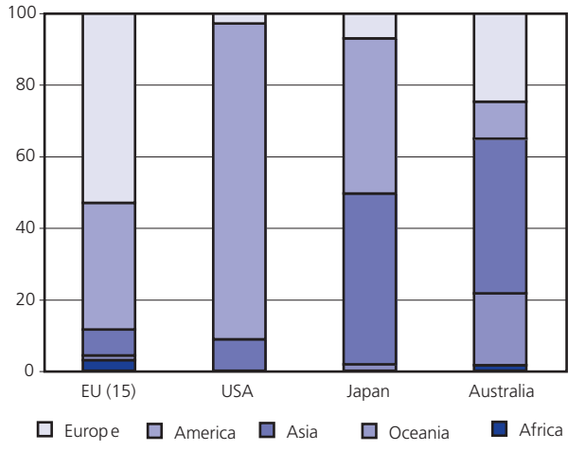
(i) Short-term labour migration: when proximity plays a role

The geographical breakdown of the BOP indicator on compensation of employees provides information on the key regions and countries of origin of temporary migrants working abroad for less than one year (Chart IB2.6). An overview of the largest industrialized economies by region would suggest that, in general, the biggest share of compensation is paid to employees from countries within the same region. In the case of the European Union, for example, more than half of its extra-EU payments, amounting to some $5.5 billion, are paid to workers originating from other non-EU European states, while payments to American workers represent about 30 per cent. For the United States, over 90 per cent of its payments are for employees from other countries in the region. Japan offers a more diversified scenario, with half of the total compensation paid to Asia and most of the rest to North and South American countries. Australia has significant shares of workers from Asian, Oceanian and European countries.

An analysis of labour-related income flows by economic group shows that short-term labour migration takes place, in varying degrees, among developed countries as well as between countries at different stages of development.

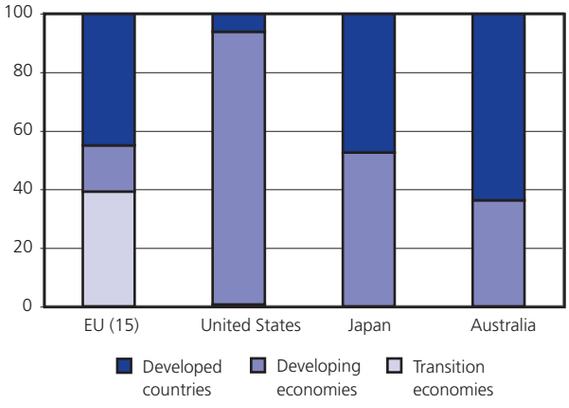
In addition to geographical proximity, a key factor in determining the temporary movement abroad of workers is the presence of bilateral or regional agreements facilitating their entry in the host country. For example, the importance of transition economies as providers of short-term labour to the EU is due to bilateral agreements signed mainly by Germany with a number of Central and Eastern European countries since 1991.[35] Chart IB2.8 suggests that the presence of specific labour agreements has facilitated larger temporary movements. In 2000, about 230,000 Polish workers were employed seasonally in agriculture, forestry, hotels, and catering (OECD-SOPEMI, 2002).

Chart IB2.6
Temporary foreign workers in selected economies by region, 2000
(Percentage)



Note: Based on payments of compensation of employees. Europe includes Western Europe and transition economies. America includes North America and Latin America. Data for EU (15) exclude compensation paid to workers from EU member states. For USA, Asia includes also Oceania and Africa.
Source: National statistics.

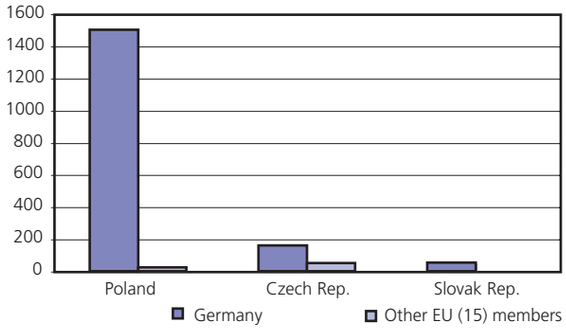
Chart IB2.7
Temporary foreign workers in selected economies by economic area, 2000
(Percentage)



Note: Based on payments of compensation of employees. Data for EU (15) exclude compensation paid to workers from EU member states.
Source: National statistics.

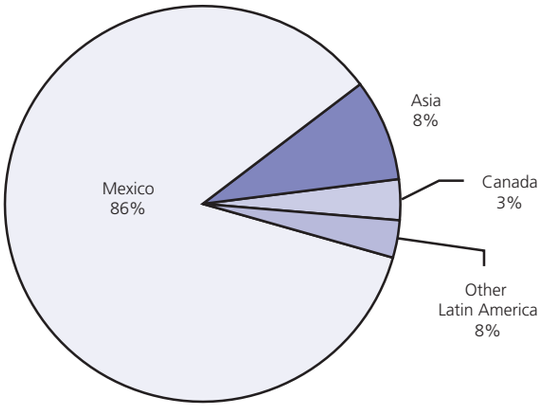
[35] Agreements exist with Poland, the Czech Republic, the Slovak Republic, Bulgaria, Romania, Hungary, Croatia, and Slovenia.

Chart IB2.8
Temporary foreign workers in Germany and in other EU members from selected transition economies, 2000
(Million dollars)



Note: Based on payments of compensation of employees.
Source: Eurostat.

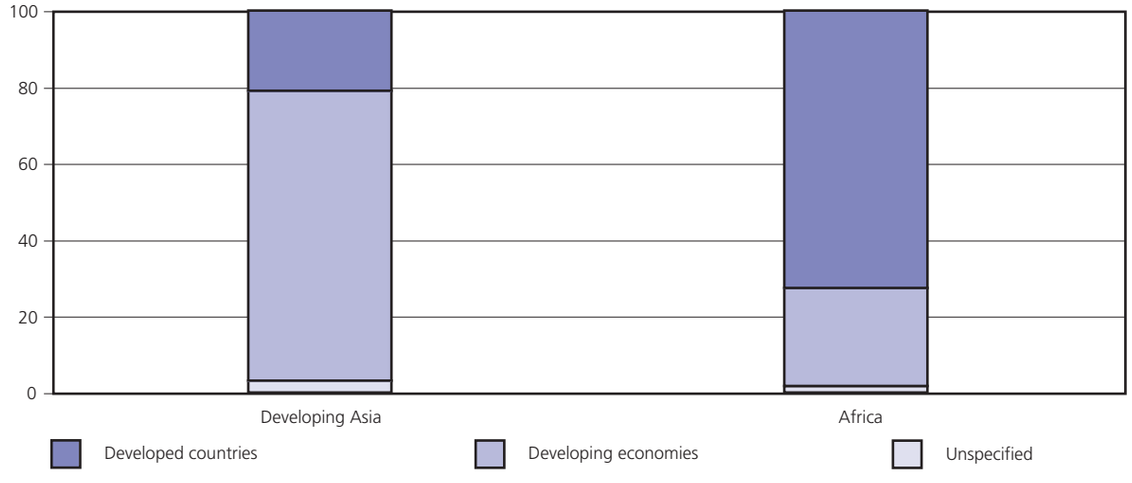
Chart IB2.9
United States: Payments of compensation of employees by origin, 2000
(Percentage)



Note: Based on payments of compensation of employees. Compensation to Asia includes also Africa.
Source: US Department of Commerce (2003).

In the United States, compensation is paid primarily to temporary Mexican workers. According to US immigration statistics, Mexicans were the main beneficiaries of short-term employment visas followed, at a distance, by Jamaicans. These workers held mainly low-skilled occupations in agriculture, and as services workers in private households and hotels and restaurants. Compensation to Canadian workers represented 3 per cent of the total.

Chart IB2.10
Workers' remittances receipts of developing Asia and Africa by economic area, 2000
(Percentage)



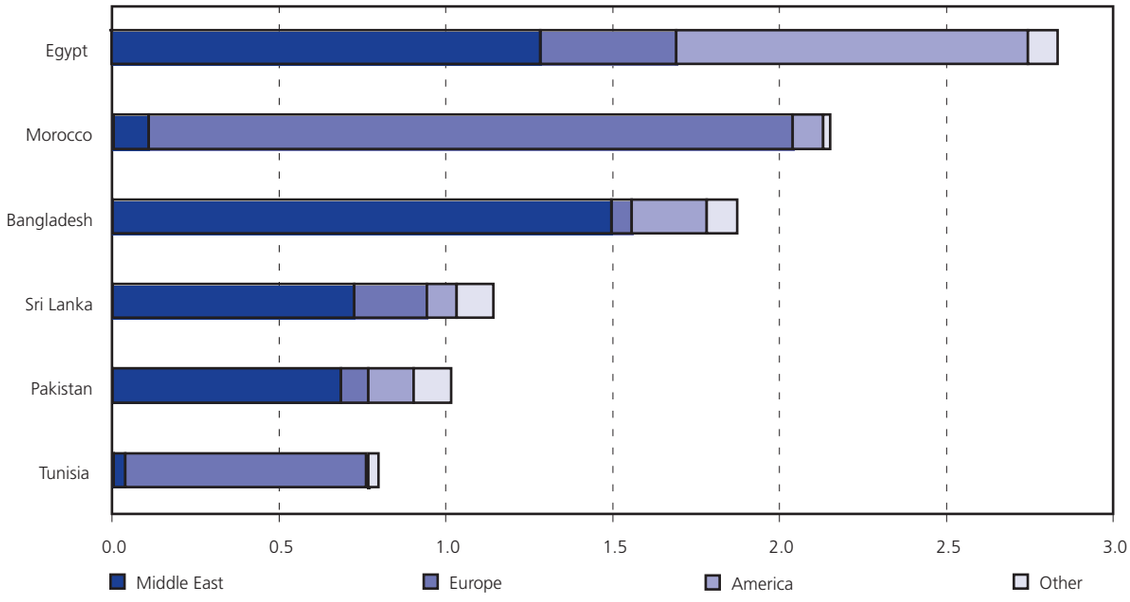
Source: WTO estimates based on national statistics.

(ii) International labour migration: not simply a North-South issue

The geographical breakdown of workers' remittances received by selected developing countries suggests that labour migration is not a straightforward North-South issue. While some developing economies, such as North African countries, benefit largely from money sent home by their nationals employed in developed countries, others receive their largest portion of remittances from other developing countries.

Chart IB2.11 shows that between 60 and 80 per cent of the total remittances of Bangladesh, Sri Lanka and Pakistan originate from the developing Middle East, predominantly the Arab Gulf countries. For example, one third of Pakistan's total remittances originated from Saudi Arabia alone. This share reached 50 per cent in the case of Bangladesh. For these countries, remittances from developed regions, such as Europe and North America, although present, have marginal importance. By contrast, in North Africa, Moroccan and Tunisian remittances originated predominantly from Europe, mainly France and Italy. Finally, more than 40 per cent of Egyptian remittances originated from Arab Gulf countries, and the rest from the United States and European countries.

Chart IB2.11
Workers' remittances receipts of selected developing countries by region, 2000
(Billion dollars)



Source: National statistics.

National statistics confirm these migration patterns. The vast majority of contract workers from India, Bangladesh, and Sri Lanka went to the Middle East, mainly to Saudi Arabia, Kuwait, and the United Arab Emirates for temporary employment. According to the Philippines' data, at the end of 2001 more than 40 per cent of the nearly 3.1 million Filipinos employed temporarily abroad were concentrated in the Arab Gulf region, mainly in Saudi Arabia (Commission on Filipinos Overseas). Within South East Asia, Thailand represents an exception. Its workers' main destinations abroad were other Asian countries, primarily Chinese Taipei, where they were employed in industry (Thailand National Statistical Office, 2000; Chinese Taipei Census Bureau). Details regarding the country of origin of remittances for selected developing countries are contained in Appendix Table IB2.2.

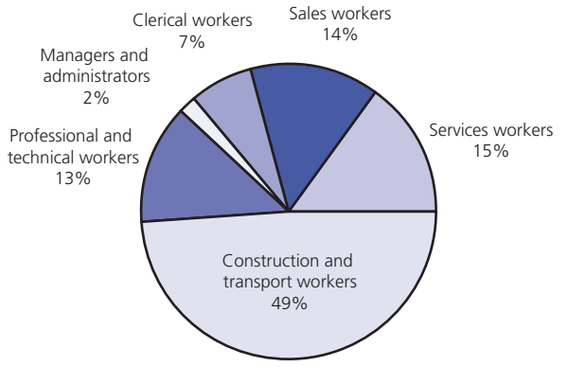
(iii) Skills and occupations of temporary foreign workers

In developing economies: the Arab Gulf countries

Data on education levels of migrant workers indicate that the average temporary migrant worker from South East Asia is low-skilled. For example, half of the Sri Lankan workers departing for the Middle East were mainly women in housemaid jobs, while professional and middle-level workers accounted for only 3 per cent (Sri Lanka, Bureau of Foreign Employment). The share of those on low-skilled jobs was even higher when analysing the outflows to other countries. Similarly, half of the estimated 220,000 Bangladeshis abroad in 2000 were in low-skilled jobs, 11 per cent in semi-skilled, 35 per cent in skilled, and 4 per cent in professional occupations. The share of low-skilled Bangladeshis abroad increased further in 2001 (Bangladesh, Bureau of Statistics, 2003).

According to Arab Gulf country statistics, the large majority of temporary foreign workers, which appear to be covered by Mode 4, are under secondary school level in terms of education and employed in low-skill jobs (Saudi Arabia Department of Statistics; Kuwait Ministry of Planning; Kingdom of Bahrain, 2001; Oman Ministry of National Economy, 2002). Within the services sectors in Kuwait, the share of foreign workers is particularly high in construction and transportation industries, engaged as transport equipment operators, loading and unloading manpower, etc. It can be safely assumed that a large share of the money sent home through remittances is generated by this low-skilled population. Services and sales occupations together employ some 20 per cent of the temporary foreign labour force in Bahrain, and up to around one third in Kuwait and Saudi Arabia. In Kuwait, services workers are mostly engaged in social, community, and personal services, employed as private guards or in hotels and restaurants, as cooks, waiters, and building caretakers.

Chart IB2.12
Mode 4 workers by occupation in selected Arab Gulf countries, 2000
(Percentage)



Note: Countries included are Bahrain, Kuwait, Oman and Saudi Arabia.
Source: National statistics.

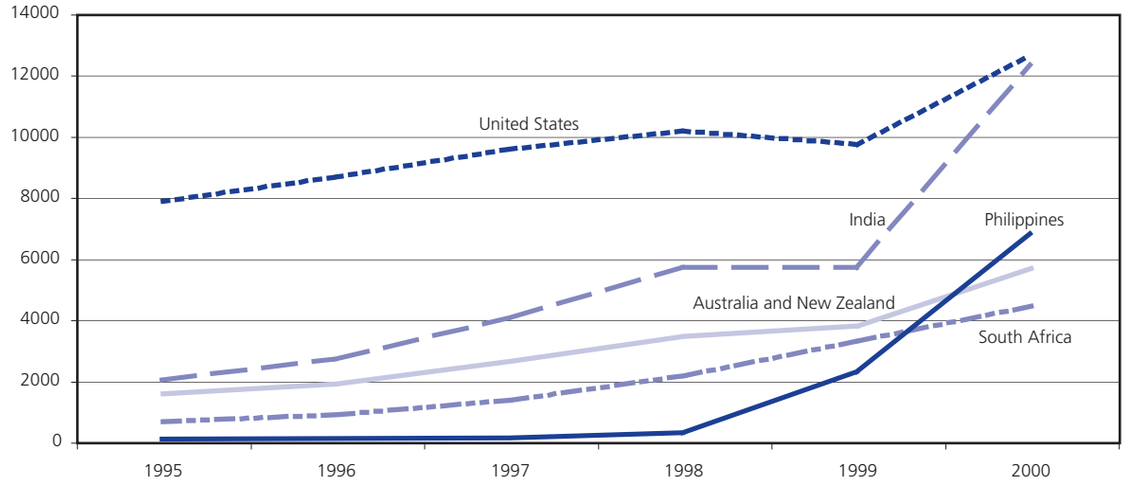
Temporary clerical workers, such as secretaries and receptionists, are comparatively not very numerous and the highest shares are found in Kuwait and Bahrain. In the region, on average, only 15 per cent of temporary foreign workers are professionals, administrators or managers. In Kuwait, they range between 9 per cent in construction activities (mainly engineers and architects) and 20 per cent in banking, insurance, real estate, and other business services. Administrators and managers are concentrated particularly in the banking and financial sectors, but also in the wholesale and retail trades, and hotels and restaurants. The health sector offers exceptional employment possibilities for skilled and highly-skilled persons. In private healthcare in Kuwait, 70 per cent of the physicians, more than half of the dentists and virtually all the nurses are foreigners. Similarly, in Oman, 80 per cent of the doctors and almost 70 per cent of the nurses employed in the country came on contracts from abroad.

In developed economies: the UK experience

If temporary labour migration among developing countries appears to be characterized to a large extent by low-skill employment, developed countries' statistics show rising inflows of temporary skilled and highly-skilled workers from developing countries. For example, an analysis of UK temporary work permits by country suggests that, between 1995 and 2000, developing countries such as India, the Philippines and, to a lesser extent South Africa, have emerged as suppliers of temporary labour (Chart IB2.13). In particular, the number of permits granted to Indian workers rose from 1,827 to 12,726 permits over five years, and between 1999 and 2000, it more than doubled. Thus, almost the same number of Indians and US foreign workers were employed in the United Kingdom in 2000. The number of permits granted to Filipino workers jumped from some 270 to over 6,700 in three years (UK Home Office, RDS, 2001). By contrast, the contribution from non-EU developed countries has remained steady or even declined.

The need to hire temporary skilled workers from very distant countries may be due to the lack of suitable nationals or to a time lag between training of national workers in specific skills and current labour market needs. The breakdown by occupation shows that half of the foreigners were recruited in associate professional positions, mainly health staff, such as nurses in both the public and private sectors. In particular, the number of temporary work permits granted to health and medical establishments has jumped from 1,774 in 1995

Chart IB2.13
Temporary work permits granted in the United Kingdom by selected country, 1995-2000
(Number)



Source: Research, Development and Statistics Directorate, UK Home Office (2001).

to more than 14,500 in 2000. Around half of the health associates staff "exported" to the United Kingdom were Filipinos, followed by Indians. It is worth noting that the Philippines' data on the type of skills exported abroad reveal that the number and share of associate professional and technical workers, primarily women, has doubled, while employment in foreign countries in low-skilled jobs has declined (Philippines Overseas Employment Administration).

Computer analysts and programmers, mainly from India, represented the second largest group of associate professional workers. Similar to the Philippines in health services, Indians have specialized in the export of information technology skills. Professional software and computer engineers, teachers, and financial services specialists ranked third. China and, to a lesser extent Malaysia, have emerged as suppliers of researchers.

Data relating to foreign managers and administrators, primarily originating from the United States, are likely to include intra-corporate transferees. In 2000, some 11,000 foreigners from non-EU countries were transferred to the United Kingdom (Final Report to the Home Office, 2001). Detailed information on the occupational breakdown of foreign temporary workers in the United Kingdom is contained in Appendix Table IB2.3.

Table IB2.9
Temporary work permits for services-related occupations granted in the United Kingdom by selected country, 2000
(Number)

	Total	of which				
		USA	India	Philippines	China	Malaysia
Total	**64144**	**12654**	**12292**	**6772**	**1541**	**866**
Managers and administrators	13487	5247	1203	55	211	139
Professional occupations	15187	1767	2947	247	285	348
Engineers and technologists	6626	932	2616	222	147	147
Associate professionals and technical occupations	33715	5493	7879	6442	885	329
Computer analysts and programmers	10470	1404	5973	82	108	73
Health associate professionals	14477	188	1301	6327	179	136
Personal and protective occupations	1587	38	194	28	125	43
Other occupations	168	42	69	-	35	7

Source: Research, Development and Statistics Directorate, UK Home Office (2001).

It is important to note that as from 2003, the United Kingdom has launched a new short-term work permit, the "Sectors Based Scheme", which permits the hiring of foreign workers aged from 18 to 30 for a maximum of one year for low-skilled occupations in the hospitality sector (such as bar staff, chefs, housekeepers, kitchen assistants, etc.) and selected food manufacturing industries.[36] These sectors are currently facing recruitment difficulties domestically.

(f) Conclusions

The discussion presented in this Section indicates that the gains from further Mode 4 liberalization could be significant. Like liberalization of trade in goods, liberalization of Mode 4 may increase welfare by offering consumers in each country a wider variety of services at lower prices. The welfare effects of Mode 4 trade liberalization are not only limited to its direct effects, but also include its effects on merchandise trade and trade in services under other modes. Data analysis presented in this Section find that these effects are significant.

The assessment of WTO commitments under Mode 4 shows that up to the present Mode 4 liberalization has been rather limited and to a large extent restricted to high-skilled labour. Nevertheless, estimates of the value of services trade under Mode 4 suggest that for some sectors and for some countries it is already large, and more important than services trade under Mode 1.

The Section has also shown that where bilateral or regional agreements exist, the movement of low-skilled workers has tended to be significant. Extending categories and skill-levels in Members' offers during the present GATS negotiations could therefore have important effects on the temporary movements of labour and on the welfare of both the sending and receiving countries.

[36] For 2003-2004, the quota under this scheme is set at 20,000 permits. Foreign workers must leave the United Kingdom for at least two months before another permit can be granted (Work Permits UK).

Appendix Table IB2.1
United States: Approved H-1B petitions for initial employment by occupation, 2000
(Number and percentage)

Occupations	Number	Share
Total	**136787**	**100**
Computer-related	74551	55
Architecture, engineering and surveying	17086	13
Administrative specializations	11468	8
Education	7210	5
Medicine and health	4734	4
Managers and officials n.e.s.	4366	3
Social sciences	3103	2
Life sciences	2921	2
Misc. professional, technical, and managerial	2734	2
Mathematics and physical sciences	2364	2
Art	1847	1
Writing	906	1
Law and jurisprudence	755	1
Fashion models	614	0
Entertainment and recreation	449	0
Museum, library and archival sciences	186	0
Religion and theology	68	0
Unspecified	1425	1

Source: US Immigration and Naturalization Services (2002).

Appendix Table IB2.2
Origin of workers' remittances received by selected developing countries, 2000-2001
(Million dollars)

	Pakistan	Bangladesh	Sri Lanka	Morocco	Tunisia	Egypt
Total	**1022**	**1882**	**1160**	**2161**	**796**	**2843**
Middle East	692	1502	730	115	43	1288
Saudi Arabia	304	920	...	54	23	681
United Arab Emirates	190	144	...	53	8	302
Kuwait	123	247	...	1	1	222
Oman	38	84	...	3	4	11
Bahrain	24	44	...	4	2	13
Qatar	13	63	...	1	4	44
United States	135	226	78[a]	84	4	1049
EU (15)	...	...	156	1879	695	301
of which France	81	56	...	977	419	49

[a] Refers to North America.

Source: State Bank of Pakistan; Central Bank of Sri Lanka; Bangladesh Bureau of Statistics; Morocco, Office des Changes; Central Bank of Tunisia; Central Bank of Egypt.

Appendix Table IB2.3
United Kingdom: Temporary work permits granted by services industry, 1995 and 2000
(Number and percentage)

	Number		Share	
	1995	2000	1995	2000
All services	**20584**	**59791**	**100**	**100**
Health and medical services	1774	14516	9	24
Computer services	1827	12726	9	21
Administration, business and managerial services	4041	9026	20	15
Financial services	3194	6997	16	12
Entertainment and leisure services	2919	4235	14	7
Education and culture	1901	3832	9	6
Telecommunications	458	2228	2	4
Hotels and restaurants	320	1751	2	3
Sporting activities	544	989	3	2
Retail and related services	2826	927	14	2
Law related services	258	881	1	2
Transport	333	780	2	1
Construction and land services	182	751	1	1
Real estate and property services	5	94	0	0
Security and protection services	2	58	0	0

Source: Research, Development and Statistics Directorate, UK Home Office (2001).

Appendix Chart IB2.1
Mode 4 workers in services industries in selected Arab Gulf countries, 2000
(Percentage)

Note: Data for Education, Hotels & Restaurants and Real Estate refer only to workers in Saudi Arabia.
Source: WTO estimates based on national statistics.

3. GEOGRAPHICAL INDICATIONS

(a) Introduction

Geographical indications (GIs) are a form of intellectual property covered by the TRIPS Agreement. Put simply, a GI refers to the use of a region's name by producers from the area in order to protect their reputation or to safeguard the expectations of consumers that have come to associate certain qualities with a product's geographical origin. A major reason for the importance attached by some to the international protection of GIs is the expansion in global trade. In various international agreements, countries have seen the need to cooperate internationally to preserve the role of GIs as conveyors of information for consumers and give support to their role as marketing tools. Under TRIPS, WTO Members are obliged, among other things, to provide the legal means for interested parties to prevent the use of indications deceiving consumers as to the geographical origin of a good or constituting an act of unfair competition. For GIs for wines and spirits, the TRIPS Agreement affords additional protection.

At present, one important area of debate at the WTO is the possibility of extending the stronger GI protection for wines and spirits to a broader range of products. Negotiations are also under way on the establishment of a notification and registration system for geographical indications for wines and spirits. This chapter seeks to contribute to a better understanding of these complex debates. It begins by defining and locating the concept of GIs in its historical context. Some main characteristics of various forms of GI protection at the national level are presented. A brief description of the nature of possible problems regarding the protection of GIs in foreign markets follows. Finally, some elements of TRIPS Article 23 on the additional protection for GIs for wines and spirits are highlighted. Relevant economic concepts surrounding the GI topic are then examined, in particular the issues of product differentiation and information asymmetries between producers and consumers. Thereafter, an illustrative analysis of the price premia on products protected by GIs is carried out in order to obtain a rough notion of the value of such indications. The final Section concludes.

(b) What are geographical indications?

(i) Historical and definitional aspects

In the pre-industrial age, when food and agricultural products were the principal output of economies, certain regions developed specialities and an excellent reputation for their produce. These qualities were presumed to be the unique outcome of the climate, soil, other natural resources or the skill of the people in those locales. GIs, like trademarks, represent an intellectual property right over the use of a distinctive sign. One of their purposes is to inform consumers of the special characteristics of certain products related to their geographical origin. Unlike with patents or copyrights, for example, other producers cannot be prevented from undertaking to copy the product or work in question. But only producers from the area are given the right to use the GI as a means to denote the specific qualities related to geographical origin and preserve the collective goodwill derived from that connection. While manufactured or industrial products can also be afforded GI protection, the vast majority are agricultural products, mostly food and beverages. Those non-agricultural products which enjoy GI protection typically include handicrafts, jewellery and textiles.

In many countries, special systems for the protection of GIs at the national level existed before multilateral agreements were developed. The differences in approach among countries are, to an important extent, related to historical developments. In some countries, the renown of certain products goes back centuries and their continued importance reflects the intertwining of commerce, history, culture and regional or local pride. Currently, there are a number of international agreements dealing with various forms of indications of geographical origin (Box IB3.1), under which member countries afford protection in their own territories to indications of other members. The main multilateral agreements of relevance are the Paris Convention for the Protection of Industrial Property (166 contracting parties), the Madrid Agreement Concerning the International Registration of Marks (74 contracting parties) and the Madrid Protocol relating to that Agreement, the Madrid Agreement for the Repression of False or Deceptive Indications of Source on Goods (33 contracting parties), the Lisbon Agreement for the Protection of Appellations of Origin and their International Registration (20 contracting parties) and the

TRIPS Agreement (147 members). While the Paris Convention is about 120 years old, 67 states (about 41 per cent of the total membership) only became members in the 1990s. And of course, the TRIPS Agreement came into force only on 1 January 1995. The strong growth of global trade in the last decade was an important factor leading to increased cooperation on these and other matters of intellectual property.

The TRIPS Agreement is the first multilateral agreement providing an explicit definition of the term "geographical indication". In Article 22.1, GIs are defined as "indications which identify a good as originating in the territory of a [WTO] Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin". Earlier multilateral agreements, notably the Paris Convention, the Madrid Agreement (on false/deceptive indications of source) and the Lisbon Agreement, have focused on "indications of source" and "appellations of origin" respectively. An indication of source designates a specific geographical location as being the origin of the product in question. While a GI as defined under TRIPS also identifies a good as originating in a place, it is, in addition, required that a given quality, reputation or other characteristic of the good is "essentially attributable" to its geographical origin. Some consider the definition of "appellation of origin" under the Lisbon Agreement to be similar to GIs, but to have higher requirements in regard to one aspect or another (Addor and Grazioli, 2002).

Within national legislation, the "multilateral" terminology is not necessarily used in its pure form. As suggested above, international agreements had to capture a wide range of existing national practices that included more precisely defined or stringent concepts over and above the requirements that were agreeable internationally. With regard to national definitions, there are three main categories: (i) definitions following closely the language of Article 22.1 of the TRIPS Agreement; (ii) definitions modelled on that used in the Lisbon Agreement; and (iii) more specific national definitions, many of which include the essential elements of the definition contained in the TRIPS and Lisbon Agreements, namely that the product has distinctive characteristics which are due to its geographical origin. Some of these definitions are combined with particular product/production requirements.

Box IB3.1: Key provisions in some international agreements on indications of geographical origin

1883 Paris Convention for the Protection of Industrial Property
(revised in 1925, 1934, 1958 and 1967 and amended in 1979)

- some of its provisions are incorporated in the TRIPS Agreement through Article 2.1;
- includes the protection of "indications of source or appellations of origin" (Article 1.2);
- countries of the Union undertake to accept for filing and to protect collective marks belonging to foreign associations even in the absence of industrial/commercial establishment (Article 7*bis*);
- prohibits the "direct or indirect use of false indications of the sources of the goods" (Article 10.1) but no special provisions therein for the protection of appellations of origin; only *false indications* covered by Article 10 and no protection provided for cases when the indication is used in translated form or accompanied by terms such as "kind" or "type" or when it is deceptive, i.e. when it may mislead the public;
- originally signed by 11 countries, the Convention now has 166 contracting parties.

1891 Madrid Agreement Concerning the International Registration of Marks ***(revised in 1900, 1911, 1925, 1934, 1957, 1967 and amended in 1979) and the*** *1989 Madrid Protocol* ***relating to that Agreement***

- establishes a procedure for the international registration of marks – protection afforded to a mark is based on national registration; the mark is protected for 10 years renewable indefinitely; if it is cancelled for some reason in the country of origin within five years from international registration, the international mark will also be cancelled;

- 74 states are contracting parties.

1891 Madrid Agreement for the Repression of False or Deceptive Indications of Source on Goods *(revised in 1911, 1925, 1934 and 1958)*

- aims at the repression not only of false but also deceptive indications of source: "all goods bearing a false or deceptive indication by which one of the countries to which this Agreement applies, or a place situated therein, is directly or indirectly indicated as being the country or place of origin shall be seized on importation into any of the said countries" (Article 1(1));
- 33 states are contracting parties.

1958 Lisbon Agreement for the Protection of Appellations of Origin and their International Registration *(revised in 1967 and amended in 1979) and the 1976 Regulations under that Agreement (amended in 2002)*

- countries undertake to protect in their territories the appellations of origin of products of the other countries of the Special Union, recognized and protected as such in the country of origin and registered at the International Bureau of Intellectual Property referred to in the Convention establishing the World Intellectual Property Organization (Article 1);
- '…"appellations of origin" means the geographical name of a country, region or locality, which serves to designate a product originating therein, the quality and characteristics of which are due exclusively or essentially to the geographical environment, including natural and human factors.' 'The country of origin is the country whose name, or the country in which is situated the region or locality whose name, constitutes the appellation of origin which has given the product its reputation' (Article 2);
- protection shall be ensured against any usurpation or imitation, even if the true origin of the product is indicated or if the appellation is used in translated form or accompanied by terms such as "kind", "type", "make", "imitation" or the like (Article 3);
- once protected in a country, an appellation of origin cannot be deemed to have become generic in that country, as long as it is protected as an appellation of origin in the country of origin (Article 6);
- 20 states are contracting parties.

WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)

- defines GIs as "… indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin" (Article 22.1);
- establishes, in Article 22, a minimum standard of protection for all geographical indications mandating Members to provide the legal means for interested parties to prevent the use of GIs in a manner which misleads the public as to the true origin of the good as well as acts of unfair competition;
- provides additional protection for wines and spirits. Members are obliged to provide the legal means to interested parties to prevent use of a GI identifying wines for wines (respectively spirits for spirits) not originating in the place indicated even where the true origin is indicated or the GI is used in translation or accompanied by expressions such as "kind", "type", "style", "imitation" or the like. Thus, in principle, there is no need to show that the public has been misled as to the true origin of the good or an act of unfair competition occurred (Article 23);
- provides a series of exceptions, most notably in relation to continued and similar use of GIs for wines and spirits, prior good faith trademark rights and generic designations (Article 24).

(ii) Legal means of protection[1]

Countries employ differing legal means of protection for GIs. They can be broadly categorized into horizontal laws focusing on business practices, trademark law and special means of protection.[2] While not specifically providing for the protection of GIs, laws focusing on business practices prohibit actions which can involve the misuse of indications. Examples of laws relating to business practices include laws on the repression of unfair competition or the protection of consumers in regard to the labelling of products. Trademark law can provide protection against unauthorized use by third parties of GIs registered as collective, certification or guarantee marks where such use would result in a likelihood of confusion. Finally, special means of protection refer to laws or provisions specifically dedicated to the protection of GIs.

Horizontal laws focusing on business practices

In practically all countries, GI protection is available under horizontal laws focusing on business practices. This category of means of protection covers laws which, while not specifically providing for the protection of GIs, prohibit business practices which can involve the misuse of GIs. While a broad range of laws of this nature exists, many of them relate to the repression of unfair competition or the protection of consumers,[3] either in general terms or more specifically in regard to such matters as the labelling of products, health protection and food safety. In some Members, provisions of common law also apply, in particular in relation to passing off. In legal proceedings under such laws, the question at stake will normally be whether the practices proscribed by the law have occurred, not whether a particular term should be determined to have the status of a protected GI.

Under unfair competition and consumer protection law an important factor is the extent to which the geographical term in question is known as an indicator of geographical origin to the public. If it is not so known or it has become a generic term, protection is not granted. Similarly, in those countries where "passing off" relief is available, complainants are usually required to demonstrate that (i) their product has acquired goodwill with the purchasing public, (ii) misrepresentation by the defendant is likely to lead the public to believe that the products offered are those of the plaintiff and (iii) damages or a likelihood of damages result from such use (Cornish, 1996).

Collective and certification marks

In some Members, GIs may be protected within the trademark system as collective, certification or guarantee marks against unauthorized use by third parties. While these terms are used somewhat differently in different countries, generally speaking, a collective mark protects a specific sign which belongs to a group of enterprises and is used by its members for their goods or services. A certification or guarantee mark protects a specific sign which belongs to a legal entity supervising or laying down standards for goods or services. Regulations governing the use of such marks must be submitted as part of the registration procedure.

The regulations for collective marks define the group of companies eligible to use the mark. In some countries, these regulations must include a provision to the effect that any person whose goods or services originate in the geographical area concerned and fulfil the conditions set out in the regulations shall be eligible to become a member of the association and shall be admitted to the group of persons having authority to use the mark. In the case of certification/guarantee marks, common characteristics are established that may

1 Large parts of this subsection are based on WTO (2003b).

2 See WTO (2003b). Annex A in this document contains examples of GIs in WTO Members and references to national legislation. See also O'Connor (2003), WIPO (2002a), Blakeney (2001) and Ladas (1975) for further examples and analytical discussions of legal means of protection.

3 Depending on the jurisdiction, one body of law may comprise elements of the other. For analytical purposes, the following distinction has been made: laws focusing on unfairness *vis-à-vis* competitors address acts which concern the establishment, the goods, or the industrial or commercial activities of a competitor. Laws focusing on misleading consumers address acts which relate to misleading allegations concerning the goods of the person who makes the allegations. In respect of this distinction see also the guide to the application of the Paris Convention by Prof. G.H.C. Bodenhausen, in particular pp. 145-146, as quoted in WTO (2003b):9, footnote P.

relate to materials, production methods, geographical origin and/or other criteria (OECD, 2000a).[4] Normally, certification/guarantee marks may not be used by their owners or any company with which the owner has close economic ties. Given that their primary purpose is not to distinguish one product or service from another, but to perform a guarantee function or certify certain characteristics, it is normally required that they be accessible to anyone who meets the conditions for use.[5]

In a number of countries, an important consideration for the trademark office when a collective, guarantee or certification mark consists solely, or essentially, of a geographic term is to satisfy itself of the authority of the applicant to control the use of the term, i.e. the ability to ensure that the conditions of eligibility are complied with. In the United States, for example, the authority which exercises control over the use of the term normally is a government body or a body operating with governmental authorization.

Special means of protection

The forms of protection in this category cover those under laws specifically dedicated to the protection of GIs or those under provisions providing for special protection of GIs contained in other laws, for example on trademarks, marketing, labelling or taxation. Generally speaking, the protection provided is stronger than that available under the other two categories of means of protection. Usually, but not in all cases, there is a requirement for prior recognition of a GI as a condition of protection. Procedures in this connection vary considerably, from essentially informal and political procedures to a registration-type system with procedural steps and criteria clearly defined in advance. In some countries, several systems co-exist with different although sometimes overlapping coverage, with tests for eligibility of differing severity, and rights of differing scope.

As a function of the specific definitions used at the national level, various criteria may be applied to determine eligibility for special protection for GIs. A central element usually is the demarcation of the area covered by a GI. This may be done by specifying eligible geographical units in accordance with political/administrative classifications or by defining geographical areas, such as groups of vineyards. Alternatively, some countries focus on criteria of a more qualitative nature aimed at establishing the homogeneity of the cultivation conditions within the area and the distinctiveness of those conditions *vis-à-vis* other areas. Other criteria are aimed at ensuring that the product comes from the designated area. Practices vary. For example, Article 2.2 of the European Council Regulation (EEC) No. 2081/92 stipulates that, for so-called "protected designations of origin" (PDO), the entire production process has to take place in the defined geographical area, whereas for "protected geographical indications" (PGI), it is sufficient that either production, processing or preparation are carried out in the respective place.

In many countries, it is also necessary that the product has specific characteristics linked to its origin. At least some of them do not explicitly call for a causal link between the geographical origin of the product and its characteristics. Special characteristics are the most common requirement. Not all definitions explicitly allow for reputation as a specific characteristic related to the geographical origin of a product. Some, especially those based on the Lisbon Agreement, note the role that human factors can play in regard to the characteristics of products that are linked to their origin. In certain countries, such requirements are only taken into consideration at the time the decision on the protection of a GI is taken. Subsequently, the response to quality and consumer expectations are left to the market-driven behaviour of those entitled to use the GI. In many cases, however, ongoing requirements regarding production methods and product specifications are established as a condition of use of the respective GI, and systems are put in place to monitor compliance (OECD, 2000a).

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4 For instance, the US Certification Mark for Stilton Cheese (Registration Number 0921358, see http://tess2.uspto.gov/bin/gate.exe?f=doc&state=87jj80.4.3, site visited on 9 December 2003) certifies that "the cheese is blue moulded or white cheese produced within the country boundaries of Leicestershire, Derbyshire and Nottinghamshire, England, with no applied pressure, forming its own crust or coat and made in cylindrical form, from full cream milk produced by English dairy herds."

5 This implies that, for instance, the US "certification marks for products such as Florida oranges or Idaho potatoes can be used by any grower who meets the published standards for such a product" (Beresford, 2000). See also WIPO (2002b) and WIPO (2002c).

(iii) Protection of GIs in foreign markets

As mentioned earlier, a number of international agreements, including the TRIPS Agreement, lay down minimum standards of protection of GIs that their members have to make available to the GIs of other members. In some cases, this matter is also regulated through regional agreements (e.g. in the context of the Cartagena Agreement of the Andean Community) or bilateral agreements (such as between the European Communities and Australia concerning wines). Some of these treaties also include a national treatment obligation. At present, a WTO panel is examining the question of the way the TRIPS national and MFN treatment rules apply in regard to GIs.

In the course of international trade, the situation may arise that producers, recognized at home as having rights in a GI, export their products to markets where local makers already use the same indication. They may also face competition from those producers in third countries. It may be that in foreign markets a domestically protected GI has already been registered as a trademark,[6] is a GI in its own right, or is considered generic.

Trademarks

It is conceivable that entitlement to use an indication is claimed in respect of the same or similar products by different parties as a trademark and as a GI respectively. The question of how to deal with such conflicts is one that is not yet fully resolved at the international level. In national law, three broad approaches can be found: first, giving priority to those who first had rights in the jurisdiction concerned in that term (commonly referred to as the principle of "first in time, first in right");[7] second, providing for co-existence of the trademark and the GI; and third, providing for GIs to prevail over earlier trademarks. The TRIPS Agreement addresses the issue of possible conflicts between GIs and prior trademark rights in one of the exceptions to GI protection provided for in Article 24. A WTO panel is presently considering how this provision, together with related trademark provisions, should be interpreted.

In many jurisdictions, it is not possible in the first place to register geographical names as trademarks, which are meant to distinguish the products of one enterprise from those of a competing firm. A geographical term may, in most cases, be considered too descriptive of the origin, nature or quality of goods and, hence, be unsuitable for trademark purposes. WIPO (2000a) states that "geographical terms cannot serve as individual trademarks, unless they have acquired distinctive character through use, or their use is fanciful and, therefore, is not deceiving as to the origin of the goods on which the trademarks are used". One could think of "Mont Blanc" writing instruments as a famous example.

In some countries, any GI may benefit from protection against registration as a trademark without having to satisfy the tests mentioned above relating to distinctiveness and likelihood to confuse, deceive or mislead the public as the geographical origin or the identity of the goods to which it applies, provided that the sign for which trademark registration is sought consists exclusively of a protected GI or of an indication which may serve, in trade, to designate the geographical origin of goods. Such signs could be seen as being inherently non-distinctive. In the European Union, for instance, a Court of Justice decision precludes registration of a trademark consisting exclusively of a geographical name of a place that is currently associated with the category of goods in question or may potentially be capable of denoting geographical origin for that category. In the evaluation of possible future developments, different factors are enumerated that need to be taken into account, namely the category of goods itself, the characteristics of the place and the degree of familiarity of actual consumers with the geographical name (ECJ, 1999). Many countries also have special regimes for certain GIs which provide protection against the registration as trademarks of signs which consist of or comprise the GIs in question without the need to consider the sorts of tests referred to above (WTO, 2003b).

6 In considering the relationship between trademarks and GIs, it is important to keep the following two issues apart: (i) the possibility of registering a GI under trademark law as a collective/certification mark, and (ii) the potential conflict of a GI with an earlier trademark essentially consisting of or containing geographical terms.

7 An exception to this principle is made if the prior right was acquired in bad faith, for instance if an employee registers a trademark that has been in use for some time by his employer. See also Stern (2003).

Homonymous indications

International trade can also lead to a situation, where two products of the same class are sold carrying GIs that are spelt or pronounced alike despite referring to different parts of the world. Both of these "homonymous" indications designate the true geographical origin of a product. Parallel use of the same name without further qualifications runs the risk of misleading consumers who expect to see the specific characteristics of the respective products. In many national legislations, this is usually not permitted and practical means have to be found to differentiate the homonymous indications from each other in an equitable manner for both producers and such that consumers are not misled.[8]

The producers (about 40) of wine named after the municipality "Champagne" situated in the Swiss canton of Vaud criticized the deal between the European Community and Switzerland (as part of their bilateral agreement on agricultural trade) for obliging them to abandon the right to use the name "Champagne" on their wines. In 2002, the Swiss wine-growers brought a case before the European Court of Justice (still ongoing) in which they demand annulment of this decision (ECJ, 2002). Another much cited case (subject to periodic, hitherto inconclusive consultations between the two countries) is the one of Rioja wines, referring to both an area in Spain and in Argentina (Addor and Grazioli, 2002).

Generic terms

Generic terms are not capable of distinguishing goods from different sources (firms or geographical origins). They describe the kind or type of goods belonging to one category. Such names therefore cannot be registered under either trademark law or a special system for the protection of GIs. According to TRIPS Article 24.6, Members are exempted from protecting GIs "with respect to goods or services for which the relevant term is identical with the term customary in common language as the common name for such goods or services in the territory of that Member". In establishing whether a name for which an application for protection is received has become generic or not, the authorities in charge (such as a trademark office) have to make a judgement as to the situation prevailing in their country. Guidance in the form of specific regulations listing terms to be considered generic appears to exist only in some jurisdictions and for a limited range of products. In all other instances, national courts decide on a case-by-case basis whether a name of geographic significance has indeed lost its original meaning and serves to designate the class of goods as a whole (WIPO, 2002b). Members of the Lisbon Agreement have eschewed this possibility for appellations of origin registered under the Agreement, which they cannot deem to have become generic, as long as they continue to be protected in the country of origin (Article 6).

(iv) Additional protection for GIs for wines and spirits

WTO Members are obliged to provide the legal means to achieve the level of protection laid out in TRIPS Articles 22.2 to 22.4 for all[9] GIs, as defined in Article 22.1, and a "higher" level of protection for wines and spirits as per Articles 23.1 to 23.3.[10] Certain exceptions are provided for in Article 24. Primarily, the protection afforded to wines and spirits goes further in the following sense: TRIPS Article 23.1 creates the obligation to provide the legal means to interested parties to prevent use of a GI identifying wines for wines (respectively spirits for spirits) not originating in the place indicated even where the true origin is indicated or the GI is used in translation or accompanied by expressions such as "kind", "type", "style", "imitation" or the like. This also implies that there is no need to show that if an indication suggests that the good in question originates in a geographical area other than the true place of origin, the public has been misled as to the true origin of the

8 This approach applies to wines and spirits pursuant to TRIPS Article 23.3.

9 No product groups are excluded.

10 TRIPS Article 24 contains a number of exceptions to the obligations under both Article 22 and Article 23 aimed at safeguarding existing uses by other parties. More specifically, Article 24.4 relates to the continued and similar use of GIs for wines and spirits by whomever has used that indication on any goods or services continuously for at least ten years – or less if in good faith – before the date of the Marrakech Agreement establishing the WTO. Concerning the question of extension of product coverage beyond wines and spirits, the question has been raised whether a similar provision would be envisaged with regard to a prior time period.

good or an act of unfair competition occurred. Most Members have put in place special means of protection to comply with these obligations, often involving some kind of registration or recognition requirement at the national level.

Pursuant to TRIPS Article 23.4 and paragraph 18 of the Doha Declaration (WTO document WT/MIN(01)/DEC/1), negotiations are currently under way on the establishment of a multilateral system of notification and registration of GIs for wines and spirits. These negotiations have proven rather difficult with positions ranging from those wishing to impart some kind of legal force to registrations and others seeing the register more as an information tool, e.g. an instrument for reference when making decisions regarding GIs under domestic law. Of key concern is, for instance, the question whether inclusion of a GI in the multilateral register would result in a rebuttable presumption of eligibility for protection at the national level. Some contest such an approach as creating new substantive obligations and as not being consistent with the principle of territoriality of intellectual property rights and the national freedom for determining the way of implementing the TRIPS Agreement, as recognized in Article 1.1. They see value in making readily available to all WTO Members the information notified by others and provided through a register for use in national decision-making processes relating to the protection of GIs. Related to these controversies are many more legal aspects and practical implications, such as the need for, and if so the nature of, a procedure to oppose inclusion of a GI into the register, or the costs involved in such a system both in relation to their magnitude and their distribution amongst the government, producers, consumers and the administering body. There is also controversy around the question of whether notifications and registrations of GIs would have any effect on WTO Members opting not to participate in the system (WTO, 2003c).

Many of the arguments advanced in the ongoing debates on GIs are anchored in differing interpretations of the relevant legal texts and negotiating mandates. Very little if any theoretical and empirical evidence has been brought to the fore to substantiate claims regarding the value and costs of GI protection for economic agents. This is discussed next.

(c) Economic theory and geographical indications

This subsection reviews the economic literature that may be relevant to the topic of GIs. Not much economic research has been undertaken that directly deals with GIs. This discussion is therefore confined to economic concepts that are useful in understanding the purpose and effects of GIs in the marketplace. In most of the relevant economic literature no attempt is made to compare economic thinking with existing legal approaches. As a consequence the terminology used does not necessarily correspond to that used in the legal literature.

In economic terms, an important role played by GIs is that they help consumers to distinguish between products coming from a particular region and similar products that come from a different region. This safeguards the expectations of consumers who have come to associate certain product characteristics with a product's geographical origin. GIs may therefore have a role to play in markets for differentiated goods suffering from a market failure called "information asymmetry". The term "differentiated goods" refers to the fact that goods belonging to the same product group, like red wine, may differ in certain characteristics, for instance, taste or quality. "Information asymmetry" describes a situation where consumers are not able to observe all the characteristics they consider relevant in a good, such as its taste, before purchase. As a consequence, some "tool" is necessary to signal the characteristics consumers may consider relevant, and GIs are one possible option. The remainder of this subsection provides a more detailed discussion of the concepts of product differentiation and information asymmetry.

(i) Product differentiation: products that are similar may not be identical

Products belonging to the same product category may have different characteristics. A Mercedes and an Opel are both cars, but most consumers would agree that they are not the same. Chocolate ice cream and strawberry ice cream belong to the product category ice cream, but they clearly differ in taste. The notion of products appearing in different varieties is common in the economic literature. Numerous economic models contain elements of product differentiation, some of them being very popular in trade theory.[11]

Economists distinguish between vertical and horizontal product differentiation.[12] In the former case, all consumers agree on the preferred mix of characteristics and, more generally, the preference ordering. A typical example is quality. Probably everybody agrees that higher quality is preferable – for instance that a Mercedes tops an Opel in a wide range of attributes. However, a large number of consumers may still purchase the latter. Consumers' income and the prices of the cars determine their ultimate choice. Similarly, a smaller and more powerful computer is preferable to a larger, less powerful one. At equal prices, all consumers would probably go for the first one. In the case of horizontal differentiation, however, the optimal choice at equal prices depends on the particular consumer. Preferences vary in the population. Colours are an obvious example. One consumer prefers a red t-shirt, while another buys the same t-shirt in blue. Flavour is another often-cited example. Some people systematically prefer chocolate over strawberry ice cream; for others the opposite is true.

In general, companies compete not only against firms offering the same product variety, but also against companies supplying different varieties of goods belonging to the same product group. For instance, even though Mercedes and Opel are rather different cars targeting different consumer segments, the price a Mercedes can command in the market is not completely independent of the price of an Opel and vice versa. Depending on factors like entry conditions into the market, costs for producing different product varieties and tastes of consumers, the level of competition can be high or low in markets of differentiated goods.

Although for the sake of economic analysis, it is often useful to make a clear distinction between vertically and horizontally differentiated products, in practice many products differ along both dimensions. Cars appear in different colours and vary in fuel consumption. The first characteristic cannot be ranked ("horizontal"), while other things being equal, fuel efficiency is a plus ("vertical"). The rest of the subsection will limit itself to a discussion of vertically differentiated goods. This is because the literature on information asymmetry typically focuses on vertical product differentiation.

(ii) Information asymmetry: products that look identical may not be identical

Consumers differ and they appreciate characteristics of products in different ways. The availability of different varieties of products in the market should therefore be welcomed. In general, it can be presumed that markets provide the varieties demanded by consumers and that they are supplied in the appropriate quantities. Yet, this is not always the case. If, for instance, consumers have only imperfect information about the characteristics of a product upon purchase, there tends to be an undersupply of "quality" in markets of vertically differentiated goods. In this context, the term quality is typically used in a very broad sense, referring to any relevant good characteristic that can be ranked according to objective criteria, such as fuel consumption in the above-mentioned example of cars or power in the case of personal computers.

Economists have classified goods into three categories according to the degree of information available to consumers when purchasing a good. In the case of so-called search goods, e.g. dresses, quality can be ascertained by consumers before purchase. In other cases, the quality is learned only after the good is bought and consumed. This is the case, for instance, with the taste of food or the quality of a restaurant. The literature refers to these goods as experience goods.[13] For still other goods, certain quality aspects (e.g. the amount of

[11] One may think, for instance, of the literature on intra-industry trade (e.g. Krugman, 1980).

[12] See Tirole (1993) for a discussion of vertically and horizontally differentiated product spaces and modelling approaches that have been used.

[13] See Nelson, 1970.

fluoride in toothpaste or whether beef is BSE infected) are rarely learned, even after consumption. This last type of product is referred to as credence goods in the economic literature.[14] Again, most goods cannot merely be classified in one or the other category, as they possess characteristics that are learned before purchase, after purchase or never.[15] In the case of a loaf of bread, for instance, the loaf's size is a search good characteristic, its taste an experience good characteristic and its calorie-content a credence good characteristic. For economic analysis, however, the pure classification is quite useful. Only in the case of experience and credence goods do economists speak of a market distortion due to information asymmetry. In the case of experience goods repeat purchases offer some consumer control over quality and market mechanisms exist that guarantee the supply of a significant range and level of product qualities. In the case of credence goods, the information problem is more acute and government intervention is often required to reach an acceptable supply of product quality.[16] The following paragraphs will discuss these issues in more detail.

Repeat purchases and the incentives of producers to maintain quality

If consumers cannot distinguish the quality of different product varieties before buying and consuming the product, they will be reluctant to pay different prices for products that, to them, look the same.[17] If, for instance, a bottle of wine just looks like another bottle of wine and consumers do not have any reason to expect one of them to contain a higher quality wine, it would be rational for them to buy the cheaper of the two bottles. This is a problem for high quality producers who probably face higher production costs than producers of lower qualities. In a market of experience goods high quality producers must, therefore, find a way to lure consumers into testing their product, but at the same time, prices must in the long-run be such that production is profitable. When introducing their product in the market, producers may consequently decide to offer their high quality product at the same price as competing low quality varieties, which probably implies that they incur a loss during the initial sales period. Alternatively, they could invest in publicity and try to create the image of a high quality product from the outset. The latter approach may allow producers to demand a higher price in initial sales periods, but it also entails an investment and hence a cost.

Once consumers have tried the product and experienced it as being of superior quality, they should be willing to accept a higher price in comparison to other varieties when returning to the market. In order for it to be profitable for producers to supply high quality, their product must command a higher price for two reasons. First, production costs are likely to be higher for high than for low quality varieties. Second, they must be able to demand a mark-up over these costs in order to recover the loss incurred or investment made during the initial sales period. The mark-up also has another function. It discourages producers from cheating their consumers by suddenly lowering product quality. Supplying lower quality would lead to extraordinary profits in the immediate period of sales, but would ruin the producer's reputation as a high quality provider in the future and thus lower his future profits. In other words, the mark-up gives an incentive to producers to maintain quality. Consumers can therefore expect producers to meet their reputation and provide today the product quality they provided yesterday.[18]

14 The term was first used by Darby and Karni (1973). Note that credence goods have been analysed above in the context of services: the timeliness of a doctor's intervention, the quality of a lawyer's advice and the timeliness and quality of car repair are typical examples of credence good characteristics.

15 An additional category that has received attention in the literature is the group of "status goods". In the case of status goods not only the characteristics of a good count to the consumer, but also (at least to some consumers) the effect these characteristics have on third parties (prestige). Depending on the importance of the prestige factor, consumers may not be bothered about not having the "real thing", as long as others believe that the product is "real". The information asymmetry is different – it is third parties who are not informed, but this is typically not assumed to be a market failure (see Grossman and Shapiro, 1988a).

16 See for instance Tirole (1993), chapter 2.

17 See Shapiro (1983) and Klein and Leffler (1981) for models of repeat purchase.

18 This does not necessarily imply that the quality provided by producers is perfectly constant. They may decide to make from time to time slight adjustments to product quality in the light of changing market conditions, like the entry of new competitors or changing income conditions of consumers. Yet, when doing so, producers will always keep in mind the investment they made in building a reputation for their products and the effect any adjustment in quality will have on future purchases.

Time plays an important role in models of repeat purchase. Consumers have to learn the quality of a product sufficiently quickly and to renew their purchase sufficiently often in order for producers to have an incentive to provide quality. If these conditions are not met, producers are not able to recover investments made in high quality. Instead, it would be profitable for producers to offer the lowest quality, as they would not expect extra profits from repeat purchase in the future.[19] This is the reason why it is more likely to find high quality restaurants in areas of town that cater for a stable population than in tourist areas, where the restaurants' clients change every day.

The more time that passes between one purchase and the next the more serious is the problem of under-provision of quality and quantity in the relevant market. Markets may disappear completely in the extreme case of one-off purchases, i.e. purchases of durables that are not repeated. As consumers do not know the quality of the good when purchasing, the purchase price must be independent of the actual quality of the good. Instead, the price is likely to reflect the average quality consumers expect to find on the market. As it is not profitable for high quality producers or suppliers to put their products on the market under these circumstances, they withdraw. As a result the average quality supplied declines and with it the price consumers are willing to pay. Intermediate quality producers will now also withdraw from the market and this dynamic continues until only low quality products or no products at all are supplied.[20] In fact, the more time passes before consumers learn about the quality of a good and/or return to the market for a new purchase, the more the relevant market starts to look like a market for credence goods. Government intervention in the form, for instance, of quality controls, minimum quality standards or safety regulations can, in these cases, be desirable, as they may have the effect of ensuring higher product quality and/or more product varieties in the market.[21]

Legal protection against free-riding by third parties

The type of regulatory intervention by the government mentioned above is not necessary in most markets of repeat purchase. As discussed before, repeat purchase guarantees that producers have an incentive not to cheat consumers and meet the reputation of high quality they built in the past. Yet, in order for this to happen, consumers must be able to recognize the product they have consumed before. If all bottles of wine looked alike – a bottle of green glass containing a red liquid – consumers would be unable to "reward" the producers of high quality wine or to "punish" those offering low quality. This is why producers make their products recognizable to consumers, for instance, through labels in the case of wine.[22] Labels will indicate the name of the producer or the region of production and provide consumers with valuable information that the quality of the wine is likely to be identical to the one they previously bought.[23]

Trademarks or brand names are probably the most frequent devices used by producers to communicate information to consumers and make their products easy to identify.[24] In the words of Landes and Posner (2003), a trademark conveys information that allows the consumer to say to himself: "I need not investigate the attributes of the brand I am about to purchase because the trademark is a shorthand way of telling me that the attributes are the same as those of the brand I enjoyed earlier". This hints at yet another reason why consumers may be willing to pay a mark-up for a branded good. The brand name reduces consumers'

19 This incentive to cut quality is referred to in economics as a problem of "moral hazard" on the producer side.

20 This line of argument is based on Akerlof (1970). In this particular model the market (for used cars) disappears completely, a result that is to a large extent based on the assumption that suppliers cannot adjust the quality they offer. Instead they only have the choice between selling the car to others or "consuming" it themselves.

21 See, for instance, the discussion in Tirole (1993).

22 Such devices may not be necessary if the consumer buys directly from the producer, for instance because the producer is located close to the consumer's home and known to him, e.g. the local bakery store.

23 It appears that most economic models of repeat purchase implicitly assume that some mechanism exists in order to make products of the same producer recognizable. Trademarks and protection against counterfeiting have been explicitly modelled in Grossman and Shapiro (1988b).

24 The terms trademark and brand name are used here as rough synonyms, like in Landes and Posner (2003). Empirical research by Png and Reitman (1995) confirms that in the case of service stations branded dealers are more likely to carry products for which cheating on quality is an issue, i.e. products that suffer from information asymmetries.

search costs.[25] Instead of having to search for the specific characteristics they appreciated in the product they previously bought, they only need to look out for the brand name. This is less complicated and thus less time consuming.[26]

In order for trademarks to fulfil their role, third parties must be prevented from using the same mark. As explained before, high quality producers demand a mark-up over costs in order to recover investments made in reputation-building. Producers who have not made this investment could supply the same, high quality product more cheaply and push original producers out of the market if they were allowed to use the same trademark. Alternatively, they could decide to supply low quality products under the same trademark. This way, they would make excessive profits during a short period of time, as consumers would still be willing to pay a high price for the product carrying the trademark.[27] When consumers return to the market, however, the reputation of the original producer is ruined. Legal protection of trademarks is therefore necessary in order to prevent free-riding by third parties that would inevitably destroy the information capital embodied in a trademark.[28]

The protection of GIs follows the same logic. It prevents producers outside the area from using the same GI and, thus, from free-riding on the reputation built by producers in that region. The guarantee that products carrying the GI originate in the area indicated is also supposed to convey information on certain product characteristics. Production in the respective region may, by definition, lead to specific qualities of the product that are essentially attributable to geographical origin, for instance, in relation to climatic factors.[29] But it may also be that the intervention of individual producers from the area has an additional impact on the characteristics of the final product – for example, through the specific method used to transform milk into cheese, grapes into wine or raw meat into ham. To the extent that the latter is the case, regional producers sharing a distinctive sign need to agree on certain characteristics of the final product or the production techniques to be used if the sign is to remain meaningful to consumers.[30] Given that, typically, more than one producer has the right to use the same GI, the potential of free-riding also exists within the relevant producer group, and a producers' association, for instance, needs to find a way to ensure that the significance of its GI is not ruined by the opportunistic behaviour of individual members.[31] If such possible coordination problems are appropriately dealt with, GI protection affords producers in a region the same advantages that are discussed in the economic literature for trademark owners. They can appropriate the benefits of investing in certain product qualities and maintaining them in the long-run. As a result, the economy as a whole benefits from higher product quality on average and a larger product variety.[32]

25 See Landes and Posner (2003) for a more detailed discussion of this mechanism. Their approach is based on Ehrlich and Fisher (1982).

26 Although the discussion in this subsection continues to focus on vertically differentiated goods, it is *a priori* possible to apply the argument presented in this paragraph to the case of horizontally differentiated goods.

27 Such a strategy can be profitable for producers who are able to produce the low quality but not the high quality product or can do so only at a higher cost than the original producer who has developed the trademark.

28 Trademark owners are also protected against confusingly similar signs. It would, for instance, not be possible to brand sneakers as being "Nike-like" or sell stereo systems with the indication "Spanish Sony".

29 For an example of how the link between climate and product characteristics may be described see, for instance, the European PDO for Comté cheese, which "is produced from raw cows' milk from the local breed 'Montbéliarde'. The herd is fed on pastures or hay from the delimitated area in the Jura mountains. The particular flora due to the soil and climate of that semi-mountain area, the local breed the milk of which has a specific ability to be processed into cheese, producers' skills in elaboration and maturing taking advantage of natural germs, confer on this cheese its genuine and distinctive characteristics among cheeses of the same category" (Vital, 2000: 52).

30 To the extent that consumers are interested in credence good characteristics, government intervention may also be desirable, as discussed previously.

31 Quality control and prevention of free-riding are typically achieved through the existence of some kind of monitoring body consisting in a group of producers or producer representatives. The mere existence of such a monitoring and coordination mechanism carries the risk of non-competitive behaviour by the relevant producer group, as discussed in OECD (2000a).

32 An increase in average quality does not imply that lower and thus cheaper products disappear from the market, which would potentially hurt low-income consumers. There are also exceptions to the result that trademark protection for experience goods leads to higher product quality and thus higher overall welfare, as shown in Grossman and Shapiro (1988b).

(d) Impact of GI protection on price

In this Section, empirical evidence regarding the impact of GIs on price is examined. In theory, consumers may be willing to pay a higher price for goods with protected GIs because this removes uncertainty regarding the origin and quality of products bearing those indications. They are assured that these products come from the right region and have the desired quality. Consumer surveys tend to confirm this increased willingness to pay. The 1999 EU consumer survey, for example, found that 40 per cent of consumers were willing to pay a 10 per cent premium for origin-guaranteed products (EU Commission, 2003). Torelli (2003) reviews the survey literature on Italian consumers and concludes that consumers are generally willing to pay a higher price for products with protected regional appellations in order to have greater guarantees of quality. However, he also cautions that the responses to the survey may be exaggerated and may not predict how consumers will actually behave in the marketplace.

There is some anecdotal evidence about the premia attached to protection for indications of geographical origin. For example, Rangnekar (2003) reports that Jamaican blue mountain coffee received a premium of 14.50 dollars per kilo in comparison to benchmark prices of Columbian milds. The EU Commission (2003) has also stated in its reports that French cheeses with GIs are sold at a premium of 2 euro per kilo over French cheeses without GIs, French "Poulet de Bresse" has a market price 4 times higher than regular French chicken, and Italian "Toscano" oil has sold at a premium of 20 per cent since it was registered as a GI in 1998.

Some econometric work has been undertaken on regional origins and wine prices. The primary econometric tool used in the analysis is the hedonic pricing model (Rosen, 1974). This is a technique that allows the price of a product to be decomposed into contributions made by its various characteristics.[33] Applied to wine, it would allow estimation of the value of such important features as geographical origin, variety, vintage, etc., whose sum make up the price of the wine. Combris, Lecocq and Visser (1997) used a hedonic pricing model to test the importance of labels on Bordeaux wines, which includes information on their regions of origin, as against experts' opinions of wine quality. They find that Bordeaux wine prices are influenced by the information contained in labels on the bottles. Similarly, Landon and Smith (1998) show that the reputation of Bordeaux wines, including their regional origins, plays a very large role in explaining their prices. For example, Table IB3.1 shows that a Pomerol will fetch 15 dollars more per bottle than an average Bordeaux.

Table IB3.1
Impact of regional classification on price of Bordeaux

Regional classification	Real dollar marginal effect on price
Graves	10.08**
Margaux	5.48**
Pauillac	11.84**
Pomerol	15.15**
St. Emilion	8.04**
St. Estèphe	11.86**
St. Julien	9.43**

** Significant at the 5% level.
Source: Landon and Smith (1998).

Using a similar approach, Schamel (2000) found that regional reputation was an important factor in determining the price of Cabernet Sauvignon in the United States market. Bombrun and Sumner (2003) examined an extensive list of California wines and found that wines with coastal region appellations commanded higher prices than those with just the California appellation. So holding other characteristics constant, wines with a "Napa Valley" appellation were priced 61 per cent higher than wines with a "California" appellation. Schamel and Anderson (2003) extended this analysis to the case of Australian wines and found that regional origin was becoming a more important determinant of prices over time (1992-2000), with average premia of up to 31 per cent in 2000. The coefficients in Table IB3.2 show the percentage difference between wines of different grape varieties and regional origins relative to a benchmark bottle of Shiraz produced in the Barossa Valley. Hence, a Pinot Noir is cheaper by 22 per cent compared to a Shiraz from the Barossa Valley, while a wine produced in Canberra is 25 per cent more expensive.

[33] In hedonic models, the observed market price of a product is the sum of the implicit (unobserved) prices paid for each attribute of the product. The assumption of these models is that the preferences (utility functions) of consumers depend on the attributes of a product. Producers, in turn, have cost functions which depend on the attributes of the product. In equilibrium, markets determine the implicit (unobserved) prices of these characteristics.

Not all the empirical work on wines has used hedonic models. Using a conjoint analysis framework,[34] Gil and Sánchez (1997) compared consumer preferences for different wine attributes in two Spanish regions, Aragón and Navarra. The authors used three wine attributes in the test: price, origin and grape vintage year. They found that consumers in both regions assigned more importance to the origin of the wine than to grape vintage or price.

The statistical evidence from these studies, involving a range of quality wines grown in different continents and hemispheres, supports the conclusion that consumers use regional names to infer quality and pay a significant price premium for those wines from areas with established reputations. But in the case of the Australia study, Schamel and Anderson go further and argue that the introduction of legislation in 1993 to allow registration of GIs for wines was an important contributing factor to this trend by increasing the returns to regional promotion of wines. At the same time, Table IB3.2 shows that wine consumers discriminate by grape varieties, which are also capable of commanding mark-ups.

Beyond the case of wines, this report looks at the specific example of Darjeeling tea. While the original intention was to analyse the evidence for a wider range of products (including various types of blue cheeses, Jasmine rice, Cava and Champagne) which enjoy GI protection, the lack of data for many products was a major constraint. Hence, beyond the specific conclusions that may be drawn from an examination of Darjeeling tea, there is a clear need to broaden the quantitative analysis to include more GI products in the future.

Table IB3.2
Impact of regional classification on price of Australian wines

Variety	Price effect
Pinot Noir	-0.223**
Chardonnay	-0.288*
Riesling	-0.42*
Sauvignon Blanc	-0.336*
Semillon	-0.324*
Regional classification	**Price effect**
Great Southern	0.267*
Margaret River	0.276*
Other WA	0.233**
Adelaide Hills	0.301*
Clare Valley	0.234*
Coonawarra	0.177***
Eden Valley	0.152***
Other SA	-0.194**
Canberra	0.253*
Hunter Valley	0.163*
Riverina	-0.280**
Other NSW	0.252*
Bendigo	0.376*
Grampians	0.218**
Macedon Ranges	0.322*
Mornington Peninsula	0.310*
Pyrenees	0.280**
Yarra Valley	0.212*
Other Victoria	0.266*
Northern Tasmania	0.259*
Southern Tasmania	0.386*

*** Significant at the 1% level.
** Significant at the 5% level.
* Significant at the 10% level.

Source: Schamel and Anderson (2003).

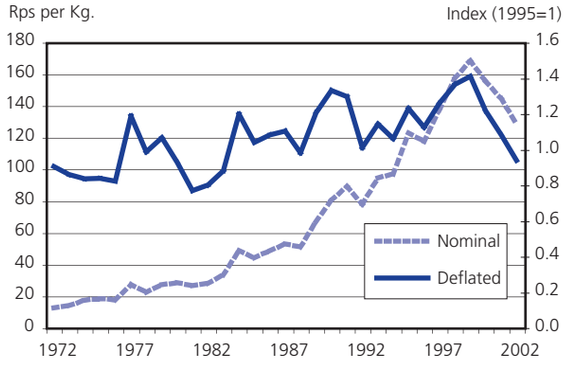
Darjeeling tea is a specialty tea grown in the West Bengal region of India. Darjeeling tea is grown on about 19,000 hectares of hilly land (from 700 to 2,000 metres), with production estimated at a little over 5,000 metric tons in 2002. About 70 per cent of production is exported, with the major export markets being the UK, Germany, Japan, the United States, the Netherlands and France (Rao, 2003). In 1983, a Darjeeling logo was created. This logo was registered as a certification mark in India in 1986. Registration of the logo as a certification mark in major export markets occurred later – in 1988 in the United States and 1997 in the United Kingdom. The Indian Tea Board has also separately registered the word "Darjeeling" as a certification mark.[35]

[34] Conjoint analysis is a technique to measure the importance of various attributes of a product in the consumer's purchasing decision. As the name implies, it is used when the consumer's choice depends on the joint effects of the product attributes. Unlike traditional surveys, the design of conjoint analysis is more rigorous and requires respondents to make tradeoffs that are similar to those in the market. Unlike the hedonic pricing model which produces a set of implicit prices for different attributes of the product, the output of conjoint analysis is a ranking of the product attributes and the consumer's willingness to make tradeoffs among the attributes. See Green and Srinivasan (1978).

[35] See Das (2003).

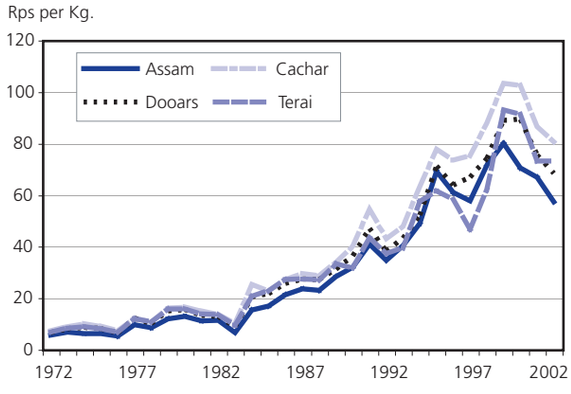
Several effects should arise from the introduction of legal protection for the name "Darjeeling". There should be an improvement in price following the introduction of protection (timing effect). The price should rise relative to other closely related products (price premium effect). This premium effect could be accentuated if producers use the protected name as a marketing or promotion tool to draw attention to the product. And we should expect to see an improvement in the quality of the product (quality effect). These three elements should allow us to distinguish the effect of legal protection from other factors which could shift demand and supply and change prices.

Chart IB3.1
Nominal and deflated price of Darjeeling tea, 1972-2002



Source: International Tea Committee (various issues) Annual Bulletin of Statistics and IMF International Financial Statistics.

Chart IB3.2
Price differential between Darjeeling and other teas, 1972-2002



Source: International Tea Committee (various issues) Annual Bulletin of Statistics.

The Indian Tea Board conducts weekly auctions of various grades of tea. The data used are the annual average prices and the quantities sold at auction in Calcutta from 1972 to 2002 of various tea leaves: Darjeeling, Assam, Cachar, Doaars and Terai. The nominal price of Darjeeling tea has shown a pronounced rise since about 1984 (Chart IB3.1). However, the deflated price of Darjeeling only rose until 1998 and fell afterwards.[36] The period under consideration also witnessed an increase in the price difference between Darjeeling and other teas sold at auction in Calcutta (Chart IB3.2). Regressing these price differences on a time trend reveals that the increases were statistically significant. But is the legal protection of the name "Darjeeling" part of the reason?

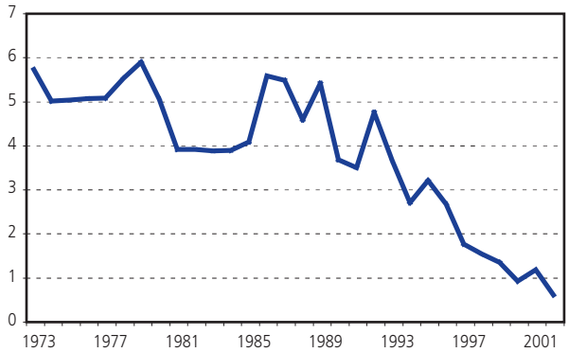
To test the impact of GIs, the demand for Darjeeling tea was estimated during the period 1972-2002. The results obtained suggest that GI protection has increased the price of Darjeeling tea in total by less than 1 per cent in real terms over the 1986-2002 period (See Box IB3.2 for more details). This result is suggestive of only a very modest price premium effect of GI protection, although there is some indication of improvement in quality in Darjeeling tea production which can be gleaned from the decline in the proportion of Darjeeling tea dust relative to Darjeeling tea leaf (Chart IB3.3). Tea brewed with whole-leaf tea is considered the best tasting while tea bags made from fannings and dust are usually considered inferior. Beginning in the mid-80s, there is a decline in the share of Darjeeling tea dust to Darjeeling tea leaf in total sales. This is consistent with tea estates in the Darjeeling region improving the quality of their tea farming and thus producing more tea leaves for sale in the market and losing less of their production to tea fanning and dust.

According to this study, GI protection seems hardly to have improved Darjeeling tea prices. One explanation for this could be a gap between the legal protection that has been given to Darjeeling tea in India and the quality of enforcement. Pettigrew (2000) estimates that 40,000 tons of tea is sold every year as Darjeeling tea in the world market, whereas production of Darjeeling tea in the area has not exceeded 10,000 tons in any year since 1976.

[36] The nominal price is deflated by the Indian wholesale price index.

So far, the empirical literature on GIs is extremely limited. A number of studies have examined the contribution made by regional origin to prices but there have been few studies made on the effect of introducing legal protection for GIs and none which has sought to measure the impact of different levels of GI protection. The case study of Darjeeling has been an initial attempt to close the gap on the first of these points. Further improvements in the methodology and more empirical studies on other products are needed to obtain a better understanding of the value of GIs to consumers and producers alike.

Chart IB3.3
Proportion of dust Darjeeling to leaf Darjeeling tea sold, 1973-2002
(Percentage)



Source: International Tea Committee (various issues) Annual Bulletin of Statistics.

Box IB3.2: The case of Darjeeling tea

An inverse demand equation for Darjeeling tea was estimated with its deflated price as the dependent variable. The explanatory variables are a dummy for geographical indication, quantity demanded, the deflated price of a substitute tea and growth in GDP in five major export markets (United States, United Kingdom, Germany, Japan and the Netherlands). The dummy takes on a value of 1 beginning in 1986, when protection was introduced. The use of growth in foreign GDP as an explanatory variable reflects the fact that most of Darjeeling production is exported.

Since price and quantity are both endogenous variables, estimating the equation by ordinary least squares (OLS) will yield inconsistent estimates of the regression coefficients. The demand equation has therefore been estimated by instrumental variables (IV). The technique involves identifying and using a set of exogenous variables (instruments) which are correlated with the explanatory variables but not the error term in the demand equation. In this case, the additional variables used are climactic variables that affect supply but not demand. IV estimation is similar (but not identical) to a two-stage estimation process which first involves regressing all the endogenous variables on the instruments and then substituting the fitted values for the endogenous variables in the second stage of the estimation (Davidson and MacKinnon, 1993).

The instruments include: a) all the exogenous variables of the demand equation – constant, dummy variable, the price of Assam tea leaf (substitute), GDP growth in key export markets; and b) exogenous variables which affect supply but not demand – average annual rainfall, average temperature and the supply of Assam (a substitute). All variables, except the GI dummy, are in natural logarithms. The results of the IV regression are shown below. The first column of the table lists the explanatory variables. The second column shows the estimated value of the coefficients. The third column reports the t-statistics (a measure of the statistical significance of the estimates), and the last column indicates the probability that the estimated coefficient is zero.

Instrumental Variable Regression: Deflated Price of Darjeeling Tea, 1972-2002

Parameter	Coefficient	T-Statistics	Probability
Constant	4.106	3.789	[.000]
Geographical Indication	0.086	1.923	[.054]
Quantity Demanded	-0.288	-2.572	[.010]
Price of Assam Leaf	0.591	7.431	[.000]
Export Market GDP	2.611	2.436	[.015]

R^2 = 0. 87

Note that all the variables have the correct signs. The constant, quantity demanded and the price of the substitute are significant at the 1 per cent level. The growth in GDP in export markets is significant at the 5 per cent level, while the dummy for GIs is significant at the 10 per cent level. The R^2 (which measures the explanatory power of the regression) suggests that a large part of the variability in price is explained by the set of variables. The coefficient on the GI dummy represents the price premium of protection, which amounts to about 1.08 rupees per kg. in 1995 prices. But this represents less than 1 per cent of the price of Darjeeling during the 1986-2002 period, suggesting that GI protection hardly added a price premium.

Data sources: The prices and quantities of Darjeeling and other teas are from various editions of the Annual Bulletin of Statistics published by the International Tea Committee. The Indian Wholesale Price Index used to deflate nominal prices and the GDP data of the United States, Japan, Germany, the United Kingdom and the Netherlands are from the IMF's International Financial Statistics CD-ROM. Rainfall data of Northeast India, where West Bengal is located, is from the Indian Institute of Tropical Meteorology. Average temperature observed in the Gauhati weather station is from the NASA Goddard Institute for Space Studies.

(e) Conclusions

The TRIPS Agreement is the first multilateral agreement defining the term "geographical indication" as such. WTO Members follow a variety of practices in implementing their TRIPS obligations to provide the legal means for interested parties to prevent the use of GIs in a manner which misleads the public as well as to prevent acts of unfair competition. These legal means can be broadly categorized into horizontal laws focusing on business practices, trademark law and special means of protection.

In international trade, it may happen that producers, recognized at home as having rights in a GI, export their products to markets where the same sign is in use by other parties. There are a number of guiding principles in national and international law which are used to resolve such situations.

Stronger protection is available under TRIPS to prevent use of a GI identifying wines for wines (respectively spirits for spirits) not originating in the indicated place. Besides the debate on whether this level of protection should be extended to GIs for products other than wines and spirits, there are negotiations under way concerning the establishment of a multilateral system of notification and registration of GIs for wines and spirits. These negotiations have proven difficult, in particular in regard to any legal implications of registrations on such a register.

Taking a step back from the complex legal issues raised in WTO discussions, a number of economic concepts offer useful insights into the purpose and effects of GIs in markets for differentiated products. In markets characterized by asymmetrical information between producers and consumers, GIs can act as one instrument to make a product recognizable to consumers who previously experienced and appreciated specific properties of that product. Distinctive signs, such as GIs, allow for repeat purchases through which, in the case of experience goods, maintenance of the peculiar mix of product characteristics is rewarded. The mark-up obtained enables producers of those products to incur the higher production costs necessary to maintain those qualities compared to other varieties. As a pre-condition, free-riding by third parties must be prevented in order to protect the information capital embodied in the sign – hence the need for protection of such signs at the national level and, when it comes to international trade, at the international level. In consequence, markets of differentiated goods will, in general, be characterized by a larger product variety and higher product quality on average, to the benefit of consumers.

With the exception of wines, few econometric studies have been undertaken on the contribution made by regional origin to price. Hardly any study has been carried out to examine specifically whether a price premium is obtained when GI legislation is introduced and none that analyses the differential impact of different levels of GI protection. Our study of Darjeeling tea suggests that the GI protection given to this term did not have a noticeable effect on price. These results may suggest that protection is not enough and that it must be coupled with strict enforcement and significant investments in promotion of the product if consumers are to attach value to the indication. There is a need for further empirical research in this direction covering a larger group of products.

II COHERENCE

The starting point for this study is that appropriately designed and sequenced trade liberalization measures and a well crafted set of trade rules can make a positive contribution to growth and development. But the extent of that contribution also depends on other policies. The notion of coherence has been deployed in this study to characterize a situation in which relevant policies are pulling together in the same direction. In a world of multiple policy objectives and priorities, and one where no consensus exists on the ideal policy set, the concept of coherence cannot be given operational precision – rather, it is indicative of the reality that policies are inter-dependent, and that poor policy or neglect in one area can undermine the efficacy of efforts in another.[1] Coherence cannot be uniquely defined unless a set of policy objectives is formally established and the objectives ranked in terms of priorities that indicate how trade-offs are to be made when these are necessary. A precise specification of a fully coherent policy set would also identify the exact nature and timing of all relevant government interventions. Any such undertaking is well beyond the scope of this study. Instead, coherence in this context simply refers to the idea that mutually supportive approaches in related areas of policy are likely to produce greater harmony between intent and outcome. Coherence as discussed here is a matter of degree, and more coherence means that the benefits of sound trade policies are greater than they would be without supportive policies in other areas.

Seen through the prism of ensuring the effectiveness of trade (and investment[2]) policy, what are the other policy areas that are most important? This study identifies four broad policy areas, each of which is analysed in relation to its impact on trade and the economy more generally. The areas covered are macroeconomic policy, infrastructure, the structure of domestic markets, and governance and institutions. The study aims to show how coherent policy in each of these areas can contribute to the attainment of trade policy goals.

The first four Sections of the study take up the policy areas mentioned above. The fifth Section then considers the question of how far international action is needed in order to ensure coherent policy-making at the national level. This discussion is rolled into a brief consideration of how the WTO can contribute to policy coherence through the provision of mechanisms for international cooperation.

The focus is on policy content and design and not on process. It should be noted, however, that the processes through which policy are conducted are also vital for coherence. For example, the ability of different ministries to work together effectively in a national setting will make a significant difference to outcomes. Poor implementation can be every bit as damaging as poor policy. Similarly, public attitudes regarding the legitimacy of policy decisions will depend on the nature of domestic policy-making processes and the degree to which individuals and groups consider they have a voice that is heard.

A INTERNATIONAL TRADE AND MACROECONOMIC POLICY

1. INTRODUCTION

Trade and macroeconomic policies are well known tools of government. What is less well known are their linkages and how they interact. Trade officials like to think of trade policy as an instrument for protecting industries or as a bargaining tool in international negotiations. In developing countries, which often have a small tax base, government officials rely on tariff revenues to finance government expenditures.

In contrast, central bank officials and officials from ministries of finance are primarily concerned about inflation, government budgets and taxation policies, respectively. Central banks typically have domestic monetary targets or inflation as their policy objectives, while the country's trade performance is only a matter of concern in terms of the foreign reserve position and/or the emergence of unsustainable current account deficits.

[1] For some interesting reflections on the use and misuse of the notion of coherence, see Winters (2002).

[2] This study does not discuss investment policy separately as an ingredient of coherence. This is because investment policies and trade policies are considered part of the same package defining a nation's international economic relations, and effectiveness in each of these areas will be conditioned in comparable ways by the other policies discussed here.

Important linkages exist between trade and macroeconomic performance and between trade and macroeconomic policies. Should governments seek to reduce current account deficits with the help of trade policies, for example, rather than other policies? Historically, governments have always been tempted to use trade restrictions to restore balance of payments equilibrium.[3] If governments have a choice, what policies are best to achieve this objective?

Another set of relevant questions concerns movements of capital. Since inflows of foreign capital facilitate financing of current account deficits, they may indirectly affect the scope and even the conduct of trade policies. Should governments create conditions to facilitate the inflow of foreign capital, for example, or should they rather rely on domestic sources of financing? What are the concerns of governments about foreign capital as a source of financing a current account deficit? What are the advantages of more open capital markets as a policy option to maintain external equilibrium?

This Section addresses these questions. The main objective is to identify the linkages that exist between trade and macroeconomic performance and between trade and macroeconomic policies. We shall draw heavily on the existing literature with the view of providing a "roadmap" for policy makers.

Subsection 2 begins with a summary of intuitive explanations of the linkages between trade and macroeconomic conditions. This will be followed in the next subsection by a brief exposition of the framework that provides the theoretical explanations of these linkages. Subsections 4 and 5 provide a review of the relevant empirical literature. The effects of trade and trade policy on macroeconomic performance are discussed in subsection 4, and the reverse – the effect of macroeconomic performance and policy on trade – is discussed in subsection 5. Policy implications for the conduct of trade and other policies arising under conditions of disequilibrium of the external balance are discussed in subsection 6. Subsection 7 draws conclusions.

2. TRADE AND MACROECONOMICS: SOME INTUITIVE EXPLANATIONS

Trade and macroeconomic variables do not operate in a vacuum. They are strongly inter-related and inter-dependent. Before formally explaining the linkages, it may be useful to provide a few intuitive explanations of those linkages.

Broadly speaking, the linkages are of two kinds. First, macroeconomic variables, such as national income, employment, price level, aggregate investment and consumption (and hence savings), are affected by trade.[4] Trade affects macroeconomic performance in terms of the dynamics of the economy's growth, its stability and distribution.[5]

Imports may be used as inputs in production and, therefore, directly affect the level of output and, indirectly, demand for labour and thus employment. Imports of consumer goods reflect choices of consumers and, hence, their decisions to spend their incomes or to save. In addition, imports compete with domestic production and may displace domestic firms from the market. As a result, domestically produced output will be affected and so will income and employment - adversely, if domestic firms are unable to compete, or positively, if they become more competitive.

[3] For a relevant discussion of this point, see, for example, Lawrence (1996), chapter 3.

[4] Effects of trade on employment and the price level are indirect. Changes in employment are derived from changes in demand for labour while changes in the price level also depend on the relative changes of domestic aggregate demand and supply.

[5] Trade and trade policy primarily act on microeconomic variables, such as productivity and efficiency of resource allocation. Although exports and imports are part of the supply and demand relationships of an economy, more complex and indirect mechanisms are at work to link them to monetary, fiscal, balance of payments and output factors. The microeconomic relationships underlying the effects of trade on macroeconomic variables are not discussed here in further detail and the interested reader may refer, for instance, to World Trade Report 2003, Section II.A.

Exports, which constitute a component of aggregate demand, stimulate growth of domestic output and hence income and employment. By expanding markets for domestic firms, exports create conditions for production costs to fall as firms benefit from economies of scale. As a result, firms' productivity will increase. Many countries have relied on exports as an "engine" of economic growth.

Second, the reverse causality – from macroeconomic variables to trade – also holds true. Domestic growth will increase demand for imports and divert resources away from production of exportables to production for domestic markets. Other things being equal, the trade balance will tend to deteriorate. By the same token, stagnating domestic demand will "push" producers to look for markets abroad. Consequently, exports will tend to grow and the trade balance will improve.

Changes in the domestic price level also have "spillover" effects on trade. Inflation lowers the competitiveness of domestic firms *vis-à-vis* foreign imports and foreign firms in external markets. Once again, imports will tend to rise, and exports fall. Consequently, the trade balance will deteriorate.

Changes in foreign prices are also important for the trade and macroeconomic performance of countries – in particular that of small countries which are inherently more dependent on international trade. Rising world prices relative to domestic prices will encourage exports and discourage imports. In addition, rising import prices will increase costs of imported inputs and may generate inflationary pressures. Rising export prices will increase the profitability of export transactions, increase cash flows of exporting firms and, hence, provide additional incentives to shift resources to the production of tradable goods. Changes in relative foreign prices affect a country's terms of trade and, thus, its balance of payments situation.

Trade is also sensitive to changes in macroeconomic policies. For example, an expansion in monetary or fiscal policy will increase aggregate spending which includes spending on imports, and influence the allocation of resources between tradables and non-tradables. Macroeconomic policies also affect the conditions in financial markets and thus the incentives for capital flows to move in and out of the country. This, in turn, is a determining factor of the amount of external resources available for financing current account deficits.

The last comment concerns the importance of macroeconomic factors for trade relative to microeconomic forces. Trade can be determined by changes in macroeconomic variables such as consumer spending or investment. If, for example, the US monetary authorities lower interest rates, domestic spending on domestically produced goods and imports will rise. Similarly, resources used in the production of exportables may be shifted to production for the home market. On the other hand, trade can be also affected by the performance of sectors or individual firms. By way of another example, US exports may expand because of new contracts signed by, say, Boeing to sell aircraft to European countries. In the latter case, the expansion takes place as a result of the success of Boeing rather than changes in macroeconomic variables or policies. The distinction between macro- and micro-economic factors needs to be kept in mind when reading the rest of the Chapter, which emphasizes the importance of the former.

3. A THEORETICAL FRAMEWORK

(a) Macroeconomic equilibrium in an open economy

Trade and macroeconomic variables are inter-related through a set of formal economic linkages. These relations form a macroeconomic system of an open economy which identifies a set of conditions necessary to maintain the economy in equilibrium (Box IIA.1). The link between trade and macroeconomic variables stems from the so-called fundamental macroeconomic identity which, in turn, constitutes the basis for a theory known as the "absorption model". The absorption model is frequently combined with another theoretical framework known as the "monetary model" which provides a foundation for the monetary approach to the balance of payments.

The absorption model links macroeconomic variables such as consumption, savings, investment and income with the external balances (typically the current account). These relations describe the "real" side of the economy. The monetary model then links the domestic real variables with monetary variables. Some aspects of these models are controversial, but they are founded in strong theory and continue to be fundamental in the provision of policy advice, especially in the context of IMF conditionality.[6]

Macroeconomic equilibrium in a closed economy is defined as the condition when planned (*ex ante*) aggregate spending (or absorption) equals actual income (output). In an open economy, this requires that planned or *ex ante* investment equal the sum of the savings of the private sector, the public sector and the amount of savings foreigners are making available to domestic residents or the government. Thus, in an open economy, macroeconomic equilibrium has two components: the first is internal balance, related to domestic goods, financial and labour markets. Equilibrium is typically defined as output at full or near full employment.[7] The second component is external balance which is defined in terms of a sustainable current account balance and its financing. In real world situations, this implies a judgment about sources of external financing and the sustainability of the country's external debt.[8]

Combining both elements in addressing the issue of current account balances, it follows that:

- The level of current account imbalance directly reflects the difference between national income and national spending. An excess of national spending over national income is only possible in the presence of the corresponding deficit on the current account. Conversely, an excess of national income over national spending leads to domestic "savings" which are channelled into an excess of exports over imports (a current account surplus).

- In the absence of capital flows, a current account deficit is only possible by running down foreign reserves or foreign borrowing by the banking system. In the absence of reserves or foreign borrowing, a balance in the current account can only be achieved through adjustments of domestic macroeconomic variables.

6 It may be useful to quote Michael Mussa, the former IMF Chief Economist: "In this connection it is a well known (and often cited) conclusion reached by Richard Cooper at a 1982 conference on IMF conditionality, namely, that any five people chosen randomly from a diverse group of participants at the conference would, if confronted with an external crisis from a position of authority, produce an adjustment program 'that would not differ greatly from a typical IMF program', seems as pertinent and valid today as it was then." (Mussa and Savastano 1999, p.22).

7 The Keynesian concept of unemployment is sometimes accepted as a part of the definition and reflects difficulties in moving to a "full employment" level due to market imperfections or the workings of "money illusion". In either case, an expansion of aggregate demand will not lead to an increase in output, but to inflation. More frequently, however, internal balance is defined in terms of "potential" output, i.e. output that can be reached at full capacity.

8 Note also that the model assumes the absence of foreign currency restrictions on current account transactions, a situation that is quite common in many developing countries. Thus, changes in the current account reflect changes in domestic relative prices, changes in the terms of trade, and changes in domestic monetary conditions. In the presence of foreign currency restrictions, external "balances" are achieved by foreign exchange rationing.

Box IIA.1: The monetary model of balance of payments

The role of monetary and fiscal policy in restoring and preserving external balance can be better understood with the help of theoretical models based on or consistent with the "absorption approach" to balance of payments. The latter, in turn, is based on the fundamental macroeconomic identity elaborated further below. One of these models – arguably the best known – is the monetary model.[1]

The IMF monetary model contains the following elements (among others):

$$dM = dR + dDC \qquad (1)$$

Identity (1) states that the change in the money supply (dM) is by definition equal to the change in the country's foreign reserves (i.e. net foreign assets) (dR) plus the change in the domestic credit of the banking system (dDC).

$$dR = X - IM - NF + dK \qquad (2)$$

Identity (2) states that the change in foreign reserves (dR) is by definition equal to exports (X) minus imports (IM) of goods and services minus net factor payments and current transfers (NF) plus net foreign capital inflows of the non-bank sector (dK).

The link between monetary and fiscal policies with external accounts is established through the "fundamental macroeconomic identity". Defining first

$$Y = GDP - NF \qquad (3)$$
$$GDP = C + I + (X - IM) \qquad (4)$$
$$A = C + I \qquad (5)$$
$$CAB = X - IM - NF \qquad (6)$$

where, Y — gross national disposable income,
A — domestic absorption (consumption C and investment I),
CAB — current account balance of BOP,

and substituting (4), (5), (6) into (3) gives the following "fundamental macroeconomic identity":

$$Y = C + I + (X - IM) - NF \rightarrow Y = A + CAB \text{ and thus, } CAB = Y - A \qquad (7)$$

The current account balance (CAB) is a difference between country's income (Y) and domestic absorption (A). Equation (7) also highlights that the current account shows a surplus if income is greater than domestic absorption and a deficit in the reverse case. So the CAB deficit can be reduced by a decline in absorption (relative to income) or by an increase in income (relative to absorption).

Now, combining equations (7) and (2) we obtain

$$dR = Y - A + dK \qquad (8)$$

which shows that if the excess of domestic absorption over income is not financed entirely by inflows of foreign capital this will lead to a rundown of the net foreign assets of the banking system.

Equation (1) can be rearranged so that it relates the change in net foreign assets to the difference between change in money supply (dM) and the change in domestic credit (dDC):

$$dR = dM - dDC \qquad (9)$$

Equation (9) shows that foreign reserves decline to the extent that the change in the total money stock is less than the change in domestic credit. Combining equations (7), (8) and (9) gives

$$Y - A + dK = dM - dDC \qquad (10)$$

Thus, the excess in the change of domestic credit over the change in money stock will be equal to the current account deficit (assuming no net inflow of foreign capital).

[1] For more details see, for example, Polak (1997).

(b) Macroeconomic instability: shocks and unsustainable current account deficits

It is customary to discuss the nature of current account imbalances in terms of four themes.[9] The distinctions are important because they determine the way in which countries can respond to the emergence of current account deficits and the way in which they will design their policies. The themes are: (i) origins of current account deficits; (ii) channels of transmission; (iii) persistence of current account imbalances; and (iv) timing and sequencing.

Three of these themes will be discussed under the subheadings that follow. The fourth, which concerns timing and sequencing – the speed with which policymakers should respond to external balances and in what policy sequence – raises complex questions. How quickly, for instance, can adjustment measures be taken and made effective? Should policies be taken in a particular sequence? For example, should capital accounts be opened only after a period of stable and unrestricted foreign currency transactions on the current account? What role should trade liberalization play as a part of adjustment programs? Should liberalization be taken as a part of the adjustment program or should it be postponed? What are the merits of immediate response as opposed to delays? The trade policy aspects of these questions will be referred to further in various contexts from subsection 4 onwards.

(i) Origins of current account imbalances

Current account imbalances may have two different origins – internal or external. External shocks are, for example, terms of trade changes, new restrictions on market access, the collapse of markets,[10] volatility of commodity prices or changes in interest rates. Internal shocks include a drop (change) in domestic investment or consumption, a change in savings habits, a change in domestic competitiveness or productivity in particular industries, or a change in government fiscal policies (spending and revenues).

Several studies show that the origins of disturbances to internal and external balances vary but that domestic origins dominate. This presumption has also been formally tested in studies, such as the ones conducted by Glick and Rogoff (1995) and Prassad and Gable (1997). Moreover, even if the shocks are of external origin and imbalances emerge, governments will most likely still have to respond with domestic policy measures.

(ii) Channels of transmission

While theory is quite clear about the economic relationships (Box IIA.1), it does not provide an obvious explanation of the mechanism through which the link between macroeconomic conditions and policies and trade works.[11] There are several channels of transmission. One is the financial sector. For example, inflation can be highly detrimental to the process of investment selection and trade specialization. Firms are likely to find it easier to obtain bank credit during an inflationary period provided they are operating in a growing market even though they may not be operating in segments of the markets in which the country has a comparative advantage. As Corbo et al. (1992) put it, the relative price variability that typically characterizes high-inflation environments is not conducive to the realization of the efficiency benefits generally expected from the removal of price distortions, such as tariffs, which, in turn, distort investment decisions.

Similarly, when the financial sector is under stress, banks may be particularly keen on borrowers who are willing to pay the highest rate of interest, even though they may be high risk. This "adverse selection" of clients as well as the problems arising from an inflationary environment could distort the pattern of the country's specialization and hence the dynamics of trade growth. In this case, the transition channel of domestic instability is also the financial sector.

9 See, for example, Calderon et al.(2003) who also provide a brief review of the relevant literature.

10 For example, the collapse of the so-called COMECON market which resulted in a virtual disappearance of the traditional markets for Central and East European exporters in the early 1990s.

11 The theoretical models discussed in the previous subsections analyse the relationships in the context of comparative statics defining two points of equilibrium without explaining the path along which the adjustment takes place.

Another important channel of transmission is the exchange rate market. Eichenbaum and Evans (1995), for example, suggest that exchange rates are primarily determined by monetary policies. Macroeconomic instability may result in large swings in expenditures and prices which, in turn, will lead to changes in foreign currency markets, pressures for exchange rates to adjust and, consequently, changes in trade flows. Their findings are in contrast with most of the literature which typically relates movements in nominal and real exchange rates to business cycles.[12] It is interesting to note that trade policy may also be a domestic factor affecting exchange rates. A study of Hau (1999), which draws on a sample of 54 countries, concludes that cross-country variations in the volatility of the effective real exchange rate can be explained by differences in trade openness.[13]

Monetary shocks, like other domestic shocks, can have different origins. In many developing and transition countries these monetary shocks often come from central bank financing of fiscal deficits. For a variety of reasons these countries' abilities to tax are often heavily limited, and not in line with their governments' propensity to spend.

(iii) Persistence of current account imbalances

High and rising current account deficits pose a serious threat to an economy. They reflect domestic imbalances which ultimately will have to be restored. This would require an appropriate domestic adjustment. The adjustment may take place automatically in the market place. Alternatively, the adjustment may require changes in government policies. The risk of large current account deficits is that they may become "excessive" as investors lose confidence and demand repayment or re-financing of loans and/or as countries lose foreign currency reserves. In brief, some current account imbalances are sustainable, others are not.

The distinction between persistent and transitory current account deficits primarily arises from the difference between permanent and transitory shocks. The question has been raised as to whether this distinction has implications for the way in which current account balances change. It is possible to argue, for example, that a persistent decline in terms of trade (due to, for example, a collapse of commodity prices) will widen the current account deficit because people are more likely to increase savings and, hence, reduce consumption as a short-term phenomenon rather than on a persistent basis. On the other hand, as argued by Obstfeld and Rogoff (1995a), transitory productivity shocks may move the current account into surplus, but may not be accompanied by a growth in investment reflecting responses of investors to new opportunities generated by the growth of productivity.

The nature of shocks – i.e. whether they are persistent or transitory – affects both the "investment" side of the macroeconomic balance as well as "savings". As the study of Obstfeld and Rogoff (1995a) above indicates, the shocks of productivity changes – as an example – may affect investment decisions. The critical question for policy makers is whether these shocks lead to a permanent change in savings behaviour or not. A transitory increase in productivity will not be translated into a permanent improvement of the current account balance while a permanent increase in productivity will have that result.

The nature of shocks will affect the way in which economic agents respond to these shocks and decide whether the current account deficit can be financed by running down reserves or by borrowing, or whether an adjustment is necessary to restore external balance. The academic "wisdom" would suggest that temporary imbalances should be financed by borrowing or lending depending on the nature of the imbalance. Permanent imbalances should be addressed by adjustment through policy changes. Thus, the challenge for policymakers is to manage shocks with the appropriate balance between discretion and recourse to policy rules. Part of this challenge, for all economies, is to avoid overreacting when correcting macroeconomic imbalances.

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12 See, for example, Frankel and Rose (1994). However, Eichenbaum and Evans' findings were supported by Prassad and Gable (1997) who conclude that nominal shocks, such as monetary expansion, tend to improve the trade balance in the short run.

13 The flow of causation can be reversed under conditions of an overvalued exchange rate. Disequilibrium exchange rates can lead to changes in trade policy. See Drabek and Brada (1998).

4. Is trade important for macroeconomic performance?

The linkages between trade and macroeconomic conditions and policies that are firmly established in theory are also supported by empirical evidence. The linkages have been studied in two separate ways. Most of the studies have looked at the impact of trade and trade policies on macroeconomic performance. An alternative approach has been to study the role of macroeconomic variables and policies as a determinant of trade. This subsection looks at the former – the linkage from trade to macroeconomic performance while the reverse relationship is discussed in the next subsection.

Since macroeconomic performance can be defined in different ways, the empirical literature covers a variety of issues. Most studies have looked at the impact of trade policies and the degree of market openness on economic growth. Other studies have examined the impact of trade policy on income distribution and poverty. But there are also other relevant effects of trade with macroeconomic implications. These include, in particular, the effects of trade on the domestic price level and inflation.

The evidence on the two types of linkages noted above is provided in Table IIA.1. The Table is organized into three panels. Panel A provides evidence on the effect of trade on economic growth. The Table also includes a list of variables linked to macroeconomic policies and other macroeconomic factors that were identified in each model reported in the Table. The dependent variables were alternatively defined as GDP per capita, income per capita and poverty.[14] Panel B summarizes selected empirical evidence on the impact of macroeconomic variables and policies on trade. In addition, the management of trade and current account balances is critically dependent on the availability of external funds. Table IIA.1 includes, therefore, a brief summary of studies that investigate the importance of macroeconomic conditions and policies on the supply of foreign capital and on the availability of foreign assistance. These studies are reported in Panel C. The coverage in each panel is not exhaustive but the selection of studies is believed to be sufficiently representative.

[14] Perhaps the most debated linkage discussed in the literature is the effect of trade on aggregate income. Numerous studies have been carried out on the effect of trade policies (typically trade liberalization) on economic growth, income distribution, poverty and other economic and social indicators. However, these are not all included in Panel A due to limitations of space. Another reason is that we concentrate on effects which have a relatively short-run horizon. Other issues such as the link between trade and sustainable economic growth – which is a long-term relationship – far exceeds the domain of macroeconomic policy.

Table IIA.1
Trade and macroeconomic conditions - selected empirical evidence

Panel A. Impact of Macroeconomic Conditions and Trade on Growth

Authors	Dependant variable	Total of variables	Trade policy variables	Number of statistically significant variables		Comments on estimated parameters of macroeconomic variables[1]
				Macro conditions	Macro policy	
Rodriguez and Rodrik (1999)	TFP Growth	10	9		1	*Macro policy:* collected tax ratio
Collier and Dehn (2001)	growth rate of per capita GDP	21	-	2	-	*Macro conditions:* (all with weak significance) Initial GDP, M2/GDP
Burnside and Dollar (1997)	growth rate of per capita GDP	15	1	3	2	*Trade policy:* openness *Macro conditions:* initial per capita GDP, M2/GDP (weak), inflation *Macro policy:* (all with weak significance) budget surplus, Gov. consumption
Arteta, Eichengreen, Wyplosz (2001)	average growth rate of per capita GDP	7	1	1	1	*Trade policy:* Quinn's index *Macro conditions:* per capita GDP *Macro policy:* investment ratio
Borensztein, Gregorio, Lee (1995) I	growth rate of per capita GDP	8	-	1	2	*Macro conditions:* Initial GDP *Macro instruments:* (low significance) Gov. consumption, FDI
Borensztein, Gregorio, Lee (1995) II	growth rate of per capita GDP	8	-	1	2	*Conditions:* Initial GDP *Macro instruments:* (low significance) Gov. consumption, FDI
Dollar and Kraay (2001) I	growth rate of per capita GDP	8	-	3	4	*Conditions:* Initial income, trade volume, inflation *Macro instruments:* (low significance) Investment/GDP, FDI, Gov. consumption/GDP, Contract-intensive money
Dollar and Kraay (2001) II	Ln (per capita Income of the bottom quintile)	6	-	4	1	*Conditions:* Commercial Bank Assets/Total Bank Assets, ln (per capita GDP), (Exports + Imports)/GDP, Inflation *Macro policy:* (low significance) Gov. consumption/GDP
Dollar and Kraay (2002)	Incomes of the poor	6	-	3	2	No information about number of dummies *Macro condition:* (low significance) (export + import)/ GDP
Edison, Klein, Ricci, Sloek (2002)	Growth in per capita income	10		2		*Conditions:* growth in per capita income, average investment

[1] This column identifies the set of macroeconomic and trade variables used in corresponding papers.

Panel B. Impact of Macroeconomic Conditions on Trade (Trade Determinants)

Authors	Dependant variable	Total of variables	Trade policy variables	Number of statistically significant variables		Comments
				Macro conditions	Macro policy	
Cataõ and Falcetti (2002) II	Log (exports)	5	-	2	1	*Conditions:* Aggregate capital stock; GDP growth in partner countries, foreign price index *Macro policy:* Real domestic absorption
Cataõ and Falcetti (2002) III	Log (imports)	4	1	3	-	*Trade policy:* import tariff rate *Conditions:* real gross domestic product, consumer price index deflated by nominal exchange rate, real interest rate
Frankel and Rose (2000)	Log (bilateral trade)	14	1	2	-	*Trade policy:* presence of Free Trade Arrangements *Conditions:* real GDP and real GDP per capita

Panel C. Impact of Macroeconomic Conditions and Trade on Supply of External Financing

Broadman and Recanatini (2001)	FDI in Russia	10	1	1	1	—
Boone (1995)	AID/GNP	17	1	5	-	Terms of trade debt rescheduling (low significance)
Alesina and Dollar (1998)	Ln (bilateral aid) Ln (FDI)	13	-	1	-	Initial income and (initial income) are counted as one variable
Singh and Jun (1995)	Real FDI	11	1	5		*Trade policy:* *Conditions:* real GDP, real GDP per capita,
Dasgupta and Ratha (2000)	IBRD flows to country/GDP	8	-	5	2	*Conditions:* world trade/world GDP; Net Non-FDI flows/GDP; Growth rate of world GDP; Growth rate of developing country GDP; LIBOR (3-month, real); *Macropolicy:* Net official flows/ GDP

(a) Trade and economic growth

As noted above, macroeconomic conditions and performance are affected by trade in different ways. Exports are a component of aggregate demand and are, therefore, a factor in economic growth. For example, Prassad and Gable (1997) show that exports of OECD countries served as a catalyst in all economic recoveries, and this positive effect was further correlated with the degree of the economy's openness to international trade. Furthermore, as Table IIA.1 shows, all studies under review testify to the importance of trade for economic growth. The studies of Dollar and Kraay (2001), Burnside and Dollar (1997), Arteta, Eichengreen and Wyplosz (2001), an earlier review of the literature by Edwards (1993) and others show that trade openness is a (statistically significant) variable in explaining differences in economic growth of countries. Moreover, each of the models in the Table included macroeconomic variables that co-determined the explanation of growth performance. For example, the study by Burnside and Dollar includes up to five different macroeconomic factors as explanatory variables out of the total number of 15 used in their estimations. All five variables were statistically significant. Even the critics of the mainstream literature[15] treat macroeconomic conditions as critical explanatory variables. In brief, macroeconomic conditions together with open trade policies and other factors are found by most economists to be the critical in explaining faster economic growth.

However, the conclusion is controversial in at least one important theoretical sense. The critics such as Rodriguez and Rodrik (1999) argue that the flow of causation is not from trade and trade policy to domestic (macroeconomic) performance but the reverse. What matters is domestic investment, which is a component of domestic aggregate demand and, therefore, a macroeconomic component. It is domestic investment which leads to a build-up of production capacities and growth of productivity and, hence, enhanced competitiveness of domestic firms in the face of foreign competition. Somewhat different reasoning is offered by Frankel and Rose (2000), who criticize the arguments of the mainstream literature on the grounds that trade policy cannot be treated as an exogenous variable (as it is in the models reported in Panel A of Table II.A.1). They suggest that trade policy could in fact be seen as being determined simultaneously with domestic policies, including macroeconomic policies.

(b) Trade and "imported inflation"?

Imports of intermediate inputs represent a factor of economic growth but they can also de-stabilize domestic economies through price changes and/or competitive pressures on domestic producers of competing products. In general, imports compete with domestic production and influence the way domestic resources are used in stimulating efficiency gains. In brief, trade is another channel of transmission of domestic and external shocks – leading to real or price effects.

How much of import price changes are reflected in higher domestic costs depends on the share of imported inputs in total production costs, the way imported inputs are priced,[16] and the tightness of the link between import prices and exchange rates. The tighter the link between import prices and exchange rates, the greater the dependence of exchange rate volatility on the movements of import prices. The latter is particularly important for countries which depend on commodity trade. As shown by Cuddington and Hong Lian (1998), the volatility of real commodity prices is much higher under flexible exchange rate regimes than under fixed exchange rate regimes. Ultimately, however, the link between rising import prices and domestic inflation is determined by the reaction of monetary authorities – whether they will accommodate the increased nominal demand for imports by increased money supply.

15 For example, Rodriguez and Rodrik (1999).

16 Recent debates about pricing methods deal primarily with producer currency pricing and local currency pricing principles. For an estimate of how these rules may affect the transmission of price changes see Campa and Goldberg (2002) who use an example of OECD countries. The authors show that across the OECD countries import prices had been only partially passed through. Moreover, higher inflation and exchange rate volatility were only weakly associated with higher pass-through of exchange rates into import prices.

(c) Trade liberalization and fiscal revenues

Another linkage is the effect of trade and trade policy on government savings. Changes in trade and trade policy lead to changes in tariff revenues and therefore to changes in budgetary revenues, thereby affecting the ability of governments to mobilize resources (savings). Growth of imports will lead to growth of tariff revenues. Similarly, a reduction in tariff rates will lead to a reduction in tariff revenues unless the reduction is offset by increased demand for imports and more efficient tax design and implementation. In theory, it is possible to replace any revenue lost as a result of tariff cuts. This replacement might come, for example, from effective reform of the indirect tax system. Such reforms might include adoption of a value-added tax, an improved tax administration, or a reduction in excessive tariff peaks. Moreover, a reduction of tariffs is likely to lead to increased import volumes and possibly increased tariff revenues, as well as reduced smuggling.

As shown in a number of studies, trade liberalization may have an adverse impact on fiscal revenues in countries which are heavily dependent on tariffs as a source of government revenues. Ebrill et al. (1999), for example, show that non-OECD countries collected about 15 per cent of the value of imports between 1975 and 1990.[17] In some developing countries, budgetary revenues are still heavily dependent on taxes imposed on international trade. This could be a more serious problem for countries with a small domestic tax base, low efficiency of tax collection or poor design of the tax regime. However, the trend in many developing countries has been to lower budgetary dependence on taxes on external trade.[18]

5. IS MACROECONOMIC PERFORMANCE IMPORTANT FOR TRADE?

The empirical evidence of the effects of macroeconomic factors on trade is scarcer and relatively more recent. The literature has addressed two main aspects of macroeconomic performance – the effects of economic growth on trade and economic cycles and their influence on trade flows. Particular attention has been given to studies of the effects of economic recessions and macroeconomic instability on trade.

(a) Economic recessions and trade policy

The effects of economic growth on trade are both short-term and long-term. Short-term effects include changes of imports typically as a result of changes in the level as well as composition of domestic expenditure due to changes in relative commodity prices. Long-term effects of economic growth reflect changes in technological conditions of production as well as more permanent changes in demand. These long-term effects are perhaps least researched and understood.

In contrast, the best known studies of the effects of economic growth on trade have been studies of economic recessions.[19] These effects are both direct and indirect. The direct effects come from real reductions of aggregate demand and inflation while the indirect effects originate in increased pressures for protection on the part of domestic firms from foreign competition. Moreover, increased protection in one country may lead to retaliation and hence to beggar-thy-neighbour responses in other trade partners. The onset of the extreme case of recession of the 1930s was marked by the adoption of those policies, as countries erected trade barriers to insulate domestic producers from foreign imports in the face of falling domestic demand. Ironically, protectionism worsened domestic deflation and deepened and lengthened the depression. This episode underscores the huge risks posed for international trade by sharp falls in domestic demand.

17 For more recent figures see, for example, WTO (2003a). The study confirms that many developing countries continue to collect large revenues from international taxes.

18 For recent data concerning the countries in Latin America (and selected OECD countries), see IDB (2004).

19 Broadly speaking, "economic recessions" could be also interpreted as elements of macroeconomic instability.

Another well-researched aspect of economic growth and its effects on trade is the link between growth of output and growth of demand for imports in the short-run. These studies point to the positive impact of growing domestic demand on demand for imports. The elasticity with which domestic firms and households respond to changes in their disposable incomes typically varies according to the nature of commodities ranging from very low levels for commodities such as fuels, energy or food to high levels for commodities such as fashion or luxury goods. Changes in aggregate domestic demand may also affect exports in the short-run, although the actual response function will depend on the specific conditions of countries. In some countries, exporters respond positively to a decline in domestic sales as they seek alternative markets, while exporters have been much slower to react in others.

(b) Effects of real and monetary shocks

As noted above, the most powerful channel of transmission of macroeconomic shocks to trade is through foreign currency markets and, therefore, through volatility of exchange rates and the domestic price level. In addition, nominal domestic shocks can come from changes in monetary policies which are transmitted through financial markets. The second stream of empirical literature, therefore, focuses on the study of both short-term and long-term effects of nominal (monetary) shocks on trade.

Inflation is detrimental to trade for several reasons. Inflation generates uncertainty which can lead to misallocation of resources whenever investment decisions distort the allocation of resources between tradables and non-tradables. Unstable and, therefore, unpredictable rates of rising prices will discourage investment. Very high rates of inflation may even lead to a flight of investors from financial and productive assets to safer markets. Inflation can also provoke calls for more protection from foreign competition as the existing level of protection is eroded by rising domestic prices.

The empirical literature of business cycles has focused on three separate approaches. One approach has been to assess the importance of common international shocks relative to country-specific or industry-specific shocks. Another approach has been to assess the role of international trade as a transmission mechanism for shocks originating in business cycles. Finally, the dynamics of linkages between trade and business cycles have been simulated in dynamic general equilibrium models.[20]

In general, the studies confirm that both exchange rate and domestic price stability are strongly correlated with trade performance and external imbalances. As already noted, the study of Prassad and Gable (1997) shows that monetary expansions tend to result in short-run improvements in trade balances. Studies of business cycles and their effects on trade also show that international variations in output are strongly correlated and that trade acts as a transmission channel. Lumsdaine and Prassad (1997), for example, find that fluctuations in industrial production have strong and positive correlation with a common component of international fluctuations.[21]

The volatility of the exchange rate and the price level is a particularly powerful factor in explaining trade performance.[22] Trading partners with low rates of inflation tend to trade more intensively with each other and are more integrated than countries that have a experienced high rate of volatility in the rate of inflation (Wyplosz 2003). Countries that experience a great deal of exchange rate volatility also tend to be less integrated (Rose 2000). Frankel and Rose (2000) and, more recently, Parsley and Wei (2003) take the point even further when they argue that countries joining a currency union in which the member countries' exchange rates are fixed and supported by monetary authorities stimulate trade as much or more than free trade arrangements.[23]

20 For more details, bibliography and a brief review of the literature see Prassad (1999).

21 However, it is interesting to note that in their earlier paper, Prassad and Gable (1997) did not find much contribution from variations in trade balances to cyclical recoveries of industrial economies in the course of the 1970s to 1990s.

22 As already noted earlier, exchange rates are determined simultaneously by factors that originate in domestic and external conditions. However, domestic factors are crucial, as we also argued.

23 The IMF has also been concerned about the impact of different exchange rate regimes on trade flows. Their recent studies have not been entirely conclusive in order to confirm the fairly widely shared beliefs that exchange rate volatility is detrimental to trade. See Clark et al. (2003). This suggests that further empirical tests are still needed.

We have also carried out a simple econometric test to provide additional evidence of the importance of macroeconomic stability on trade, and the results are reported in Box IIA.2. Countries which experienced greater output volatility were also more likely to have a lower average trade growth. These results suggest that macroeconomic instability can be detrimental to the growth of trade and hence to economic growth, as a slower growth of trade "feeds into" slower domestic production and growth of incomes.

Box IIA.2: Trade and macroeconomic stability: an econometric experiment

To test the importance of macroeconomic stability for trade a multivariate regression controlling for changes in trade barriers was carried out.[1] Using data on 114 countries, we regressed the average annual rate of real growth of imports against average GDP growth, average MFN tariff rates and the standard deviation of GDP growth for the period 1980-2000. The standard deviation of GDP growth is expected to be a reasonable proxy for macroeconomic volatility. The key feature of the model is the dependence of the growth of countries' imports on growth of their GDP, on the level of import restrictions and – to test the importance of macroeconomic volatility – on volatility in the growth of their GDP.

Data on average growth of import volume was available from the WTO for only 57 countries (half of the sample). For the other half, data on nominal dollar imports were used and deflated by the US GDP deflator. GDP growth rates from the World Development Indicators were used to calculate the average and standard deviation of growth over the period. Given the lack of data on average MFN tariffs for the 1980-2000 period, recent average MFN tariff rates from WTO (2003a) were used instead.

The regression results are shown in the Table below. All three explanatory variables have the right signs and are highly significant. As expected, the results confirm that import growth depends positively on GDP growth but negatively on the magnitude of tariff barriers and the volatility of GDP growth. Countries which experienced greater output volatility were more likely to have lower average trade growth. On average, import growth was reduced by 0.32 per cent for every one per cent increase in the standard deviation of GDP. The R^2 reported is also reasonably high given the cross-sectional nature of the data.

Regression Result: import growth and macroeconomic instability

Variable	Estimated Coefficient	T-Statistics
Constant	1.18	1.61
Average GDP Growth	1.14*	11.55
Average MFN Tariff	-0.14*	-4.24
Standard Deviation of GDP	-0.32*	-3.81

$R^2 = 0.64$ *denotes significant at the 1% level

[1] The test does not take into account the simultaneity which must be suspected in the model for reasons discussed in the text. Due to the paucity of data, no account has been taken of tariff reductions over time. In addition, the results are undoubtedly affected by the size of countries and their weight in the data sample. However, we were unable to normalize our equation, once again, due to data problems. Moreover, the regression uses current values of variables even though time lags are probably also operative.

6. POLICY RESPONSES TO EXTERNAL DISEQUILIBRIUM

In subsection 3, the main elements of the theoretical model that explains the linkages between trade and macroeconomic variables have been outlined. The discussion in the text and in Box IIA.1 identified the conditions necessary to maintain internal and external equilibrium. In this Section, the main policies that lead to a restoration of external equilibrium will be discussed.

Policy makers face three critical questions whenever they fear that the country's external imbalances are no longer sustainable. These are:

- *"Finance or adjust"?* Consider a situation with a current account deficit. The first critical question faced by policy makers is whether the deficit can be financed externally by external borrowing, foreign direct investment (FDI) or other kinds of foreign capital or by running down the country's reserves. The recourse to external financing is particularly attractive for countries whenever fiscal adjustment would generate further shortfalls of private savings, or whenever the deficit is seen to be generated by transitory factors. If the deficit cannot be financed from external sources, or by foreign currency reserves, a domestic adjustment will be necessary to bring the current account into equilibrium. Moreover, as already noted above, academic "wisdom" would suggest that temporary imbalances should be financed by borrowing or lending depending on the nature of the imbalance. Permanent imbalances should be addressed by adjustment through policy changes.

- *"Automatic adjustment or policy-induced adjustment"?* Domestic adjustment to internal or external shocks can take place in market economies either spontaneously and automatically or with the help of government policies. The former typically requires that markets are efficient and without distortions. Otherwise, the latter will apply. For example, wage rigidities in labour markets will prevent labour markets from clearing and will lead to unemployment. Distortions will also make exchange rate policy ineffective as changes in exchange rates will lead to offsetting changes in real wages.

- *"If policy-induced adjustment, what adjustment and what policies"?* If the imbalance originates in external shocks, nothing can be done to address directly the origins of these shocks.[24] The case is different with regard to internal shocks – for example, governments can typically either reduce domestic absorption or address structural constraints on economic performance, or both. However, with the exception of measures directed towards a reduction of aggregate spending, most other policy measures will take time to be effective. This is the reason why measures of macroeconomic policy which target domestic components of aggregate demand will, in fact, be crucial in the presence of external imbalances.

(a) Trade policy and balance of payments adjustment

When the government policy objective is the restoration of external equilibrium, trade policy measures to restrain imports are highly inefficient and inappropriate. As elaborated in the earlier writings of Machlup and Corden, the use of tariffs and other border measures to restrain imports is not only asymmetrical in that tariffs only directly affect one side of trade – imports, but they also provide the "wrong" incentives for exporters. Thus, a tariff on imports will not only reduce demand for imports but it will also increase the price of inputs used in the production of exportables – exactly the opposite effect that would be needed to improve the balance of payments. Furthermore, a tariff will encourage the production of importables rather than the production of those commodities that are competitive in world markets. The effect of tariffs as an instrument of balance of payments policy is in direct contrast to the effects of a flexible exchange rate regime which is discussed below. In sum, the use of border measures for balance of payments purposes is highly inefficient, welfare-reducing and in the long-run ineffective.

[24] For example, the government will hardly be able to reverse the decision in the short-run if other countries also impose trade restrictions on the country's exports. It will also be unable to reverse changes in the terms of trade.

Nevertheless, some developing countries have relied in the past on trade policy as part of their stabilization programs for different reasons – most notably to finance fiscal expenditures. As we have already noted above, the main reasons are the small tax base and the highly inefficient tax regimes which have made governments rely on tariffs as important sources of government revenues. Trade policy is, therefore, often seen as threatening government revenues and thus public savings.[25]

Except in highly unusual circumstances, trade liberalization has been a part of many adjustment programs with or without IMF support. The main justification for this approach is the attempt to remove distortions that are generated by trade protection and to improve allocative efficiency. Furthermore, in order to minimize the costs of trade liberalization, which may lead to lower import prices and thus surges of imports, the adjustment packages typically emphasize the need for appropriate changes in the exchange rate (devaluation). The latter will increase the costs of imports and thus offset the adverse impact on domestic industries from more open markets.[26] Moreover, the combination of trade liberalization and exchange rate adjustment are preconditions for avoiding trade policy slippages (reversals) later on.

(b) Exchange rate policy

A more straightforward method of balance of payments adjustment exists under a flexible exchange rate regime. No capital movements need to take place in the presence of a current account imbalance because the imbalance is automatically redressed by changes in the exchange rate. These changes will take place as soon as there is excess demand for or excess supply of foreign currency. Thus, in the presence of a relatively faster growth of imports over exports, the supply of foreign currency in foreign exchange markets dominated by trade transactions will not be sufficient to satisfy the current demand for foreign currency. The price of foreign exchange will rise and vice-versa in the presence of a current account surplus.

The exchange rate adjustment will "do" two things: first, it will change the relative price of foreign goods in terms of domestic goods.[27] For example, a devaluation of a currency will increase the price of imports relative to domestically produced goods which will tend to depress the demand for imports. In contrast, devaluation will increase the competitiveness of domestic goods abroad and thus encourage production for exports. A revaluation of the currency will have the opposite effect.

Second, a change in the exchange rate implies a change in the price of tradables relative to non-tradables.[28] This change in domestic relative prices will lead not only to changes in the growth of exports and imports but also to changes in the patterns of domestic consumption and investment. In other words, changes in relative prices will lead to a domestic adjustment in two important macroeconomic variables – consumption and investment.[29]

If external balance is the sole government objective, a flexible exchange rate system is preferable to tariffs. Exchange rate adjustments are symmetrical in that they affect both the demand for imports and incentives to exports.[30] However, government authorities are typically concerned not only about external but also about

25 Go and Mitra (1998).

26 This issue is discussed in more detail in the following Section.

27 More precisely, a change in the exchange rate will change the relative price of tradables in terms of non-tradables. Thus, for example, a devaluation will increase the competitiveness of domestic producers relative to foreigners which will provide incentives to move resources to export activities and to activities replacing imports. It is for this reason that we refer to the exchange rate as the price of tradables relative to non-tradables.

28 See the previous footnote for details.

29 The effectiveness of exchange rate policies is based on the assumption of instantaneous adjustment in different markets. If the adjustment is "sluggish" in goods markets – a frequent phenomenon – while financial markets adjust fast, the change in the exchange rate can lead to "overshooting" in relation to its equilibrium value. See Dornbusch (1976).

30 This conclusion is not shared by all economists. Proponents of the "monetary approach" to balance of payments argue that devaluation can at best only be effective in the short-run. They argue that over time, devaluation will lead to a trade surplus and growth in the money supply, which will increase the price level and reduce competitiveness. However, this outcome is very unlikely mainly in view of the fact that devaluations typically take place under conditions of unemployment and spare production capacity. Moreover, the monetary authorities are likely to intervene and sterilize the excessive growth of money stock.

internal equilibrium. A problem of devaluation as a policy instrument is that a depreciation of the currency leads to a decline in real incomes expressed in foreign currency and to upward pressure on production costs expressed in domestic currency.

While there is a consensus among economists that the exchange rate is the best instrument to restore external equilibrium, there is nevertheless a continuing debate about the choice of exchange rate regimes. The debate is about which exchange rate regime is more suitable and effective in order to restore macroeconomic equilibrium and stability. The debate is further complicated by the fact that exchange rate regimes are better characterized as varying across a continuum rather than being dichotomized into fixed and flexible. In looking at various exchange rate regimes, Frankel (1999), for instance, has identified different arrangements: currency union, currency board, "truly" fixed rate, adjustable peg, crawling peg, basket peg, target zone or band, managed float and free float.

The case for fixed exchange rates is that it provides an anchor for monetary policy, i.e. predictable policies that maintain stable price levels, and avoids the transactions costs of multiple currencies in international transactions, whether for trade or capital movements. The arguments for flexible exchange rates are that they give domestic monetary authorities independence, they better insulate the economy from real shocks and they constitute a less disruptive adjustment mechanism in the face of nominal rigidities. The long-run evidence seems to suggest that fixed exchange rates produce lower average inflation rates but there is no systematic relationship between economic growth and the exchange rate regime.

In the past decade, the trend has been towards the adoption of either end of the exchange rate continuum. Countries either choose a currency union (or some form of truly fixed peg) or a freely floating rate. This is because countries with open capital accounts have found that intermediate exchange rate arrangements "are crisis-prone and not viable over long periods".[31] In the aftermath of the Asian financial crisis, the policy prescription given to developing countries has been similar. The idea is to avoid an intermediate arrangement, neither fully fixed nor fully flexible, that can be the subject of speculative attack. This is based on the argument that real exchange rate overvaluation, which has typically been observed prior to the outbreak of crises, and the intermediate exchange rate arrangement adopted by the crisis countries gave currency speculators a one-way bet.

Most economists would probably agree that there is no single currency system that is right for all countries or at all times. In the end, the choice of exchange rate regime is likely to be less important than the development of good fiscal, financial, and monetary institutions in producing macroeconomic stability, particularly in emerging economies.

(c) Monetary policy

In order to discuss the link between monetary policy and trade a distinction needs to be made between two scenarios – an economy with and without capital flows. We shall first assume the absence of capital flows and consider an economy with a current account deficit.

Financing current account imbalances in the absence of capital flows under a fixed exchange rate regime

In the absence of offsetting measures by monetary authorities, a current account deficit will lead to a monetary contraction and to pressures for interest rates to rise. The rise in interest rates will reduce spending by the private sector (firms and households), especially demand for interest-sensitive commodities such as capital goods (and hence investment) and consumer durables. Furthermore, since demand for financial assets increases as interest rates rise, central banks may be tempted to intervene. Expansionary monetary policy may or may not succeed in lowering interest rates, but it will accommodate the increase in production costs and a depreciation in the real exchange rate.

[31] For more details, see Fischer (2001).

Note that a monetary policy will not be used to restore external equilibrium in countries which maintain foreign currency restrictions (i.e. with non-convertible currencies).[32] External balance is maintained by restrictions imposed on the access and use of foreign currency. While ensuring that total foreign currency expenditures are kept at the level of current foreign currency earnings, however, the restrictions lead to distortions reflected in the presence of multiple exchange rates and distorted trade volumes and patterns. The distortions are unaffected by the conduct of monetary (and fiscal) policies which can only target domestic currency variables.

Monetary policy in the presence of capital flows and flexible exchange rates

In the presence of perfect capital mobility, the adjustment mechanism will be somewhat different. If a country is a small open economy and finds it desirable to maintain capital markets, monetary policymakers will have one degree of freedom less. They have to choose between fixed exchange rates with loss of monetary autonomy and floating exchange rates but with monetary sovereignty.[33] When authorities choose monetary sovereignty and floating rates, the effect of monetary policy on the current account balance is channelled through domestic interest rates. A current account imbalance is fully funded by capital inflows and a current account surplus is offset by capital outflows.[34]

An expansionary monetary stance (a lowering of the short-term interest rate) will lead to lower demand for financial assets denominated in domestic currency, causing a depreciation of the exchange rate. With sluggish goods prices, this translates into a real depreciation and will make exports more competitive and imports more expensive.[35] Hence, more accommodating monetary policies will normally be associated with an improving current account balance. This will be mirrored in a corresponding deterioration in the capital account as investors shift their holdings away from domestic financial assets. Restrictive monetary policy will have the opposite effect on exports, imports and the current account balance.

Monetary policy in the presence of capital flows and a fixed exchange rate

Once again, a current account deficit is fully funded by capital inflows while a current account surplus is offset by corresponding capital outflows. However, in contrast to a regime with flexible exchange rates, monetary policy in the economy with a fixed exchange rate cannot be effective. Any attempt to change the money stock and interest rates will lead to offsetting movements of capital and hence to corresponding pressures for changes in the exchange rate. The central bank will have to intervene in order to maintain the exchange rate fixed at a given level. There is, therefore, no effect on trade.

Note that the room for monetary intervention is limited even if capital markets are imperfect. If, for example, investors do not immediately respond to interest rate differentials, the differences are likely to remain in place only for a limited period of time. In such a case, monetary independence will only be a short-term phenomenon.

Optimal monetary policy?

The challenge for monetary authorities in an open economy is to ensure that domestic instability does not translate into an external instability and imbalance. The issue of optimal policies in "normal" times, when governments need not respond to external crisis is subject to continuous debate. The academic discussion on optimal monetary policies has focused on the choice between rules and discretion. Rules, such as a fixed growth rate of money supply or inflation targeting, create greater predictability in monetary policy. Further, when monetary authorities follow well-specified rules and pre-commit not to create policy surprises, rules

32 See discussion in Section 3 above.

33 This loss of a degree of freedom is sometimes referred to as the "impossible trinity" and refers to the proposition that only two of the following conditions can hold: i) capital is perfectly mobile; ii) exchange rates are fixed; and iii) monetary authorities have autonomy (in determining monetary aggregates and the domestic interest rate).

34 For a contrarian's view, see Rose (1996) who tried to empirically test the validity of the proposition. He did not find any strong support for the mutual incompatibility of fixed exchange rates, monetary independence, and perfect capital mobility although he acknowledged difficulties in measuring monetary independence and capital mobility.

35 This may be accompanied by exchange rate "overshooting", as already noted above.

allow for a lower rate of inflation in the long run.[36] However, the drawback is that the central bank will be unable to respond when unforeseen circumstances occur. Discretion gives the central bank leeway in determining policy, but it adds an important source of uncertainty to the economy.

Historically, central bank behaviour has been a mix of both. However, there has been growing sentiment for policy to be guided by fairly simple rules with the only question being what rule would be the best. Ironically, the popularity of rules has come together with the reduced role of targeting monetary aggregates. This is because the relationship between money and economic activity has become less predictable, i.e. velocity has become less predictable, probably as a result of distortions in the functioning of the banking system in the process of financial intermediation. Considerable attention has recently been given to the Taylor rule in which the short-term interest rate adjusts positively to increases in core inflation and to the deviation of output from the natural rate.[37] In the past few years, a number of central banks have adopted inflation targeting as an alternative to the Taylor rule.[38]

(d) Fiscal policy

In general, prudent fiscal policies that aim at aligning government spending with tax revenues tend to lead to greater macroeconomic stability. This does not mean, however, that budgets have to be balanced every year, but imbalances must be sustainable and without adverse effects for the rest of the economy. Moreover, when fiscal revenues decline, other things being equal, government savings fall, increasing pressures for the current account deficit to widen.

There are a number of pathways through which fiscal imbalances can be transmitted to the trade account. One is directly through the increase in absorption and hence imports. The other is through the impact of government borrowing on interest rates and the real exchange rate. An increase in public spending will tend to increase domestic interest rates and set in motion an incipient appreciation of the domestic currency.[39] In the short run with goods prices being sluggish, this will represent a real appreciation of the domestic currency with some possible loss of competitiveness in export markets. Thus, an increasing fiscal deficit will normally be associated with a deterioration of the current account balance.

Conventional wisdom states that fiscal policy tends to be slow due to decision and implementation lags. In addition, central banks can react fast with relatively limited outside political pressure in countries in which their status is independent. In certain circumstances, however, fiscal policy can be more effective than monetary policy. For example, fiscal policy – unlike monetary policy – can be very effective in the presence of (perfect) capital mobility and fixed exchange rates. Fiscal expansion will lead to pressure for the interest rate to rise, to capital inflows and to exchange rate appreciation. The authorities will have to intervene by expanding the domestic money stock in order to maintain the exchange rate at the same level, moving the economy to a higher level of output and lowering interest rates. The expansion of output and incomes will result in an increased demand for imports and a deterioration in the current account balance, which will be financed by increased capital inflows.

[36] This is the solution to the time-inconsistency problem identified by Kydland and Prescott (1977).

[37] The Taylor rule usually takes the form: $i = r + \pi^* + \alpha(y - y^*) + \beta(\pi - \pi^*)$, where i, r, π^*, y, y^* and π are the short-term interest rate (target), the real interest rate, the target inflation rate, actual output, the natural rate of output and the actual inflation rate. α and β are parameters which should both be positive. The Taylor rule seems to describe the conduct of actual monetary policy in several countries, including the United States.

[38] The countries are, for example, Canada, New Zealand, the United Kingdom, Sweden and the Czech Republic. Bernanke and Mihov (1997) argue that the policy of the German Bundesbank could also be characterized as targeting inflation for most of the post-Bretton Woods period even though it officially targeted a monetary aggregate. A related and recently debated issue is whether inflation targets should include asset prices in the inflation target. See, for example, C. Bean (2003).

[39] The upward pressures on interest rates can be offset by increased demand of households and firms for government debt paper – a situation characteristic of Japan in recent years.

The conclusion that fiscal policy will be more effective under certain conditions holds true especially whenever a fiscal deficit and/or excessive growth of domestic credit are seen as the origins of a balance of payments crisis and the authorities do not wish to devalue. Primarily as a result of the Asian financial crisis, however, such a recommendation may be pursued more cautiously by policy makers if fiscal imbalances are no longer the origin of the problem.[40]

When fiscal policy is used to restrain domestic demand, the design of fiscal measures will also be very important. As noted above, excessive dependence of government budgets on one single source of revenue – such as in the case of many developing countries and their dependence on tariff revenues – will greatly constrain the effectiveness of fiscal policy.[41] While budget deficits may still have to be reduced, the inability of governments to diversify their tax base or to increase the efficiency of tax collection will act as a drag on domestic growth. Accordingly, a reduction of the fiscal deficit will tend to lower trade.

With a greater degree of freedom for fiscal manoeuvre, the authorities need to ensure that an increase in public savings is not offset by a reduction in private savings. Increased direct taxation will reduce disposable incomes and, most likely, household savings. Increased corporate taxation will generate adverse incentives for firms to expand output, corporate incomes, employment and the wage bill. Increased indirect taxation of intermediate inputs will increase production costs with adverse effects on production activities. The aim of the policies must be to increase aggregate savings if the objective is a reduction of the current account deficit.

(e) Financial liberalization

So far, we have only considered the way in which governments apply instruments of macroeconomic policy to target aggregate spending. However, the imbalances may originate in distortions that are of a structural nature and cannot be effectively removed by measures designed to target aggregate demand. Indeed, structural constraints and the need to address them with structural policies may even dominate the policy reform agenda in some situations. However, since structural policies are long-term measures and require time to take effect, and since balance of payments crises require an immediate solution, macroeconomic policies will still play a critical role but may have to be combined with appropriate structural policy measures.

Which structural policies have to be used will depend, of course, on the specific circumstances of each country. Currently, the most frequently debated measure of a structural nature is financial liberalization. Should countries liberalize their domestic financial markets or should they maintain restrictions on capital movement? In particular, would a liberalization of domestic financial markets be helpful in restoring external equilibrium?[42]

Approaches to financial liberalization

The approach to financial liberalization varies from country to country. Most developing countries' financial sectors remain relatively closed. In contrast, developed countries' financial markets are open even though the opening of their markets is a fairly recent phenomenon. Furthermore, a large number of transition countries have aggressively pursued an opening of their financial sectors to foreign competition.[43]

40 See Mussa and Savastano (1999) for more details.

41 As noted in subsection 4(c) above, it is, of course, possible to replace any revenue lost as a result of tariff cuts. This replacement must come from effective reform of the indirect tax system, by adopting or improving a value added tax, by improved tax administration, or by a reduction in tariff peaks. Moreover, a reduction of tariffs could be more than offset by increased import volumes and, possibly, increased tariff revenues as well as reduced incentives to smuggle.

42 The benefits of financial liberalization are far greater than merely as an instrument of balance of payments management. The broader aspects are not discussed here. For a review of the literature see Prassad et al.(2003).

43 The policy to liberalize capital accounts and financial markets in stress situations of current account imbalances has been highly controversial especially after the financial crisis in 1997 in South East Asia. This point is elaborated further in the text.

The objectives of financial liberalization and deregulation will vary according to the nature of distortions in financial markets. The distortions may affect foreign currency markets as well as domestic money and other financial markets dealing in domestic currency-denominated instruments. Foreign currency markets can be affected by restrictions on transactions denominated in foreign currencies, and these can range from restrictions on the use of export proceeds to restrictions on firms to borrow in foreign currencies abroad or restrictions imposed on foreign residents to acquire domestic assets.

The objectives of reforms aiming at the deregulation of domestic financial markets will also vary according to local conditions. Typically, the distortions have included: i) restrictions on the flexibility of banks to price their loans according to the market risk (leading to deregulation of interest rates); ii) restrictions on the allocation of credit (leading to elimination of "directed credits"); iii) barriers preventing financial institutions from expanding the range of their financial instruments in order to widen the consumer choice, and to protect banks against credit and non-credit risks; and iv) barriers preventing financial institutions from enhancing corporate governance and increasing the efficiency of their operations through market consolidations and mergers.

Financial liberalization and trade policy

The reasons for these different approaches to financial liberalization are principally related to concerns of countries about the likely effects of free capital movements on the stability of their exchange rates, financial sector, inflation, and trade. Will the opening of the capital account increase domestic financial instability and output volatility rather than help finance current account deficits? Will improved access of foreign capital to domestic markets enhance the economic potential of the host country and thus facilitate balance of payments management? In brief, these concerns are about surges of foreign capital which can be generated by the removal of restrictions on capital movements and capital flight which has often followed the surges in the aftermath of financial crises.

Surges of capital flows lead to excessive expansion of monetary liquidity. The increase has to be "mopped up" to prevent inflationary pressures, but this can only be done at very high costs as interest rates rise, attracting more capital inflow which will further reduce the effectiveness of monetary policy. But a flexible exchange rate is not a panacea either. If the exchange rate is flexible, the domestic currency appreciates and this will lead to an increase in the current account deficit. Moreover, rising interest rates increase debt service payments and the proportion of non-discretionary expenditures of the government and in the corporate sector. The flexibility of fiscal policy is further reduced and the banks' balance sheets deteriorate as the proportion of non-performing loans increases.

Has financial liberalization been beneficial?

The evidence on the role of financial liberalization on macroeconomic volatility is inconclusive. An earlier study of Razin and Rose (1994) found no significant link between financial openness and volatility of output, consumption and investment. Writing in the same spirit, Easterly, Islam, and Stiglitz (2000) and O'Donnell (2001) find that a higher level of development of the domestic financial sector and a high degree of financial integration are associated with lower volatility. In other words, the depth of financial integration matters – the deeper the integration is, the better the financial sector can deal with capital surges and outflows.

The most comprehensive review to date of the relationship between financial liberalization and macroeconomic performance has been the recent study of Prassad, Rogoff, Wei and Kose (2003). What makes the study particularly interesting is that the authors look at the topic from the perspective of developing countries whose financial sectors could in theory greatly benefit from the removal of foreign currency restrictions on foreign capital, and restrictions on access to their financial markets. The authors have put together the evidence from the literature as well as their own. It may be useful to summarize their conclusions: "The principal conclusions that emerge from the analysis are sobering but, in many ways, informative from a policy perspective. It is true that many developing countries with a high degree of financial integration have also experienced higher growth rates. It is also true that, in theory, there are many channels through which financial openness could enhance growth. A systematic examination of the evidence, however, suggests that it is difficult to establish a

robust causal relationship between the degree of financial integration and output growth performance. There is also little evidence that financial integration has helped developing countries to better stabilize fluctuations in consumption growth." [44]

Nevertheless, a few general principles have emerged from their study. The quality of domestic institutions and macroeconomic stability, enhanced by strong macroeconomic policies, are critical in attracting FDI. Moreover, since FDI is typically less volatile than portfolio investment, inflows of FDI further enhance macroeconomic stability. Recent studies such as Lehman (2002) and Brada and Tomsik (2003) show that FDI contributes positively to the balance of payments and that the contribution can be very large.

The finding that the supply of foreign capital is dependent, *inter alia*, on macroeconomic stability is supported by other empirical evidence. Some of that evidence is summarized in Table IIA.1, Panel C. The studies reported in that panel refer to two different sources of foreign capital – FDI and foreign assistance flows – and they confirm the importance of the influence of macroeconomic conditions on the supply of FDI and foreign aid.[45] Macroeconomic conditions are, of course, only one factor among different determinants of movements of foreign capital. Their roles are crucial, however, as all these studies clearly demonstrate.

Sequencing issues

Sequencing of economic reform is always controversial and the question of sequencing of financial liberalization is equally difficult. Nevertheless, several fairly widely acceptable conclusions have emerged from the literature and practical experience.

Perhaps the most widely discussed sequencing issue has been the relationship between trade liberalization and macroeconomic stability. As observed in many empirical studies, a period of macroeconomic instability (i.e. inflation) is very unlikely to be the right time to liberalize trade regimes. Domestic inflation, unsustainable levels of foreign and domestic debt, exchange rate volatility or poor conduct of macroeconomic policies will all lead to a loss of investors' and consumers' confidence. This, in turn, will endanger trade liberalization since its success will critically depend on the availability of investment funds. Any non-uniform change in tariffs (or quotas) will lead to changes in relative product prices and hence the relative attractiveness of different sectors of the economy. The changes in sectoral incentives will stimulate movements of resources from less to more profitable industries but the movement will not take place if the investors' confidence is lost. Moreover, even uniform changes in tariffs will most likely have to be accompanied by increased investment activity as greater competition will push firms to seek new ways of remaining competitive – for instance, through the acquisition of new technologies.

However, trade liberalization measures have often been taken even in the presence of macroeconomic instability. The decision to liberalize in such cases was based on the belief that increased competition would induce firms to take internal measures to increase efficiency without new investment. Thus, the implicit assumption is that firms operate below their optimal production capacity. In reality, this is indeed often the case, particularly in times of macroeconomic instability. In brief, the sequence in which trade policy measures are taken in relation to the process of macroeconomic stabilization critically depends on judgments about the likely impact of these decisions on investment and the likely response of firms to foreign competition.

In addition, there are several other sequencing issues to be considered. First, liberalization of financial markets is most likely strongly related to the liberalization of other markets. According to Aizenman (2003), countries with more open trade regimes also have more open financial sectors. The high correlation can be explained in different ways. The most sensible explanation seems to be that countries that are heavily integrated in global markets for goods will also require deeper integration of financial services.

44 See Prassad et al. (2003), p.1. Volatility of consumption is treated by the authors as a better measure of macroeconomic stability.

45 While the importance of macroeconomic stability on supply of foreign aid seems to be quite accepted in the literature, the link between effectiveness of aid and economic growth is much more controversial. The latter, however, is not a subject of this paper. For more detail on the debate see, for example, Easterly (1999).

Second, countries have typically liberalized their current accounts before opening their capital accounts. In other words, these countries have first removed the restrictions on foreign currency transactions involving the current account of the balance of payments before removing restrictions on capital movements.

Third, the reverse sequence – the liberalization first of the capital account – is very uncommon. Countries with highly protected goods and services markets pose extra risks for investors. Protected industries increase investors' uncertainty about the likely success with which the protected industries will become internationally competitive. Moreover, governments often protect those sectors in which the country in question does not currently have comparative advantage, thus further reducing the prospects for future profitability.

(f) A policy implication: shocks to the balance of payments, optimal policies and WTO rules

A number of provisions in the GATT 1994 allow for quantitative restrictions in cases where a country runs into balance of payments disequilibrium. Article XII of GATT 1994 allows a WTO Member to restrict the quantity of imports in order to safeguard its balance of payments. There is also a separate provision on restrictions for balance of payments purposes applying to developing countries. Article XVIII:B of GATT 1994 permits a developing country to restrict the quantity or value of imports "in order to safeguard its external financial position and to ensure a level of reserves adequate for the implementation of its programmes of economic development". This recognizes the structural nature of the balance of payments problems of many developing countries, which have experienced more fiscal instability than developed countries. A major factor for this provision has been the mismatch between the expenditures of the central government and its ability to generate revenues from taxes. The requirement to build infrastructure and provide for social security often comes into conflict with the difficulty of collecting taxes in economies where the informal sector is large, many enterprises are small and tax evasion is rampant.

However, there is an increased recognition among WTO Members that quantitative restrictions are an inefficient means to respond to balance of payments disequilibrium. Thus, the Uruguay Round Understanding on Balance-of-Payments Provisions of GATT 1994 encourages all WTO Members, including developing countries, to give preference to "price-based measures" such as import surcharges or other equivalent trade measures with an impact on the price of imported goods.

7. CONCLUDING REMARKS

The main purpose of this Section has been to clarify the linkages between trade and trade policy on the one hand and macroeconomic performance and policies on the other. Various policies which can be used to target external imbalances have been discussed and their impact on trade has been examined.

The discussion of these linkages focused on one specific issue – targeting an external imbalance and choosing among different policy instruments. In reality, however, governments rarely, if ever, subordinate their macroeconomic policies to the dictates of the management of the current account. They have other objectives such as the task of controlling domestic inflation or managing the rate of domestic unemployment. This means that governments only rarely maintain a fully neutral stand in the presence of an unsustainable balance of payments deficit. In brief, they will seek to restore the external balance while maintaining or restoring the internal balance as well.

In restoring macroeconomic equilibrium, open trade policies play an important role. Open trade regimes help strengthen the country's growth prospects, which is a critical factor for maintaining a healthy balance of payments. By promoting trade, the policies promote the country's integration into global markets and its ability to reap benefits from economies of scale and from more efficient participation in global patterns of specialization. Furthermore, open trade regimes increase transparency of government policies and institutions.

This study concludes that the use of trade restrictions as an instrument for restoring external equilibrium is highly undesirable. The effects of trade restrictions are asymmetric and welfare-reducing. In addition, trade restrictions may only improve the balance of payments in the short run. A second main message is that open trade policies are not sufficient to benefit from greater integration into world markets. Open trade policies will fail if they are not accompanied by sensible macroeconomic policies. This translates into policies that support macroeconomic stability. Countries with open trade regimes tend to grow faster if they are also financially more stable. Moreover, what holds for macroeconomic polices will also hold for other policies. If economic performance is adversely affected by other distortions, other appropriate policies targeting those distortions will have to be part of the package.

B INFRASTRUCTURE IN TRADE AND ECONOMIC DEVELOPMENT

This Section discusses how key infrastructure and infrastructural services support trade and how the quality and cost of infrastructure and related services impact on trade. It includes a discussion of transport infrastructure (roads, railways, airports, seaports etc.) and the services provided by the transport and logistics sector, and telecommunications networks and the services provided over such networks. These are the sectors involved in physical infrastructure that are crucial for moving goods and services from exporting to importing countries. Payments for goods and services flow in the opposite direction from importers to exporters. Financial services are therefore also part of the infrastructural services that support trade. Finally, a number of business services play an important role in intermediating between or matching exporters and importers. They provide logistics services that reduce the transaction costs of international trade and are, therefore, also trade-supporting infrastructural services.

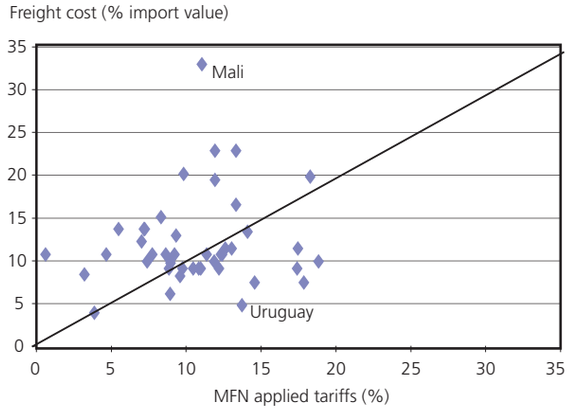
Having established that infrastructure and related services play a crucial role in the flow of international trade, the Section continues with a discussion of how to make infrastructural services more efficient and effective. Infrastructural services are, to a varying degree, subject to market imperfections that require government regulation, but technological changes over the past decade or so have changed the competitive environment of these services, particularly in telecommunications. Making infrastructural services more efficient, therefore, may involve government policy measures and possibly regulatory reforms. These are complementary to trade policies because gains from trade often depend on the quality of infrastructure and related services. Physical infrastructure can at least partly be considered a public good and government intervention is necessary for obtaining efficiency.

These infrastructural services support trade whether or not they themselves are traded. Increasingly, however, they are tradable and traded, and opening up to trade in these services is one channel through which quality can be improved and costs reduced. The Section finally discusses the interface between domestic and international regulation when infrastructural services are traded, focusing on how to improve effectiveness and efficiency. One subsection is dedicated to each of the four infrastructural services sectors.

1. TRANSPORT SERVICES

The effective rate of protection provided by transport costs is in many cases higher than that provided by tariffs. A recent study of the World Bank (2001) shows that for 168 out of 216 US trading partners, transport costs barriers outweighed tariff barriers. For the majority of Sub-Saharan African countries, transport cost incidence for exports (the share of international shipping costs in the value of trade) is five times higher than tariff cost incidence (the trade weighted *ad valorem* duty actually paid). Chart IIB.1 shows that in many countries in Latin America, the Caribbean and Africa, an importer pays relatively more for transport cost than for tariffs (these countries are represented by the observations above the 45-degree line in the chart).

Chart IIB.1
The relative importance of transport costs and tariffs as a barrier to trade



Note: Data refer to US, New Zealand and selected developing countries in Latin America, the Caribbean and Africa. Latest available year.

Source: UNCTAD, Review of Maritime Transport (2002 and 2003a); WTO - IDB; Hummels (1999a).

Moreover, transport costs vary across regions and products. Table IIB.1 shows that freight costs in developing countries are on average 70 per cent higher than in developed countries. Freight costs are highest in Africa, where they are twice the world average.

At the industry level, freight costs are highest among industries producing goods with a low value-to-weight ratio. In general, agricultural and mining products are more expensively shipped than manufacturing products (Table IIB.2).

Table IIB.1
Freight costs by region, 2001
(Percentage of import value)

World	**6.1**
Developed countries	5.1
Developing countries	8.7
Africa	12.7
Latin America	8.6
Asia	8.4
Pacific	11.7

Source: UNCTAD, Review of Maritime Transport (2003a).

Various factors determine different transport costs across countries. Distance from major markets and other geographical characteristics are only two of these factors. For example, it is estimated that doubling distance increases overall freight rates by between 20 to 30 per cent[46], and that landlocked countries face, on average, 50 per cent higher transport costs than otherwise equivalent coastal economies (Limão and Venables, 2001). Other important factors affecting transport costs are the extent of a country's trade imbalances[47], the type of products that a country exports or imports, the degree of containerization of transport, the traffic on specific routes, the quality of transport infrastructure, and the efficiency of related transport services.

Table IIB.2
Transport cost as a source of comparative advantage
(Trade-weighted freight rates in per cent of imports, 1994)

	United States	New Zealand	Argentina	Brazil	Chile	Paraguay	Uruguay
All products	**3.8**	**8.3**	**7.5**	**7.3**	**8.8**	**13.3**	**4.6**
Food and live animals	8.2	14.5	9.9	10.4	12.7	12.0	3.6
Beverages & tobacco	6.9	9.4	11.3	9.0	8.4	10.4	4.8
Crude materials	8.2	16.3	15.2	7.7	12.0	10.2	3.7
Mineral fuels, lubricants	6.6	9.9	14.7	10.7	11.8	20.9	4.7
Animal and veg. oils, fat	7.1	10.6	10.8	5.4	9.3	12.5	2.6
Chemicals & rel. prod.	4.5	9.0	7.6	6.8	10.2	10.4	3.0
Manufactures (by material)	5.3	10.0	9.4	8.5	10.9	11.2	4.7
Machinery & transport equip.	2.0	6.3	5.6	5.1	6.3	13.8	4.1
Misc manufactures	4.7	6.6	9.3	8.1	9.1	15.2	5.8
All other goods	1.0	0.6	4.5	0.8	7.6	6.8	2.5

Note: Given the limited availability of data, transport costs are reported for 1994 to allow a comparison across countries.
Source: Hummels (1999a) based on US Census, Statistics New Zealand and ALADI Secretariat.

High transport costs will be an obstacle to trade and impede the realization of gains from trade liberalization. Differences across countries in transport costs, including relative costs between different modes of transport, are a source of absolute and comparative advantage and affect the volume and composition of trade. For example, a country with relatively lower air transport costs may have a comparative advantage in time-sensitive goods.

As an indication of the relative importance of the various modes of transport for trade, Table IIB.3 below shows the share of trade carried by land, water and air transportation for the United States and Japan. Geographical characteristics obviously explain the zero figures for trade by land for Japan. Similarly trade by land for the United States only refers to US trade with Canada and Mexico. However, these data still provide useful information. A comparison between the shares in value and weight suggests that products characterized by high value/weight ratios are mainly transported by air, whereas those characterized by low value/weight ratios are mainly shipped by water.

46 For example, Hummels (1999a) estimates a distance elasticity equal to 0.27.

47 For example, if a country's exports *vis-à-vis* a trading partner greatly exceed its imports, many carriers will be forced to carry empty containers on their return trip. Therefore, the whole cost of the return trip will fall on the exporter. In contrast, if volumes of bilateral exports and imports are similar, containers may be in part used in the return trip too. Therefore, total freight costs can be partially shared between trading partners.

Table IIB.3
United States' merchandise trade by transport mode, 2001
(Percentage shares based on values and weight)

Mode	United States				Japan			
	Imports		Exports		Imports		Exports	
	value	weight	value	weight	value	weight	value	weight
Water	45.5	78.7	27.2	75.1	70.7	99.8	74.8	99.2
Air	23.4	0.3	34.4	0.6	29.3	0.2	29.3	0.8
Land	26.2	20.8	29.5	23.9	0.0	0.0	0.0	0.0
Miscellaneous	5.0	0.2	8.9	0.8	0.0	0.0	0.0	0.0

Note: Land transport includes rail, truck and pipeline transport.

Source: US Department of Transportation, Bureau of Transportation Statistics, May 2002; Japan Tariff Association, the summary report on Japan's trade, December 2002.

The rest of this subsection focuses on transport infrastructure and related services for sea, land and air transport. It looks at the role that transportation services play in trade and international integration. Then it discusses the market structure of the transportation industry. Finally, it assesses the options available to the policy maker to render transport services more effective.

(a) Effectiveness of transport infrastructure differs greatly across countries

Poor transport infrastructure or inefficient transport services are reflected in higher direct transport costs and longer time of delivery. An improvement in a country's infrastructure can make a big difference to the costs of trading. A study by Limão and Venables (2001) shows that if a country's infrastructure improved such that the country moved from being at the mid-point (median) among 64 countries to being among the top 25 per cent of those countries, this would reduce transport costs by an amount equivalent to 481 kilometres of overland travel and 3,989 kilometres of travel by sea. It would also increase trade volumes by 68 per cent, which is equivalent to being 2,005 kilometres closer to other countries. Similarly, inefficient transport services are associated with higher overall transport costs.

(i) Sea transport

World seaborne trade amounted to 5.9 billion tons of loaded goods in 2002, up by 0.8 per cent from the previous year. In 2002, the share of seaborne exports of developing countries was equal to 49.4 per cent, while that of developed countries was 40.4 per cent.[48] Sea transport represents for many countries the most important mode of transport for trade. For example, for Brazil, Chile, Colombia and Peru over 95 per cent of exports in volume terms (nearly 75 per cent in value terms) is seaborne.

Table IIB.4 reports average costs of the six major liner companies for the major liner trade routes.[49] The direct comparison of liner freight rates for these six companies in 2000 and 2002 seems to suggest that sea transport costs have declined. It is worth noticing, however, that the analysis of historical data on total sea transport costs shows a different picture. Liner price indices for German trade, for example, show a significant increase in ocean freight rates over the period from 1970 to 2000. Causes of this surprising trend are higher port charges and increases in the speed of vessels (Hummels, 1999b). Table IIB.4 also shows that sea freight rates differ greatly across routes. Large price differentials suggest that some countries have a significant disadvantage in terms of competitiveness and their ability to capture the gains from trade. Finally, sea freight rates are not symmetric – the average sea freight rate to haul from Asia to the United States is more than double that to ship from the United States to Asia. While rates for westbound shipments have experienced the largest fall since 2000, sea freight rates remain the highest for cargoes loaded in Asia.

[48] Developed countries' share in seaborne imports was 60.3 per cent, while that of developing countries was 31.4 per cent.

[49] Lack of publicly available data precludes a comparison of sea transport costs at the country level.

Several factors can explain sea freight rate differentials across countries between westbound and eastbound routes and across regions. Among these are trade imbalances, the product composition of exports, the extent to which containers are used for transport[50], the average distance of importing countries, terminal handling charges and port efficiency. Focusing on port efficiency, a recent study estimates that being among the 25 per cent least efficient ports is equivalent to being 5000 miles farther away from the nearest major market compared to being among the 25 per cent most efficient ports. This is equivalent to a reduction in shipping costs by more than 12 per cent (Clark et al, 2004). Chart IIB.2 shows that port handling charges[51] are lower in more efficient ports.[52]

Table IIB.4
Sea freight rates on the three major liner trade routes, 2000-2002
($ per TEU and percentage change)

	2000	2002	Change (2000-02)
Trans-Pacific			
US-Asia	852	768	-9.9
Asia-US	2013	1502	-25.4
Europe-Asia			
Europe-Asia	741	663	-10.5
Asia-Europe	1620	1172	-27.7
Trans-Atlantic			
US-Europe	976	832	-14.8
Europe-US	1204	1182	-1.8

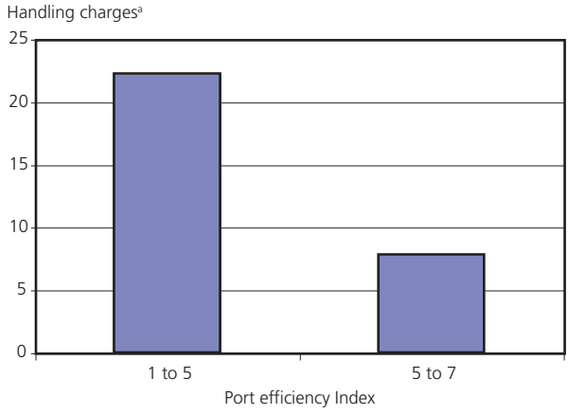
Note: Average of the six trades' major liner companies. Annual data are averages across quarterly data. TEUs denotes twenty-foot equivalent units, a standard-sized container.

Source: UNCTAD, Review of Maritime Transport (2002, 2003a).

Determinants of port efficiency are quality of port infrastructure and the market structure of port services. On the one hand, better infrastructure facilitates port operations, such as maritime cargo handling, storage, fuelling and watering, and emergency repair facilities. It reduces the time required to perform these operations and ameliorates the quality of the services provided. For example, investments of more than one billion dollars since 1996 to improve the existing system of locks in the Panama Canal have cut overall transit time by a fifth since 2000. Now ships that reserve in advance and pay a premium can get through the canal in 16 hours compared to a minimum of two days before.

On the other hand, better regulation, more domestic competition and international liberalization of the transportation service industry increases allocative efficiency (i.e. pricing close to costs) and internal efficiency (i.e. reduction of operational costs), thus reducing transport costs. These observations are confirmed by empirical evidence. A recent study finds that public restrictive trade policies, such as cargo reservation schemes (that require that part of the cargo carried in trade be transported only by national ships), and other restrictions imposed on potential foreign suppliers of a service, as well as private non-competitive practices (such as price-fixing carrier agreements and cooperative working agreements) significantly increase liner transport prices (Fink et al., 2002).

Chart IIB.2
Port handling charges and efficiency



[a] $ per TEU/GDP deflator.

Note: TEU is a standard container measure that refers to twenty-foot equivalent unit. Countries included are: Australia, Belgium, Brazil, Canada, Chile, China, France, Germany, Italy, Japan, Malaysia, Netherlands, Philippines, Singapore, Spain, Thailand, United Kingdom and the United States.

Source: WEF (1999); Micco and Perez (2001).

50 Container port traffic is distributed unevenly across regions. It represents 45 per cent of total traffic in South East Asia, 23 per cent in Europe, 16 per cent in North America, 6 per cent in Middle East, 4 per cent in Central and South America and 3 per cent in Africa.

51 Port handling charges are divided by per capita GDP at purchasing power parity, in order to control for factors other than port efficiency that may affect productivity at the country level.

52 The port efficiency index used for the Chart in the studies by Clark et al. (2004) and Micco and Perez (2001) is the one reported in Global Competitiveness Report (WEF, various years). It is based on surveys conducted of representative firms in each country. The question asked is: "Port facilities and inland waterways are extensive and efficient (1 if "strongly disagree", 7 if "strongly agree").

(ii) Land transport

Land transport includes road transport, rail transport and pipelines. In the United States the share of total trade transported by land is 34 per cent. Of this, freight transport by road is the principal mode of land freight transport, accounting for 60 per cent of total trade (in value terms) by land.

Data on the costs of inland transport are extremely difficult to obtain, except for some specific case studies. Table IIB.5 provides some examples of land transport costs for selected routes in Africa. The Table shows large differentials in road transport costs across routes. An additional kilometre on the route from Douala to N'djamena, for example, is three times more expensive than on the route from Maputo to Johannesburg. Other studies also find large cost differentials across routes. For example, the cost of shipping from Durban to Lusaka, 1,600 kilometres away, is 2,500 dollars, whereas the cost of shipping from Durban to Maseru (Lesotho), only 347 kilometres away, is 7,500 dollars (Limão and Venables, 2001). The quality of a country's own road infrastructure, and road infrastructure in transit countries, is likely to be an important determinant of inland transport costs. The third column of Table IIB.5 reports an index of the quality of land transport infrastructure based on the quality of roads in the origin and destination countries. The data show a negative correlation between inland transport costs and the quality of infrastructure.

Table IIB.5
Estimated unit road transport costs for container and selected routes

Route	Distance (km)	Cost ($ per km)	Road quality index
Dar-es-Salaam-Kigali	1650	3.0	2.1
Dar-es-Salaam-Bujumbura	1750	3.0	2.0
Douala-D'Jamena	1900	4.2	0.5
Lomé-Ouagadougou	1000	2.6	2.5
Lomé-Niamey	1234	2.6	2.1
Mombasa-Kampala	1440	2.3	1.0
Maputo-Johannesburg	561	1.4	3.4

Note: Refers to containers of maximum 28 tons in 40'. The index of quality of roads is calculated as an average of km of paved roads per 100 sq km in the origin and destination countries.

Source: UNCTAD, Review of Maritime Transport (2003a).

Table IIB.6 shows the kilometres of roads (total of paved and dirt roads), paved roads and rail lines per 100 square-kilometres for high, middle and low income countries.[53] The gap in terms of quality of infrastructure between poor and rich countries is large. Data on the availability of paved roads show that rich countries have, on average, more than 13 times as many kilometres of paved roads per 100 square-kilometres than poor countries. For example, while Belgium has nearly 350 kilometres of paved roads per 100 square-kilometres, El Salvador only has about 9.5. The disadvantage in terms of reduced efficiency, lack of competitiveness and forgone gains from trade of countries with poor road infrastructures is substantial. Box IIB.1 provides an example of how the poor quality of transportation infrastructure affects efficiency of production and prices in the case of beer production in Cameroon.

Table IIB.6
Quality of infrastructure for land transportation
(Km per 100 sq km of the territory)

	Roads	Paved roads	Rail lines
High-income OECD countries	41.7	36.7	2.5
Middle-income countries	12.3	6.5	0.7
Low-income countries	17.7	2.9	0.7
World	20.7	9.0	0.9

Source: WTO calculations on World Bank, WDI (2003) data.

A comparison between transport costs by land and by sea shows that transport by land is more expensive than by sea. Using data on the cost of transporting a standard container from Baltimore to selected destinations, Limão and Venables (2001) estimate that land transport is about seven times more costly than sea transport. An extra 1,000 kilometres by sea adds on average 190 dollars whereas by land it adds on average 1,380 dollars to the transport cost. As a consequence, at a given distance, being landlocked increases transport costs and represents a disadvantage for trade. Despite the higher costs, there is evidence that land transport is gaining market share relative to sea transport and that the cost of overland transport has declined relative to ocean transport (Hummels, 1999b). As discussed below, the growing importance of timeliness for trade is one factor explaining this trend.

[53] The definition of high income OECD, middle income and low income countries, used in this Section, follows the World Bank definition applied in the WDI 2003.

Box IIB.1: Poor road infrastructure: who pays the cost? The case of beer distribution in Cameroon

Cameroonian transport infrastructure is very poor. In 1995, there were 2.6 kilometres of road per 1,000 people. Of these, less than a tenth are paved, and most are badly cracked or potholed which rainstorms make much worse. Road repairs are undertaken occasionally by amateur workers or street boys who fill holes with sand. In these conditions, a trip of 500 kilometres can take up to 4 days and a rainstorm may render roads impassable.

Guinness has a local subsidiary in Cameroon, the fifth biggest market by volume for the company. The company performance is good. Returns to capital are about 16 per cent and sales of the main brands have gone up by 14 per cent over the past five years.

However, bad infrastructure is estimated to add an average of 15 per cent to the production costs of beer in Cameroon. Bad infrastructure makes "just-in-time delivery" impossible. Factories and wholesalers need to keep large stocks and this increases costs. Guinness Cameroon keeps a 40-day inventory in the factory, while some European factories keep only a few hours of inventories. At the start of the rainy season, a wholesaler might need up to five months of inventory, as the rain renders the road impossible to travel.

Who loses? The big losers are ordinary Cameroonians, who pay higher prices or are paid lower wages. A Guinness that costs 350 CFA in Douala may cost up to 30 per cent more in an eastern village that can be reached only on foot.

Source: The Economist, 19 December 2002.

(iii) Air Transport

The importance of air transport for trade has been increasing over time. The share of US imports shipped by air increased from 7 per cent in 1965 to 23 per cent in 2001 in value terms. In terms of ton-miles, air cargo grew at an annual average rate of 10 per cent between 1970 and 1996, while ocean shipping grew at an average rate of 2.6 per cent over the same period (World Bank, 2001). Air transport is also very important for developing countries, accounting for nearly 30 per cent of their exports by value (World Bank, 2003a). More than 20 per cent of African exports to the United States are shipped by air. The products exported from Africa to the United States by air are mainly precious stones, scientific instruments, clocks and watches (Amjadi and Yeats, 1995).

Air transportation is particularly important for time-sensitive products such as agricultural products and intermediate inputs traded within international production networks. In 1995, the most important air cargo commodities in US trade, by weight, were machinery parts (10 per cent of trade), electronics (13 per cent), high-tech instruments (4.6 per cent) and cut flowers and fish (each representing 4 per cent of trade) (OECD, 1999). Low air transport costs relative to ocean transport costs, for example, may contribute to creating comparative advantage in time-sensitive goods.

Data on air cargo costs are difficult to obtain. Some specific information shows significant differences in international freight rates across countries. For example, a synthesis indicator developed by the Japanese Ministry of Transport indicates that overall air cargo freight charges in China are approximately 70 per cent cheaper than in Japan, and in Germany and the United States they are about 25 and 45 per cent less expensive respectively than in Japan (OECD, 1999). African air transport costs appear to be higher than other countries. Amjadi and Yeats (1995) estimate that air transport costs represent in some cases up to 50 per cent of the value of African exports to the United States.

Table IIB.7
Quality of airport infrastructure

	Average number of first class airports[a]	
	per country	per 100,000 sq km
High-income OECD countries	14	1.1
Medium-income countries	5	0.6
Low-income countries	2	0.4

[a] Airports with paved runways over 3047 m.

Source: WTO calculations based on CIA (2003) and on World Bank, WDI (2003b) data.

The quality of air infrastructure varies greatly across countries. Table IIB.7 reports the average number of airports within country categories that have paved runways over 3,047 metres in length. High income OECD countries have seven times as many airports on average with paved runways over 3,047 metres long than low income countries. When figures are standardized to control for different country sizes, high income countries still have, on average, four times as many airports as low income countries. Large differentials across countries, in terms of quality of airport infrastructure, also appear when looking at the total number of airports. For example, the United States has over 5,131 times more airports than Benin, but is only 86 times larger in terms of land mass and 44 times larger in terms of population.

(iv) Integrated transport and logistic services

Total logistics costs (packaging, storage, transport, inventories, administration and management) are estimated on average at 20 per cent of total production costs in OECD countries. Transport usually accounts for a quarter of total logistics costs, storage for a fifth and inventories for a sixth. Integrated transport and communication links are essential for cost-efficient transport networks. Border delays, transport coordination problems and direct charges that may be required by transit countries constitute an important part of trade costs. After controlling for the distance between countries, empirical analysis suggests a positive border effect on trade – that is, adjacent countries trade more than two otherwise identical countries for reasons other than distance.

Efficient logistics is an important determinant of a country's competitiveness. The international transport system may suffer from insufficient cross-country coordination of the network, such as non-integrated time schedules, customs delays, incompatible standards or an insufficient flow of information about delays. Logistics services help to solve these problems. For example, they assist clients to save costs by concentrating cargo flows, reducing the ratio of empty voyages and favouring the sharing of information across transport operators. Box IIB.2 illustrates the role of information communication technology in this context.

Efficient logistics do not just reduce costs of transport and transit time, but also decrease the costs of production. If logistics services are inefficient, firms are likely to maintain higher inventories at each stage of the production chain, requiring additional working capital (bigger warehouses to store larger inventories). Gaush and Kogan (2001) estimated that developing countries could reduce the unit cost of production by as much as 20 per cent by reducing inventory holdings by half. At the sectoral level, logistics is most important for the electronic, pharmaceutical, fashion clothes and automotive sectors, where timeliness is important.[54]

[54] For example, to serve a Ford factory producing 1500 minivans a day in Toronto, the logistics contractor organises 800 deliveries a day from 300 different part makers. Loads have to arrive in 12 different places along the assembly lines, and parts must be loaded in the right sequencing. In order to perform this task, the firm employs 200 unskilled workers and ten computer experts (The Economist, 5 December 2002).

Box IIB.2: How information communication technology (ICT) has transformed the transport sector

The transport system is more and more characterized by a multimodal transport structure integrated by logistics companies. ICT rather than the development of coordinated international networks has brought this about by improving the efficiency of the transport system and market access. As a consequence, the digital divide between developed and developing countries has become a further source of diminished market access and competitiveness for developing countries.

ICT and the transport sector share some common characteristics. They both enhance accessibility and facilitate the linking of remote activities, and they both have a network structure. There is, therefore, a certain potential for substitutability between tele-activity and physical travel. The possibility of transferring files through the Internet, for example, has reduced the need to send hard copies of a document.

Technological advancement of ICT has been largely complementary to the transport sector. The application of telecommunication and information technology to the transport sector has transformed the latter. First, logistics companies have emerged next to pre-existing road haulage companies, rail-freight firms, shipping companies and air-cargo firms. The freight industry, traditionally very fragmented, has become more integrated and a multimodal transport system organized by logistics companies has developed. Technological advancements in ICT are a major factor in this transformation. The use of radio frequency identification tags, the Internet and transponders on product packages allows factories and warehouses to keep track of where a product is at any time. Sharing information among terminal operators, shippers and customs brokers can help manufacturers and logistics contractors to manage the supply chain and fulfil the need of "just-in-time" delivery and material requirements planning.

Second, freight companies have extended their services. The restructuring of the production, distribution and transportation system through the entry of logistics firms has created demand for some new activities to be performed at the place of shipment. As a consequence, for example, freight forwarders no longer simply buy capacity on ships and cargo planes and put together loads from different companies and load them, but also increasingly do packaging and labelling, i.e. start organizing the supply of parts and the preparation of kits for assembly.

Source: Cohen et al., 2002; The Economist, 5 December 2002.

Integrating transport systems across countries and liberalizing consultancy services in order to develop efficient transport chains may contribute to a large reduction in transport costs and improved market access. In this context, the GATS has a major role to play. The issues involved range from the establishment of block train connections, the introduction of swap bodies and the improvement of container logistics to the efficient flow of production components between international sites.

(b) Transport costs affect the volume and the composition of trade

This subsection discusses the relationship between transport costs and trade. The discussion focuses on two dimensions of transport costs: direct transport costs and time to market. A final subsection focuses on the quality of infrastructure. The impact of transport costs on the volume and pattern of trade is analysed.

(i) Direct transport costs and trade

Direct transport costs impede trade in much the same way as tariffs. Empirical evidence shows that freight charges are a crucial determinant of a country's ability to participate in the global economy and ultimately of its export competitiveness. It has been estimated that a 10 per cent increase in transport costs may reduce trade

volumes by more than 20 per cent (Limão and Venables, 2001) and that the decline in transport costs accounts for 8 per cent of average world trade growth in the post-World War II period (Baier and Bergstrand, 2001).[55]

However, most of the existing literature on the relationship between transport costs and trade only captures part of the overall impact of transport costs on trade. The reason is two-fold. First, the index generally used for estimation (the c.i.f./f.o.b. ratio) is a very imperfect measure of transport costs. It underestimates the recent fall in transport freight rates due to technological advancements and the reduction in air transport costs (see Box IIB.3 for further details). Second, the role that transport costs play in trade growth is more complex than that captured by an analysis conducted using an overall index of transport costs. The dynamics of trade growth and changes in the composition of trade are also determined by variations in the relative prices of various modes of transport, the fall in the relative price of long-distance hauls and the increased speed of transport. Understanding the causes and welfare consequences of trade growth require that transport costs be carefully measured, and the relative variation in sea, land, and air transport be taken into account.

(ii) Shipping times and trade

The proliferation of intra-firm trade, international outsourcing, and an increasing focus by firms on managing their supply chains efficiently have highlighted new dimensions of transport costs. One of these aspects is time to market. In this respect transport costs are different from tariffs. Distance matters as a determinant of trade – even after controlling for transport costs – as it captures the cost of time.

There is a trade-off between time and cost in the demand for transport services. Lengthy shipping times impose costs that impede trade. Therefore, importers are willing to pay in order to avoid these costs. This explains why a large and growing fraction of trade occurs by air, even though it is more expensive than sea transport. It has been estimated that each day spent in shipping time adds 0.5 per cent to the cost of a good, approximately 30 times greater than the cost associated with pure inventory holding (Hummels, 2000).

Box IIB.3: Alternative measures of transport costs

Transport costs include freight charges and insurance on shipments (customarily added to freight charges data), holding costs for goods in transit, the opportunity cost of time spent moving goods across borders, vehicle renewal costs and other general charges.

Direct measures of transport costs exist, but their availability is limited. For instance, the US Department of Commerce provides disaggregated freight rates for ocean, air and land transportation for imports to the United States from everywhere in the world. Similar data exist for New Zealand and a few Latin American countries, although product level data are less disaggregated and they do not distinguish by mode of transport. Transport companies also report freight rates. However, the availability of these data is partly limited by their private nature. For example, Panalpina provides the cost of shipping a 40-foot container from Baltimore to 64 destination countries, including information on the city of docking and the final city of destination (thus allowing an estimation of sea versus land costs), but these data are not publicly available.

Indexes of *ad valorem* shipping liner rates have been collected by the Royal Netherlands Shipowners Association (reported in the Review of Maritime Transport) since 1961, but they are limited to only a certain number of commodities and routes. An index on liner shipping costs is also calculated by the German Ministry of Transport, but it only includes liners loading and unloading in Germany and the Netherlands. A third index is calculated by the Norwegian Shipping News. The index covers several important routes worldwide, but only comprises tramp shipping costs.

[55] Baier and Bergstrand (2001) also find that income growth and tariff liberalization explain about 67 per cent and 25 per cent respectively of world trade growth. In contrast, they do not find a significant impact of income convergence on world trade growth.

As regards air transport, World Air Transport Statistics reports worldwide air freight revenue and ton-kilometres over the period 1955-1997. The International Civil Aviation Organisation has surveyed air cargo transport rates (price per kilometre between two cities) worldwide for the period 1973 to 1993. In the case of land freight rates, US Transborder Surface Freight supplies data on overland imports from Canada, by city of origin and destination and transport mode (rail or truck).

Since the availability of direct measures of transport costs is limited in coverage or by its private nature, economists generally measure transportation costs using various proxies. These include *ad valorem* iceberg costs, distance and geography-related proxies and c.i.f./f.o.b. ratios. The simplest measure of transport costs is the one that assumes *ad valorem* iceberg types of costs, where transport costs are a fraction, generally between 10 and 20 per cent, of the value of trade. The shortcomings of this measure are that it does not depend on the specific countries of origin and destination, it does not depend on the transport mode or industry, and it is based on the strong (empirically unfounded) hypothesis that transport costs are a linear function of the value of the goods shipped.

Another measure of transport costs often used in economic literature is based on distance and geography. This measure assumes that transport costs increase with distance, and decrease with adjacency. This could be related to less time spent at customs, whether a trade facilitating measure is in place, whether information flows more easily between neighbouring countries, the degree of integration of the transportation network and whether trade partners share a common language. Although this measure depends on the country of origin and destination, it does not overcome all limitations applying to iceberg costs. It fails to capture variations in transport costs by mode of transport or type of commodity shipped. It is also a timeless measure and fails to capture variations of transport costs over time. Adding a variable indicating whether the country is landlocked or an island may partially correct for differing transport modes. Adding a variable on country specific infrastructure may capture variations over time.

The measure of transport costs most often used by economists to estimate the impact of transport costs on international trade is based on the comparison between "free-on-board" (f.o.b.) and "cost-insurance-freight" (c.i.f.) values of trade. The f.o.b. price measures the cost of an imported item at the point of shipment by the exporter as it is loaded onto a carrier for transport. The c.i.f. price measures the cost of the imported item at the point of entry into the importing country, inclusive of the costs of transport, insurance, handling, and shipment costs, but not including customs charges. The higher the value of the ratio, the higher the share of transport cost in the value of traded goods.

Although widely used this measure is quite imprecise. First, c.i.f./f.o.b. ratios are not available for all countries – for example, Europe and Japan are not included. Second, there are a series of technical problems that are simply solved through data imputation. For example, loading or unloading costs are included in the c.i.f. values depending on the country. This renders the quality of the data very poor. Third, disaggregated data are usually not available. An exception is US Census data. This provides data on US imports at the HS 10 level by exporter country, mode of transport and entry port valued at f.o.b. and c.i.f. base. Fourth, the c.i.f./f.o.b. ratio is subject to variations due to compositional changes in the types of goods traded, the set of partners with which a country trades over time, and in the choice of the mode of transport. For example, worldwide trade in high-value-to-weight manufactures (cheaply shipped) has grown much faster than trade in low-value-to-weight primary products (expensively shipped). This will affect the c.i.f./f.o.b. ratio measure of costs even if the unit cost of shipping remains unchanged. A related issue is that the ratio probably does not capture the significant decline in transport costs that has taken place over the years (Hummels, 1999b). If technological innovations reduce the price of fast means of transport relative to slow means, or if time becomes more important in trade (in the context of expanding production network), it is likely that demand will shift toward fast vessels and air transport (relatively more expensive than slower means of transport at each point in time). The c.i.f./f.o.b. ratio fails to capture these absolute and relative price variations, thus underestimating the decline in transport costs.

Source: Combes and Lafourcade (2003), Hummels (1999b), Anderson and Wincoop (2003).

What is the impact of shipping time on trade? The time required to transfer a good through space is an additional barrier to trade. Using the standard gravity equation of trade (including GDP, distance, common language and adjacency), augmented by a variable measuring the shipping time between ports, Hummels (2000) estimates that doubling shipping time decreases the volume of trade by approximately one quarter to one third. Similarly, the results obtained by the estimation of a gravity equation model augmented by a variable measuring the median number of days required for customs clearance[56] show that lengthy times in completing administrative procedures for border crossing have a significant negative impact on trade. An increase in the median number of days required for customs clearance from five to seven reduces trade by more than 40 per cent. Passing from a most efficient country in terms of time required for customs clearance, such as Estonia or Lithuania where customs clearance procedures only require one day (Table IIB.8), to a least efficient country such as Ethiopia, where customs clearance requires an average of 30 days, would *ceteris paribus* nearly eliminate trade (Nordås and Piermartini, 2004).

Table IIB.8
Days required at border for customs clearance
(Median number)

Most efficient countries		Least efficient countries	
Estonia	1	Ethiopia	30
Lithuania	1	Cameroon	20
Croatia	2	Nigeria	18
Czech Rep.	2	Malawi	17
Georgia	2	Ecuador	15
Italy	2	Haiti	15
Singapore	2	Kenya	14
Slovakia	2	Tanzania	14
Slovenia	2	Uganda	14
Sweden	2	Venezuela	11

Source: Micco and Perez (2001).

Where shipping time is important for trade, some additional considerations should be borne in mind. First, the time required to ship a good between two ports may determine a country's comparative advantage. Lengthy shipping times impose a cost. This cost is magnified for some goods, such as fresh products, cut flowers, newspapers, Christmas decorations and high-fashion textiles, as well as for countries that trade intermediate goods and specialize in a specific stage of production. Shipping time is a determinant of comparative advantage as some sectors are more time-sensitive than others. Countries whose air shipping costs are lower than sea shipping costs have a comparative advantage in exporting time-sensitive products. By the same token, these countries have a comparative advantage in adopting a production structure characterized by vertical specialization.

Second, technological changes that decrease shipping times constitute a reduction in trade barriers and will therefore enhance trade. Hummels (2000) has estimated that the development of fast transport (air shipping and faster ocean vessels) was equivalent to reducing tariffs from 20 per cent to 5.5 per cent between 1950 and 1998, thus explaining part of world trade growth over the post-World War II period.

Third, the importance of shipping time for trade suggests that the decline in shipping prices and the relative decline of air shipping prices help to explain the growth of world trade. To the extent that time is an important barrier to trade for all goods, the decline in the price of air transport relative to sea transport boosts trade, because sea transport can be substituted by faster air transport.

Fourth, the relative decline in air transport costs can explain variations in the composition of world trade. Trade in more time-sensitive goods has grown more rapidly than trade in other goods. To the extent that just-in-time delivery is very important for trade within production networks, the relative decline in air transport can be responsible for the increase in the share of vertical specialization in trade. In fact, trade growth within production networks explains roughly half of world trade growth between 1970 and 1990 (Hummels, 2000).

[56] Data are based on surveys conducted by the World Bank on importers of each country. The specific question asked is "if you import, how long does it typically take from the time your goods arrive at their port of entry until the time you can claim them from customs?".

Finally, the quality of infrastructure and related transport services are an important determinant of trade through their effect on the time required to move goods between trading partners. Shipping times are not only determined by the time spent travelling (of which the speed of the means of transport used is the most important determinant), but also by the time spent in port loading, unloading and carrying out administrative procedures for customs clearance. Delays in transit represent costs and affect trade, comparative advantage, investment choices and ultimately GDP. Although research on these issues is at a preliminary stage, the case of Intel's investment in Costa Rica is a useful example. Intel decided to invest $300 million in Costa Rica in a microchip facility only after the Government of Costa Rica had guaranteed rapid customs clearance free of bureaucratic and administrative blockages (Redding and Venables, 2002).

(iii) Quality of transport infrastructure and trade

The quality of transport infrastructure affects trade in two ways. First, poor quality of infrastructure increases total transport costs as it increases direct transport costs and the time of delivery. Box IIB.4 illustrates an example of the crucial impact of the quality of infrastructure and related transport services on trade, although the case addresses internal trade in a poor country. The example also shows how transport costs and lack of infrastructure erode the potential income of local producers. The negative impact of a lack of infrastructure on domestic income is generally recognized – improving infrastructure in the service sector has been estimated to be worth $154 billion or 4 per cent of world GDP (Wilson et al. 2003).

Box IIB.4: Transport cost, market access and rural income in the Democratic Republic of Congo

Small-scale farmers in the Kinshasa region trade their surplus output in Kinshasa. The region is characterized by long distances between villages, and roads are often of poor quality. Traders travel from Kinshasa to the villages and purchase farm products which they bring back to the Kinshasa market. Minten and Kyle (2000) study how the distance between producers and market, and quality of infrastructure, affects the prices received by the farmer and the transport margin. Traders can choose between travelling by road or on the river for villages located close to the river. The direct transport costs are considerably lower on the river, but it takes much more time. The journey takes, on average, 20 days on the river as compared to four days on the road, in both cases over a distance of about 300 km. A very small share of the total produce is transported on the river, indicating that time to market is important. On average, transport costs account for as much as 30 per cent of wholesale price for goods transported by road and about 20 per cent for goods transported by river. The farmers receive about 40 per cent of the wholesale price, on average, for goods transported by road. An analysis of the relationship between transport costs and income at each link in the supply chain finds that the farmer's share of the wholesale price declines by 3.4 percentage points per 100 km, while the share of transport costs increases by 3.1 percentage point per 100 km of road transport on good roads (paved roads), but by as much as 6.2 percentage points on bad roads (dirt roads). This implies that a farmer living 500 km from Kinshasa, where 400 km is on paved roads and 100 km is on dirt roads, would enjoy a 15 per cent increase in the producer price if the dirt road was paved.

Source: Minten and Kyle (2000).

Second, public infrastructure, including transportation infrastructure, has been proved to affect trade through its effect on a country's comparative advantage. If a sector, say textiles, is more sensitive than others to the quality of infrastructure, then the provision of good infrastructure will promote a country's comparative advantage in textiles. Yeaple and Golub (2002) quantify the extent to which government infrastructure explains the large international differences in total factor productivity (TFP) existing at the sectoral level. The provision of road infrastructure consistently appears to be a significant factor in a sector's productivity growth and in a country's production specialization. Road infrastructure appears to be particularly important for productivity growth in the transportation equipment sector, and for specializing in the production of textiles and apparel.

One recent study estimated a standard gravity model augmented with a variable measuring the quality of infrastructure of the importing and exporting country. The study showed that better infrastructure for sea, land and air transport are associated with higher volumes of trade. The quality of ports seems to have the largest impact on trade.[57] Increasing port efficiency has a significant positive impact on trade. Efficient ports explain bilateral trade patterns better than preferential margins. As regards air transport infrastructure, doubling the number of paved airports per square kilometres of territory in a country boosts imports by 14 per cent. Trading with an exporting country with twice as many airports increases bilateral trade by a further 15 per cent. Good quality of land infrastructure also has a positive effect on trade. Doubling the kilometres of paved roads per 100 square-kilometres is estimated to increase trade by 13 per cent. Imports from a country with twice as many kilometres of paved roads per 100 square kilometres than another increases trade by 12 per cent (Nordås and Piermartini, 2004).

(c) Liberalization of transport services and complementary domestic policies

Anticompetitive behaviour and restrictive regulations increase transport costs, thus raising actual trade barriers between countries and ultimately increasing costs of traded goods and market shares. Practices that restrict competition and restrictive regulations are present in both the maritime and international air transport sectors.

The market structure for international maritime transport includes tramp shipping (transport services performed irregularly and provided on a demand basis) and liner shipping (regular lines which publish in advance their calls in different harbours). It is generally believed that the former is fairly competitive while the latter has been traditionally characterized by private cooperative agreements and government restrictions. For example, some countries still have in place cargo reservation schemes which require that part of the transported cargo be shipped only on national carriers. Shipping companies commonly join carrier agreements and consent to common practices regarding tariff rates, conditions of services, traffic distribution and/or vessel capacity utilization. Historically, port and auxiliary services, such as cargo handling, fuelling, watering and navigation aids have been characterized by monopoly.

Cargo reservation schemes and limitations on port services often protect inefficient shipping lines and port operators. Cooperation agreements among maritime carriers on technical standards and price fixing are other competition-restricting practices.[58] A recent study (Fink et al., 2002) estimates that liberalizing port services may reduce prices by an average of 9 per cent, and the break-up of cooperative working agreements and price-fixing agreements could lower prices by 25 per cent. Another study (Clark et al., 2004) argues that the relative inefficiency of South American ports can be explained by their excessive regulation, as the practice of mandatory service for incoming ships is beneficial at low levels, but harmful when it is too high. The case of Brazil illustrated in Box IIB.5 gives an example of how excessive regulation reduces port efficiency. Chart IIB.3 shows that there is a negative correlation between barriers to services trade and port efficiency.[59]

In 1974 the UNCTAD Liner Code of Conduct was adopted in order to counteract the anti-competitive practices generated by cooperation agreements among maritime carriers. The Liner Code requires that cargo is transported by the importing, exporting and a third country on the basis of a 40:40:20 ratio. The Code entered into force in 1983 in over 70 countries. However, it has never been applied on a large scale and today covers only a small share of trade, being applied mainly on routes between West Africa and Europe.

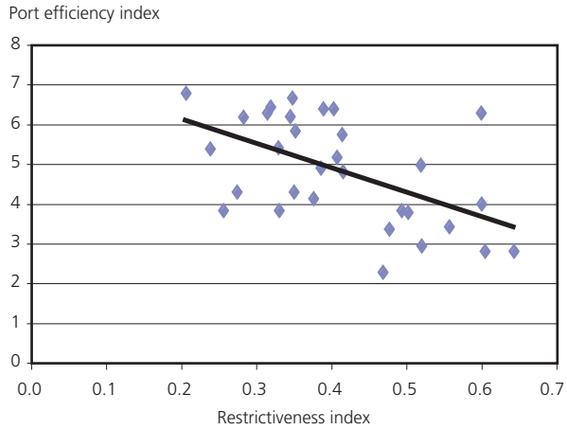
57 Data availability limits the number of observations for port infrastructure.

58 A cooperation agreement, however, can also include some provisions that may actually increase efficiency, like for example, slot sharing provisions.

59 The index of restrictiveness used in the chart is calculated on the basis of the number and severity of restrictions that hinder foreign firms from entering and operating in an economy. As it applies to foreign firms, it is referred to as a foreign index. A domestic index of restrictions that apply to domestic firms also exists (produced by the Australian Productivity Commission). A plot of a port efficiency index on a domestic index of restrictiveness of maritime services also shows a negative correlation.

Historically, the air travel industry has been dominated by inter-governmental deals which dictate which airline can fly where, how many seats each airline can offer and in some cases what fares airlines can charge. So far, for example, air traffic across the Atlantic has been regulated by bilateral agreements between the United States and individual European countries.[60] While bilateral airline agreements may increase network efficiency, they may impede competition by precluding entry to efficient outside carriers, thus resulting in higher costs. For example, one study shows that airfares for city-pair routes on which more than two airlines operate are on average 10.7 per cent less expensive (World Bank, 2003b).

Chart IIB.3
Maritime service trade restrictiveness and port efficiency



Source: Productivity Commission of Australia, http://www.pc.gov.au/research/ and Micco and Perez (2001).

Deregulation of air transport services would lead to substantial gains from enhanced competition. One study estimates that restrictions imposed by domestic regulatory regimes increases prices in international discount air passenger fares by a percentage ranging between 3 to 22 per cent (Doove et al., 2001). Some country experiences show the benefits of deregulation. For example, domestic deregulation in Europe and the United States led to the emergence of new low-cost carriers, new routes, more passenger traffic, lower fares and some innovation, such as Internet-based booking techniques initiated by low cost start-ups. The domestic air transport industry was liberalized in the United States in 1978. Over the next 20 years, air travel (measured as revenue passenger kilometre) rose by 150 per cent. Empirical studies find that as a consequence of air traffic liberalization, consumers benefited by $20 billion a year, fares were 20 per cent lower than they would have been and 80 per cent of passengers enjoyed lower fares on their routes (cited in The Economist, 4 October 2003).

International liberalization of trade in transport services and the opening of investment in infrastructure to private capital, including foreign capital, can play an important role in improving the quality and reducing the costs of transport services. It can increase competition and provide the necessary funds for investing in infrastructure. However, appropriate competition policy, domestic regulation and good governance are complementary to international liberalization. First, liberalization in services without proper competition and regulation may transform a public monopoly into a private monopoly without improving efficiency in the service sector.[61] Indeed, a simulation of the impact of full trade liberalization in the maritime industry on welfare in Latin America, South Asia and Africa has shown that the effect depends critically on the degree of competition in the shipping industry. The more competitive the industry, the larger the gains occurring to consumers (Francois and Wooton, 2001).

Second, effective regulation is crucial, for example, to ensure adequate access to services of low-income groups or people located in very remote areas. Liberalization of the transport system may transform the structure of the service supply from a comprehensive network with many links to a hub-and-spoke network. A hub-and-spoke structure may lower prices on well-connected hub routes, but could actually raise freight rates on thin spoke routes, thus increasing income inequality within a country by marginalizing the periphery from the core of the economy.

60 In October 2003, the European Union and United States commenced talks on liberalizing transatlantic air traffic.

61 It is often argued that the high fixed costs of transport infrastructure, such as the cost of building rail tracks, and sea and air ports renders the industry a natural monopoly. A natural monopoly occurs when average costs of production decline over the entire range of demand. In this case, the firm that covers the whole demand can sell at a lower price and crowd out competition. Since one firm is viable but two or more are not under these circumstances, cartels and private monopoly might replace public monopoly when the transport sector is liberalized. As a counter example, Box IIB.5 shows that a regime of public ownership can coexist with private and competitive ownership of transport services.

To conclude, a well-conceived liberalization of trade in transport services may lead to large gains. However, little has been achieved at the multilateral level in terms of transport service liberalization to date both in maritime transportation and air transport. Only 47 WTO Members have included maritime transport commitments in their GATS[62] schedules, with considerable variation in terms of coverage and depth of commitments. Few among developing countries have assumed any obligation. For example, only seven African countries have included maritime transport commitments in their schedules. Moreover, commitments cover only the three pillars of maritime transport – blue water services, auxiliary services and access to and use of port services.

As regards air transport, GATS rules at present cover only aircraft repair and maintenance, the selling and marketing of air transport services and computer reservation system services. Services affecting air traffic rights are excluded from GATS. Thirty-four WTO Members (counting the EU as one country) have assumed MFN obligations for repair and maintenance, 23 for selling and marketing of air transport services, and 28 for computer reservation system services.

Box IIB.5: Liberalization of port services: the case of Argentina and Brazil

The process of liberalization and privatization of port services was initiated in the 1980s in Latin America. Initially, the involvement of private firms was confined to the provision of specific port services, such as towing, pilotage and stevedoring. Starting from the 1990s in many Latin American countries, firms were allowed to operate ports and undertake investments to improve the quality of the services they offered. Analysis of Latin American countries' experiences in liberalizing and privatizing port services shows that deregulation and participation of the private sector, including foreign capital, in public ports has led to higher productivity and lower cargo handling costs. It also shows that what is crucial for successful liberalization and privatization is the coherence between these policies and other economic policies, such as the promotion of competition between ports, investments in infrastructure and the flexibility of the labour market.

Let us compare the case of Argentina and Brazil.

Argentina

Argentina started privatizing some seaport services in the 1970s. This phase of privatization did not have much success in terms of productivity. Public investments in infrastructures remained low, the system was over-regulated and port institutions were inadequate. In the 1990s, private firms were allowed to operate public ports and to build new ports or invest in their infrastructure. In the case of the port of Buenos Aires, its six terminals were given in concessions to five different private firms, while the Port Authority retained the ownership of infrastructure (landlord port model).

As a result of the reforms, cargo handling increased by 50 per cent between 1990 and 1995, labour productivity surged by 275 per cent and Argentinean ports became the cheapest ports in Latin America. In 1997, Puerto Nuevo's cargo handling surpassed that of Santos (Brazil), the biggest port in South America. Foreign firms participated in the construction of new ports, as in the case of a terminal in Zarate.

62 The General Agreement on Trade in Services (GATS) establishes a multilateral set of rules and principles that govern trade in services, including international transportation services.

Brazil

In 1990s, Brazil initiated a reform that involved the participation of the private sector in cargo handling services and the liberalization of port tariffs. The results of the privatization were not as successful as in Argentina. For example, in 1998, the average cost of handling a twenty-foot container in Buenos Aires was 130 dollars, while in Brazil it was 350 dollars.

Brazil suffered strong resistance from labour unions to allow flexibility in the number of employees. As a consequence, in 1999 in Santos 50 workers were required to handle a ship's cargo, while only 14 were needed in Buenos Aires.

Nevertheless, privatization did deliver some gains. In the two terminals in Santos operated by private firms, for example, waiting time was drastically reduced from several days to less than a day in 1999, and container handling charges fell from 550 dollars per TEU in 1996 to 328 dollars per TEU in 1998.

Two important lessons can be drawn from the experience of Argentina and Brazil in liberalizing and privatizing port services. First, the gains that can be achieved through liberalization and privatization depend on whether adequate competition is guaranteed to prevent firms from engaging in anti-competitive behaviour. This can be achieved with effective regulation (anti-trust laws), but as the experience of Argentina shows, it can also be achieved by fostering inter- and intra- (between terminals) port competition through investing in new terminals or improving land transport infrastructure.

Second, gains from liberalization and privatization are greater when the right economic environment is created instead of heavily regulating enterprises. For example, in Brazil insufficient flexibility in the labour market delayed adjustment in capital-labour ratios required by technological changes in maritime transport.

Source: Micco and Perez (2001).

2. TELECOMMUNICATIONS

Effective telecommunications provide a low-cost channel for searching, gathering and exchanging information which, in turn, is a key input in all economic activities. Hardly any business today can operate without telecommunications. For many industries the telephone is the primary point of selling, and the Internet is an increasingly important channel for marketing, and for sales for some industries. Telecommunications networks provide the supporting infrastructure for such information flows and for Internet access. During the past few decades, technological progress in the telecommunications sector has been remarkable and there has been a rapid diffusion of technology as well. It is now possible for countries that have lagged in economic and technological development to switch to the most recent technologies at relatively low costs of adoption. In Africa, for example, 95 per cent of mobile lines were GSM in 2001, well above the world average of 70 per cent. The Republic of Korea has the highest rate of broadband penetration in the world, with almost twice as many lines per 100 inhabitants as Canada, the country with the second highest rate.[63] Finally, it appears that the digital gap is narrower and narrowing faster than the income gap between rich and poor countries. Thus, while GDP per capita grew at almost the same pace in low-income and high-income countries during the period 1995-2001, the number of mobile phones per 100 inhabitants grew almost twice as fast in low-income countries.[64]

[63] In June 2002, the Republic of Korea topped the ranking of OECD countries according to broadband access per 100 inhabitants with a score of 19.1, almost twice the score of Canada which came second with 10.2 (OECD, 2003f).

[64] GDP per capita grew by about 2 per cent per annum in both low and high-income countries, while the number of mobile phones per 100 inhabitants grew by 63 and 32 per cent per annum respectively. The figures are calculated from World Development Indicators 2003.

Telecommunications consist of services that can be wire-based (e.g. fixed-line telephony), wireless (e.g. mobile and satellite services), resale-based (i.e. over leased transport capacity) and a myriad of combinations thereof. The Internet has come to embody a technology in its own right, providing low-cost access to data as well as voice communication. Telecommunications are a network industry and as such the value of the network for each customer increases with the size of the network. Because of this and because of economies of scale, the industry was considered a natural monopoly in the past. Recent technological developments have, however, reduced the importance of economies of scale and made vertical disintegration and competition possible. As a consequence, most countries have carried out regulatory reforms, often including privatization of state monopolies and the introduction of competition in some or all market segments. Regulatory reforms in the sector have contributed to further innovations, diffusion of technology and a substantial reduction in the cost of telecommunication services. This does not mean, however, that telecommunications have become a perfectly competitive industry with no need for government regulation. Rather, there has been a rethinking of regulation in order to ensure incentives for cost effectiveness and innovation and for investment and competition in a rapidly changing market.

This subsection first presents the structure and the performance of the telecommunications sector in terms of supply and cost of services. It continues with an analysis of the relationship between telecommunication sector performance and trade performance. Finally, regulatory challenges related to greater openness in the telecommunication sector are addressed, focusing in particular on LDCs, where the potential gains from reform may be the largest.

(a) The digital gap is wide, but narrowing

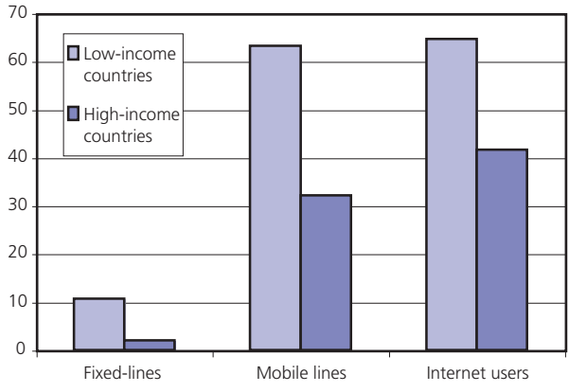
The industry consists of fixed-line telephony, mobile telephony, the Internet and a number of related services. In most countries fixed-line telephony has the largest market share, but mobile communication revenue reached 33 per cent of total telecommunication revenues in the OECD area in 2001, and accounted for more than half of total revenues in some developed as well as developing countries. For example, the share of mobile revenue in total revenue was 58 per cent in Japan, 60 per cent in the Republic of Korea and Zimbabwe, 69 per cent in Swaziland and as much as 89 per cent in Latvia in 2001.[65] In developing countries with low fixed line density there are typically more mobile lines than fixed lines. In as many as 20 developing countries included in the ITU database there were more than twice as many mobile as fixed lines in 2001.

Fixed-line communication requires a substantial investment in infrastructure and was usually provided by a state-owned monopoly in the past. The initial investment requirement in mobile networks is modest in comparison and the mobile market was therefore easier to enter and more amenable to competition than fixed-line services. The market structure is changing, even in the fixed-line segment of the market. By the end of 2002, all OECD countries except Turkey had abolished the state monopoly and the trend is similar in developing countries. Nevertheless, new entrants' share of fixed access lines is still modest in most countries. Fixed-line services can also meet competition from new sources such as cable television providers, electricity providers and rail transport companies who offer telephony over their networks. In some OECD countries (Belgium, the United States and Canada), nearly all households are close to a cable television network. Also voice-over-internet protocol (VOIP) has emerged as a competitor to fixed-line telephony, although its quality is still inferior to state-of-the-art fixed-line services. Some OECD countries define this service as a value-added network service not subject to the kind of regulation applied to basic telecommunications, while others do not make this distinction. Some operators, particularly in Asia and Latin America, have elected to offer VOIP themselves. An increasing number of national regulators are caught in the dilemma of trying to determine how best to deal with VOIP.

[65] Source: ITU (2003).

Chart IIB.4 shows the growth of the number of fixed lines, mobile lines and Internet hosts over the period 1995-2001 for low-income and high-income countries respectively. The figure suggests a narrowing digital gap between high-income countries and low-income countries. In both groups of countries the price of local calls has fallen during the 1990s, but it has declined more in low-income countries. In 2000, the average price of a three-minute local call in low-income countries was less than half that in high-income countries ($0.05 versus $0.11). The cost of international calls varies widely among countries. The most expensive services are generally found in low-income countries while the cheapest services are found in Scandinavia. The data suggest that local calls more commonly remain cross-subsidized by international calls in low-income countries than in high-income countries. Most developed countries had rebalanced rates by the mid- to late 1990s to reflect better costs and market conditions during the reform process. Rebalancing has become an essential component of telecommunications reform in developing countries as well, both in response to price competition from mobile services, call-back services and the Internet, and to lay the groundwork for introducing new market entrants in fixed telephony.

Chart IIB.4
Growth in telecommunication infrastructure, 1995-2001
(Percentage)



Source: World Bank, WDI (2003b).

Even though the digital gap is narrowing, it remains substantial, particularly when comparing the least connected to the best connected individual countries. Table IIB.9 shows the top and bottom 10 countries ranked according to the number of fixed and mobile lines per 1000 inhabitants, and the ratio of mobile lines to fixed lines.

Table IIB.9
Number of fixed and mobile lines per 1000 inhabitants and total number of Internet hosts

Fixed-lines		Mobile lines		Mobile/fixed-lines		Internet hosts	
Top 10 countries							
Bermuda	869	Luxembourg	921	Congo, Dem. Rep.	7.5	United States	110 000 000
Luxembourg	780	Hong Kong, China	859	Gabon	6.9	Japan	7 000 000
Switzerland	746	Italy	839	Congo, Rep.	6.8	Canada	2 900 000
Sweden	739	Norway	825	Cambodia	6.7	Netherlands	2 600 000
Norway	720	Iceland	820	Uganda	5.1	Germany	2 400 000
Denmark	719	Israel	808	Morocco	4.0	Australia	2 300 000
Canada	676	Austria	807	Paraguay	4.0	United Kingdom	2 200 000
United States	667	Sweden	790	Philippines	3.5	Chinese, Taipei	1 700 000
Iceland	664	Finland	778	Cameroon	3.1	Brazil	1 600 000
Germany	634	Portugal	774	Rwanda	3.0	Mexico	900 000
Bottom 10 countries							
Congo, Dem. Rep.	0.4	Niger	0.2	Tajikistan	0.01	Haiti	0
Chad	1.4	Tajikistan	0.3	Cuba	0.01	Iraq	0
Afghanistan	1.5	Myanmar	0.3	Tonga	0.02	Sudan	0
Niger	1.9	Ethiopia	0.4	Uzbekistan	0.04	Burundi	1
Liberia	2.2	Liberia	0.6	Armenia	0.05	Chad	1
Central African Republic	2.4	Cuba	0.7	Myanmar	0.05	Myanmar	2
Cambodia	2.5	Nepal	0.8	Belarus	0.05	Bangladesh	3
Rwanda	2.7	Vanuatu	1.7	Vanuatu	0.05	Marshall Islands	3
Uganda	2.8	Papua New Guinea	2.0	Algeria	0.05	Saint Kitts and Nevis	3
Burundi	2.9	Tonga	2.4	Nepal	0.06	St. Vincent and the Gr.	3

Source: ITU (2003).

It is notable that many of the countries with the lowest fixed-line penetration rate have a high mobile to fixed line ratio, indicating that mobile telephones to some extent serve as a substitute for fixed lines. This assumption is supported by a recent study by Fink et al. (2003), which finds that mobile telephone penetration grows faster in countries with a lower fixed-line penetration. Mobile services have often been provided by two or more competing firms from the start in developing as well as developed countries, and the performance of this market segment underscores the importance of competition. Finally, note that tiny island nations have a larger total number of Internet hosts than a populous country such as Bangladesh.

(b) Good telecommunications promotes cross-border trade in services and just-in-time delivery of goods

A few years ago, before the Internet bubble burst, it was widely believed that the Internet would imply the death of distance and market access would only be limited by policy-induced trade barriers. This vision has not materialized, and online selling has had a slower start than expected. However, e-commerce as broadly defined has become essential to businesses around the world.[66] Thus, the Internet provides a rich source of information and a channel for advertising, marketing and searching. It also appears that e-commerce is important for international trade in certain geographical areas and in some industries, particularly in services industries. The number of Internet subscribers per 100 habitants is often taken as a proxy for the demand side of e-commerce, while the number of secure servers per 100,000 inhabitants is taken as a proxy for the supply side of e-commerce. Among the OECD countries, Iceland is the country with by far the highest score on both counts, indicating that e-commerce is an attractive substitute to conventional trade in remote and sparsely populated countries.

Cross-border trade in services (GATS Mode 1) largely depends on telecommunications as the channel for transactions. A study of the impact of the Internet on US trade in services found that trading partners' Internet penetration had a significant impact on US imports of business, professional and technical services. But no significant relationship between Internet penetration and US exports of services was found (Freund and Weinhold, 2002). A possible explanation is that it is often the customer (importer) who determines the mode of supply and communication. Thus, given the high rate of Internet penetration in the United States it is likely that US importers prefer the Internet as the channel of exchange of information and services, and therefore tend to choose suppliers that are able to provide services over the Internet. Such suppliers are most likely found in countries that also have a relatively high Internet penetration rate.

A recent study finds a strong and positive correlation between the density of fixed and mobile telephone lines and trade relative to GDP. Moreover, the study also found that the supply response to a reduction in tariffs is larger the higher the penetration rate of telecommunications (Box IIB.6 and Jansen and Nordås, 2004). However, anecdotal evidence suggests that new technology can sometimes also create barriers between those connected and those not connected in low-income countries. For example, traders in Ghana regularly travel to visit suppliers of agricultural products in order to purchase their produce. Some of the traders have recently acquired mobile phones and started to contact suppliers beforehand to check what they have on offer. In some cases they have stopped visiting those suppliers who could not be contacted over the telephone. The use of mobile phones vastly improved efficiency and reduced travel time, but some networks of traders and suppliers became limited to those who were connected to telecommunication lines (Overå, 2004).[67]

In the same way as sectors differ according to transport intensity (Section IIB.1) they also differ as far as the use of information and communication technology is concerned. The most information-intensive sectors are those producing goods with short product cycles, experiencing rapid fluctuations in consumer tastes, enjoying rapid technology development and sectors where international vertical fragmentation is common. Consumer electronics, for example, is characterized by all these features, while fashion clothing is an example of goods for which tastes change rapidly, and the automotive sector is an example of a sector where international

66 The WTO Work Program on Electronic Commerce defined electronic commerce as "the production, distribution, marketing, sale or delivery of goods and services by electronic means" (WT/L/274, adopted 25 September 1998).

67 Similar phenomena can be observed as infrastructure and related services have improved in other areas. Improved roads, for example, induce the adoption of larger trucks, which bypass villages whose roads cannot carry them. Improved harbour facilities have increased the average size of ships which in turn bypass harbours with inadequate facilities.

vertical fragmentation is important. Good telecommunications services contribute to comparative advantage in these sectors and hence influence the pattern of international specialization and merchandise trade. Having seen that the quality and cost of telecommunication play an important role in both the volume of trade and the pattern of international specialization, the question arises as to how telecommunication services can be improved through trade and better regulation.

(c) Liberalization is necessary to improve quality and effectiveness, but getting regulation right is a challenge

In many low-income countries, the incumbent state telecommunication monopoly has been unable to raise the funds necessary for upgrading the services and extending the network to the level considered necessary in the information society that developing countries invariably have become a part of. World Bank studies of eight Sub-Saharan African countries, for example, find that prior to reform the growth in telephone density was very low, the number of faults per line was high, the service provider had low and in some cases even negative equity and large arrears on customer payment, the largest debtor typically being the government.[68] Privatization, partial or full, has therefore come to be seen as a necessity in many low-income countries. Privatization, in turn, usually involves direct foreign investment since domestic investors with experience in this sector are often scarce for obvious reasons. Domestic liberalization, therefore, often goes hand in hand with international liberalization, particularly under GATS Mode 3, which covers foreign direct investment.

Privatization alone is, however, no panacea for a better functioning market. Several studies have found that the impact of reform in terms of higher telephone penetration, higher productivity in the telephone companies and lower costs to customers depends on a packet of reforms including privatization of the state-owned monopoly, introduction of competition and the establishment of an independent regulator. Wallsten (1999) analysed the impact of reforms in 30 African and Latin American countries and found that competition increased the number of mainlines per capita and the number of payphones, it increased connection capacity and the costs of local telephone calls declined. Such effects were not found for privatization alone. A later study by Fink et al. (2003), including 86 developing countries, found that both privatization and competition had a positive impact on telephone penetration and productivity in the telecommunications sector. Furthermore, they found that the two reforms reinforced each other, such that the impact on performance was larger when competition was introduced at the same time as privatization. These findings suggest that allowing the privatized incumbent temporary exclusive rights has few if any benefits in the short run and may adversely affect market performance even after competition is introduced. The long-term effect is due to large up-front and sunk costs that often give the first entrant lasting advantages. Finally, the study found that the establishment of an independent regulator reinforced the gains from competition and privatization. Countries that introduced the full package of reforms did systematically better than those that confined themselves to partial reforms.

Mobile services are up to a point competing with fixed-line services. Mobile competition can therefore serve as a surrogate for fixed-line competition and thus a possible first step towards competition. Regulating a privatized fixed-line industry in a way that ensures or mimics competition beyond the competitive pressure from mobile entrants has proved more challenging.

The history of regulation of the telecommunications sector can be seen as defining the boundary of a natural monopoly under changing technological circumstances. In the early days of telecommunications, the complete end-to-end service was considered a natural monopoly and prices were regulated to serve several objectives. The most common approach was to set prices such that total revenue covered costs, but the prices of individual services were determined by social objectives, such as universal services at equitable prices. This involved cross-subsidizing and constituted another rationale for not allowing competition. The first legal limitation of the boundary of the monopoly in the United States was to set the limit at the end of the wire at the customer's premises, thus unbundling customers' telecommunication equipment. Subsequent limitations of the monopoly came after new technology (e.g. micro-wave, local access networks and time-sharing computers) opened the opportunity for niche producers, who subsequently extended their

[68] See Gebreab (2002), Haggarty et al. (2002) and Clark et al. (2003).

services and challenged the monopoly. The second significant regulatory redefinition of the boundary of the monopoly in the United States came in 1984, when long-distance services were opened for competition and the regulated monopoly limited to regional networks.[69] Further, a line was drawn between unregulated data processing services (enhanced or value added services) and regulated basic telecommunication services. There is, however, no universal consensus on where to draw that line.

New entrants in the telecommunication services sector raise the question of how to ensure interconnection between networks and between networks and services. This is an area where there is ample scope for uncompetitive behaviour on the part of the incumbent. Most countries, therefore, regulate interconnection conditions and fees, ensuring that entrants have the right to access networks on a non-discriminatory basis, that the interconnection fees are cost-based, and that the entrant does not have to pay for a bundle of services, some of which he does not need. These principles are also included in the Reference Paper on regulatory principles formulated under the basic telecommunications negotiations under the auspices of the GATS.[70] One area where the need for regulation has become widely acknowledged is the local loop connecting individual customers to the nearest local switching centre. The local loop is often controlled by a single supplier, usually the incumbent fixed line supplier. Duplicating the local loop is probably costly from a welfare point of view, but it is a highly strategic asset since all services provided over the network have to pass this loop to reach the customer. Ensuring access to the local loop on a non-discriminatory basis is therefore crucial for competition.

Where market power is considerable, price regulation may still be necessary. The most common forms are rate-of-return regulation and price cap regulation. Rate-of-return regulation imposes a target rate of return for the regulated telecommunication firm and specifies the actions to be taken if the realized rate of return deviates from the target. Typically, there is a margin where no actions need to be taken while a rate of return below this range would allow the telecoms firm to increase prices and a rate of return above the range would require the firm to lower prices or share the excess return with customers. Price cap regulation places a limit on the prices that a firm can charge on its services. Regulated companies are typically allowed to raise prices in step with the consumer price index less an estimated productivity gains factor (the so-called x-factor). The x-factor, which is the difference in productivity growth between the telecoms sector and the average for the economy as a whole, is the crucial element in price cap regulation.

It follows that efficient regulation of both interconnection and end-user prices requires information on costs of individual services, which is intrinsically difficult for regulators to obtain. This is because telecommunications providers offer multiple services using capital that is fixed and common across a variety of applications, and there may be economies of scale and scope that render the cost of a bundle of services different from the cost of the sum of services when provided individually. Information on costs is often considered of strategic importance and thus not readily available. The solution to this challenge has been for the regulatory body to estimate cost functions for each service based on information on the scope and scale of services provided and the amount and price of inputs used. Again this is a demanding task that requires specialized skills often in short supply in developing countries. A practical solution applied in many countries is to set a cap on the average price of a bundle of services. This allows the regulated companies some flexibility in price setting, but unfortunately also the possibility of setting prices in a way that deters the entry of competitors. For interconnection rates, a practical solution has been for regulators to draw upon benchmarking or to encourage commercial negotiations as a first resort, intervening only when the parties cannot arrive at a mutually satisfactory rate.

As already indicated, competition is crucial for a desirable outcome of reforms in the telecommunication sector, and trade liberalization is one measure to this effect. An analysis of the relation between service supply and the extent to which foreign entry is restricted finds that the more restricted is foreign entry, the lower

69 This was the split of AT&T into a long-distance provider operating in a competitive market and seven regional regulated monopolies (the Baby Bells) that were excluded from the long-distance market in 1984.

70 The Reference Paper takes on a legally binding character in GATS when inscribed by a WTO Member as part of the additional commitments in its Schedule of Specific Commitments on trade in services. See also Tuthill (1997) and Geradin and Kerf (2004) for further discussions.

the mobile telephone density.[71] It is also worth noting that the more open market-based mobile services have produced a narrower international digital gap than the state-controlled fixed-line services. As a result, in several countries, including some of the poorest countries in the world, households and businesses have better access to mobile services than to fixed line services.

In conclusion, telecommunications are found to have a positive impact on the volume of trade and, in addition, they affect the pattern of international specialization. The availability of fixed and mobile telephone lines is negatively correlated with the restrictions on competition and trade in telecommunications services imposed by governments. For example, restrictions on foreign investment and cross-border trade are strongly and negatively correlated with the number of mobile telephone lines. These findings suggest that liberalization of the telecommunications sector complements trade liberalization in other sectors in addition to improving the performance of the economy in its own right.

3. FINANCE

The financial sector plays a pivotal role in the efficient allocation of resources across time and space and in facilitating macroeconomic stability (Section IIA). Financial services also play a crucial role in the process of transferring the ownership of a product across borders and hedging the risk of international trade flows. Financial services are thus part and parcel of international trade transactions and the pricing and quality of such services are key components of the transaction costs incurred by traders.

Financial services are themselves subject to international trade and it has been found that trade improves the quality and reduces the cost of financial services. The presence of foreign banks, for example, can exert competitive pressure on local banks leading to a significant decline in their overhead costs following the entry of foreign banks. In addition, foreign banks often bring new products and may stimulate improvements in domestic supervision and regulation (Levine, 2001). However, foreign as well as domestic private banks are profit-maximizing institutions and are likely to exploit market power as well as loopholes in the regulatory environment, if any, when regulation is weak. Therefore, when trade liberalization results in a more complex and diversified financial sector, it is often necessary to strengthen the regulatory and supervisory framework in order to safeguard against financial instability and ensure competitive markets.

This Section first presents the structure and the performance of the financial services sector in terms of supply and cost of services. It continues with an analysis of the relationship between financial sector performance and trade performance. Finally, regulatory challenges related to greater openness in the financial sector are addressed, focusing in particular on emerging markets. This is because countries at an intermediate level of economic and financial development experience higher trade and income volatility in the face of financial sector openness than both LDCs and developed countries.[72]

(a) Performance of the financial services sector differs widely among countries

The financial service industry consists of five broad categories of services: banks, insurance, securities, asset management and financial information. In the past, these five categories of services corresponded to categories of financial institutions. For example, banks' major business has traditionally been to take deposits and award loans. However, in recent years capital markets and non-bank financial institutions have taken a larger share of this business, while an increasing proportion of banks' revenues has come from such fee-based services as underwriting, trading, brokerage, rating, and advising on mergers and acquisitions.

71 The mobile telephone density was regressed on GDP per capita and a trade restrictiveness index developed by the Australian Productivity Institute. Trade restrictiveness was significant at a one per cent level and the regression explained 82 per cent of the variation (staff estimates).

72 See Aghion et al. (2004) for a recent analysis.

Both access to financial services and costs of financial services vary enormously among countries. The financial sector performance gap is illustrated by Table IIB.10 which shows the top ten countries ranked according to credit to private sector provided by financial institutions relative to GDP, the top ten ranked according to the overhead cost of financial institutions relative to their total assets and finally the ranking according to banks' net interest margin. The Table also shows the bottom ten countries ranked by the same criteria.[73]

Table IIB.10
Financial indicators, selected countries, 2001

Credit to private sector % of GDP		Overhead cost % of total assets		Net Interest Margin	
Top 10 countries					
Switzerland	161	Cuba	0.6	Luxembourg	1.0
Hong Kong, China	157	Ireland	0.6	Ireland	1.4
United States	145	Bahamas, The	0.9	Thailand	1.7
Denmark	138	Kuwait	1.1	New Zealand	1.8
Portugal	138	China	1.1	Egypt, Arab Rep.	2.0
Malaysia	138	Chinese, Taipei	1.3	China	2.1
Netherlands	138	Luxembourg	1.3	Netherlands	2.1
Korea, Rep. of	133	Netherlands	1.4	Belgium	2.1
United Kingdom	132	Mauritius	1.4	Portugal	2.1
Singapore	122	New Zealand	1.5	Switzerland	2.2
Bottom 10 countries					
Angola	2.0	Congo, Rep.	13.3	Congo, Rep.	18.7
Chad	3.7	Paraguay	11.8	Turkey	16.5
Kyrgyz Republic	3.7	Argentina	10.5	Venezuela	15.3
Central African Republic	4.5	Venezuela	10.5	Nicaragua	14.8
Niger	4.6	Colombia	10.5	Zimbabwe	14.6
Congo, Rep.	4.7	Malawi	9.9	Malawi	14.0
El Salvador	4.8	Kyrgyz Republic	9.8	Zambia	13.1
Guinea-Bissau	5.8	Zambia	9.8	Georgia	12.8
Romania	6.3	Cambodia	9.7	Uganda	12.7
Lao PDR	7.9	Sierra Leone	9.5	Paraguay	11.7

Source: Financial structure database, IMF.

The ten countries with the highest ratio of private sector credit to GDP are mainly high-income countries, although Malaysia also falls into this group. At the other end of the scale are a number of least-developed countries where credit to the private sector is almost non-existent. It should be noted, however, that a high ratio of private sector credit may be a problem in countries where risk assessment is weak or credit allocation is made according to other criteria than assessment of the return and risk of the projects being financed. The high ratio in Malaysia, for example, can partly be explained by high bank exposure to financial and property markets. The picture is more mixed when it comes to overhead costs where some developing countries such as Cuba and Mauritius are doing well. Cuba does, however, have a highly centralized financial sector where credit allocation is largely undertaken administratively, which explains its low overhead costs. The same has applied to China, while Mauritius has an efficient and modern financial sector (IMF and World Bank, 2003). The huge difference in interest margins between the top and bottom 10 in the table is an indication of the differences in finance-related transaction costs that firms face in different parts of the world. It is, however, an imperfect indicator because differences in net interest margins may not always reflect differences in real interest rates that firms pay on their borrowing, including on export credit.[74] The three performance indicators of financial services reported in the Table are correlated. High overhead costs are reflected in high interest margins and high costs and interest margins are reflected in low credit volumes.[75]

[73] The list of the bottom 10 has the worst performer on top of the list.

[74] Differences in inflation rates and subsidies, for example, may be important determinants of differences in the real interest costs paid by companies.

[75] The correlation coefficients are 0.83 for overhead and interest margins, -0.60 for credit to private sector and interest margins and -0.57 for credit to private sector and overhead cost. There is also a negative correlation between the market share of the three largest banks and credit to the private sector of -0.44.

One reason why credit to the private sector is particularly low in LDCs is that poor institutions, including poor enforcement of contracts and weak rule of law are commonly found in poor countries (Section IID). Poor institutions translate into weak investor rights, weak property rights, and thus high risk in lending and corresponding borrowing constraints on would-be entrepreneurs. Finally, the financial sector itself is part of the institutional framework in a country. In LDCs, banks often lack the capacity to assess risk and they consequently concentrate on credit to large firms or government paper.[76] As a result there may be fewer entrepreneurs while existing entrepreneurs upgrade their machinery and introduce new technology less often than they would if credit was available to all viable projects. This, in turn, prevents them from responding to new market opportunities following trade liberalization.

(b) Financial services support merchandise trade and influence comparative advantage

Empirical research has found that integration of financial markets and trade in goods and services tend to go together. The IMF (2002) finds that financial openness and openness to international trade are highly correlated both in developed and developing countries.[77] This finding is supported by Tornell et al. (2004) who also observe that trade liberalization typically comes before financial liberalization.[78] A reason for this is the complementarity between trade and trade financing and between trade and hedging the risk of trade flows. As already noted, the cost of financial services is part of the transactions costs of international trade and one would expect a negative relation between such costs and the volume of trade. A negative relationship is indeed found in a recent study. Furthermore, the study indicates that the disadvantage of not having access to credit is an even more significant impediment to international trade. Hence, a positive relation is found between credit to the private sector and trade, both measured as shares of GDP (see Box IIB.6 for details).

Finally, financial sector development is found to affect a country's comparative advantage. Industries differ as far as their dependency on external financing is concerned. First, any industry with high growth prospects will experience relatively high investment demand compared to current cash flows and therefore be dependent on external financing. Second, in some industries there is an inherent mismatch between investment and cash flow, even in the long run, due to underlying technological characteristics. Examples of industries with high growth potential in the short run are new industries based on recent innovations (e.g. mobile phones), while examples of industries with an inherent dependence on external finance are R&D-intensive industries such as pharmaceuticals, electronics and many categories within the chemicals industry aggregate. Empirical research indeed finds that countries with a high level of financial development have a higher growth rate in new industries and a higher share of industries dependent on external finance in total industrial output.[79]

Bearing in mind the importance of financial development for the volume and composition of trade and for economic development in general, it is natural to ask how the performance of the financial sector can be improved and how trade in financial services may contribute. The next subsections will look at this.

76 See Beck and Levine (2003) for a recent review of the evidence on the relations between institutions and financial markets.

77 Financial openness is defined as the sum of external assets and liabilities of foreign direct investment and portfolio investment divided by GDP.

78 The Tornell et al. (2004) study actually argues that trade liberalization leads to financial liberalization in a sample of 66 high and medium contract enforceability countries (as measured by the rule of law index discussed in Section II.D) during the period 1980-99.

79 See Fisman and Love (2004) for a recent study.

Box IIB.6: Openness to trade and infrastructural services

Chart 1
Openness and credit to private sector
(Percentage of GDP)

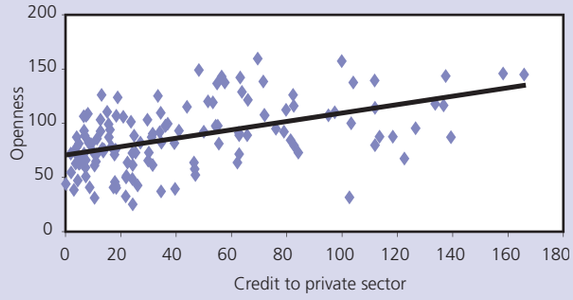
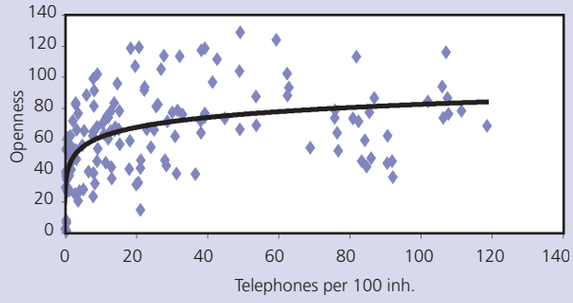


Chart 2
Openness and telephone density



Access to financial services and telecommunications reduces the cost of engaging in international trade and thereby increases a country's openness towards the rest of the world as measured by (exports + imports)/GDP. Chart 1 depicts the estimated relationship between credit to the private sector and openness, while Chart 2 depicts the relationship between mobile plus fixed telephone lines per 1,000 inhabitants and openness. Both regressions control for market size, own and trading partners' tariffs, dummy variables are used for islands and landlocked countries respectively, and the distance from the equator is included as a proxy for distance to major markets.

The inserted trend lines show the estimated positive correlation between trade flows and access to credit. In the first figure the estimated coefficient is 0.45 and it is significant at a one per cent level. The regression explains 37 per cent of the variation. In the second figure the trend-line is log-linear, the coefficient on telephone density is significant at a one per cent level and the regression explains 35 per cent of the variation (Jansen and Nordås, 2004).

(c) Trade in financial services improves the financial system's effectiveness

The most important mode of trade in financial services, particularly in the banking sector, is through commercial presence (GATS Mode 3). In a sample of 80 developed and developing countries covering the first half of the 1990s, about a third on average of the total number of banks in the domestic banking system were foreign-owned and about a quarter on average of total bank assets were foreign. The share of foreign banks ranked from 0 to 100 per cent. Nepal and Swaziland had only foreign-owned banks while many other small countries, developing countries and countries in transition also had a high share of foreign banks. Foreign banks have played a particularly important role in the economies in transition in Central and Eastern Europe. More than half of the banks in the region were foreign-owned, and foreign-owned banks accounted for about two thirds of total bank assets in 2000. Foreign-owned banks lent more to the private sector than local banks, they were more profitable, and focused their activities more on large companies than domestic banks. However, local and foreign banks' performance has tended to converge over time in the transitional economies. Foreign banks have expanded and broadened their activities and are facing more of the same conditions as local banks, while local banks' performance has improved following both competition from foreign banks and liberalization of the domestic financial sector. There are, however, large differences among the transitional countries. Only the Czech Republic has obtained a financial sector similar to that of the euro area as measured by bank assets relative to GDP, while this ratio is still low and appears to have stagnated in Bulgaria, Lithuania, FYR of Macedonia and Romania.[80]

[80] See Naaborg et al. (2003) for details.

A recent study (Classens et al., 2001) finds that foreign banks tend to have higher interest margins, higher profitability and pay more taxes than local banks in developing countries while the opposite is true in developed countries. The explanation for this is that foreign banks are typically not subject to credit allocation and other regulations that domestic banks may face in developing countries, while the advantage of local knowledge benefits local banks in developed countries.[81] Second, it is found that a larger share of foreign banks is associated with reduction in the profitability and interest margins of domestic banks, a result that is consistent with findings in other studies, suggesting that foreign entry improves the functioning and reduces the cost of domestic banking (Levine, 2001). Third, the study found that the number of foreign banks entering the local market is more important than their market share, indicating that the competitive pressure from foreign banks is felt immediately after opening the market. Finally, it was found that the impact on domestic banks' profits may reduce their charter values and make them more vulnerable. This may destabilize the financial sector in the case where domestic regulation and supervision are insufficient. Thus, entry of foreign banks in local markets appears to improve efficiency, but also has a downside risk in the case of weak regulatory capacity.

(d) Openness requires appropriate regulation and international cooperation on supervision and surveillance

Trade liberalization under the auspices of GATS relates to transactions on the current account of the balance of payments only, but capital transfers often underlie the provision of services. An understanding of the benefits and risks of trade in financial services therefore requires an appreciation of the relationship between current account and capital account transactions. An example taken from Kono and Schuknecht (2000) illustrates this relationship: "if a domestic bank provides a loan to a domestic client using domestic capital, this creates neither financial services trade nor an international capital flow. If a domestic bank lends capital from abroad to the same client, this is a case of capital flows without financial services trade. A loan arranged by a foreign institution involving only domestic capital is an incidence of financial services trade without international capital flows. Only loans through a foreign bank involving international capital represent international capital flows and trade in financial services" (p.141).[82]

Transactions through commercial presence are perceived to lend themselves more easily to regulation, supervision and surveillance than cross-border trade. Furthermore, lending from local subsidiaries or branches is often more long-term than cross border trade in financial services. Cross-border trade in financial services usually implies exposure to short-term international capital flows unless trade is restricted to trade in financial information and brokerage. Meaningful liberalization therefore requires the lifting of certain capital controls as well, although full openness to international capital flows is still not necessary. Financial services trade, international capital flows and not least recent technological developments, particularly in information technology, have all contributed to more internationally integrated financial markets, and a changing environment facing regulators, and thus changes in regulation as well.

Both national and international financial markets have become increasingly complex with a growing number of financial instruments. Among financial sector institutions, the banking sector is usually subject to the strictest regulation and supervision. However, banks have recently engaged in securitizing and selling off large amounts of loans, shifting some of the lending risk out of the banking system to less regulated markets. As the various types of financial service providers have started to compete in the same markets, there is a need to develop regulation and supervision systems that focus on functions rather than institutions in order to avoid regulatory arbitrage in domestic markets. By the same token, regulatory differences among countries create arbitrage at the international level, and this calls for international cooperation.

[81] This is of course also the case in developing countries, but this advantage is more than offset by other factors.

[82] The quotation omits references to a table in the original text. Since developed countries have by and large opened their capital account to international capital flows, the discussion here is mainly relevant to developing countries, in particular emerging markets.

Although the regulatory measures and institutions change over time, the rationale for regulation and the core principles of regulation largely remain the same. These are market imperfections, such as asymmetric information that may lead to problems of moral hazard and adverse selection. Put simply, moral hazard arises when individuals take less care to avoid losses or damages because others share the losses, but not the gains, from risky projects. Adverse selection refers to the case where, for example, an insurance policy mainly attracts those with a high risk of experiencing the event that is covered by the insurance. These problems are mitigated by regulation of financial institutions' exposure to risk. Direct regulation of risks has proved increasingly difficult as banks and other intermediaries are more and more in a position to outwit the rules. In response, the regulatory focus has shifted from capital-adequacy rules towards assessments of internal risk-management systems, increased banking supervision and effective market discipline (BIS, 1999a; BIS, 1999b). Successful implementation of such an approach critically hinges on the available expertise in financial intermediaries and regulatory institutions. It also requires functioning markets for debt and equity leading to the disclosure of relevant information. This last aspect can be problematic, especially in developing countries. Liberalizing financial services may help in allowing for increased competition among banks and the development of credit-rating agencies that improve transparency and know-how in the sector.

In developed countries challenges remain regarding the management of risk. It is increasingly recognized that financial sector crises do not always result from discrete institutional failures and financial contagion. Risk can also build up over time and systemic risk can arise from common exposure to macroeconomic conditions. Furthermore, the incentives for caution actually decrease in the run-up to a crisis. When the markets are booming, managers have every incentive to compete for market share even if they perceive the boom to be unsustainable. Regulatory systems in many countries are well equipped to deal with the failure of individual institutions and to analyse risk across institutions and markets at a certain point in time. However, the ability to analyse the development of risk over time and from broader macroeconomic factors, including external shocks, appears to be less well developed.[83]

An additional rationale for government regulation, supervision and surveillance is the economic and social consequences of institutional failures in the financial sector. Financial crises often trigger recessions, and sometimes even depressions, and in some cases it has taken several years to restore the pre-crisis income levels. Many governments have introduced deposit insurance and lender of last resort policies in order to prevent systemic financial crises arising from individual bankruptcies. It is acknowledged, however, that these measures can potentially contribute to moral hazard, and thus an additional rationale for the regulation of exposure to risk.

A brief look at historical developments illustrates the linkage between national regulation, international integration of financial markets and regulatory arbitrage. The period 1950 to 1970 was a period with strict regulation of the financial sector in many countries. Interest rates, credit volumes, market entry and the range of services offered by banks were typically regulated – and the markets were stable. However, during the 1960s the offshore banking sector emerged, mainly as a response to strict regulation in the United States (Errico and Musalem, 1999). Banking services emerged in offshore financial centres (OFC) and became a vehicle for financial institutions to shift their heavily regulated activities to these less regulated (or close to unregulated) locations and the market share of the OFCs grew rapidly.

The 1980s and 1990s was a period of liberalization and deregulation of financial markets in a number of developed and emerging markets, partly in response to changing market conditions and partly due to the emerging regulatory arbitrage. The period of liberalization was also one of greater international financial volatility and a number of countries including the United States, Norway, Sweden, Mexico and other Latin American and Asian countries experienced financial crises. The reasons for these crises varied from case to case, but it appears that insufficient surveillance, supervision or regulation in the face of changing market conditions played a role in most of the episodes, while offshore banking played a role in some (IMF, 2000). International cooperation between national regulatory bodies, the IMF, the World Bank and the Basel Committee on Banking Supervision has been intensified following financial sector turmoil. One of the most

83 Borio (2003).

important developments in this regard was the creation in 1999 of the Financial Stability Forum (FSF) by G-7 ministers and central bank governors. The FSF is composed of senior representatives from national financial authorities, international financial institutions, international regulatory and supervisory groupings, committees of central bank experts and the European Central Bank. Its main objective is to promote international financial stability through the exchange of information and cooperation on supervision and surveillance, including bringing OFCs under such supervision and surveillance.[84]

The role of offshore banking declined in the major developed markets following liberalization, as offshore and onshore activities became less distinguishable. In emerging markets, by contrast, offshore banking has increased in importance. It appears that demand for credit and financial intermediation have run ahead of domestic supply, which has often been heavily regulated, creating space for offshore suppliers. It is therefore worth taking a closer look at the offshore sector.

Offshore banking is defined as the provision of financial services by banks and other agents to non-residents. However, the term is usually related to OFCs, where the bulk of financial sector transactions on both sides of the balance sheet are with companies and individuals that are non-residents, and transactions are in currencies other than that of the country where the OFC is located. An OFC, in turn, is defined as a financial system with external assets and liabilities out of proportion to the current account transactions of the domestic economy. Typically, OFCs have low tax rates, no interest rate or exchange rate restrictions, and deposits are not subject to reserve requirements (Errico and Musalem, 1999). Offshore banking mainly consists of inter-bank markets where onshore banks establish branches, subsidiaries, shell branches and parallel-owned banks.[85] The inter-bank nature of the market encourages uploading and downloading of funds between onshore and offshore activities unless effective capital controls are in place. But even in the case of capital controls, onshore parents are still legally responsible for the offshore branches and subsidiaries and are therefore exposed to the risks they take on.

Some key statistics illustrate the relative importance of offshore banking. By mid-2003 external loans by banks located in OFCs – excluding the US International Banking Facilities (IBF) and Japanese Offshore Markets (JOM) – accounted for 27 per cent of total external loans by banks, down from 31 per cent in 1995. External loans by banks located in OFCs (again excluding the IBF and JOM) corresponded to 9 per cent of world GDP in 2002. Thus, it is clear that offshore banking is not a marginal activity on the fringe of the international financial market but, rather, a major sector that needs to be taken into account when analysing financial sector trade liberalization and its impact on financial sector and trade performance, and also on other macroeconomic variables.[86]

This Section has emphasized the role of financial services in international trade and economic development, the relation between financial openness and trade openness and the regulatory challenges following international integration of financial markets and regulatory arbitrage. It has also pointed out the need for international cooperation regarding supervision and surveillance of banks in the event of greater financial market integration, a need that has been addressed through several initiatives including the Financial Stability Forum.

84 The FSF initiated a number of activities such as the Financial Sector Assessment Program (FSAP) jointly with the IMF and World Bank, cross-border E-banking with the Basel Committee on Banking Supervision, Foreign Direct Investment in the Financial Sector with the Committee on Global Financial System, and Offshore Financial Centre Assessment with the IMF. It also issued a Compendium of Standards identifying 12 standards that in the FSF's opinion deserve priority implementation. See http://www.fsforum.org/home/home.html for details.

85 A branch is part of the onshore bank in terms of being part of the same legal entity, while a subsidiary is an independent legal entity incorporated in the OFC. Parallel-owned banks are separate corporate and legal entities with the same owners.

86 So far, seven countries have made commitments on offshore banking under the GATS. These are Bahrain; Chinese Taipei; Macao, China; Malaysia; Singapore; Thailand and Uruguay. Malaysia and Chinese Taipei restrict offshore banks to servicing non-resident customers in foreign currencies and there is thus little interaction between the local and the offshore financial system. Thailand restricts the number of "international banking facilities" in the country. Singapore, on the other hand, allows offshore banks to lend in Singaporean dollars to residents, but limits the amount. St Kitts & Nevis has also made commitments, but only on registration of offshore companies and trusts, not including banking and insurance.

4. BUSINESS SERVICES

Business services consist of a broad range of services, including computing and data processing, professional services, marketing services, technical services, leasing and renting, labour recruitment and operational services. For almost every function performed in a modern business, there exist specialized companies providing the function in the form of a business service. As a result, an increasing number of manufacturing and service firms choose to purchase or outsource business services from external suppliers rather than producing the services themselves. The growing outsourcing business, in turn, contributes to diversification in the business services sector, with new types of services emerging all the time.

(a) Business services are among the most dynamic in the economy

In the OECD area, business services have been among the fastest growing sectors in terms of employment and value added since around 1980. In the European Union, business services contributed to about the same share of GDP as manufacturing in 2000, while in the United States business services had a higher share in GDP than manufacturing in 2001.[87] In South Africa, a middle income country, the business services sector has also recorded healthy growth both in absolute terms and as a share of GDP over the past decade. The business services sector increased its share of GDP from 7.9 per cent in 1990 to 9.5 per cent in 2002. This is far below the European Union and the United States, but the business services sector is nevertheless one of the most dynamic in the South African economy. In Brazil, another emerging market, the business services sector has been among the most dynamic in the economy over the past few years. During the period from 1998 to 2000, the sector increased its share in total value added from 7.5 to 8.7 per cent, while employment in the sector increased by 20 percent. Employment in the business services sector was only slightly below manufacturing sector employment in 1999 (4.6 million and 4.9 million employees respectively). The fastest growing business services sector was computer services, where employment increased by 40 per cent during the period.[88] Finally, in the Czech Republic business services also grew faster than the rest of the economy during the 1990s, increasing its share of total GDP from 11.8 per cent to 12.6 per cent from 1990 to 2002.

Business services mainly provide knowledge-intensive inputs to other industries, and are important channels for technology diffusion and a source of productivity growth in other industries. It is particularly important for diffusion of process and management innovations. An indicator of the prominence business services have gained in recent years is its share in total intermediate demand in the manufacturing sector, which has increased from 5 per cent in 1972 to 20 per cent in 1998 in the Netherlands and from 3 per cent in 1968 to 14 per cent in 1997 in the United Kingdom.[89] According to the US input-output table for 1999, business services accounted for only 7.5 per cent of total intermediate inputs in the manufacturing sector. There is, however, large variation within the manufacturing sector. The highest shares were found in the tobacco, printing and pharmaceutical industries at 30 per cent, 27 per cent and 25 per cent respectively. At the other end of the spectrum was the motor vehicle industry, with less than 3 per cent. This is perhaps surprising, given that the motor vehicle industry has been among the pioneers in terms of new management and industrial organization practises. But a closer look at the data reveals that the American car industry has shifted its core functions from manufacturing of cars to R&D, design and marketing of cars, while as much as 88 per cent of total gross output consists of intermediate inputs, shifting the car industry's core activities from manufacturing to services.

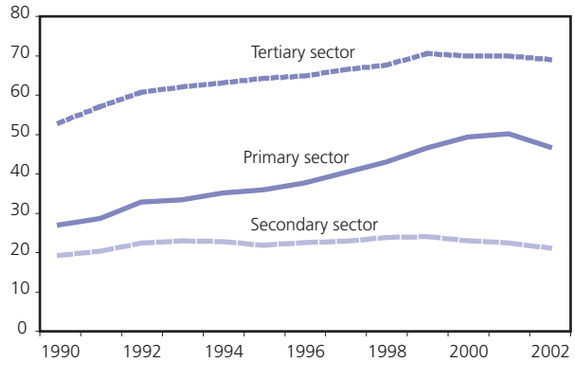
87 Business services are defined by category K in the ISIC revision 3 sector classification, including real estate and business services. In the European Union this category accounted for about 21 per cent of GDP in 2000, while in the United States it accounted for about 18 per cent of GDP in 2001. (Source: Commission of the European Communities, 2002a and BEA, 2003).

88 The source of data on Brazil is the Instituto Brasileiro de Geografia e Estatística (2003).

89 See Commission of the European Communities (2002b). The shares refer to knowledge-based services without giving the exact sector classification.

An example of the importance of services inputs in production in a middle-income developing country is shown in Chart IIB.5, which depicts the development of the share of services in intermediate inputs during the period 1990-2002 in the South African economy.[90] As in the United States and the European Union, the services (tertiary) sector uses services inputs most intensively. The highly export-oriented primary sector, consisting of agriculture and mining, comes second, indicating the important role that business services play in international trade. The primary sector has increased its imports of intermediate services from 3.6 per cent in 1990 to 6.5 per cent of total service intermediates in 2002.[91] The share of expenditure on services in total intermediate inputs increased sharply from 1990 to 2001, after which it dropped slightly. In manufacturing (the secondary sector), however, the services share of expenditure has been flat during the entire decade. Nevertheless, the level is approximately the same as in many European countries and much higher than in the United States.

Chart IIB.5
Share of services in intermediate purchases of major sectors in South Africa, 1990-2002
(Percentage)



Source: TIPS (2003).

The market for business services is much thinner in low-income developing countries, due to the lack of a sufficient pool of skills and a small market size that cannot sustain a highly diversified business services sector. The problem is circular – the degree of specialization depends on the size of the market and the size of the market depends on the extent of specialization. International trade in business services can help businesses in developing countries to escape this trap.

(b) Business services lower entry barriers and transfer technology

Purchasing business services from specialized outside suppliers often saves costs but, first and foremost, it allows even small and medium-sized companies in manufacturing and service industries to utilize specialist services in non-core, but strategically important functions. For example, a small shipyard could produce design and engineering in-house, but then one or two persons would have to design and engineer the vessels from hull to interior, and these two persons could not possibly be experts on all parts of the operations. They would typically continue to produce the same design and concept for as long as possible. By purchasing these services from a specialized engineering firm, the shipyard would have access to a team of architects and engineers, expert in specialized areas and commanding state-of-the-art-technology. The interaction between the shipyard and the design and engineering service supplier enables the former to adopt new technologies and designs more rapidly, and to enter into higher-margin markets for specialized vessels.[92] By the same token, in consumer goods industries, packaging, brand development and marketing are often key strategic functions that determine the market price, and thus the profitability of the producer. These services are increasingly outsourced to specialized service providers, and the availability of such services is particularly important for small and medium-sized companies (OECD, 2000b).

The business service sector creates jobs directly and also contributes to job creation in other sectors by lowering the barriers to entry for entrepreneurs with business ideas and product inventions. Such entrepreneurs usually do not have the necessary expertise in accounting and business regulation to comply with laws and regulation in domestic, let alone foreign markets and they do not often have the capacity to carry out market research.

90 The data are for total services, but one should expect that since these are intermediate inputs in the production process, they are largely business services.

91 A likely explanation for increased imports of business services is that some of the major South African mining companies have moved their headquarters to London, and headquarter services to local affiliates are therefore registered as trade in business services.

92 See Nordås (2004) for a discussion and case study.

Furthermore, the entrepreneur will typically not have the resources to employ expertise in these areas. Therefore, the existence of a market for services where entrepreneurs can purchase the necessary accountancy services, legal advice, marketing, and possibly also rent production equipment, would lower entry barriers substantially. This kind of outsourcing has the effect of turning some fixed costs into variable costs. The external purchase of specialized business services by small and medium sized companies often helps them access new production, process and organizational technology and to comply with customers' quality requirements and standards required by legislation.[93]

(c) Business services can match suppliers and customers across borders

The business services sector has both a direct and indirect impact on international trade. The direct impact is the rapidly growing international trade in business services. The indirect effect stems from business services providers acting as intermediaries between potential exporters and foreign customers. These providers lower transaction costs and improve productivity and competitiveness in customer companies. In the case of ports, for example, Table IIB.6 above shows that it takes, on average, three weeks to clear goods in the worst performing African ports. In such a situation, it would be impossible – even for the most innovative and capable local firms – to enter export markets where delivery time is an important competitive factor. In an increasing number of markets timeliness is important.[94] However, as Box IIB.5 shows, opening up port services to private services companies, local and foreign, brought down clearing times substantially, so reducing an obstacle preventing local producers from entering export markets. In countries where local service providers are lacking, such services can be imported, thereby opening trade possibilities for other sectors.

Business services contribute to lowering trade costs by improving supply chain management. For example, marketing services can help to match producers in one country with customers in another, while technical and management services help producers in countries with shortages of skills to improve productivity and become more competitive. Returning to the shipyard example, it is often the case that developing countries have a comparative advantage in shipbuilding. Access to technical services through imports could help them benefit more from this comparative advantage through technology transfer that would enable them to produce more technologically advanced vessels, which also yield higher prices.

An engineering and design services firm in the shipbuilding industry in Norway, for example, develops design and work drawings at its main office in Norway and transmits them electronically to shipyards all over the world. The company also has local offices close to all its major customers' shipyards including in China, Iceland and Poland, where it employs local staff and sends staff from the main office for shorter or longer periods. Their local employees in their overseas offices can also spend time at the main office in Norway working on projects and undergoing on-the-job training. All this helps the shipyards to compete in the market for highly-specialized vessels.

This example illustrates the complementarity between cross-border supply, foreign direct investment and movement of natural persons in the business services sector. Testing services is another business service that could reduce an important entry barrier for many potential exporters in developing countries. Meeting quality standards, whether legal or self-imposed by business, can often be a problem. And even if the standards are met, it can be a problem to document that this is actually the case. Access to foreign testing services could potentially improve the situation and open new markets for developing country producers.

93 In a perfect capital market financing upfront investment for a project with an expected positive return should not be a problem, but in most countries, particularly developing countries, capital markets are not perfect.

94 See Hummels (2000) and Evans and Harrigan (2003) for a discussion.

(d) Business services are also a dynamic traded sector

Business services not only facilitate trade in other sectors, but can also be a dynamic trading sector in its own right. Trade in business services takes place in all four modes included in the GATS and Mode 3 (foreign direct investment) appears to be the most important. According to UNCTAD (2003b), the inward stock of foreign direct investment in the sector increased nine-fold during the period 1990-2001 worldwide – about five-fold in developed countries and almost one hundred-fold in developing countries. Moreover, the share of business services in the stock of total inward investment increased from 6 per cent to 17 per cent globally, and from less than 2 per cent to almost 25 per cent in developing countries during the same period. Also, the stock of outward investment by developing countries in business services increased substantially. These investments are largely motivated by supporting trade and other operations by multinational firms or immigrants, and this appears to be the case both for developed and developing country outward investment. For example, about a third of the foreign affiliates of Japanese manufacturing multinational corporations are in the services sector (UNCTAD, 2003b).

The world's largest exporter of business services is the United States. The country publishes data on trade in services distinguishing between sales through foreign affiliates and other modes. Table IIB.11 presents the data on US exports of business services during the period 1997-2002.

Table IIB.11
United States: Business services exports by sub-sector, 1997-2002
(Billion dollars)

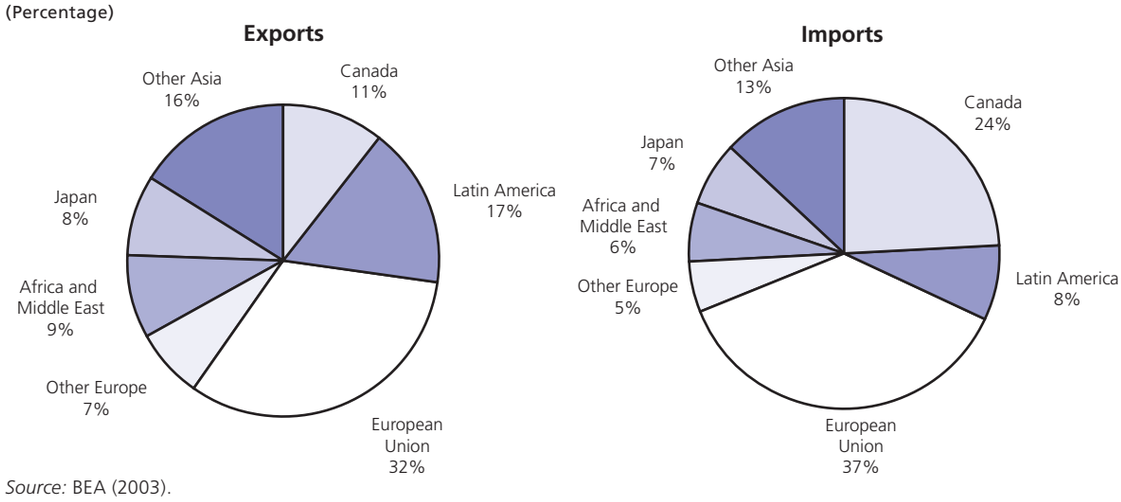
	1997	2000	2002
Business, professional, and technical services	**44.0**	**55.2**	**65.4**
Unaffiliated	**21.5**	**25.3**	**28.8**
Affiliated	**22.4**	**29.9**	**36.6**
Computer and information services	5.1	6.8	6.9
Unaffiliated	3.5	5.6	5.4
Affiliated	1.6	1.2	1.5
Management and consulting services	n.a.	n.a.	3.7
Unaffiliated	1.6	1.7	1.7
Affiliated	n.a.	n.a.	2.0
Research and development and testing services	n.a.	n.a.	6.3
Unaffiliated	0.9	0.9	1.1
Affiliated	n.a.	n.a.	5.2
Operational leasing	3.6	5.2	5.9
Unaffiliated	2.0	3.1	3.6
Affiliated	1.5	2.1	2.3
Other business, professional, and technical services	32.8	40.6	42.5
Unaffiliated	13.5	14.0	17.0
Affiliated	19.3	26.6	25.5

Source: BEA (2003).

Total exports of business services increased at an average annual rate of about 8 per cent and the share of affiliated sales (i.e. sales by US multinationals abroad) increased for the business services sector as a whole. This conceals, however, some interesting differences among business services industries. In computer services, the entire export growth has come from non-affiliate sales, and non-affiliate sales are also more important than affiliate sales in the operational leasing industry, the fastest-growing category.[95] Chart IIB.6 shows the regional distribution of US non-affiliate trade in business services.

[95] US imports of business services increased by about 10 per cent per year during the period 1997-2002, and non-affiliate sales accounted for 28 per cent of the total in 2002. For imports, affiliate sales dominate non-affiliate sales in all sub-sectors.

Chart IIB.6
United States' unaffiliated trade in business services by region, 2002
(Percentage)

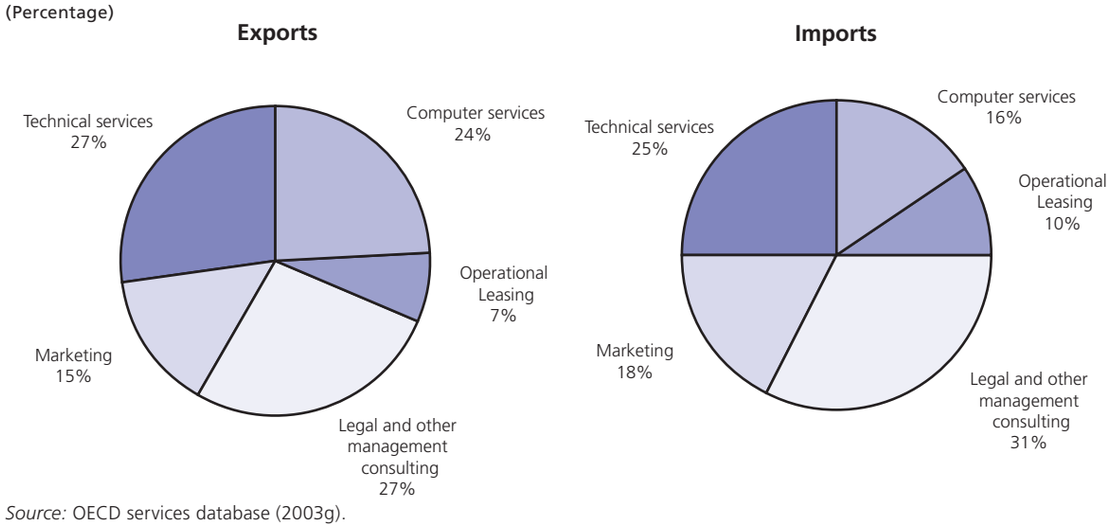


Source: BEA (2003).

Although OECD countries dominate both as destinations for exports and sources of imports, the Middle East and Africa receive more than twice the share of services exports from the United States as they do for goods exports and they account for a higher share of US imports as well.

Turning to the European Union, exports of business services increased by almost 14 per cent per year in nominal terms during the period 1998-2001, while imports grew even more rapidly – at a rate of 16 per cent during the same period. These figures only represent cross-border trade. Chart IIB.7 shows exports and imports of business services for the European Union in 2001.[96] The composition of exports and imports is fairly similar to that of the United States, although computer services account for a larger share in the European Union's trade in business services.[97]

Chart IIB.7
European Union's trade in business services by sector, 2001
(Percentage)



Source: OECD services database (2003g).

96 Total trade in business services amounted to about euro 80 billion, evenly split between exports and imports.

97 Because of differences in classification, US and European Union data are not perfectly comparable.

Among the OECD countries, Central European countries have experienced the most rapid export growth in computer services. Exports increased from $5 million in 1995 to $122 million in 2001 in the Czech Republic, and high growth rates were also experienced in Poland and the Slovak Republic. A number of developing countries, led by India, have emerged as important exporters of business services, particularly those that can be transmitted electronically to the foreign customer. According to UNCTAD (2003b), India accounts for about 80 per cent of international IT-enabled business process outsourcing (Box II.7).[98] As pointed out in Section IIB.2, adequate telecommunications are necessary in order to enter this growing export market.

Box IIB.7: "Offshoring" of business services

Offshoring is defined as the relocation of jobs from the domestic economy to a lower-cost foreign country. According to McKinsey (2003), offshoring is growing by more than 30 per cent per year. The business services being offshored are back-end processing, call centres, accounting, software maintenance and development, product design, telemarketing, procurement and research and consultancy services. The United States accounts for about 70 per cent of offshoring and the major host countries are Canada, India, Ireland and Israel, while Australia, South Africa and the Philippines are emerging as major hosts to such services as well. Developments in the telecommunications market, with better services at lower costs, have made offshoring possible, while substantial differences in wages paid to workers with comparable skills have made offshoring profitable. A software developer costs about $60 an hour in the United States, but only $6 in India. By offshoring to India, a US firm can save about 50 per cent in the cost base for a particular service. The estimated value of exports due to offshoring to India in 2001 was $7.7 billion, while offshoring to Israel and the Philippines had a value of $3 billion and $0.3 billion respectively. The number of US jobs offshored is estimated to be about 400,000. It is also estimated that for each dollar value of outsourcing, there is a net gain of 14 cents to the US economy due to increased competitiveness and productivity. So far, offshoring has mainly been a phenomenon among English-speaking countries, as a common language appears to be crucial for these services.

To conclude this Section, even if a developing country does not have a comparative advantage in business services, it can still benefit from trade. First, trade in business services creates jobs in the importing country. Second, trade in business services may provide a "missing link" between domestic producers and foreign customers in other industries and thus stimulate exports in other sectors. Furthermore, it appears that the barriers to entry in export markets are lower in the business services sector than in many other services sectors, and therefore trade flows are likely to respond swiftly to trade liberalization The costs of such liberalization are probably minimal, and the regulatory capacity less critical than for financial services and telecommunications. This is because unlike transport, finance and telecommunications, there are no obvious market imperfections in the business services sector. However, the precarious state of infrastructure in some least-developed countries may limit, but not eliminate, the gains from trade in business services.

[98] It appears, however, that this is an under-researched area as the data included in the UNCTAD report are mainly taken from newspaper articles.

5. SUMMARY AND CONCLUSIONS

Infrastructure and related services interact with trade in goods and services in a complex way. First, the cost and quality of infrastructural services are important determinants of the volume and value of international trade through the impact they have on cross-border transactions costs. Second, because sectors differ in terms of how intensively they use infrastructural services, the quality and cost of such services also affect patterns of comparative advantage and international specialization. Reliable and cost effective infrastructure services are, for example, more important for trade within international production networks in advanced industries than for trade in non-perishable commodities. Third, trade in infrastructural services may improve the quality and cost effectiveness of such services, and when that is the case trade in infrastructural services will stimulate trade in other sectors through the transactions cost channel. Infrastructural services, with the exception of business services, are subject to market imperfections such as network externalities, significant scale economies and coordination failure. Financial services are also subject to moral hazard and adverse selection. The underlying infrastructure often has the character of a public good. Because of these market imperfections, government regulation is often necessary and so is government intervention in the provision of underlying infrastructure. In some cases market imperfections have international dimensions. This applies in particular to the interface between national and international transport and communications systems, where common or compatible standards are necessary. It also applies to areas where international regulatory arbitrage can undermine domestic regulation. The fourth area of interaction between infrastructure services and trade involves regulation. Regulation is a very information-intensive activity and good telecommunications improve the ability of regulators to cooperate at the international level.

C MARKET STRUCTURE, EXTERNALITIES AND POLICY INTERVENTION

The proposition that trade liberalization (in this case, openness in product and factor markets) is of mutual benefit to countries depends, in part, on the efficient functioning of various markets. If product or factor markets are not competitive, or if market signals do not properly reflect social costs and benefits (i.e. externalities are present), the beneficial effects of openness may be reduced or negated. In some, but not all cases, policy interventions will be required to correct these shortcomings, since openness alone will often not be enough to create a competitive environment. Indeed, in some circumstances, openness may exacerbate inefficiencies or create new ones in the presence of externalities or market power.

The purpose of this Section is to identify complementary, essentially corrective policies and measures countries can take to promote competition and ensure that positive or negative externalities are fully taken into account. Emphasis will be placed on the choice of appropriate policies to deal with particular instances of market failure, as well as the political economy challenge of ensuring that putatively corrective policy interventions do not serve surrogate interests that undermine national welfare. Focus here will be on the contribution of competition policy in making markets more contestable. In the case of externalities, the Section will emphasize the need for policies to provide producers and consumers with prices that allow them to internalize externalities. None of the policy prescriptions and underlying analysis that follows is new – this report seeks, however, to place the discussion within the broad context of a coherent policy framework that promotes the fullest possible realization of the benefits from trade liberalization.

1. MARKET STRUCTURE, EXTERNALITIES AND THE ALLOCATION OF RESOURCES

(a) Efficiency in the allocation of resources

Economists have long argued that market exchange – where the choices of individuals reflect their own values and firms make choices to maximize their profits – will lead to an efficient allocation of scarce resources. Efficiency in this sense requires that individual buyers and sellers cannot affect the price at which exchange takes place in a market. In addition, markets must exist for all goods. If these conditions are met, markets are competitive and complete and there will be an efficient allocation of resources.[99]

In reality, these conditions are rarely met. The following are some examples of departures from these conditions:

- Some firms may have control over price, either because there are too few competitors or because the products they sell have significant brand names that allow the seller to exercise power over price. Firms can also exert control over prices if they act in a collusive manner.[100]

- Information flows may not be perfect. Asymmetric information between buyers and sellers, for instance, could lead to a drastic reduction in market transactions (the market for 'lemons' problem).[101]

- Sometimes the benefits of consuming a good may not accrue solely to the consumer. Others may also benefit. This is the case of positive externalities. Conversely, a firm may not be the sole bearer of the costs of producing a good – for example, environmental damage arising from production. In this case a negative externality arises as society's cost of producing that particular good is greater than the private cost.

99 This is when the price of a resource is equal to its marginal cost.

100 It should also be noted that imperfect market structures do not necessarily nullify the gains from trade. Trade theorists have long recognised that scale economies are an important determinant of trade and can deliver gains from exchange such as an increase in product variety (Feenstra, 2004).

101 The market for 'lemons' refers to the second-hand market for cars, where the seller (current owner) has better information about the quality of the car than a potential buyer. This asymmetry in information is likely to discourage many potential buyers from purchasing a second-hand car for fear of being stuck with a 'lemon'. See Akerlof (1970).

Even if there are no market failures, the workings of the economy may produce a distribution of income that is perceived as inequitable. Often, this is because of the unequal distribution of wealth and of unequal opportunities. Policies aimed at redistributing wealth and at creating equal opportunities (for example in education and health) would help achieve a more socially acceptable distribution of wealth without heavily distorting markets and incentives.

The kind of market failures noted above provide the necessary (but not sufficient) condition for public action. But public action needs to be informed and the effective design of policies and their interaction with trade is discussed next.

(b) Policy coherence

In discussing issues of policy coherence in these areas, a number of themes need to be emphasized. First, increasing efficiency in resource allocation is the prism through which we view coherence in trade, competition and environmental policies. The effect of trade liberalization in perfect markets is to allocate resources to their most productive or efficient use. This takes place when countries specialize in producing those goods and services in which they have the comparative advantage. The principle aim of competition policy is to limit the exercise of market power by firms, otherwise the profit maximizing motivation of a firm could result in a wedge between the opportunity cost of a resource and the prices that consumers pay for them. The purpose of pricing environmental resources correctly is to make sure that people properly value these resources and do not treat them as free goods. Hence, coherence in trade, environmental and competition policy must ultimately be judged by the degree to which they contribute to efficiency in resource allocation.

Second, there is an international element to competition and environmental policies. In the case of cross-border mergers, for example, conflicts can arise from differences in competition frameworks and principles. Different approaches to merger review could result in different outcomes. Preventing this from disrupting global commerce may require international cooperation among competition authorities. International cooperation would also be required when the competition problem is global in nature, such as in the case of international cartels which determine prices affecting consumers in national markets. Where environmental externalities are global, rather than national in scope, international cooperation offers the most effective way of managing the problem. Left to their own devices, national authorities will not possess all the incentives to curb the harm to the global commons, since part of the cost is borne by foreigners. International coherence is also required to avoid conflicts between differing systems of international law, such as between multilateral environmental agreements and multilateral trade rules. Section IIE contains a more systematic analysis of the contribution of international cooperation to good policy and coherence.

Third, the whole is more than the sum of its parts. Trade, environmental and competition policies individually promote efficiency in resource allocation. But each, without the other policies in place, is less effective. A country will not reap the maximum benefits from open trade if domestic laws allow non-competitive behaviour by domestic firms. Needless to say, a country with the most stringent competition rules foregoes significant static and dynamic benefits if it is closed to foreign trade.

While the emphasis is on optimal policy interventions to complement openness to trade, public action is not a panacea for all ills. While market power by firms is, in general, undesirable in many cases it may be the only possible outcome given consumer taste or technological realities. Mergers, for example, can bring economic benefits due to economies of scale and sharing of know-how even as they might heighten the degree of market power enjoyed by the merged entity. Regulators may err on the side of caution and disallow such mergers. Regulation also imposes its own costs, not least of which is the possibility of regulatory capture by industry. In the case of externalities, the Pigouvian (environmental) tax imposes an excess burden, just like any other distortionary tax. Environmental regulations need monitoring and enforcement, which require resources to be expended. All of these costs of government action must be carefully considered when deciding on the extent of public intervention in dealing with externalities.

While the movement towards a more open economy will increase competition, the scope for anti-competitive practices by domestic and foreign firms may not necessarily diminish. Indeed, in some cases, defensive reactions by domestic firms facing competition may increase. Or foreign firms, in an attempt to penetrate a market, may behave in an anti-competitive manner. In either case, the argument for developing and enforcing an efficient competition policy is compelling. In the context of competition problems that are not within the jurisdiction of a domestic authority, the resort to trade instruments is not an efficient response. International competition problems increasingly require international solutions. The scope of such solutions, including whether or not they are legally binding, is still a matter of debate. There is little evidence to suggest that it is beyond the capacity of developing countries, with adequate provisions for technical assistance, to implement trade liberalization and effective national competition policies.

In the case of externalities, the thrust of policy is to face producers and consumers with the correct prices. In the case of a negative externality, such as the emission of pollutants, this would require environmental taxes or, in some cases, command and control measures if monitoring and enforcement costs as well as distribution concerns are to be taken into account. Trade measures are often a second- or third-best policy response to a local externality. They may only make sense in the context of multilaterally agreed covenants to address transboundary pollution problems, or perhaps as an enforcement mechanism within an international agreement. In the case of positive externalities, such as the creation of knowledge through R&D, appropriate measures could include public investment in basic research or the provision of R&D tax credits. This should not be seen as downplaying, in any way, the role of intellectual property protection and competition policy in fostering an environment conducive to the creation of new knowledge. Given the importance of trade as a conduit for the transmission of knowledge spillovers, there is a dynamic benefit (increase in productivity) from removing trade distortions, apart from the usual static resource allocation effects.

Finally, the need for complementary measures to make trade policy more effective does not mean that trade liberalization should not be attempted in their absence. Or that governments should wait until all the other complementary policies are in place before undertaking meaningful trade reform. Far from it. Time after time, the removal of protection even in the face of other distortions in the economy has created net benefits rather than costs. This discussion of market structure and externalities is in the framework of seeking to magnify the benefits from further trade liberalization.

2. COMPETITION POLICY

The interaction and relationship between competition and trade policy has received considerable attention in the past decade.[102] There are good reasons for this, especially when one considers that both policies have the same objective of developing and promoting efficient and competitive markets. Trade policies achieve this through lower tariff and non-tariff barriers imposed by governments. Competition policy, on the other hand, has as its primary objective the discipline of actions by private firms that interfere with competition in a manner that imposes costs on society.

Recognition of the similarity and indeed, as will be shown below, the complementarity of these two policy areas is not new. The 1948 Havana Charter, which proposed an international organization, included provisions on restrictive business practices. An international complaints and investigation procedure was envisaged for an open-ended list of restrictive business practices. However, the stillbirth of the International Trade Organization meant that competition policy did not become part of the mainstream trade agenda. In more recent years, it has become part of the discussions in various fora including some components of the Uruguay Round negotiations.[103]

[102] See WTO (1997). The WTO Secretariat paper entitled "Study on Issues Relating to a Possible Multilateral Framework on Competition Policy" (WT/WGRCP/W/228) provides a comprehensive coverage of the issues relating to competition policy in an open economy.

[103] See also United Nations Set of Multilaterally Agreed Equitable Principles and Rules for the Control of Restrictive Business Practices ("the Set") which was adopted by the General Assembly of the United Nations on 5 December 1980 (Resolution 35/63). In addition, there are competition related provisions in the General Agreement on Trade in Services and the Agreement on Trade Related Intellectual Property Rights. For more on competition policy and the Uruguay Round see WTO (1997).

The return of competition policy as part of international policy making is driven by continuing reductions in trade barriers and the increasing fragmentation of the production structure of the world economy. Both of these developments have taken place in the context of dramatic changes in information and transport technology, and the growth of the service sector in the world. These developments have contributed to a more competitive global economy and a very different trade policy environment compared to the immediate post-World War II period. A key issue is whether the benefits of continued trade liberalization can be nullified by the anti-competitive actions of private firms, despite an increasingly competitive global environment. Or, conversely, whether trade policy instruments can be used as an effective remedy against anti-competitive behaviour.

The discussion that follows of how competition policy can enhance the benefits of trade liberalization distinguishes among three scenarios in an open economy where anti-competitive practices may exist: where a domestic firm engages in anti-competitive practices in a domestic market; where a foreign firm engages in anti-competitive practices in a domestic market; and where foreign firms engage in anti-competitive practices in international markets that affect prices in a domestic market. The starting point for the analysis is an overview of the basic concepts of market structure. This is followed by a discussion of how competition policy addresses selected market failures. Finally, some conclusions are drawn on the interaction between trade policy and competition policy.

(a) Market structure

The traditional approach to examining market structure is to measure the number and size distribution of firms. The larger the number of firms, the more competitive the industry. This approach changed during the 1980s with the development of more sophisticated thinking about industrial organization. Armed with tools borrowed from game theory, new insights into the behaviour of firms were developed. Instead of focusing on the number and size of firms in an industry, the focus shifted to their behaviour and, in particular, to market entry barriers.

In order to understand better the primacy accorded to entry barriers, consider the basic monopoly case. If only one firm was to operate in an industry it would restrict output and raise the price of the good that it sells in order to maximize its profits. Positive profits, however, would create an incentive for other firms to enter the industry. In the scenario where they do enter the industry, the incumbent monopolist would be forced to alter its pricing and production behaviour. Arguably, one could also reasonably expect an incumbent monopolist to alter its commercial behaviour pre-emptively if a new entrant was to credibly signal its intent to enter the industry.[104] The credibility of this signal would depend greatly on the level of barriers – the lower the entry barriers the stronger the credibility of the threat that a new entrant may emerge. Conversely, the higher the entry barriers, the lower the credibility.

In the absence of a precise definition of a 'barrier' *per se*, a widely accepted definition of a barrier is any condition that affects the mobility of capital into and out of an industry.[105] The emphasis in this case is the mobility of capital. There is also the case of a merger, which may not affect the mobility of capital, but may still affect the conditions of competition.[106] The overriding question is whether or not entry, or perceived entry, will bring market prices closer to the perfectly competitive price.

Two types of barriers to entry can be identified – regulatory and structural barriers. Regulatory barriers are often government policies designed to limit or control entry into an industry. These include requiring a permit or licence to participate in a particular market. In some cases, acquisition of a permit may be allowed, but the cost of doing so may be prohibitive. Another example of a regulatory barrier to competition is a measure that reduces or prohibits imports, such as tariffs or quantitative restrictions.

104 Baumol et al. (1982) developed this line of thought through the concept of 'contestable markets', where the credible threat of entry could lead to competitive outcomes even with a small number of firms in the market. As Gilbert (1989) points out, they either mimic perfectly competitive markets, or they act as perfectly regulated monopolies with (average) price equal to average cost.

105 See Gilbert (1989) for the various definitions of barriers to entry.

106 For example, a horizontal merger that would change ownership without a corresponding transfer of capital.

Not all barriers to entry are erected by governments. In many cases the barriers could be structural in nature. For example, sunk costs may be specific to an industry. In this case, the nature of the costs may be such that exit from a failed entry may be difficult, raising the risk of entry. In a similar way, but associated with entry, high fixed entry costs may deter entry. Other possible structural barriers include economies of scale and network effects.

Within the class of structural barriers to entry there is also the case where the structural barriers to entry are such that the market can only be efficiently supplied by one firm. Examples of such natural monopolies can be found in industries that require large-scale investments in distributive networks, such as power generation.[107] The policy response in this case is not to ease entry into the market, since this will have no consequence. Instead, the behaviour of natural monopolists needs to be regulated in such a way as to balance the public interest in the provision of the product to the market, with the commercial interest of the natural monopolist.

Another set of barriers to entry are those associated with the response of the incumbent. Even if regulatory and structural barriers were minimal, an incumbent firm could use strategies at its disposal to limit competition. Pricing policy, for example, could not only be aggressive in nature, but implemented in a predatory manner.

(b) Objectives of competition policy

An effective competition policy is an important underpinning of an efficient economy. To date, there is no universally agreed approach to competition policy. Different approaches are used by different countries. Some have extensive legislation covering merger review, dominance and anti-competitive practices, while others have basic price surveillance legislations.[108] Competition policy should, therefore, be understood in a broad sense, and viewed as comprising not only antitrust policy, but also other policies that have an impact on market structure, business behaviour and economic performance. It should also be understood in a dynamic context. Indeed, in the context of trade policy a dynamic argument for protection is the infant-industry case, where the costs of production decline in the future. Krugman (1984) highlights this case as one where protection from competition, in this case imports, expands output to the point where the protected industry becomes internationally competitive.[109] Increasingly, the competition policies of many governments aim to promote dynamic as well as static efficiency gains, for example in the approach that they take to intellectual property licensing issues.[110]

Despite the different approaches used by countries, all competition policies have the ultimate common goal of maintaining and encouraging competition. However, in some cases the objectives as stated in the legal instrument are very broad (World Bank and OECD (1999); CUTS (2003). Nevertheless most of the legal instruments that were developed in the 1990s have the objective of 'promoting', or 'encouraging' competition. This is a marked shift in the intent of the instruments developed prior to the 1980s. A good example of this shift is the case of India, where its 1969 Act aimed at the "prevention of concentration of economic power that is or that may lead to the common detriment". The 2002 Act has various objectives, including to prevent practices having an adverse effect on competition, to promote and sustain competition in markets, to protect the interests of consumers, and to ensure freedom of trade.

107 In technical terms any given level of output can be produced at less cost by a single entity than by two or more firms. As a result, in a single product market the firm with the largest output would always be able to under-price any rivals.

108 A summary of the basic content of national legislation on competition policy for 55 countries is contained in WTO document WT/WGTCP/W/128/Rev. 3, 27 November 2003. The document shows that the vast majority of competition policies have a number of common elements including those on horizontal and vertical restraints, abuse of dominant position and merger review.

109 This case is explained in Feenstra (2004).

110 See Anderson and Gallini (1998)

Some further examples of objectives from different competition policy instruments are stated below.

- maintenance of the competitive process or of free competition;
- freedom of trade, freedom of choice and access to markets;
- freedom of individual action;
- securing economic freedom;
- lessening the adverse effects of government intervention in the marketplace;
- prevention of abuse of economic power;
- achievement of economic efficiency.

As noted above, a competitive market may not deliver an equitable result. One view would be to include equity as an objective of competition policy. While understandable from the point of view of governments concerned with social justice, the reality is that broad and ambiguous mandates give rise to the possibility of inconsistent outcomes. In the extreme case, the absence of clear and concise objectives can lead to incoherence and perhaps the political capture of the competition authority.

The number of countries with competition policies has been steadily increasing (Table IIC.1). Most developed countries have had some type of competition legislation in place for sometime, so these new countries are predominantly developing countries. This is a positive development. It should be noted, however, that developing countries do not form a homogenous group. There are fundamental economic differences between them and one would not expect a high degree of homogeneity in their approach to competition policy. Yet at the same time there are a number of similarities, or core principles.

Table IIC.1
Number of jurisdictions enacting competition laws

Years	Number of jurisdictions enacting a competition law for the first time
1985-1990	8
1991-1995	25
1996-2000	16
Total for 1985-2000	49

Note: Excluding European Communities 80 jurisdictions were reported to have some form of competition law in 2001.
Source: WTO.

(c) Competition and openness

It is sometimes argued that the objectives of competition policy can be met, at least in part, by open trade and investment policies. A small open economy, for example, may derive significant pro-competitive benefits in many markets by allowing foreign suppliers to contest those markets. Similarly, open investment policies may be expected to reduce opportunities for domestic industries to capture markets and extract monopolistic rents. The validity of the argument that open trade and investment policies can replace competition policies depends on the assumption that these external influences will eradicate anti-competitive market structures. This will not always be the case. Openness may not increase rivalry among firms – in fact the reverse might occur in some circumstances. This suggests a role for competition policy.

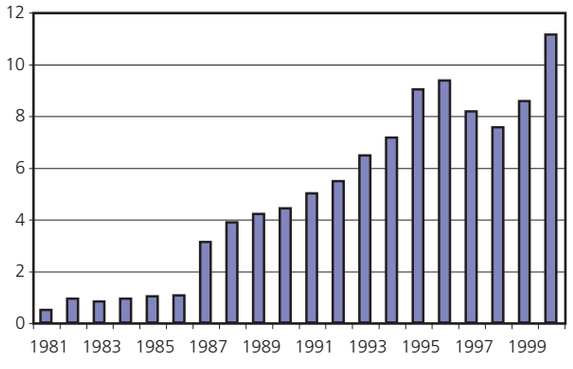
Some industries are simply less amenable to competition than others. Take, for example, network-based industries such as electricity or water supply. Huge sunk costs in such industries make entry difficult and the market is unlikely to deliver competitive structures, with or without foreign participation. In such cases, regulation is essential. Two further instances will be considered below where open trade and investment policies require a complementary competition policy in order to achieve the full benefits of openness. The first is the case of international cartels and the second is cross-border mergers.

(i) International cartels[111]

Foreign exporters could be members of a cartel with the objective of reducing output and raising prices. Even if trade measures in the importing country are liberalized, the full benefits of the tariff reduction may not be passed on to consumers, due to the actions of such a cartel.

Empirical research seeking to estimate the costs of international cartels is still in its infancy. The work focuses on known cartels such as the ones that were prosecuted in the 1990s. These studies employ a basic methodology to estimate the overcharging to consumers. The resulting estimates fall in the range of 20-40 per cent.[112]

Chart IIC.1
Total imports of 12 cartelized products by developing countries, 1981-2000
(Billions constant 2000 $US)



Source: WTO Document WT/WGTCP/W/228.

These estimates shed some light on the relative magnitudes of the costs to national treasuries and the benefits of adopting multilateral provisions on cartels. The associated state outlays include: (i) the cost of drafting and enacting a cartel law, establishing the relevant enforcement agency, and developing the necessary expertise; (ii) the budgetary cost of enforcing a cartel law; and (iii) the costs to the private sector of any unwarranted bureaucratic harassment that may follow enactment of a cartel law. The benefits include: (i) any benefits to the national treasury associated with deterring the formation of bid rigging cartels in the first place; (ii) any benefits associated with deterring the formation of cartels that target private sector customers in the first place; (iii) any benefits to national treasuries that accrue from bid rigging cartels submitting lower bids in jurisdictions with active cartel enforcement regimes; and (iv) any benefits to private sector customers that accrue because cartel members set lower prices in jurisdictions with active cartel enforcement regimes.

Recent research has shown that benefit (iv) listed above may be sufficiently large to justify public outlays on anti-cartel enforcement and supports the view that there are likely to be sizeable benefits from implementing effective provisions on hardcore cartels, whether at the national and/or international level.[113] Moreover, to the extent that voluntary cooperation further strengthens the ability of competition agencies to successfully conduct investigations into hardcore cartels, then this will increase the deterrent effects on cartelization.

Evidence points to the possibility that the benefits of effective measures to tackle international hardcore cartels could exceed the welfare gains from liberalizing certain impediments to market access in the context of the Doha Round. For example, in the September 2002 edition of the IMF's World Economic Outlook, it is estimated that the increase in developing country welfare resulting from the liberalization of agricultural policies in industrialized economies would be approximately US$8 billion per annum.[114] Undoubtedly, this constitutes a sizeable potential benefit for developing economies. However, in 2002, developing countries imported merchandise worth $1,704 billion, and in order for disciplines on hardcore cartels to yield an $8 billion reduction in overcharges to developing countries, international hardcore cartels controlling as little as 1.8 to

111 This Section is based on WTO Document WT/WGTCP/W/228 "Study on issues relating to a possible Multilateral Framework on Competition Policy", 19 May 2003.

112 Connor (2001), Levenstein and Suslow (2001), and OECD (2002a, 2002b).

113 It should also be added that to the extent private firms respond to stronger cartel enforcement measures by adopting price-raising but not cartel-like practices – such as collusion and price leadership – this may detract from the benefits of properly implementing national cartel laws. This concern is of special importance if the new practice is less easy to deter or prosecute under national competition law.

114 For comparative purposes, Chadha et al. (2000) estimate the gains for developing countries resulting from a 33 per cent overall reduction of agricultural tariffs to be $5.7 billion annually.

3.1 percent of developing countries' imports would have to be deterred or stopped by the implementation of such new disciplines.[115] This amounts to $28-48 billion of developing countries' merchandise imports in 2002, much less than the $81.1 billion of developing country imports that Levenstein and Suslow (2001) estimated might have been affected by international cartels prosecuted in the 1990s. These calculations suggest that disciplines on international cartels offer considerable benefits to developing countries.

Economic analyses of the harm done by anti-competitive practices, such as private international cartels, are becoming more sophisticated over time. In one such analysis, the overcharges on cartelized exports of vitamins was found to be much higher in Asian, Latin American and Western European jurisdictions that do not have vigorous cartel enforcement regimes. This finding highlights one of the important benefits of cartel enforcement – namely providing incentives to those cartels to limit the amount they overcharge customers in a given jurisdiction.[116]

When quantitative estimates of these benefits were compared to the costs of running an agency responsible for enforcing competition laws, considerable returns were found to investments in cartel enforcement activities. It remains to be seen whether further studies will bear out these conclusions. To the extent that they do, such research will reinforce the case for adopting and enforcing national cartel laws and associated measures at the international level that underpin the effective enforcement of national competition laws. The return on these investments in national cartel enforcement can be further enhanced by capacity building and technical assistance measures.

(ii) Mergers

The policy interest in mergers stems from the fact that, in some cases, they create conditions that are conducive to the exercise of market power. As indicated above, the correlation between market power and concentration has been eroded somewhat over recent years due to new theoretical insights. Mergers can bring economic benefits due such factors as economies of scale and the possibility of sharing of know-how. However, nowhere has the case been made that mergers should be not reviewed. Mergers can be classified into three categories: horizontal mergers that take place between firms that are actual or potential competitors, vertical mergers between firms at different levels in the chain of production, and conglomerate mergers which are neither horizontal nor vertical.[117] In the last case the two firms do not necessarily have a specific commercial relationship.

Concern about the potential anti-competitive effects associated with opening an economy has increased in the past five years as a result of the boom in cross-border mergers and acquisitions. If one considers the case of two countries and multinational corporations (in the form of affiliates and firms) there are six possible outcomes if cross-border mergers were to be allowed (UNCTAD, 2000). These are:

- a domestic firm in X acquires a foreign affiliate in X
- a foreign affiliate in X acquires another foreign affiliate in X
- a domestic firm in X acquires a foreign firm in Y
- a foreign affiliate in X acquires a domestic firm in Y
- a foreign affiliate in X acquires a domestic firm in X
- a foreign affiliate in X acquires a foreign affiliate in Y

[115] These calculations assume that the price increase with international cartelization is between 20 per cent and 40 per cent, consistent with the findings of Levenstein and Suslow (2001).

[116] Of course, one of the other benefits of having a vigorous cartel enforcement regime is that it deters the formation of cartels in the first place.

[117] These categories are not necessarily mutually exclusive.

The first two cases are clearly restricted to the jurisdiction of domestic authorities. The resulting merger increases concentration in the domestic economy. Whether or not the merger is anti-competitive will depend upon the specifics of the case. In each of the other four cases, however, there is a cross-border competition issue in either country X or country Y. In each instance, the issue is not limited to the increase in concentration in either market, but the increase in concentration in the global market, which could lead to potential anti-competitive behaviour.

The scenarios are further complicated if a third country is added. For example, in this case the mergers outlined above could have an anti-competitive effect in country Z. Country Z, however, may not have a competition policy in place to address this situation. Or, even if it did, it may not have jurisdiction over the transaction since the new merged entity may not have a presence in country Z.

Concern about the potential anti-competitive effects of mergers stems either from a unilateral or coordinated effect, or both.[118] In the case of unilateral effects, the concern is that the reduction in rivalry may alter the incentives for the new firm to behave in a competitive manner. The consequences of unilateral effects are no different from those of a large firm in a domestic market. The coordinated effect relates to the reduction in transactions costs that may be incurred when colluding.

In these cases, the existence of domestic competition regulations on price-fixing arrangements (or cartels) and on mergers would limit the impact of anti-competitive behaviour on international trade and increase benefits for consumers.[119] This suggests that unless the liberalization of trade measures is complemented with competition regulations, the full benefits of trade liberalization may not be realized.

While an increase in concentration can signal anti-competitive behaviour, this is not always the case. Recent empirical and theoretical work has shown that efficiency considerations can provide a justification for mergers in certain cases.[120] The economic argument in this case is that minimum efficient scale could be a limiting factor in allowing many firms into a market. In the extreme case, consider two firms, both of which compete in their closed domestic market. Once trade liberalization takes place the market expands, but due to increasing returns to scale, per unit costs decrease as output increases. Consequently, the firm with the smaller output will not find it profitable to compete. Combining the two firms will increase the output of the single firm, which will further decrease the costs of production. In the end, the market will have one firm, supplying the global market, but at a lower resource cost than in the case of two domestic firms. This scenario is applicable to a number of cases. Restructuring in the international airline industry is a good example of the need to have a broader interpretation in merger review cases that admits efficiency defences.

(iii) The role of trade policies

The previous Sections have argued that trade and foreign investment liberalization can give rise to pro-competitive and anti-competitive outcomes. These outcomes raise the question whether restrictions on trade and investment policy could be used in order to mitigate the anti-competitive effects of liberalization. Different answers to this question provoked a heated debate about trade policy in the 1980s. Until then, the predominant view of trade policy was that open trade should be the only policy pursued by governments. The catalyst for the change in the approach to trade policy was the shift away from perfectly competitive models of trade determination to ones that were based on increasing returns to scale and imperfect competition.

The principal trade policy result derived from these models is the role for government policy to increase welfare. This result is driven largely from the assumed departure from perfect competition, or the existence of a 'second best' world. In such a world, it is possible to improve welfare through government intervention.[121]

118 World Bank and OECD (1999).

119 As previously noted in Section IIC.1.(c).

120 World Bank and OECD (1999).

121 See Vousden (1990) and Feenstra (2004) for an exposition of these arguments.

In the trade context, this proposition is best exemplified by the development of the strategic trade policy literature, which emphasized the role of government policy as a means by which to extract rents. In its simplest form, a government can use a protectionist instrument to shift rents from foreign firms selling in their market to domestic firms. Similarly, the 'optimal tariff' argument for the large country case, which is widely regarded as one of the few departures from the optimality of free trade, has been expanded in an imperfectly competitive framework. The intuition behind this result is that in a world where producers enjoy some market power arising from brand strength, a tariff or an export tax can be used to change the terms of trade in favour of the importing country.

Despite the strength and appeal of the strategic trade policy literature, an overall general policy prescription was never developed. The principal problem in generalizing the results was the specificity of the circumstances when government intervention would be welfare-improving. It is widely acknowledged that only a few industries could be identified, such as the market for large passenger aircraft, that would meet the required assumptions.

Another part of the difficulty is the existence of welfare-deteriorating cases under similar assumptions about welfare-improving trade policy. Strategic interaction takes many forms. The extent to which it occurs also depends on assumptions about firm behaviour. In a world with asymmetric information, government intervention could change key market parameters, which would induce anti-competitive practices. For example, consider the case of a quantitative restriction on imports. In this case, the level of sales in a domestic market by foreign firms is fixed. A domestic firm operating in the same market can then decide to choose its level of output with full knowledge that the foreign firm will not be able to react by increasing its output. In this sense, trade policy could act as a 'facilitating' device for anti-competitive behaviour.[122]

(d) International cooperation and competition policy

The discussion above has shown that competition policy can have a role to play in ensuring that trade liberalization is not undermined by anti-competitive behaviour.[123] Anti-competitive action arising out of power exercised by affiliates may be effectively addressed, but domestic competition policy is likely to encounter limits when it comes to 'international' problems such as cartels.

The issue of how best to approach competition policy in an international setting has been a hotly debated topic. The debate revolves around three broad approaches:

- harmonizing national competition laws and practices (convergence);
- improving cooperation among national competition authorities;
- creating a multilateral framework.

Each approach has its potential merits and limitations. It should be pointed out that the harmonization of national competition laws and practices is not called for in the recent proposals for a multilateral framework on competition policy. Rather, the proposals aim at: i) promoting effective measures against international cartels; ii) clarifying the application of core WTO principles of transparency, non-discrimination and procedural fairness in this area; iii) promoting voluntary cooperation among national competition agencies; and iv) expanding current technical cooperation and capacity-building efforts. The principal point to be made regarding competition policy in an open economy is that some degree of international coordination and cooperation is required for two reasons outlined in previous sections. Anti-competitive problems arising out of the behaviour of foreign firms within a country's borders can be difficult to resolve in the absence of interaction with foreign competition agencies. The extent of that cooperation can vary. For some countries, such as Australia and New Zealand, there is a great deal of cooperation. For others it could involve 'comity', which is a term used to describe factors and issues that a competition authority in one country takes into account when deciding to pursue a case against subjects in another jurisdiction. The degree of international cooperation on competition policy issues is clearly on the increase (Table IIC.2).

[122] Harris (1985); Krishna (1989).

[123] See Anderson and Holmes (2002) for an overview of competition policy in the context of openness.

Table IIC.2
Cooperation on competition policies in selected countries

	Aus-tralia	Brazil	Canada	Chile	China	Den-mark	EC	France	Ger-many	Iceland	Israel	Japan	Kaza-khstan	Mexico	New Zealand	Norway	Papua New Guinea	Russian Fed.	Taipei, Chinese	USA
Aus-tralia	-		2000**												1994 & 2000**		1999		1996	1982 & 1997
Brazil		-																		1999
Canada	2000**		-	2001			1999 & 2000							2001	2000**					1995
Chile			2001	-																
China					-								1999					1996		
Den-mark						-				2001**					2001**					
EC			1999 & 2000				-													1991 & 1998
France								-	1984											
Ger-many								1984	-											1976
Iceland						2001**				-						2001**				
Israel											-									1999
Japan												-								1998 & 1999
Kaza-khstan					1999								-							
Mexico			2001											-						2000
New Zealand	1994 & 2000**		2000**	1997											-					
Norway						2001**				2001**						-				
Papua New Guinea	1999																-			
Russian Fed.				1996														-		
Taipei, Chinese	1996														1997				-	
USA	1982 & 1997	1999	1995				1991 & 1998		1976		1999	1998 & 1999		2000						-

** denotes tripartite arrangement.
Source: WTO.

Comity and coordination are useful concepts when it comes to cases involving at least one firm within the jurisdiction of a competition authority. But it is a different matter when foreign consumers pay the cost for anti-competitive behaviour in another jurisdiction. In such a case, similar to some of the environmental problems to be discussed later, the problem is 'international' in nature and calls for international solutions.

(e) Conclusions

Over the past decade there has been considerable research into the linkage between competition policy and the liberalization of trade and investment policies. This research is summarized in a recent paper which identified a number of complementarities and tensions arising from the application of competition law in an open economy setting.[124] Two tensions of note are the possibility of exacerbating distortions in markets other than the goods market, in particular labour and financial markets. Inefficiencies in these markets may not necessarily be attenuated through the application of competition law. The second tension relates to the point about national champions. A larger market allows efficient firms with increasing returns to scale technology to produce at a lower cost. Smaller firms, or firms operating in a small economy prior to opening up to the world economy, may not necessarily have access to the scale of production required to compete in a global economy.

Two additional issues that may contribute to a negative perception of competition policy in an open economy setting are miscalculation on the part of competition authorities and atypical production structures. In the first case, the introduction of international competition will act to discipline anti-competitive practices. However, there is the need to guard against the establishment of competition policy structures that risk bureaucratic capture, without corresponding precision in terms of appropriate interventions. The second issue concerns atypical consumer preferences. A larger market will lead to an increase in production, but if product preferences are specific to countries, a reduction in product variety arising from openness could lead to welfare losses.

Despite these reservations, the overwhelming evidence is that openness and competition policy will promote efficiency, innovation and growth. In fact, modern approaches to competition policy increasingly take account of atypical market structures and other circumstances in which the application of competition law needs to be tempered. As noted, these approaches attach much importance to the promotion of dynamic efficiency gains. The 'tailoring' of competition policy to respond to these situations is, in fact, an important element of the overall application of competition law.

3. ENVIRONMENT-RELATED EXTERNALITIES

(a) Introduction

This Section will deal with the subject of trade and negative externalities, with a specific focus on environmental externalities. The policy challenge is to ensure that producers and consumers make decisions on the basis of correct environmental resource prices. This will ensure optimality in the allocation of resources. With the right environmental policies in place, trade liberalization can generate benefits without needlessly jeopardizing the environment. While the traditional focus of economists has been on environmental taxes, it shall be seen that interventions often also mean command and control measures. The literature on computable general equilibrium (CGE) simulations of trade and the environment is reviewed to see what insights it offers regarding combinations of liberalization and environmental policies that increase incomes and improve the environment. Finally, we examine the appropriateness of trade instruments as measures to correct environmental externalities.

[124] WTO document WT/WGTCP/W/228.

(b) Trade and environmental externalities

Suppose an economy faces both trade-related distortions and environmental externalities. What can be said in general about the effect of removing the trade distortions through liberalization? Since producers and consumers do not face the full cost of their actions, and treat environmental resources as free goods, one possibility is that trade could result in a greater than optimal scale of economic activity and produce environmental damage. The other possibility is, that in spite of these negative externalities, the removal of the trade distortion improves welfare because the benefits of liberalization exceed the costs of additional environmental damage. Since two distortions are present, there may be no definite answer and it will often be an empirical matter (Lipsey and Lancaster, 1956).

Based on recent econometric studies (Antweiller, Copeland and Taylor, 2001; Frankel and Rose, 2002), the concern with the negative environmental impact of trade liberalization may be exaggerated. Antweiller, Copeland and Taylor (2001) have estimated a model of trade and air pollution for a sample of 43 countries over the period 1971-96. The form of air pollution studied was sulphur dioxide, which is a noxious gas produced by the burning of fossil fuel and is primarily emitted as either a direct or indirect product of industrial production. The estimated model allowed the authors to separate the environmental impact of trade into scale, composition and technique effects.[125]

The study arrives at two striking results. One is that technique effects are quite large and tend to dominate the scale effect. Second, for the sample of 43 countries, the composition effect of trade resulted in a decrease in air pollution. The study finds that the composition effect tended to worsen air pollution in capital-intensive countries, which had a comparative advantage in "dirty industries", while it improved air quality in more labour-intensive countries. Still, the net effect of these changes for the countries in the sample was an improvement in air quality. Overall, the study concludes that a process of trade liberalization which raises GDP per person by 1 per cent can reduce sulphur dioxide emissions by 1 per cent.

Using a gravity model, Frankel and Rose examined what effect a country's degree of trade openness has on various measures of environmental quality.[126] Their use of a gravity model seeks to preclude the possibility of reverse causation (i.e. of countries with better environmental quality trading more, thus tainting the econometric results). They find that trade has a beneficial effect on air quality, with more open economies seeing reduced levels of nitrogen oxide and sulphur dioxide levels. They do not find as strong an effect of trade on other environmental indicators, but neither do they find that trade causes any harmful effects on them. The positive effect on the environment arises from trade's impact on output or income and the working of the Environmental Kuznets curve. For every one percentage point increase in openness (exports plus imports as a share of GDP), the authors find that output is increased by 1.6 per cent. Beyond a certain per capita income level, these increases in income lead to an improvement in environmental quality.

These results, for a large and wide sample of countries, are important. In the specific case of air quality, greater openness is associated with declines in harmful emissions. This suggests that countries faced with both trade and environmental distortions can make headway in addressing both – increasing incomes and improving the environment – through greater openness. While these results are important for continuing with trade liberalization, it does not reduce the need for governments to adopt policies that appropriately value environmental resources.

125 The scale effect refers to the environmental consequences of increased output or economic activity which results from more trade. An increase in output will result in more pollution or degradation of environmental resources. The composition effect refers to the way that trade liberalization affects relative prices and changes the composition of output between polluting and non-polluting sectors. The composition effect will be positive for the environment if the expanding sector is less pollution-intensive than the contracting sectors and vice-versa. Finally, the technique effect reflects the increased demand for a better environment as trade liberalization leads to higher incomes. With higher incomes, citizens demand better environmental quality from governments and they are able to afford more easily the resulting abatement costs. Increased demand for environmental standards or regulations has to be supplied by national governments.

126 Standard gravity models explain a country's bilateral trade pattern by using, in addition to GDP, a host of geographical indicators – distance to trade partner, whether a country is land-locked, common borders, linguistic links, and so on. These geographical variables are plausibly exogenous and when aggregated across all bilateral trading partners are highly correlated with a country's overall trade. Thus they make good instrumental variables of trade or openness.

(c) Optimal interventions

(i) Bargaining solution

While the focus in this Section is on public policy towards environmental externalities, it is important to recognize that the existence of externalities does not automatically call for government intervention. If there are no transactions costs, (i.e. the parties involved can readily make and enforce contracts), bargaining among the parties would lead to the socially-desirable allocation of resources (Coase, 1960).

There are two key ideas which will allow us to better understand this result. The first is the reciprocal nature of an externality. A negative externality is the outcome of a joint decision.[127] A rancher has such a large herd of cattle that a few of them always manage to stray and trample part of his neighbour's crop. But his neighbour would not have suffered the loss if his farm was located a greater distance away from the ranch. Thus, the location of the farm contributes to the existence of the externality.

The second idea is that the optimal outcome requires that the externality be dealt with at the lowest cost possible. Suppose that the cost of the externality (damage to the farmer's crop) is $4,000. Suppose also that the negative externality can only be dealt with in three ways. Either the rancher reduces his herd of cattle (which would have been the 'Pigouvian solution');[128] or a fence should be built around the farm; or the farmer should stop farming. Suppose that the cost of each option is $5,000, $1,000 and $10,000 respectively. In the absence of transactions costs, the rancher and the farmer would be able to bargain their way to the least-cost solution – building a fence.[129] To confirm this, note that the first outcome would not be acceptable to the rancher (he would rather give $1,000 to the farmer to build the fence). The third option would not be acceptable to the farmer (he might as well build the fence himself or even allow some of his crops to be trampled upon). Finally, doing nothing (letting the externality continue and cause $4,000 worth of damage) is not feasible because one option, e.g. building the fence, is always cheaper for the farmer. Who bears the cost of the fence, i.e. the distributional issue, will depend on the bargaining position of the parties but will not affect the optimal allocation of resources.

One other aspect is worth mentioning. If the least-cost option for removing the negative externality costs as much or more than the externality itself, then the best course of action is to do nothing. Suppose that the fence will cost $4,500 to build, then society will not be made better off by correcting the externality. This is one reason why even in the presence of positive transactions costs, there will be instances when government intervention will still not be required and the socially desirable outcome would be to live with the externality. In addition, government intervention imposes its own costs (e.g. monitoring and enforcement costs) all of which must be factored in when considering the desirability of regulatory action.

(ii) Environmental taxes

With transactions costs large enough to preclude bargaining among the concerned parties, the prescribed solution to correct negative externalities is the application of a tax on the activity causing the externality at a rate equal to its marginal environmental damage. This tax is called the Pigouvian tax.

Suppose that a plant discharges noxious fumes in the process of smelting copper. The fumes cause breathing problems among people who live downwind from the plant, and the health costs associated with the activity of the smelter is estimated at x dollars per ton of copper output. Since the owner of the plant does not pay for that cost, it is not included in his private calculation of profit and loss. Hence, the amount of copper smelted is increased to the point where the sum of its marginal cost, and the associated health cost of the pollution becomes greater

[127] As Coase points out, this key insight was always understood by lawyers who had centuries of litigation experience of such cases, but it was apparently unknown to most economists.

[128] It is named after the economist A. C. Pigou (1920), who first developed this prescription for managing externalities.

[129] Incidentally, this example demonstrates that the optimal solution to a negative externality (building a fence) may not be the Pigouvian solution (taxing the rancher).

than the value attached to the additional copper by consumers. The outcome is socially inefficient. The Pigouvian tax rate should be set equal to the marginal environmental damage at the socially optimal level of production. In this example, it is x dollars per ton of copper output. With this tax, producers of the externality face the full costs of their activities and would therefore set their volume of production to the socially-optimal level.

This discussion has been carried out in the context of an optimal tax on the dirty production good. But the analysis is really much more general than this. While the Pigouvian tax is normally conceived of as an output tax, this need not always be the case. The fundamental principle is that the Pigouvian tax should be applied directly to the activity which generates the negative externality. Hence, the Pigouvian tax could also be an input tax if it is the use of the input which generates the negative externality (e.g. think of a firm that uses coal as its source of power). In this case, it would not be efficient to apply the tax on the output of the firm, as that would result in a much larger reduction in production than necessary to lower emission levels. In this context, it would be too blunt an instrument. A tax on the input (coal) is much more efficient since the firm can then adjust by using other cleaner inputs as substitutes to produce a given level of output. We shall come back to this general principle of dealing with the externality at the source when considering the question of command and control instruments and trade measures, and their use in dealing with environmental externalities.

Since Pigouvian or environmental taxes generate revenues, it has led to the intriguing conjecture that environmental taxes create a "double dividend" for society (Pearce, 1991; Poterba, 1993; Oates, 1991). Not only do the taxes correct an externality (the first dividend), they also allow governments the possibility of reducing other distortionary taxes and the excess burden associated with them (the second dividend).[130] However, the theoretical basis for this conjecture turns out to be quite weak. The reason for this is that if we ignore the first dividend (the correction of the negative externality), an environmental tax imposes distortions on the economy no differently from other taxes. Hence, the imposition of the environmental tax adds to the excess burden created by the tax system.[131] Returning tax revenues to citizens through cuts in other taxes can create a second dividend only if the excess burden associated with the environmental tax is less than that from other taxes. Otherwise, we would simply be restoring the excess burden from the tax system to where it was before the environmental tax was imposed. Whether there is a second dividend or not is an empirical question.

One final and related point needs to be made about Pigouvian taxes. If the distortions created by the tax system are taken into account, the appropriate tax to apply to a negative externality should actually be set below the marginal environmental damage (Bovenberg and de Mooij, 1994). The reason for this is that the excess burden of the tax system creates a wedge between the revenue raised and the monetary value of the utility lost by the consumer.[132] The imposition of another tax, whether it be an environmental tax or not, widens the wedge. The policymaker therefore has to trade off the welfare gain from correcting the externality against the welfare loss suffered by increasing peoples' (already high) excess burden.[133] This balancing act will result in an environmental tax rate that is less than that required to correct fully the externality.[134]

130 This proposition is the strong form of the "double dividend" hypothesis. The weak form states that using revenues from an environmental tax to finance reductions in marginal rates of an existing distortionary tax achieves cost savings relative to the case where the tax revenues are returned to taxpayers in lump-sum fashion.

131 The excess burden of a tax refers to the welfare loss faced by consumers, the monetary value of which is larger than the revenue generated by the tax. In other words, the collection of a $1 distortionary tax results in a welfare loss for consumers which is in excess of $1. This excess burden is created by the 'forced' substitution of consumption away from the taxed good.

132 This can be calculated by using either equivalent variation or compensating variation, both of which are money-metric welfare indicators.

133 This result should not be surprising since it arises out of a general equilibrium setting with two sources of distortions in the economy: the excess burden from taxes and the environmental externality. Pigou's analysis only considered one distortion – the environmental externality.

134 West and Williams (2004) arrive at a different conclusion with respect to Pigouvian taxes on gasoline. They argue that because gasoline and leisure are complementary in demand, the Pigouvian tax on gasoline should be set above the marginal environmental damage.

(iii) Regulation as an alternative to taxes

Despite the central role played by Pigouvian taxes in economic theory, governments tend not to make widespread use of environmental taxes. Most prefer to pursue their environmental objectives through command and control measures, such as performance standards or mandated technologies, licenses, permits, zoning regulations, registration, and other regulations. This need not mean that the traditional focus on Pigouvian taxes is necessarily misplaced, since it serves as an important reference or benchmark with which other measures can be compared.

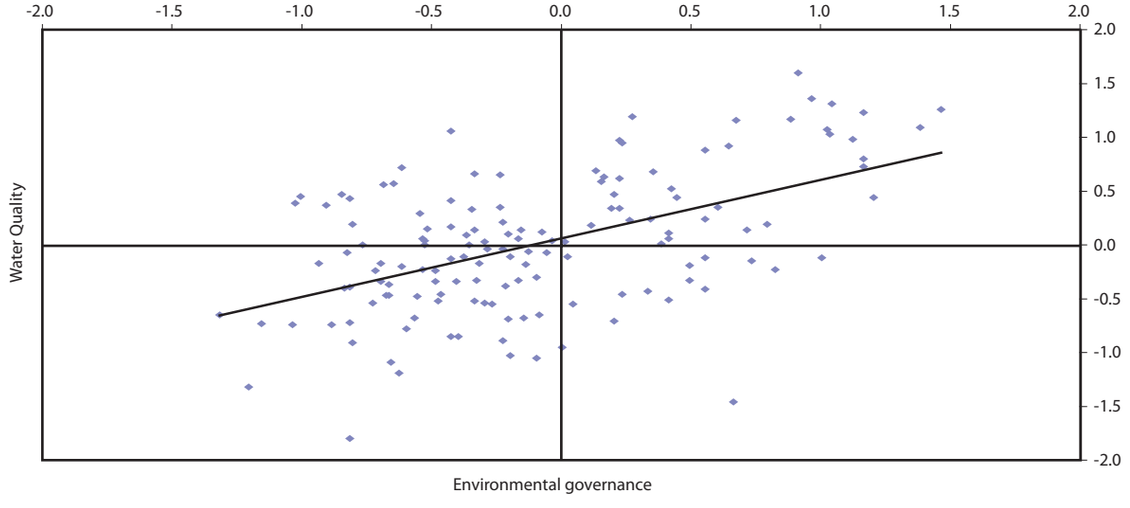
Despite their widespread use, command and control measures are less efficient than taxes. This is because they tend to be "one size fits all" instruments, prescribing the nature of the technology, inputs and performance standard to meet, leaving producers little or no room to reduce environmental damage at the lowest cost possible to them. However, it turns out that there are other compelling reasons why governments prefer regulations to emission taxes. These include distributional concerns, uncertainty about the costs and benefits of abatement and the costs of monitoring and enforcement involved (Bovenberg and Goulder, 2001).

Governments may be reluctant to saddle households and firms with the distributional consequences of an environment tax. For example, the application of environmental taxes will tend to reduce the incomes of the owners of the factors of production which are involved in the production of goods which create the negative environmental externality. The resulting increase in the relative prices of environmentally-dirty goods will also affect the distribution of gains and losses to consumers if households differ in their preferences for these goods (some households place a higher value on the environment than others). There may be no other fiscal measure (e.g. transfers) available to the government to correct for the distributional effects of the environment tax.

Typically, the main cost of pollution is the increased toll it takes on people's health. The cost of congestion on the roads is the value of the additional time spent by commuters in getting to and from their places of work. While an increasingly wide set of methods is being applied by social scientists to measure the monetary value of these costs – including hedonic pricing (paying the price for a pleasurable outcome), contingent valuation, etc. – there continues to be a great deal of uncertainty about the exact magnitudes, and hence about the calculation of the benefits and costs from pollution abatement. But this is precisely the information required to calculate optimal environmental taxes.

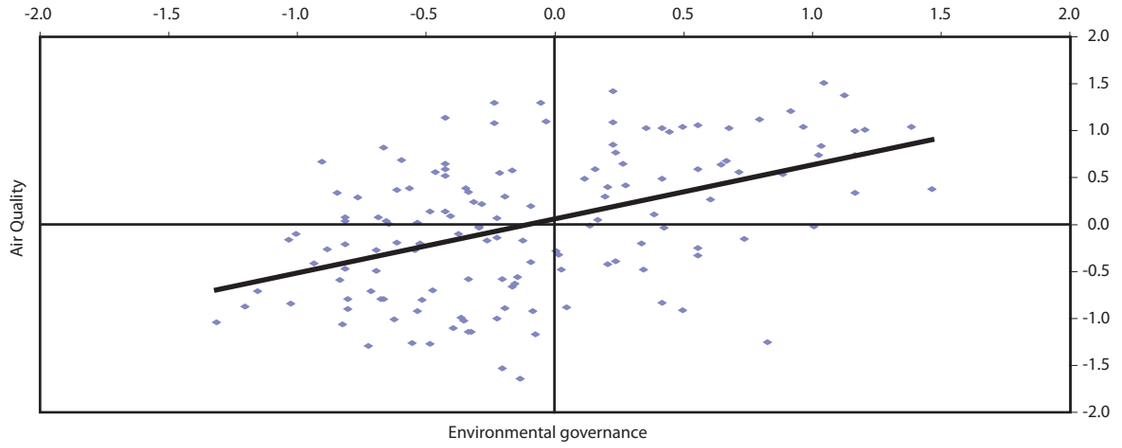
Perhaps the most important reason why governments use command and control measures instead of Pigouvian taxes is the cost of monitoring and enforcement. As noted above, calculating the Pigouvian tax rate is not a straightforward exercise. It requires knowledge of the cost of the pollution (monetary value of the increase in mortality or morbidity) at the optimal level of production. Command and control measures, such as mandated technologies, are much easier to monitor and enforce. Requiring that all motor vehicles be fitted with catalytic converters and enforcing this requirement through the motor vehicle registration system is far simpler than taxing emissions from motor vehicles.

Chart IIC.2
Environmental governance and water quality



Source: 2002 Environmental Sustainability Index.

Chart IIC.3
Environmental governance and air quality



Source: 2002 Environmental Sustainability Index.

Some evidence is available of the impact of sound environmental policies on the environment, be they emission taxes or command and control measures. In recent years, the Global Leaders for Tomorrow Environment Task Force of the World Economic Forum has attempted to measure environmental sustainability in one summary indicator and to rank countries on the basis of this index. As part of this exercise, the Task Force constructs indices which measure not only the health of the environmental system in a country (the quality of air, water, land and biodiversity), but also the quality of environmental governance. This is an indicator that depends on a number of variables including the percentage of land area under protected status, taxes on gasoline, the number of sectoral environmental impact assessment (EIA) guidelines, measures to reduce corruption, Forestry Stewardship Council (FSC) accredited forest area as a percent of total forest area, etc. Charts IIC.2 and IIC.3 have been compiled using this measure of environmental governance and indicators of air and water quality for about 141 countries. There is a statistically significant and positive relationship between the index of environmental governance and the quality of air and water. Countries that measure well on the governance scale generally have better water and air quality.

(d) Trade when externalities are internalized

Facing consumers and producers with the correct prices or costs allows for the efficient allocation and use of society's resources. It ensures that society places a value on environmental resources and does not treat them as free goods. It enhances the prospects that trade liberalization will increase incomes without putting undue stress upon society's environmental resources.[135] This does not mean that pollution and environmental degradation will disappear or that they will never increase. While society places a value on both consumption (of goods and services) and the environment, the process of economic growth and development will require trade-offs to be made between more consumption and a better environment. The internalization of environmental externalities only means that society makes the trade-off at the maximum feasible level of production in terms of available choice, and not at some lesser level of output.[136]

At the same time, there is a need to recognize that as countries adopt more stringent environmental measures they can also cause trade frictions. This is because such measures apply not only to domestically produced goods but also to imported ones. The scope of these measures is quite wide, encompassing labelling, performance or emission standards, recycling, provisions for disposal, etc. Their application will raise production costs for domestic firms and may also do so for foreign producers who export to the country. The importance of ensuring coherence between the objectives of environmental protection and multilateral trade rules deserves

135 See Bagwell and Staiger (2004). They have argued that the Subsidies and Countervailing Measures Agreement creates a tension with multilateral liberalization. By constraining the ability of governments to take domestic measures (such as subsidies and environmental taxes) to correct market failures, the Agreement would also limit the desire of those governments to reduce and bind tariffs at the multilateral level.

136 In economists' parlance, the choice is made on the frontier of the production possibility curve and not on some inefficient point within it.

emphasis. Policymakers will need to be sensitive to differences in environmental standards or preferences across countries. In practical terms, this may mean consulting closely with foreign suppliers in the process of drawing up environmental measures, particularly in sectors where imports represent a significant part of domestic use or consumption. More importantly, environmental measures will need to conform to basic trade obligations such as national treatment and they must not be more trade restrictive than necessary.

In what follows, a survey is undertaken of the results of simulations examining how trade liberalization, singly or in conjunction with appropriate environmental measures, affects the environment. These studies tend to confirm that coupling trade liberalization with appropriate environmental measures leads to higher incomes and improved environmental quality. In recent years, notable progress has been made in building computable general equilibrium models that include economy-environment interactions.[137] A number of key challenges have been solved in these models. They include linking changes in output and product composition to pollution emission levels, introducing endogenous technical change (which allows society to lower pollution intensities or increase energy efficiency over time), incorporating environmental policy measures (environmental taxes, tradable permits, command and control measures) into the models, allowing for substitution between various dirty inputs or between dirty inputs and primary factors of production, and introducing feedback from pollution on labour productivity, health and the welfare of the consumer.

The CGE models with an environmental focus can be broadly classified into three main groups. The first includes models developed to examine greenhouse gases and the potential threat of global warming. A non-exhaustive list of these models includes the OECD's General Equilibrium Environmental (GREEN) model[138], the Dynamic Integrated model of Climate Change[139], the Regional Integrated Model of Climate Change[140], the Model for Exchanging Regionalised Geographic Entities or MERGE[141], and G-Cube.[142] These models simulate the effects of aggregate economic activity and energy use on the emission of greenhouse gases and climate change, and examine the cost effectiveness of various measures, national and international, to curb these emissions.

There is a second and more eclectic group of models. They examine the impact of environmental regulations or environmental standards[143] and two-way links between the environment and the economy.[144]

A final group of CGE models are those in which the environmental impacts of various trade liberalization scenarios are considered. These include variants of the OECD General Equilibrium Environmental (GREEN) model[145], various applications employing the Global Trade Analysis Project or GTAP model[146], and models by Espinosa and Smith (1995), Lee and Roland-Holst (1997) and Reiner and Roland-Holst (2001). The simulations have been done for a range of countries, a number of them developing countries such as Costa Rica, Indonesia and Mexico, as well as regional trade agreements such as NAFTA (see Box IIC.1 for details of some of the simulation results).

137 Conrad (2002) has the most current survey of computable general equilibrium models incorporating economy and environment linkages.

138 Burniaux, Martin, Nicoletti and Martins (1992); van der Mensbrugghe (1994).

139 Nordhaus (1992).

140 Nordhaus and Boyer (2000).

141 Manne, Mendelsohn, and Richels (1995).

142 McKibbin and Wilcoxen (1992).

143 Conrad and Schröder (1993); Goulder et al. (1999); Jorgensen and Wilcoxen (1990).

144 Nordhaus (1994); Vennemo (1997); Bergman and Hill (2000); Conrad and Heng (2000).

145 Beghin, Roland-Holst, and van der Mensbrugghe (1995); Dessus and Bussolo (1998).

146 Tsigas, Frisvold and Kuhn (1997); and Strutt and Anderson (1999).

Box IIC.1: Simulating the environmental impact of trade liberalization

This box contains a summary of the results of recent CGE simulations of trade and environmental reforms.

Mexico: Beghin, Roland-Holst, and van der Mensbrugghe (1995) calibrated the OECD GREEN model for Mexico and used it to model the environmental impact of three policy scenarios: trade liberalization, implementation of piecemeal environmental policies (i.e. abatement taxes to reduce emissions), and trade liberalization *cum* emission reduction. These scenarios are compared to a twenty-year baseline, which projects the path of economic growth and environmental outcomes in Mexico, in the absence of the policy interventions. Adoption of abatement taxes lead to decreases in major pollutants, but reduced GDP and trade. Trade liberalization leads to a significant increase in trade and GDP, but also to an increase in all major pollutants. But when trade liberalization is accompanied by pollution abatement measures, GDP growth is accompanied by a decline in pollution emissions. The overall conclusion drawn from the study is that growth with an outward-oriented trade strategy can be sustainable because pollution emissions can be significantly mitigated over time.

Indonesia: Strutt and Anderson (1999) employ the Global Trade Analysis Project (GTAP) to examine the environmental impact on Indonesia of the implementation of the Uruguay Round agreements and APEC liberalization. These scenarios are to be compared to a baseline where Indonesia's economy and its level of air pollution, water pollution and water usage is simulated up to 2020. The simulations show that implementation of the Uruguay Round agreements actually reduces air pollution in Indonesia, primarily as a result of the product composition effect (reduction in trade and transport sector compared to the baseline). However, APEC liberalization adds a small increase to air pollution levels. Water use declines in both the Uruguay Round and APEC scenarios, primarily because paddy rice production declines as a result of trade liberalization. Most water pollution indicators decline with Uruguay Round implementation, although the effect of APEC liberalization is more mixed, with some indicators increasing and others declining.

Indonesia: Lee and Roland-Holst (1997) analyse the environmental impact of trade liberalization in Indonesia. Changes in the volume and composition of industrial production generates pollution. The pollution load is calculated using the pollution coefficients from the World Bank's Industrial Pollution Projection System and is linear in production. The emissions include air, water, and toxic pollutants. The paper simulates the effect of removing all of Indonesia's import tariffs. Trade liberalization results in an expansion in Indonesia's trade of about 6 per cent and a corresponding increase in GDP of about 0.9 per cent. But liberalization also leads to pollution rising at a rate greater than the increase in output. This is because liberalization leads to Indonesia specializing more towards environmentally 'dirty' industries. The paper then simulates both trade liberalization and implementation of a uniform emission tax to reduce pollution. The simulation shows that Indonesia is able to achieve both an increase in output (0.3 per cent) and a reduction in emissions.

Costa Rica: Dessus and Busolo (1998) employed a CGE model based on the OECD's GREEN model and calibrated for Costa Rica. It is a dynamic model (simulated over a horizon of 18 years, from 1992 to 2010) with 10 household categories, 40 production sectors, 16 types of labour and 13 different polluting emissions. An initial benchmark was created where the path of the Costa Rican economy over the 1982-2000 period was simulated. The paper then considered three major policy scenarios. First, pollution abatement, with each of the 13 polluting emissions being reduced by 25 per cent from the benchmark scenario over the period. Second, gradual trade liberalization with all of Costa Rica's trade barriers being eliminated by 2020. Third, combining trade liberalization with progressive reduction of emissions. Three main conclusions emerged from these simulations. First, abatement policy (an emissions tax) does not seem to involve any major cost in terms of reduced output. This is because pollution is reduced not through a decrease in output but through a change in the composition of output towards environmentally 'cleaner' sectors and because of substitution away from polluting intermediate goods towards the use of more primary factors of production - labour and capital. Second, trade liberalization increases Costa Rica's growth rate and expands trade by 30 per cent. But it also results in more pollution in Costa Rica with the scale, composition and technique effects all contributing to increased pollution. And third, the optimal policy for Costa Rica would involve a mixture of

liberalization and the tightening of environmental measures. Combining the two leads both to higher GDP growth, compared to the baseline, and to a reduction in emission levels.

United Kingdom: The paper by Espinosa and Smith (1995) is notable for incorporating the negative externalities associated with air pollution into a CGE model. They allow for emissions of sulphur dioxide, nitrogen oxide and particulate matter to affect morbidity and mortality rates. Increases in morbidity and mortality rates reduce societal welfare in two ways. Morbidity increases the subsistence levels of health expenditures in their Stone-Geary demand systems, while each death results in a deduction from the welfare measure equal to the monetary value of a statistical life. The paper considers the environmental effect in the UK of two alternative policies. One is a 50 per cent reduction in trade barriers in UK durables manufacturing. The other is the same reduction in trade barriers accompanied by an exogenous rise of 25 per cent in air pollution emissions. Reducing trade barriers in durable manufacturing in the UK still results in an overall increase in welfare despite the rise in morbidity and mortality from more emissions. The increase in morbidity and mortality rates from increased air pollution reduces welfare by only 0.09 per cent of GDP. This is exceeded by the efficiency gains from trade liberalization so that overall, welfare still increases by 0.19 per cent of GDP compared to the baseline.

Overall, the results from the trade and environment simulations suggest that the optimal policy is a mix of greater openness and more stringent environmental measures. Trade liberalization creates economic gains from exploiting a country's comparative advantage. However, some of these gains may be accompanied by increased emissions or pollution; hence, mitigating measures need to be taken to curb these effects. Nevertheless, the gains from liberalization will be more than sufficient to pay for these additional curbs or abatement measures so that increased incomes and an improved environment are both within reach.

(e) Use of trade measures to address externalities

But what if there is no coherence in national policies and countries do not correct environmental externalities? Could not trade measures (tariffs, quotas or prohibitions) be used to correct the environmental damage? There are a number of multilateral environmental agreements which employ trade measures to deal with endangered species and ozone-depleting substances. What would be the benefits and costs of using a trade measure to address environmental externalities?

Recall that if environmental externalities were geographically confined to the territory of a country, then a trade measure (whether applied by that country or by its partners) would constitute a second-best policy response. The first-best option is still to apply a corrective measure to the source of the externality. As seen earlier, this principle removes the externality at the least cost to society in terms of foregone output. What is more, dealing with the problem by targeting some intermediate link such as trade may give with the impression that the externality has been managed, while leaving the underlying problem to fester.

Will the welfare evaluation change if the externality is transboundary or global in nature? It must be admitted that if a country is manufacturing a dirty good which damages the global commons, its authorities do not have the incentives to reduce fully the scale of manufacturing output since part of the cost is borne by foreigners rather than by its citizens. If there was a global regulator or a global government, it would have imposed environmental taxes on the country's industry equal to the marginal environmental damage it caused. This would have made sure that the country's industry took the damage to the global commons into account. In the absence of a global regulator, governments have often negotiated binding agreements limiting production of the dirty good. In some of these multilateral environmental agreements, trade measures are central to realizing the objectives of the agreements. While acknowledging the benefits that can arise from these conventions, the trade provisions in these agreements are still second-best policy responses that fail to address the sources of the environmental threat, whether these be to endangered species or to the ozone layer. In many countries, these threats that impact the global commons are symptoms of poverty or underdevelopment. It can thus be argued that there is a far more legitimate role for provisions such as financial transfers or technical assistance in these agreements, which alleviate the underlying causes of the environmental threat and do not carry the costs associated with restrictive trade measures.

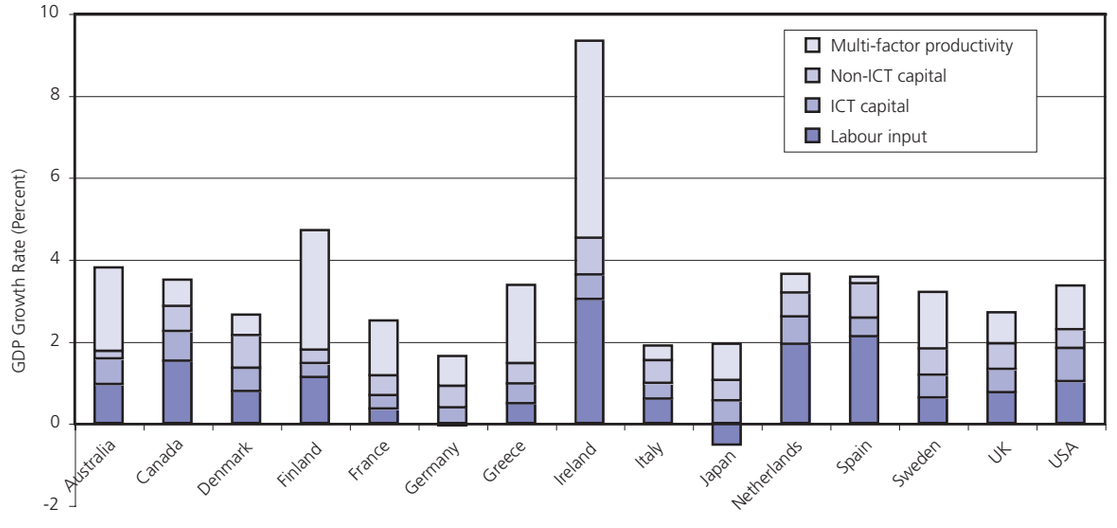
4. KNOWLEDGE AND POSITIVE EXTERNALITIES

This Section continues the discussion of positive externalities in the context of knowledge. The topic has received renewed attention in recent years as a result of endogenous growth theory[147], in the context of which knowledge creation plays a central role in explaining the long-term growth path of countries. Because consumption of knowledge is non-rival[148], it gives rise to an externality. This externality may not only be local or national in character, but knowledge can be diffused across national borders. The extent of this international diffusion may be important in determining how far per capita incomes, which vary widely now, will converge in the long run. In the absence of public intervention, these "goods" would be underprovided by the market, leading to less than the socially optimal levels of supply of knowledge. This Section will also consider the nature of optimal interventions and the role of trade policy in that mix.[149]

(a) Knowledge as an externality

Economic growth depends on the accumulation of capital and labour but more fundamentally on improvements in productivity. It is impossible to account for the massive increases in living standards in modern economies simply on the basis of capital accumulation.[150] The importance of productivity growth can be seen from its estimated contribution to the growth of selected OECD countries in the last decade (Chart IIC.4). In many of these countries, productivity is the single most important source of growth, explaining on average a little over 40 per cent of GDP growth.

Chart IIC.4
Contributions to growth of GDP, selected OECD countries, 1995-2001
(In percentage points)



Source: OECD, Productivity Database and Database on Capital Services, June 2003.

But productivity does not arise out of nothing. Resources such as capital and skilled labour need to be devoted to the production of knowledge and its transformation into products that will be demanded in the market place. This process takes place in the R&D sector of the economy, which could be considered as an industry on its own, but with a unique output. In 2001, the OECD countries spent about $645 billion (in current PPP terms) on R&D, representing some 2.3 per cent of their combined GDP.[151] About 70 per cent of this investment is undertaken by business enterprises. The leading investors in R&D as a proportion of GDP were Sweden

147 Romer (1986, 1990); Lucas (1988).

148 This means that one person's use of knowledge does not affect another person's use of the same knowledge.

149 See also WTO (2003a) which has a longer discussion of the role that trade plays in enabling countries to share more knowledge.

150 The original conclusion arose from Solow's (1956, 1957) work in growth accounting.

151 OECD (2003h).

(3.7 per cent), Finland (3.4 per cent) and Japan (3.1 per cent). While there is far less information available for non-OECD countries, the picture that emerges from what is available indicates that they generally spend less than 1 per cent of their GDP on R&D (Table IIC.3).

Since the richer countries tend to invest a larger proportion of their output on R&D, the bulk of R&D spending in absolute terms is accounted for by the developed countries. This points to the very skewed distribution of R&D spending in the world. Even among OECD countries, Japanese and US spending on R&D represent over 61 per cent of the total.

An important feature of the R&D process is that the quantity of new knowledge produced depends not only on the amount of resources, scientific manpower, laboratories, equipment, etc. that are funnelled to the activity, but also on the existing stock of knowledge. Knowledge creation involves a positive externality. Not only does a firm's investment in R&D increase the probability of generating new and useful knowledge for itself, it also increases the stock of knowledge, which will indirectly make other firms in the industry or even beyond more productive.

As already noted, the reason why knowledge generates a positive externality is that its consumption is non-rival.[152] Once knowledge is discovered, its use by some does not lead to a reduction in the ability of others to use it for a similar or different purpose. This does not prevent society, however, from devising principles of exclusion (such as intellectual property rights) for some forms of knowledge. In this case, while the use of the discovery itself is non-rival, the nature of societal and economic institutions may make its use excludable.

Table IIC.3
R&D spending as a per cent of GDP: selected OECD and non-OECD countries
(Percentage)

Countries	2000[a]
Low income	
India (1995)	0.64
Kyrgyz Republic (1995)	0.29
Madagascar (1995)	0.18
Moldova (1995)	1.13
Uganda (1995)	0.59
Ukraine	0.95
Lower middle income	
Bolivia	0.29
China	1.00
Colombia	0.25
Cuba	0.49
Egypt, Arab Rep.	0.19
Macedonia, FYR (1995)	0.52
Romania	0.37
Russian Federation	1.00
Thailand (1995)	0.13
Tunisia	0.45
Upper middle income	
Argentina	0.45
Brazil	0.77
Chile	0.54
Estonia (1995)	0.62
Latvia (1995)	0.52
Venezuela	0.34
High-income non-OECD	
Israel (1995)	2.24
Singapore	1.88
Slovenia (1995)	1.68
OECD	
Australia	1.53
Canada (2001)	1.94
Czech Republic (2001)	1.30
Finland (2001)	3.40
France (2001)	2.20
Germany (2001)	2.49
Hungary (2001)	0.95
Italy	1.07
Japan (2001)	3.09
Korea, Rep. (2001)	2.96
Mexico (1999)	0.43
Netherlands	1.94
Poland (2001)	0.67
Slovak Rep. (2001)	0.65
Sweden (2001)	4.27
Switzerland	2.63
Turkey	0.64
United Kingdom (2001)	1.90
United States (2001)	2.82

[a] Data for most recent year available.

Source: OECD MSTI Database (May 2003); World Bank World Development Indicators.

[152] Nelson (1959); Arrow (1962).

Table IIC.4
Estimated social rates of return to R&D

Study	Social return (per cent)	Number of observations (industries)	Years
Sveikauskas (1981)	17	144	1959-69
Griliches (1994)	30	143	1978-89
Griliches and Lichtenberg (1984b)	34	27	1969-73
Terleckyj (1980)	107	20	1948-66
Scherer (1982)	103	87	1973-78
Griliches and Lichtenberg (1984a)	71	193	1969-78

Note: The dependent variable is average TFP growth in an industry over the years indicated, except for Scherer (1982), who uses labour productivity growth in the capital-labour ratio as a regressor.

Source: Jones and Williams (1998).

This means that the returns from R&D include not only the additional revenues earned by the firm on its investment, but also the consequent increase in productivity experienced by other firms in the industry or the economy. There is an extensive literature estimating the social return from investment in R&D. Table IIC.4 gives a sample of the estimates from a number of key studies in this large empirical literature. Despite the wide range of these estimates (from a low of 17 per cent to a high of 107 per cent) the overall message is that spillover effects are important.

(b) International Spillovers

The externalities associated with knowledge and knowledge creation do not necessarily stop at a country's borders. The empirical evidence of technology diffusion seems to be strong. Eaton and Kortum (1996) developed a specific general equilibrium model of the inventive and technology process and estimated it using the OECD countries for their sample. They found strong evidence of international diffusion although the rate was about half as strong as domestic diffusion. They estimated that with the exception of the United States, all other OECD countries derived the bulk of their knowledge-based growth from inventive activity conducted in other OECD countries. Focusing on the five leading research economies (United States, Japan, Germany, United Kingdom and France), they found that the United States and Japan were the source of at least two thirds of the growth in each of the countries in their sample.[153] Keller (2002) also found evidence that technology diffusion is becoming more international. Using a partial equilibrium approach, he estimated that between 1983 and 1995 the contribution of technology diffusion from five countries (United States, Japan, Germany, United Kingdom and France) constituted almost 90 per cent of the total R&D effect on productivity in nine other OECD countries.

There are a number of possible conduits for the international spillover of knowledge including international trade, the movement of natural persons (particularly, but not limited, to scientific personnel) and cross-border direct investments. In studies conducted so far, the evidence of spillovers has been strongest with respect to foreign direct investments and trade.

There are a number of reasons why FDI can be an important vehicle of technological spillovers. A large part of the stock of FDI comes from the most technologically advanced countries. In 2002, the United States, Japan, United Kingdom, France and Germany accounted for about 60 per cent of global FDI stock.[154] The flows of technology to affiliates of MNCs dominate all other types of formal technology transfers between countries.[155] Workers employed by foreign firms can accumulate knowledge which could be transferred when they move to domestic firms. MNCs who locate in less advanced economies can create positive spillover effects if domestic firms copy their best practice technology and management practices.

But the early empirical literature on spillovers tended to produce mixed results. Haddad and Harrison (1993) cast doubt on the existence of these spillovers in their study of MNCs in Morocco. Aitken and Harrison (1999) found no evidence of a spillover effect in their study of over 4,000 firms in Venezuela. Meanwhile, Larrain, Lopez-Calva, and Rodriguez-Clare (2000) concluded that Intel's investment in Costa Rica generated substantial benefits for the local economy.

153 Eaton and Kortum (1999).

154 Based on data from UNCTAD (2003c).

155 Bloomstrom, Kokko and Zejan (1994)

However, the more recent empirical studies have tended to provide more evidence about positive spillover effects from FDI. Blomstrom and Sjoholm (1999) found strong evidence that MNC presence in Indonesia has benefited domestic establishments by increasing labour productivity. Haskell, Pereira and Slaughter (2002) estimated that a ten percentage point increase in foreign presence in a UK industry raised the total factor productivity (TFP) of that industry's domestic plants by about 0.5 per cent. Keller and Yeaple (2003) found an even greater impact of FDI spillovers. They estimated that about 14 per cent of productivity growth in US firms between 1987 and 1996 could be accounted for by FDI. In the case where both the source and host countries are developed countries, there seems to be a suggestion of two-way spillovers. Using patent citations as a measure of technological spillover, Branstetter (2000) found evidence that Japanese FDI in the United States increased the flow of knowledge spillovers both from and to the investing Japanese firms.

In the case of international trade, several channels have been identified which could explain how productivity is spread across countries.[156] One is the availability through trade of intermediate products and inputs which a country could not have produced on its own. Second is the opening of channels of communication that allow learning of production methods, design, and marketing from advanced countries. Third, international trade increases the opportunities for the copying or reverse-engineering of foreign technologies. Lastly, the learning made possible by international economic relations reduces the cost of future innovation and imitation.

Empirical work to link the international diffusion of technology with international trade has had mixed results. Studies which have examined more specific categories of trade, e.g. capital goods, have been more successful in linking trade flows with technology diffusion and its impact on productivity.

Initially, Coe and Helpman (1995) and Coe, Helpman and Hoffmaister (1997) included a variable representing the foreign stock of knowledge (mainly the R&D stock of industrial countries) in total factor productivity regressions and showed that this had a positive and significant effect. The variable was constructed as a weighted sum of the R&D expenditures of the country's trade partners where the weights are given by the bilateral import shares. This particular construction implied that the magnitude of the R&D spillover effect depended on the volume of a country's trade with those industrial countries undertaking the R&D. However, Keller (1998) later showed that the same positive effect on productivity could be reproduced by a measure of R&D stock which had import weights that were randomly chosen. Hence, while some indicators of foreign R&D still affected a country's productivity, the impact did not depend on how much it traded with those foreign countries.

However, the analysis was conducted at a high level of aggregation using total imports as weights in the measure of foreign R&D. Subsequent research has sought to focus on imports of specific products which could more readily embody foreign R&D activity, e.g. capital goods. Xu and Wang (1999) obtained stronger results by using as weights the import share of capital goods instead of total imports. Eaton and Kortum (2001) also found a role for capital goods trade in explaining productivity differences across countries. They found significant differences in the relative prices of equipment, about half of which they ascribed to barriers to trade. They were able to attribute about 25 per cent of cross-country productivity differences to this variation in the relative price of equipment.

[156] Grossman and Helpman (1991); Helpman (1997).

(c) Public policy

Given that technology spillovers have both a national and international dimension, policy interventions necessarily have to contain elements of both. The problem that arises from the existence of the externality is that firms contemplating investments in R&D do not profit from the increased productivity of other firms. On their own, firms will underinvest in R&D and create less than the socially optimal amount of knowledge. The failure of markets to provide enough incentives for firms to undertake the right amount of investments in R&D has led to public funding of basic research (whether in government institutes or universities), patent protection laws and R&D tax credits. There are, of course, other measures not directly targeted at R&D, such as competition policy, which may have also have an impact on the level of R&D investment by private firms.

Public sector investment in R&D averages about 0.3 per cent of GDP in the OECD countries. Typically, public money has been spent supporting basic research, since there is a presumption that while the social returns are high, they are less appropriable by business enterprises than other more commercially-oriented research. Public support may also be necessary due to the intrinsic riskiness of basic research (one is never sure how useful the outcome will be) and the long gestation periods between the conduct of the research and the development of commercially viable outputs. In many cases, the public sector not only allocates funding among competing research proposals but actually carries out R&D in state universities, laboratories and research institutes.

The business sector also undertakes a substantial part of basic research and this seems to contribute significantly more to the productivity of firms than publicly supported basic research.[157] This raises the question of how well the public sector chooses among competing basic research projects. Since the difficulty for firms to appropriate the social returns from basic research is the problem, an alternative way to support basic research is to subsidize what is done by the private sector. The subsidies could take the form of R&D tax credits. This may make better use of available public resources, since the private sector will have a better feel for which research topics are likely to contribute more to increasing their future productivity than government bureaucrats.

In the case of foreign investments, greater receptiveness to FDI is obviously called for. Host country and host industry characteristics combined with the policy environment in which multinationals operate appear crucial for facilitating spillover effects.[158] Policies that encourage domestic market competition can increase the pace of technology transfer from MNCs as they strive to maintain their edge.[159] Improving the educational levels and skills of the domestic labour force may also encourage higher technology transfers and increase the likelihood of positive spillovers.[160] This reflects the concern that spillovers may not materialize if the technological gap between the host environment and the foreign firm is too large.

There is also a suggestion of a differentiated approach to encouraging the diffusion of knowledge from external sources. The differentiation is based on a stylized story of technological development, where countries progress in steps up a technology ladder, from being technologically backward, to imitation and finally to innovation. Hence, for countries that have weak absorptive capacity (low-income countries), the focus may be on maintaining a liberal trade and investment regime, investments in education, and basic IP protection and standards. For countries who may be at the imitation stage, IPRs can be further strengthened by adopting standards for patentability, novelty, and utility that are more than those found in the industrial countries.

Finally, the role of international trade as a conduit for knowledge-related externalities points to the very high dividends from trade liberalization. Countries not only derive (static) benefits from trade liberalization through the increased efficiency in resource allocation, they also obtain the (dynamic) benefits of increased productivity which increases the rate of economic growth. This means that the benefits of liberalization are not confined to a once-and-for-all increase in welfare but are sustained over time.

157 Griliches (1986).

158 Blomstrom and Sjoholm (1999).

159 Wang and Blomstrom (1992).

160 Blomstrom and Kokko (1995).

D GOVERNANCE AND INSTITUTIONS

The notion of an institution embodies several elements: formal and informal rules of behaviour, ways and means of enforcing these rules, procedures for mediation of conflicts, sanctions in the case of breach of the rules, and organizations supporting market transactions.[161] Institutions are more or less developed depending on how well these different features operate. They can create or destroy incentives for individuals to engage in trade, invest in human and physical capital, and can bring about the incentives to engage in R&D and work effort.

The quality of institutions has long been recognized as an important component of a well-functioning market. Market activities involve the interaction of human beings, and institutions exist to reduce the uncertainties that arise from incomplete information concerning the behaviour of other individuals in this process of human interaction. Institutions can act through a number of channels:

- They decrease information asymmetries as they channel information about market conditions, goods and participants;
- They reduce risk as they define and enforce property rights and contracts, determining who gets what and when;
- They restrict the actions of politicians and interest groups, making them accountable to citizens.

Institutions are thus likely to have an important impact on economic activities in general. This Section, however, focuses on the importance of domestic institutions for the success of trade reform.[162] In particular, the quality of institutions is likely to affect the amount of trade generated by trade liberalization, with implicit consequences for the welfare and growth effects of trade liberalization. A country's institutional set-up may also affect the level of social acceptance of trade reforms within the country. This is because certain individuals may in the short- and/or long-run lose from trade liberalization. How and to what extent institutions deal with these individual losses may affect public sentiment on trade liberalization in parts of the population.

1. DOMESTIC INSTITUTIONS AND THE SIZE OF TRADE FLOWS

(a) How do institutions affect trade: the role of contract enforcement

In order to understand the importance of institutions for trade in general and international trade in particular, it is interesting to have a closer look at the historical development of institutions that supported international trade. The problems traders encounter have not changed much over time, while the institutions that aimed at solving these problems have changed. Yet they have always needed to fulfil the same tasks and it is instructive to look at how historical institutions achieved this. This subsection will focus on the problem of contract enforcement.

An interesting example of an institution facilitating trade is the coalition that governed agency relations among the Maghribi traders in the Mediterranean area in the 11th century (Greif, 1993). At that time, a merchant organizing the supply of services required for the handling of his goods abroad, could either travel along with his merchandise or hire overseas agents to supply the services. Employing agents was more efficient, but carried the risk of being cheated by the agent who could embezzle the merchant's goods. To overcome this commitment problem, Maghribi traders tended to be associated with many other Maghribi traders residing in different trade centres. Within such a coalition traders exchanged trade-related information. As a result, the information that an agent had cheated a merchant would quickly be passed on to the other members of the coalition. The entire coalition would stop doing business with the unreliable agent and this represented a serious punishment for that agent in terms of lost earnings. The incentive to cheat was reduced significantly in this way, and collaboration between Maghribi merchants and agents flourished in the Mediterranean area.

[161] See North (1994) and World Bank (2002). North (1990) makes a distinction between institutions and organizations, referring to the first as the rules and the second as the players. This distinction also plays a role in this section, although organizations are treated as forming part of the covering term institutions.

[162] See for instance Frankel and Romer (1999), Acemoglu and Johnson (2003), Acemoglu et al. (2001) and Rodrik et al. (2002) for contributions to the relevant growth literature.

Nowadays contract enforcement can represent a problem in international trade. Trans-national networks can, even in modern times, have a role in facilitating trade as they build, or substitute for, trust when contract enforcement is weak or nonexistent. The following quotation regarding the modern network of overseas Chinese business owners, for instance, sounds intriguingly similar to the one discussed in the previous paragraph: "If a business owner violates an agreement, he is blacklisted. This is far worse than being sued, because the entire Chinese network will refrain from doing business with the guilty party."[163]

Trans-national networks can thus facilitate trade when contract enforcement is weak. In the absence of such networks or other mechanisms to overcome problems of contract enforcement, the absence of an efficient legal system can have significantly negative effects on trade as discussed, for instance, in Bigsten et al. (2000). These authors examine the contractual practices of African manufacturing firms using survey data collected in Burundi, Cameroon, Côte d'Ivoire, Kenya, Zambia and Zimbabwe. It is shown that contractual flexibility is pervasive and that it is a rational response to risk – the riskier the environment, the higher the incidence of contract non-performance, and the higher the probability of renegotiation of a contract. Breaches of contracts and the use of lawyers and courts to enforce the original contract are rare, simply because of the absence of an efficient legal system. Instead, suppliers and clients fulfil their contracts, but in a "flexible" way – supplies occasionally arrive late or their quality is different from what was ordered, and clients sometimes pay late. Under these arrangements, foreigners are often taken by surprise by contractual delays and calls for contractual renegotiation. They are accustomed to functioning in a very different environment, and it may be hard for them to understand that seemingly unpredictable behaviour is a rational response to an inefficient system. This may explain why foreign firms find it difficult to operate in such environments, and why local manufacturers have a hard time breaking into export markets.[164]

Another problem that plays an important role in trade is contract enforcement when the delivery of goods or services and their payment do not take place at the same moment in time. Trade typically implies the exchange of goods or services against money. The probability of transactions taking place increases if (commercial) credits can be used – that is, if it is possible to pay today for something that will be delivered in the future or to obtain goods today and to pay for them in the future. The problem is that the person giving the credit, either in the form of money or in the form of goods or services, needs to have some assurance that he or she will in the future get what was agreed upon when the deal was made. During the so-called Commercial Revolution in the 11th to 14th century, the use of credit was already quite common in Europe among people who lived near each other. Trading partners living near each other are likely to know each other and it is, therefore, possible to make a judgement on whether a person is trustworthy or not.

Credit arrangements were also frequent among merchants who did not live near each other. For example, around the middle of the 12th century traders from Asti (in what is now Italy) regularly sold Northern textiles imported from France's Champagne fairs on credit to Genoese traders (Greif, 2001). Similarly, contracts for future delivery among individuals from distant localities were common in England, France and Italy. How was contract enforcement guaranteed in situations where merchants were unlikely to know each other? What guarantee was given to a lender that a borrower would not enrich himself after obtaining a loan by simply not repaying his debt?

Evidence shows that long-distance traders were identified as members of a particular community. Such communities could take various forms. The most common ones were a hometown, a borough, and a merchant guild. These communities had the common characteristic that they had the ability to impose punishment on their members, mainly because the economic and social costs of leaving one's community were relatively high. For each community it was important to maintain the reputation of being trustworthy in order to be able to engage in trade with traders from other communities. It was, therefore, in the interest of the community to control the behaviour of individual traders within the community. If one trader cheated, for instance by not paying an outstanding debt, the community would reimburse the lender to maintain its reputation of being

163 Weidenbaum and Hughes (1996) as quoted in Rauch (2001).

164 Limited success in integrating into global markets may also have other explanations. Poor infrastructure is the main explanation (see Section IIB of this Report).

a trustworthy community. At the same time, the trader who had cheated would be punished. Because each trader knew in advance that this would happen, the incentive to cheat was reduced. At the same time, this system facilitated trade among different communities, because individual traders knew communities would guarantee the enforcement of contracts through a system of collective responsibility.

In the course of the 13th century, however, this system became less and less effective, mainly due to its own success. Trade flows had increased significantly and so had the number and the size of communities involved in trade. At the same time, communities were becoming more heterogeneous. This led to a number of problems, one of them being that it became easier for traders to give false information concerning their origin. It became more costly for the community to check whether a trader who was accused of defaulting on a debt actually belonged to the community. Slowly but surely contract enforcement based on collective responsibility was replaced by a system based on individual responsibility.

It is interesting to compare this European experience with existing lending systems in developing countries. Collier and Gunning (1999), for instance, discuss the absence of adequate state-provided enforcement mechanisms for the reimbursement of loans in certain African countries. As a consequence, the social institution deciding on the credit-worthiness of a project is often restricted to the kin group. It has been argued that this restricts business to the small group of firms known to the network and often to a restricted number of activities. Switching to new activities may turn out to be difficult, even if it would be profitable. This may be a disadvantage for the firms concerned when it comes to adjusting to changes in trade policy or changes in the global environment.

A particular type of collective lending also seems to have played a role in the success of China's township and village enterprises (TVEs). These enterprises are one of the most distinctive institutional features of China's economic transition. The national output of TVEs – defined as all rural collectively owned enterprises – grew more than six-fold in real terms between 1985 and 1997. This phenomenon was accompanied by a steady expansion of rural lending from state financial institutions to TVEs, from 17 per cent in 1985 to 33 per cent in 1994 (Park and Shen, 2002). At first glance this may seem surprising, as an underdeveloped legal system, combined with limitations on ownership of publicly-owned assets made it nearly impossible to collateralize loans. So how was it possible that lending to TVEs nearly doubled within a decade?

The explanation may lie in a particular form of joint liability lending that emerged in China. Under joint liability lending, members of a group are held mutually responsible for repaying individual loans made to group members. Park and Shen (2002) describe the particular way of sanctioning that allowed Chinese lenders to circumvent the problem of collateralizing loans: "managers of collective firms are appointed by local government leaders who, as insiders, closely monitor firm decision-making. Because most collective enterprise managers are native local residents, they often have well-developed personal relationships with local government officials and depend on officials' support for career advancement. Local government officials thus possess the information and sanctioning ability necessary to make joint liability lending contracts credible. They often explicitly or implicitly guaranteed loans in lieu of collateral, so that enterprises owned by the same local government (or community) became jointly liable for loans to individual enterprises." Park and Shen (2002) also describe how, in the mid-1990s, a number of changes harmed the environment for joint liability lending and how this led to a dramatic change in the lending preferences of banks in favour of private firms.[165]

Both the historical European example and the more recent example from China illustrate that institutions tend to function well if they complement the existing environment in terms of other supporting institutions, human capabilities and available technologies.[166] Very different institutions can have similar effects. The examples also illustrate that institutions may need to change or adapt as a result of changes in the external environment. Institutions that are efficient in a certain place at a certain point in time may do a bad job if imposed on a different external environment. Institutional change is a complicated process that typically takes place very

[165] One of these changes was the deterioration of firm performance as the economy slowed and competition increased in product markets. As a result, the advantages of local leader involvement in TVE management declined and the incentive problems of public ownership became more apparent.

[166] See also World Bank (2002).

gradually rather than abruptly. Although formal rules can in principle change overnight as the result of political or judicial decisions (e.g. revolutions), informal rules embodied in customs, traditions and codes of conduct are very difficult to change.[167] Moreover, institutions do not always adapt automatically in an efficient way to changes in the external environment, and as a result societies may be stuck with "bad" institutions. Whether or not efficient institutions arise will depend to a large extent on whether this is in the interests of those having the power to devise new institutions.[168]

(b) Measuring the effect of institutions on trade flows

The availability of information and the assessment of risk are particularly important concerns for foreigners trading with a country. Even if a country lowers its trade barriers, outsiders may be reluctant to trade with the country if, for instance, they do not believe contracts can be enforced or are not sure whether payments will be made. Therefore the quality of domestic institutions matters for international trade.[169] This Section takes a closer look at the effects on trade of three indicators of institutional quality included in the World Bank Database for Governance Indicators:

- "Government Effectiveness" refers to the quality of public service provision, the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government's commitment to policies. It is, therefore, a measure of the quality of government inputs.
- "Rule of Law" is based on several indicators that measure the extent to which agents have confidence in, and abide by, the rules of society. These include perceptions of the incidence of crime, the effectiveness and predictability of the judiciary, and the enforceability of contracts.
- "Control of Corruption" measures perceptions of corruption, conventionally defined as the exercise of public power for private gain.

These indices can take values between -2.5 and 2.5, and the higher the value the better the institution. The reason for focusing on these three variables is that they can be expected to affect significantly the degree of uncertainty involved in trade and, therefore, transactions costs. In many cases, governments have the power to change domestic institutions, and therefore the index of "government effectiveness" is likely to reflect the quality of domestic institutions in general. This index will also determine the likelihood of uncertainties related to policy changes in general and trade policy changes in particular. The "rule of law index" refers, among others factors, to the enforceability of contracts, the importance of which has been discussed in detail in the previous subsection. High levels of corruption increase uncertainty as to the size of gains to be expected from economic activities. Corruption is often a widespread phenomenon with potentially large negative effects on trade.[170] In a ranking of the main obstacles for doing business based on a 1996 World Bank survey of 3,685 firms in 69 countries, corruption ranked as the second obstacle. It was only preceded by complaints about tax regulation or high taxes.[171]

167 North (1990, 1994).

168 North (1990). See also Anderson (2001) on possible conflicts of interest concerning the preference for high quality institutions.

169 Anderson and Young (2000) present a theoretical framework in which the absence of the rule of law has a negative effect on trade.

170 Causality can also go in the other direction. Ades and Di Tella (1999) argue that openness increases competition and thus reduces the rents that can be appropriated through corruption. Their data analysis confirms this argument. Wei (2000) shows that "natural openness", as determined by a country's geography and size, reduces corruption. He argues that this is the case because natural openness increases a country's incentive to invest in corruption-fighting public governance infrastructure. Another strand of literature has focused on the negative effects of corruption on foreign direct investment. See for instance Wei (1997).

171 Brunetti et al. (1997) as cited in Anderson and Marcouiller (2002).

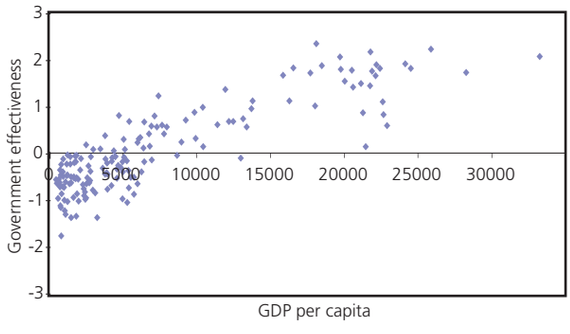
Table IID.1
Highest, lowest and median values in institutional quality

	Government effectiveness	Rule of law	Corruption control
Maximum	Singapore (2.34)	Switzerland (2.21)	Finland (2.39)
Median	Peru (-0.18)	Philippines (-0.22)	Madagascar (-0.28)
Minimum	Somalia (-2.14)	Congo, Democratic Republic of the (-1.83)	Congo (-1.56)

Source: Kaufman et al. (2002).

Table IID.1 shows the countries with the highest and lowest value for the three institutional variables. It also shows the country at the median value. The Table suggests a link between institutional and economic development. Chart IID.1 confirms that these two variables are closely related.[172] The Chart plots the index for government effectiveness against GDP per capita, showing this close relationship graphically. Several studies covering different groups of countries and different time periods have found that the quality of institutions is an important determinant of economic performance.[173] It should also be noted that the level of institutional quality depends on the level of income as well, since rich countries can afford better institutions. Yet good institutions do not always require significant investments and institutions supporting good governance are also possible in poor countries. Clearly defined and enforceable property rights, at least for physical assets, are possible in poor countries. It is also possible to create and maintain incentives that stimulate productive activities and transactions rather than rent-seeking in rich as well as poor countries. Finally, good institutions refer to the level of trust and the incentives they create, rather than to particular organizational structures or cultural characteristics. Over time and across countries many different institutional structures have been associated with high income levels or high growth rates. China and Ireland are among the five fastest growing countries during the decade from 1991 to 2001, and they are countries with very different institutional structures and income levels. Despite these differences, the two countries have in common that their institutions are of higher quality than those of other countries with similar income levels.[174]

Chart IID.1
Average government effectiveness (1996, 1998, 2000) and GDP per capita (1995)



Source: Kaufman et al. (2002) and World Development Indicators.

Another characteristic shared by China and Ireland is that they experienced a sharp rise in their openness to trade with other countries. Openness as measured by total trade as a share of income is another variable that has been found in the literature to be an important determinant of a country's level of income. The previous discussion suggests that the quality of institutions may also affect a country's level of openness to trade. A number of empirical papers focusing on the determinants of trade flows show that institutional quality is indeed positively related with the size of trade flows. De Groot et al. (2003), for example, study how the measures for institutional quality included in Table IID.1 above affect trade and find that a better quality of formal institutions tends to coincide with more trade. They also find that similarity between trading partners in the quality of their institutions promotes trade. Anderson and Marcouiller (2002) use survey data from businessmen gathered by the World Economic Forum on contractual enforcement and corruption as an index of institutional quality. They find that lower institutional quality has a substantially negative effect on trade. Rauch and Trindade (2002) focus on the role of trans-national networks for trade. As discussed before, such networks can play an important role when it comes to contract enforcement in international trade. They can also reduce transaction costs through the reduction of information costs. Rauch and Trindade (2002) find

172 The correlation coefficient between institutional quality and GDP per capita is around 0.9 for all three measures of institutional quality.

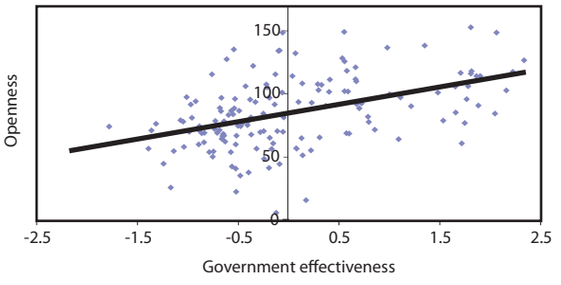
173 See for example Acemoglu et al. (2001; 2002).

174 The point estimate for Ireland's government effectiveness in 2002 is 1.62 compared to a 1.48 average for high income countries. China's point estimate is 0.18, compared to -0.37 for lower middle income countries (World Bank: Governance Research Indicators Dataset, 2002).

that the presence of ethnic Chinese networks has an important positive impact on bilateral trade and that this impact is larger for differentiated than for homogeneous products. The latter result can be explained by the fact that information costs are more important in the case of differentiated goods.

Chart IID.2 shows the result of another study that analyses the relation between institutional quality and openness (Jansen and Nordås, 2004). The study explores whether and to what extent there is a relation between the quality of institutions and how successful trade liberalization is in obtaining a higher degree of integration into world markets. Three findings are worth noting from this study. First, there is a strong positive relation between institutions and openness, as Chart IID.2 shows. Second, the better the institutional quality, the more difference it makes whether it has high or low tariffs. For example, a reduction in average applied tariffs from about 13 per cent to about 5 per cent will increase openness by ten percentage points if the control of corruption index has a value of zero, and by twenty percentage points if the control of corruption index has a value of unity.[175] If the control of corruption index is at the very low end of the spectrum, however, lower tariffs will have no effect on the openness index. Finally, it is found that a country's own tariffs are much more important for its trade performance both in terms of openness and bilateral trade than its trading partners' tariffs.[176]

Chart IID.2
Openness and government effectiveness



Source: Kaufman et al. (2002) and World Development Indicators.

2. DOMESTIC INSTITUTIONS AND SOCIAL ACCEPTANCE OF TRADE REFORMS

Concerns about the social acceptance of reform arise at two different stages of the trade liberalization process: during the adjustment process, and once the economy has adapted to the new situation (i.e. when the economy is open). The reasons for resistance against trade reform or pressure for policy reversals are likely to be different at these two stages. Possible policy responses to increase social acceptance of change, therefore, also differ.

(a) Social acceptance during the adjustment process

The process of adjustment to trade liberalization involves costs that are mainly paid by agents operating in the import competing sector. Political resistance against trade reform, or pressure to reverse it, is likely to come from firms and employees in that sector.

There will always be industries in which foreign competitors are more efficient than domestic producers. When import barriers on the products of those industries are lowered, foreign producers will be able to attract domestic consumers with lower prices. Domestic import competing firms in those markets will face downward pressures on sales and profits which, in turn, can lead to pressure for lower wages, job losses and perhaps even company closures. Lower wages and/or job losses, and the prospects of lower returns to capital, will cause workers and capital to search for employment in other parts of the economy. This search is very likely to include the country's export industries, especially if the trade liberalization is the kind of reciprocal liberalization that occurs in a multilateral round such as the recently launched Doha negotiations. Provided the country is pursuing sound economic policies, other parts of the economy are likely to grow, as consumers – who are benefiting from lower prices due to trade liberalization – expand their purchases to a range of other goods and services.

[175] The sample mean tariff level is 13 per cent while the standard deviation is 7.8 percentage points. Recall that the control of corruption index takes values between -2.5 and 2.5.

[176] The regressions in the study control for market size, distance to markets, whether the country is landlocked or an island, and the quality of infrastructure.

The concentration of adjustment costs in particular sectors of economic activity is a particular characteristic of trade liberalization. Other policy reforms cause adjustment costs, but in many cases these tend to be more evenly spread across the population. A reduction of legal minimum wages, for instance, will affect low income earners across the economy. Also, a reduction in government spending will have repercussions in different sectors of the economy. The more concentrated the losers of a reform are within a society, the more likely they are to join forces against the relevant reform. Thus, even if the magnitude of adjustment costs caused by trade reform is not necessarily different from the costs arising from other reforms, the concentration of those costs in very specific sections of the economy raises the prospects of well organized resistance against trade reform.

Many of those losing their jobs in an import competing industry may end up finding better paid jobs in exporting sectors. Others will receive lower wages in the long run. Likewise, there will be companies that manage to adjust to the new competitive situation, while others will have to shrink or even close down. In other words, while most actors in the import competing sector will have to go through an adjustment process, an important number of them may well end up being better off in the long run. It has been argued, however, that even individuals in this latter group may show resistance to trade liberalization if they do not know in advance whether they will be among the losers or the winners of trade reform. Fernandez and Rodrik (1991) show that in this situation some of those who would gain from trade liberalization may *ex ante* judge it wiser to lobby against trade reform rather than run the risk of being among those who lose from the change. It is argued that this status-quo bias explains phenomena like those observed in Chinese Taipei and Rep. of Korea (early 1960s), Chile (1970s), and Turkey (1980s). In all three cases, reform was imposed by authoritarian regimes and against the wishes of business, even though business emerged as the staunchest defender of outward orientation once the policies were in place.

What can be done to reduce the resistance to trade reform from the import-competing sector and thus increase social acceptance of trade reform? Two approaches have been discussed in the literature. One approach focuses on the need to create "winners" from trade reform as quickly as possible in order to counterbalance pressure against trade liberalization.[177] The other approach focuses on keeping the losses of those that will suffer from adjustment to the absolute minimum.

(i) "Create winners" from trade reform

Trade liberalization creates new opportunities for exporters, particularly if trade liberalization is reciprocal and makes new export markets accessible. The better exporters' information about these opportunities, the faster will be their response to them.[178] Information failures are increasingly recognized as a key constraint in developing countries. They may, for instance, be one of the reasons for the disappointing supply responses to increases in agricultural prices that has been observed in many developing countries. Information spreads slowly within the country and public investment in basic infrastructure, such as roads or in the development of local media, could do a lot to improve information flows.

A particularly relevant type of information is that directly related to exporting activities. Exporting firms need to have information about the foreign markets they serve and potential buyers in foreign markets need to have information about the exporting firm. The costs of obtaining this information are potentially high, in particular for new exporters. Surveys of manufacturing firms carried out in Kenya, Zimbabwe and Ghana in 1992 and 1993 showed that the majority of firms have little involvement in international markets. The vast majority of firms imported none of their raw materials, exported none of their output, and did not have any foreign ownership.[179] For this type of firm, penetrating a foreign market for the first time is likely to involve a very costly process of search and screening. Existing studies have documented the efforts by US retail corporations

177 See for instance Rodrik (1989), who argues in favour of export promotion, in particular during early stages of trade liberalization, in order to build up support for the policy changes.

178 Exporters may also have to make important investments in order to expand production or to start new export activities. As such investments need to be financed, the functioning of domestic financial markets is crucial for the supply response to trade liberalization. Financial markets have been discussed in more detail in Section IIB of this Report.

179 Pack and Paxson (1999).

to source products in Africa.[180] Sourcing from Africa is complicated by the fact that US firms lack reliable contacts on the continent that can assist them in screening out undesirable firms – or even countries. If US retail corporations, with all the resources and finance they can muster, find it hard to source products in Africa, it must be extremely difficult for African firms to investigate and penetrate Western markets, particularly if they have barely been involved in international markets.

A study of African exporters of garments and home products indicates that the transactions costs of linking into international markets in Africa are likely to be quite high.[181] One problem is that Africa has no reputation as an exporter of manufactured products. This reputation problem is something all nascent exporting countries have had to overcome. The study suggests that mechanisms need to be found to reduce the high *ex-ante* search costs for buyers, as well as the high direct marketing costs for African suppliers. Collective marketing support services are often missing or are weak in delivering adequate services. The creation or improvement of such services can play an important role in speeding up and improving the supply response to trade reform.

An additional obstacle to entering export markets for African firms is, in many cases, the precarious state of infrastructure and service delivery at ports. In a modern economy where the time taken to reach market and delivery reliability are important competitive factors, it is simply not possible for African entrepreneurs – however innovative and capable – to penetrate export markets if their goods are stranded for weeks at the ports, and roads are impassable during the rainy seasons. These issues are discussed in Section IIB.

(ii) Attenuate individual losses from trade reform

Government efforts to reduce adjustment costs in order to increase the social acceptance of trade reforms should focus on workers in import competing industries, where losses from trade liberalization tend to be most keenly felt. The functioning of labour markets will to some extent determine the size of the adjustment burden to be carried by workers, as this will determine the length of the period of unemployment they are likely to go through.[182] Employment protection policies, for instance, may discourage entrepreneurs from hiring the few workers needed for starting up a new company as it would be costly to fire them if a business turns out to be less profitable than expected. Job creation in export sectors would then remain moderate, reducing the chances of displaced workers from import-competing sectors of finding new jobs.

High minimum wages may lead to excessive lay-offs, particularly in those sectors under competitive pressure from abroad, where minimum wages would most likely become binding. Without the option of lowering wages, companies faced with strong competition may start laying off potentially large numbers of workers. The sudden unemployment of large numbers of workers represents less of a problem for the economy if these workers easily find new jobs. But there may be serious problems if bottlenecks occur in the job search or retraining process, and it may be difficult for the economy to create the necessary new jobs within a short time-frame.

The level of unionization in import-competing sectors may also have an impact on the adjustment burden resulting from trade reform. The higher the level of unionization in those sectors, the more likely it is that workers were able to share in the rents accruing to those sectors prior to reform.[183] In other words, the higher the level of unionization, the more likely it is that workers were earning wages above the value of their marginal product prior to reform and the higher the wage losses they will face if they become redundant. Affected workers will have stronger reasons to resist trade liberalization. A high level of unionization will also give them more political weight in their struggle against trade liberalization. A vast political economy literature has emphasized resistance by potential losers as one of the main obstacles to adjustment. Resistance by losers could lead to half-hearted adoption of reforms, thus diluting their economic impact. The mere threat of prolonged strikes, or massive street demonstrations, could make a government delay the adoption of economic reforms, dilute their substance or lead to policy reversals, with negative consequences for adjustment.

180 Biggs, T., G. Moody, J. van Leewen and E. White (1994), as referred to in Fafchamps (2001).

181 Biggs et al. (1996).

182 See Bacchetta and Jansen (2003) for a broader discussion on the role of labour markets in the adjustment process.

183 See Harrison and Hanson (1999) for evidence on how Mexican labour shared in the rents accruing to protected sectors prior to trade reform.

So how do these different characteristics of labour markets interact during an adjustment process? Forteza and Rama (2001) compare the impact of different labour market characteristics on an economy's propensity to adjust.[184] In addition to minimum wages and non-wage costs, the authors include the level of unionization and the size of government employment in their measures for labour market rigidity. These two indicators are intended to capture the ability of potential losers from reform to express their grievances. The results of their empirical analysis show that countries experience recessions immediately before adjustment and slower recovery afterwards, where organized labour is potentially influential. Whereas growth performance is not affected by the level of minimum wages and non-wage costs. These results suggest that labour market characteristics affect adjustment through political mechanisms rather than economic ones.

Although the study by Forteza and Rama (2001) focuses on developing countries there are reasons to believe that labour markets are more likely to create excessive unemployment following trade reform in industrialized countries than in developing countries. Many developing countries, in particular the poorest ones, are characterized by dual labour markets, with a relatively inflexible formal segment but a highly flexible informal segment, where employment protection policies and minimum wages are non-existent.[185] Union membership as a percentage of the total labour force tends to be lower in developing countries than in industrialized countries. When looking at regional averages, union membership turns out to be highest in Eastern Europe and Central Asia, with 67 per cent of the labour force unionized (Forteza and Rama, 2001).[186] The average share of unionized labour in total labour is 37 per cent in industrialized countries, significantly higher than in Latin America and the Caribbean (19 per cent), the Middle East and North Africa (17 per cent), Sub-Saharan Africa (10 per cent) and South Asia (9 per cent). The degree to which a high level of unionization leads to political resistance, however, depends on many other factors such as, for example, the relationship between unions and the political leadership. In 1990, France was one of the European countries with the highest number of strikes and lockouts (1,529), although it has a relatively low level of unionization (14.5 per cent in 1985 and 9.1 per cent in 1995). In contrast, Austria is a country with a significantly higher level of unionization (51 per cent in 1985 and 41.2 per cent in 1995), but a very low number of strikes and lockouts (9 in 1990).[187]

In general, it could be argued that the likelihood of long unemployment spells following trade reform is higher for workers in industrialized countries than in developing countries. Yet being unemployed is likely to cause significantly more hardship in developing countries than in industrialized countries. Credit markets typically fail to help the jobless in both industrialized and developing countries. But while many industrialized countries have developed social safety nets to assist individuals concerned, developing countries are typically unable to afford adequate social safety nets.

Most European Union members are, for instance, characterized by large equity-oriented welfare states.[188] The US welfare state is considered to be less generous, but the country utilizes a special programme of "Trade Adjustment Assistance" for displaced workers.[189] This programme offers a variety of benefits and reemployment services to assist trade-displaced and unemployed workers in preparing for and obtaining suitable employment. These benefits include special income support, job search and relocation allowances and paid training schemes. On the other hand, recent macroeconomic crises in Latin America and East Asia have shown that existing safety net mechanisms are too often inadequate.[190] Their coverage is limited and the assistance available is far below demand during a crisis or adjustment period. Moreover, the poor are often unaware of the programmes, or have too little influence to obtain their entitlements. In principle, informal safety nets such as family support systems can replace formal safety nets. A case study of Uganda, however, shows that these informal safety nets tend not to work for the poorest[191], whereas informal mutual insurance at the community level works well in Ugandan middle-class families.

184 The study looks at adjustment to «economic reform programs» financed by World Bank adjustment credits and loans.

185 Matusz and Tarr (1999).

186 The figures refer to averages over the period 1970-1999. The ILO (1999) reports declining levels of unionisation in many European countries in the 1990s.

187 See ILO (1999).

188 The term "equity oriented" refers to the fact that their welfare systems contain strong elements of income redistribution. See, for instance, the discussion in Sapir (2000).

189 See Bacchetta and Jansen (2003) for a more detailed discussion.

190 Ferreira et al. (1999).

191 McDonald et al. (1999).

The introduction of more sophisticated safety nets in developing countries could significantly reduce the adjustment burden carried by the poorest workers, and thus increase social acceptance of trade reform. Where the introduction of wide-ranging and permanent social safety nets goes beyond the means of a government, the installation of temporary arrangements in the period following trade liberalization may be an option.[192] Special attention would need to be paid to the targeting of benefits in order for them to reach the most needy. Such programmes are likely to be more effective in countries characterized by high quality institutional arrangements.

(b) Social acceptance of an open trade regime

Trade liberalization may also have long-term negative effects for some. The literature has focused on two effects – increased exposure to external risk and distributional effects.

Openness increases an economy's exposure to external shocks. At the same time, however, openness can reduce the negative effects of domestic shocks. A drought that destroys a large share of the domestic harvest, for instance, can have disastrous effects on food supply in a closed economy. Effects will be less dramatic in an open economy that can import food in order to cover the domestic shortages. A priori, therefore, it is not clear whether individuals' exposure to risk is higher in an open economy than in a closed economy. Rodrik (1998) argues that the former is the case. He shows that there is a positive and robust partial correlation between openness, as measured by the share of trade in GDP, and the scope of government, as measured by the share of government expenditure in GDP. In order to show that the explanation for this statistical relationship is to be found in the role of external risk, the paper performs regressions in which openness is interacted with two measures of external risk – volatility of the terms of trade and the product concentration of exports. In each case the interaction term is strongly significant, while the coefficient on openness *per se* turns either statistically insignificant or negative when it is significant. Government consumption thus plays a risk-reducing role in economies exposed to a significant amount of external risk.

Trade is also expected to have long-term distributional effects as it increases the demand for some types of labour while it decreases the demand for others. In particular, trade is expected to decrease the demand for unskilled labour in industrialized countries, and to decrease their wages relative to the wages of skilled workers. Countries like the United States have experienced periods of significant increases in wage inequality in recent decades.[193] Other industrialized countries, in particular some European countries, have not experienced significant increases in inequality, but are characterized by increasing levels of unemployment among unskilled workers. This contrast can be explained by differences in the functioning of labour markets. Minimum wages, for instance, may have the effect of transforming inequality into unemployment. This is the case when decreased demand for certain kinds of domestic products may reduce the demand for certain types of labour in such a way that wages would be below the minimum wage. Since companies cannot lower wages to that point they will, instead, lay off workers. Increased unemployment and increased inequality may be two different effects with the same cause – a reduction in the demand for unskilled labour. In both cases, social insurance systems can help to make the unskilled better off, either in the form of unemployment assistance or in the form of a system of redistribution that ensures that increased inequality in gross wages does not result in increased inequality of net wages.

Even though trade may be one of the factors behind observed increases in inequality in industrialized societies[194], it is almost certainly not the only one. Profound changes in production technologies in recent decades are also likely to have affected the demand for workers of different skill levels. Several empirical studies have measured the relative impact of trade liberalization and technological change on skill inequality in developed countries.

192 See, for instance, Ferreira et al. (1999) and Gupta et al. (2000) for the role of social safety nets in the protection of the poor from macroeconomic shocks.

193 This has occurred alongside increases in the supply of skilled workers during the same period.

194 See WTO (2003a) on the effect of trade on inequality in developing countries.

The estimated contribution of trade to the rise in skill inequality differs widely across the various studies. At one extreme, the studies of Berman, Bound and Griliches (1994) and Lawrence and Slaughter (1993) attribute a small or non-existent role to trade, but an overwhelming role to technological change. At the other extreme, Wood (1994) attributes 70 per cent of the causation to trade. Cline (1997) provides a comprehensive overview of the existing literature (at that stage) and concludes[195] "a reasonable estimate based solely on the literature reviewed in this chapter would be that international influences contributed to about 20 per cent of rising wage inequality in the 1980s". Cline (1997) himself finds different results: " ... about one-third of the net increase in the skilled/unskilled wage ratio from 1973-93 was attributable to trade and an additional one-ninth was attributable to immigration".[196]

Both increased uncertainty and increased inequality, be they in terms of job opportunities or in terms of income, could undermine social acceptance of trade reform in the long run. This can be ameliorated if public institutions intervene more intensively in the provision of insurance (against unemployment, for instance) in those countries where openness significantly increases a country's exposure to risk, and in the redistribution of wealth where openness contributes to increases in inequality.

195 Another, more recent overview of the literature is Acemoglu (2002).

196 Bhagwati (2000), in contrast, suggests that the effect of trade with poor countries on wage inequality in industrialized countries has been positive and has moderated the adverse impact from other causes (like technical change) on real wages in the North. He argues that capital accumulation and technical change in the 1980s and early 1990s offset the effects of trade liberalization and resulted in a reduction of the relative supply of labour-intensive goods. The net result of these forces would be an increase in Northern prices for labour-intensive manufactures, a phenomenon that has indeed been observed. The changes emanating from the South thus push goods prices in the wrong direction and cannot be responsible for the decline of the real wages in the North.

E POLICY COHERENCE AND INTERNATIONAL COOPERATION

This Section discusses some aspects of the international dimensions of policy coherence. The core question that will be considered is how far coherent policies at the national level require international cooperation. The examination of this question is not just limited to the policy areas discussed in the rest of the study, but is a more general exploration of the role of international cooperation in supporting coherent policy formulation, including in the field of trade policy. In identifying what appear to be the main explanations of how international cooperation helps support good policy domestically, the point will also be made that sometimes efforts to foster international cooperation may have negative consequences. In other words, effective international cooperation depends on such considerations as what governments are trying to coordinate, the degree of cooperation sought, the willingness of the parties involved to shape national policies around a common international approach, and the costs of seeking and maintaining cooperative arrangements in relation to the benefits so generated.

Another important consideration, not taken up in this study, is how different international agencies cooperate among themselves and whether they are sufficiently coherent to meet the needs of the governments they are intended to serve. Institutional and policy incoherence at the international level will weaken governments' contribution and may even undermine the primary rationale for international cooperation.

As noted in the introduction to Section II of this report, coherence is a complicated and multi-faceted term used, and arguably misused, in a range of contexts. This discussion is not repeated here. For the present purposes, however, coherence is not just a matter of whether policies that might conflict or cancel out one another are adequately aligned to meet set objectives – it is also about how international cooperation fosters efficiency and national welfare by allowing governments to meet policy objectives that might otherwise elude them. So far as the notion of international cooperation is concerned, this is also a term open to divergent interpretations. Cooperation can be more or less explicit and more or less binding, and this will be explored further below.

The first subsection below examines the circumstances in which one form or another of international cooperation can facilitate the attainment of national objectives, in the sense of securing efficient outcomes that maximize a country's welfare. If there is a case for such cooperation, a question that naturally follows is the form that cooperation should take, and this is examined in the next subsection. Finally, Section IIE is rounded off with a short discussion of the role of the WTO as an agent of international cooperation and of the conditions required for the effective fulfilment of that role.

1. INTERNATIONAL COOPERATION AND NATIONAL POLICY OBJECTIVES

What are the circumstances in which international cooperation can facilitate the attainment of national economic objectives? The potential role of international cooperation in assisting governments to attain their social, political and economic objectives is a vast subject. This discussion will only touch briefly on a subset of issues, focusing mainly on economic efficiency and welfare maximization gains from cooperation. It is important to remember, however, that international cooperation goes much wider and deeper than this, dealing with such fundamental issues as peace, security, the eradication of poverty, and human rights.[197] The conclusions drawn here about cooperation may be more or less relevant to these other aspects of how governments seek to support one another through joint international action.

The discussion that follows touches on 'beggar-thy-neighbour' or 'prisoners' dilemma' problems in policy formulation, the role of international cooperation from a political economy perspective, international policy spillovers, cooperation in curbing market power, transparency, regulatory coordination, and questions relating to institutional capacity.

[197] The United Nations Development Programme has undertaken some interesting recent work in this area, structuring a consideration of the challenges of international cooperation around the notion of global public goods and an analysis of where responsibilities lie for supplying these «goods». See Kaul et al. (1999) and Kaul et al. (2003). The adoption by the United Nations of the Millennium Development Goals is an important international initiative aimed at addressing a wide range of development challenges through international cooperation. For more detail, see World Trade Report (2003) pp.80-81.

(a) The terms of trade, domestic political economy, and international cooperation

International trade is one area where extensive international cooperation is observed. The rationale for entering into international trade agreements and the ways such agreements are enforced have been subject to extensive research. The literature points to at least three reasons why countries may want to enter into international trade agreements: i) a terms-of-trade driven prisoners' dilemma; ii) political economy considerations and iii) commitment to policies.[198]

About fifty years ago, Harry Johnson (1954) showed how, in the face of terms-or-trade effects arising from tariffs, countries could cooperate to make themselves better off through the avoidance of mutually destructive episodes of trade policy retaliation. This is an application of the prisoners' dilemma in game theory, where a failure to cooperate reduces the welfare of parties to the game, and cooperation increases welfare. Johnson was looking at a situation where countries presided over a market that was big enough to affect the world price of a product following a change in demand in that market. Thus, if a government in a big country were to impose a tariff on an imported good, this would raise the price and reduce demand in the domestic market, affecting enough of the total market to lower the world price of the good concerned. The effect of the tariff would be to cheapen the price of imports relative to exports (the terms of trade) and thereby increase national income at the expense of another country. The same thing could happen if a large country taxed an export, thus raising the international price of the good concerned.

The effect on national income of the relationship between import and export prices has been well understood for a long time. Johnson's insight was to show that if countries pursue such beggar-thy-neighbour policies – retaliating against one another with sequential trade restrictions – they would end up reducing national income all round. An international agreement to restrain such behaviour makes all parties better off. Here, then, is a reason why government policy can be made more coherent through international cooperation. Furthermore, in the presence of power imbalances between countries, multinational bargaining enables countries to achieve deeper trade liberalization than a web of bilateral negotiations. Thus, Maggi (1999) argues that trade negotiations can be regarded as a market where countries exchange trade concessions and that bilateral bargaining is inefficient because the market is segmented.

Ethier (2004a; 2004b) addresses political economy reasons why governments might enter into international trade agreements. He questions whether the terms of trade effect is the main reason for the existence of GATT and the WTO. He argues that the GATT does not in fact prohibit export taxes and, therefore, does not prevent large countries from using trade policy to improve their terms of trade. Besides, if terms of trade were the main explanation for the existence of multilateral agreements, small countries would have little to gain from membership. The explanation offered by Ethier is a combination of terms of trade effects and what he calls political externalities. These externalities relate to the assumption that governments depend on political support from different interest groups and thus need to balance the interests of exporters and import-competing industries and workers employed in these industries. Two assumptions are made about the policy environment. First, it is assumed that political support is more affected by the direct impact of a trade agreement than the indirect effects. The direct effect refers to increased import penetration in sectors where the government has lowered protection, and to increased exports in sectors where the government has negotiated improved market access. The indirect effects are the economy-wide subsequent adjustments in prices and rewards to factors of production that take place in order to rebalance the overall trade balance. The second assumption is that while governments want to reap the gains from trade, they also want to avoid large reductions in the income of any interest group. When these assumptions are satisfied, a reciprocal, gradual approach to trade liberalization is the preferred policy. Ethier argues that the political support rationale best explains the actual trade agreements that we observe.[199]

198 See Bagwell and Staiger (2002) for an extensive discussion.

199 See also Mayer (1981), Grossman and Helpman (1995) and Bagwell and Staiger (2002) for discussions of the relative importance of terms of trade and political economy effects.

The third rationale for international trade agreements – commitment – has been analysed by Maggi and Rodríguez-Clare (1998) and Staiger and Tabellini (1999). They have provided a good theoretical basis for the idea that governments can use international commitments to signal policy intentions, or "tie in" policy commitments in a manner that makes them harder to challenge by interest groups. This can be done by governments regardless of country size. The analysis suggests that the balance between a government's bargaining position and that of lobbies will influence the willingness and ability of governments to use international commitments in this way. Finally, it should be noted that if there are no terms of trade effects and if the government's objective is to maximize total national income, then free trade is the optimal policy.

Turning to the issue of enforcing trade agreements, a potential problem with multilateral agreements is the incentive for, say, two countries to enter into separate agreements that would undermine the concessions that the two have given to all other countries. A most favoured nation (MFN) clause in the agreement prevents this from happening and makes reciprocal liberalization agreements implementable. Furthermore, Bagwell and Staiger (1999) show that in a multi-country setting tariffs that satisfy governments' objectives of maximizing welfare are efficient only if they conform to MFN. Efficiency is defined as a tariff structure where no country can improve its welfare by changing its tariffs without harming another country. Finally, Ethier (2004b) notes that MFN is important to the individual signatory to a multilateral agreement not because of the MFN status it receives, but because each of its competitors has conceded such status to each of its potential trading partners.

A dispute settlement procedure (DSP) is another feature of the multilateral trading system that is important for the enforcement of agreements. In addition to settling disputes between two or more Members, the procedure identifies violations of the agreements and brings them to the attention of third countries. This has a disciplining effect since it affects the offender's reputation as a trustworthy trading partner. Non-tariff barriers are much less transparent than tariffs and the "information conveying" function of the DSP is particularly relevant in these areas. Maggi (1999) shows that with a DSP in place, a multilateral agreement can be enforced without having to resort to severe sanctions. Third party sanctions can be small and are needed only for violations that are difficult to deter through bilateral sanctions, most importantly in cases involving a strong and a weak country. Thus, the DSP transfers enforcement power across bilateral relationships – another feature that distinguishes a multilateral from a bilateral trade agreement.

To sum up this subsection, governments may wish to secure greater policy coherence through international commitments in order to: i) avoid tit-for-tat trade restrictions that make all worse off; ii) affect the distribution of political influence that determines policy outcomes in the domestic economy; and iii) commit themselves to trade policy reforms. The results built on political economy arguments are not sensitive to country size. Moreover, even though the insights from this work have been couched largely in terms of trade policy, it would be interesting to consider whether they help in understanding other areas of international cooperation.

(b) International policy spillovers

International policy spillovers are an example of an externality that may require international cooperation to deal with effectively (Section IIC). Frequently cited examples of international spillovers are the unsustainable use of the global commons (e.g. global climate, oceans, etc.), and the "export" of pollution to other jurisdictions. The level of international cooperation on environmental problems has grown enormously since the 1972 Stockholm Conference (UN Conference on the Human Environment). There are now a multitude of international environmental agreements, covering such issues as climate change, the ozone layer, biodiversity, marine and coastal areas, endangered species, persistent organic pollutants, hazardous wastes, desertification, etc. A number of key processes have made this progress possible, including the growth in scientific understanding of environmental problems, greater global public awareness and concern about environmental issues and greater recognition by national governments of the need for environmental action (Conca and Dabelko, 1998). Effective inter-governmental cooperation would ensure that economic activities at the national level are not responsible for environmental degradation affecting other countries or the world at large.

The presence of technological spillovers with international dimensions is another example of where international policy coordination might help. If technological spillovers accrue through trade, for example, this would suggest that the market is producing too little trade, thereby supporting the notion that coordinated action to reduce obstacles to trade would increase economic well-being.

Another area of international spillovers is the transmission of macroeconomic shocks (Section IIA). Countries face some degree of fluctuations in aggregate economic activity arising from the business cycle. Each national authority will be required to employ fiscal and monetary policies to smooth out its business cycle. But the effects of the cycle as well as the policy response can be transmitted to one's partners through changes in trade flows which affects the partners' output, employment and prices.

In the two-country Mundell-Fleming model with flexible exchange rates, a country which adopts an expansionary monetary policy will worsen the current account and reduce the aggregate demand of its trade partner. This policy will not be welcome by its trading partner particularly if it is facing macroeconomic weakness of its own. The mechanisms for transmitting this beggar-thy-neighbour effect are the exchange rate and the induced changes in trade flows (switch in demand to the exportables of the first country). One way to alleviate such tensions is to coordinate a response to macroeconomic weakness (or strength) and to share in the benefits and costs through international cooperation. Cooperation can take various forms, from macroeconomic coordination (such as through the G-7) all the way to monetary union (such as in the formation of the euro zone). Still, one key shortcoming of this literature is that the policy analysis is not welfare-based and depends on ad-hoc assumptions about the objectives of policy makers.[200]

Over the last decade, a new modelling framework for open-economy macroeconomics has been developed (Obtsfeld and Rogoff, 1995b). The new framework moves away from the old Mundell-Fleming model with its Keynesian roots to one with stronger micro-foundations. The key features include differentiated products and hence imperfectly competitive markets, utility maximization by households through their choice of consumption, real balances and labour supply, and nominal price rigidity. One important consequence of this framework (particularly the utility maximizing behaviour of households) is that it allows for welfare evaluation of various types of policy choices, including the coordination of policies with other partners.

While the possibility of international spillovers is acknowledged, there is less consensus about the value of international macroeconomic coordination. Obstfeld and Rogoff (2000) have argued that as central banks in the major industrialized countries move towards rules-based monetary policies and as international financial markets become more complete, international spillover effects become only a 'second-order' problem.[201] The gains from monetary cooperation are therefore small. Hence it is enough that central banks respond optimally to domestic macroeconomic conditions and shocks. However, their results regarding international transmission and the welfare effects may not be robust to changes in some of the specifications of the models, including price stickiness, preferences and the financial structure (Lane, 2001). Using the same basic model, Canzoneri, Cumby and Diba (2002) assumed a different pattern of productivity shocks and asymmetries in the formation of wages and prices to generate benefits from international monetary cooperation.

While recognizing the value of international cooperation, a recent paper by Conconi and Perroni (2003) explores the conditions under which coordination among governments can help deal with spillovers. The analysis deals with interaction among governments as well as with private agents. One conclusion of the paper is that if governments and private interests are continually reacting to each other and among themselves ("repeated interaction"), international agreements may be less necessary. The players can build up sufficient credibility regarding their willingness to accommodate one another's interests. On the other hand, if governments have difficulty in pre-committing to a desirable domestic policy response, an international agreement may help. One object lesson from this analysis, and a number of similar papers built on game theoretic analysis, is that the nature and degree of desirable international cooperation will vary with circumstance. It is not always true that more cooperation at the international level is better than less.

200 More often than not, the analysis assumes that governments are seeking to avoid unemployment and inflation.

201 In marked contrast for example to the Mundell-Fleming result, a monetary expansion by one country increases the output and welfare of its trade partner (a prosper-thy-neighbour outcome).

(c) Curbing market power

Another important area for international cooperation to address is market power by firms that are domiciled in one jurisdiction but whose activities exact significant costs on consumers and firms in another jurisdiction. The sources of such market power and the form it takes can vary. Market power may be concentrated in just one firm or it could be shared among a group of firms acting in a coordinated fashion (e.g. a cartel) to manipulate prices and stifle competition. The source of market power may be monopoly over a resource, economies of scale, or access to a unique technology.

Some have questioned whether these negative spillovers are sufficiently large to warrant the need for international cooperation (Bilal and Olarreaga, 1998). But as noted in Section IIC, recent research suggests that the costs to consumers and other producers of international cartels can be quite high. Many governments are frequently more lenient about the behaviour of firms in export markets than in domestic markets. This is because national competition authorities may not have an incentive to curb monopolistic behaviour by firms based in their jurisdiction if such behaviour leads to increased domestic profits primarily at the expense of foreign consumers and competitors.

There is yet another argument which calls for international coordination on competition rules. With greater trade liberalization and multilateral disciplines on the use of traditional trade measures, there may be a temptation for governments to make strategic use of competition policy as a device to shift rents from foreign to domestic firms (Cadot, Grether and de Melo, 2000). The few studies that have looked at this issue in the context of mergers have suggested that there is no simple answer (Horn and Levinsohn, 2001). In fact, the model that was employed produced the contrary result – greater liberalization induced national welfare maximizing governments to tighten competition rules. But the results clearly depend on model and parameter assumptions so that the issue continues to stand as an empirical question.

Section IIC has also discussed the various forms of international cooperation such as strengthened comity-based agreements among national competition authorities, harmonization of national competition laws and the creation of a multilateral framework. Some have argued that multilateral rules and case law already provide scope for both the application and non-application of existing domestic competition laws of members to be challenged where de facto discrimination occurs between domestic and foreign products (Hoekman and Mavroidis, 1994). Hoekman and Mavroidis (2002) also argue that for developing countries, the presumed benefits of multilateral disciplines in competition policy can be more effectively secured from traditional liberalization commitments using existing WTO fora.

In any case, the sheer variety of regimes suggest that any effort at harmonization would be a difficult task. A rough taxonomy of competition regimes internationally classify them into five major categories (Levinsohn, 1996). If harmonization is to be attempted at all, chances of success will be higher if it focused on core principles. Current work in the WTO on competition policy has focused on core principles, including transparency, non-discrimination and procedural fairness, and provisions on hard core cartels.

(d) Information asymmetries, transparency and regulatory failure

The economics of information has been a dominant theme of theoretical analysis in economics in recent years. The focus on imperfections in markets for information to explain varying outcomes has proved a rich vein of analysis. The simple idea is that information concerning conditions in the market is often asymmetrically distributed among parties to a transaction, and in some cases, an appropriate policy intervention to lessen or eradicate the asymmetry may be beneficial. Many expressions that have found their way into every day parlance, such as moral hazard, adverse selection and the principal-agent problem are applications of information economics. Information asymmetry has proven useful in explaining various types of market behaviour including signalling (Spence, 1974), screening (Stiglitz, 1975) or credit rationing (Stiglitz and Weiss, 1981).

Some of these kinds of problems can occur in an international setting, and to the extent they do, may provide grounds for international cooperation. Once again, however, proper analysis is essential to determine the degree and nature of desirable international cooperation. Examples where each of these aspects of cooperation has appeal are to be found in earlier parts of the study.

Information asymmetry may exist between consumers who wish to purchase products of a specific quality and producers. One way in which producers of the quality product can overcome the asymmetry is to signal to consumers through the use of marks or geographical indications (Section IB.3). But legal protection for these marks only in national markets would not be sufficient to ensure that consumers are protected since commerce is increasingly globalized. Hence, international cooperation in intellectual property protection complements national protection of these marks and indications.

The amount of information asymmetry in financial markets also increases their susceptibility to contagion. The asymmetry exists between debtors and share-issuing enterprises on the one hand and creditors and shareholders on the other. Debtors and enterprises have greater knowledge about the riskiness of their investment projects than creditors and shareholders. While this asymmetry is certainly present within national financial markets, it can be more severe in the case of undeveloped and poorly regulated emerging markets.[202] The asymmetry means that international investors may treat all emerging markets as alike and it also creates a hair trigger sensitivity to financial or macroeconomic shocks.[203] Creditors' and shareholders' panicky reactions in the face of a shock cause an adverse chain reaction through several financial markets at once, producing contagion. International cooperation in increasing transparency in financial markets as well as coordinating appropriate responses to financial crises can help reduce the often huge economic losses that are incurred in these episodes.

Finally, action to improve policy transparency, including at the international level, offers a basis for more informed policy-making. The cost of doing business internationally – that is, transactions costs – can be reduced through regulatory coordination. In the field of standard-setting, harmonization in some areas can be a prior requirement for transactions even to take place. Similarly, a coordinated approach to standard-setting can reduce transactions costs. Examples where each of these aspects of cooperation has appeal are to be found in earlier parts of the study. In the financial field, coordination can reduce opportunities for regulatory arbitrage that undermines macroeconomic management at the national level.

(e) Supporting institution and capacity-building

"Trade, not aid" has been a catchphrase in recent debate, indicating that the two are seen as substitutes. The two are indeed substitutes in the sense that exports and aid are alternative sources of foreign exchange earnings that in turn can be used for importing goods and services. Aid can also affect trade in other more distorting ways. There is, for example, the possibility that donors are explicitly or implicitly given preferential access to the recipient's market.[204] In addition, aid transfers may have an impact on the recipient's exchange rate, causing it to appreciate and may thus have a negative impact on exporters' competitiveness. Finally, aid may allow a recipient to sustain trade deficits for long periods of time and thus may strengthen the import competing lobby relative to the export lobby. As discussed above, this may create less incentives for the government to pursue mutual exchange of market access.

202 The recent accounting scandals across both sides of the Atlantic show that even the most developed, transparent and regulated financial markets are not free from quite severe cases of information asymmetry.

203 See Calvo and Mendoza (2000).

204 Aid can be tied to purchasing project inputs from the donor country, or aid may generate preferences for the donor country's goods and services through goodwill, or tie-ins with suppliers that might extend to purchases beyond the donor-funded part of a project (see Djajić et al. (2004), for a recent discussion).

The discussion in this Report, however, has focused on areas where aid and trade are complementary. The discussion in Section IIB on the role of infrastructure in trade clearly points to the disadvantages poor infrastructure imposes on exporters. Furthermore, the increased relative importance of timeliness as a competitive factor has rendered poor infrastructure a more serious obstacle to participation in international exchange of goods and services than it was in the past. Many LDCs will need significant transfers from abroad in order to raise the quality of infrastructure to an adequate standard, and hence aid in this area would help in improving the recipient's supply response to trade liberalization. This might in turn strengthen the export lobby and create incentives for negotiating reciprocal concessions.

The insight that better economic and physical infrastructure enhances the supply response of trade reforms and economic incentives in general is not new and infrastructure has been a priority area for aid recipients and donors alike for decades. Yet, in many cases there is much left to be desired as far as the quality of infrastructure is concerned. The fact that development aid has not always had the intended impact has provoked a growing body of research. It has been pointed out that aid is often motivated by the donors' political considerations rather than the need of the recipient (Alesina and Dollar, 2000). Incentive problems have also been suggested as an explanation for poor results (e.g. Svensson, 2003). Another explanation that has received a lot of attention and which has arguably induced a shift in focus is the empirical finding that aid is effective when combined with good governance, but has no positive effect on economic growth in a setting of weak governance (Burnside and Dollar, 2000).[205] The shift in focus of development aid has therefore been in the direction of institution and capacity building, which has also been a priority in the DDA under the auspices of the WTO.

Section IID in this Report highlights the role of institutions in creating a conducive environment of security and trust which, in turn, lowers the cost of doing business in general and international trade in particular. Institution building has been an area of increased emphasis in the donor community and both sticks and carrots have been employed in order to promote good governance – rewarding countries with good governance or significant improvements in governance and withholding aid from governments that have shown little progress.

The WTO has worked with the World Bank, IMF, UNCTAD, UNDP and ITC within an integrated framework for trade-related technical assistance with the objective of building capacity in the policy area of trade. The Integrated Framework was introduced following the Ministerial Meeting in Singapore. Coherence was one of the main objectives in this initiative as it sought to "mainstream trade into national development plans," as for example in the Poverty Reduction Strategy Plans. These plans, in turn, may serve as a vehicle for coordination of domestic policies as well as donor support for various projects and programmes.

2. WHAT KIND OF INTERNATIONAL COOPERATION NURTURES POLICY COHERENCE?

(a) Differing degrees of cooperation

The previous subsection identified a range of circumstances that may give rise to a need for international cooperation in order to ensure policy coherence at the global and national level. But cooperation can be of varying degrees, with significant implications as to how far governments "tie their hands" through international agreements. At its lightest, cooperation might amount to little more than information exchange. Such exchanges may be more or less obligatory and may lead to additional layers of international commitment, often of a more binding nature.

[205] A recent paper (Easterly et al. 2003) casts doubt also on this result. It applies the same methodology as Burnside and Dollar but for a larger sample of aid recipients and for a longer timer period, and the result that aid was positively related to growth when interacted with the quality of institutions was not replicated in this study.

A second level entails consultation. Consultation will have features of comity, such that cooperating jurisdictions may agree on a good-faith basis to assist one another. This could be by fashioning policy responses in a particular manner in order to convenience a partner. Such arrangements can be found, for example, among certain countries that cooperate in the field of competition or anti-trust policy. These kinds of undertakings are unlikely to have legal force, but will nevertheless be adhered to if there is a shared perception of mutual benefit.

A third level of cooperation is coordination. In this case authorities agree at the international level to adopt particular policy stances considered to be mutually beneficial. Again, strong enforcement mechanisms are likely to be lacking. Finance ministers from large countries have sought to coordinate exchange rate policy from time to time, with varying degrees of success. Sustained coordination in this field requires that agreed targets or ranges for currency values are seen to be in the common interest, and that central banks are strong enough to carry out their objectives if the markets hold a contrary view as to the exchange rates that reflect underlying economic fundamentals.

Fourthly, international cooperation may entail legally binding obligations which are backed up by more or less effective enforcement mechanisms. The World Trade Organization is a good example of an expression of international cooperation that relies on strong enforcement mechanisms. As with the softer varieties of international obligation described above, commitments of this kind may deal either with rules about what governments cannot do, or they may be more positive in the sense of defining what governments must do. In the latter case, the rules are more likely to embody requirements that lead to harmonized policy.

(b) What degree of international cooperation is desirable for coherence?

This question cannot be answered simply, since situations will differ among countries and through time. Moreover, views as to what is desirable will vary across the political spectrum. The argument here, however, is that there can be too much as well as too little international cooperation on policy matters. Because the idea of cooperation carries intrinsic appeal, and the alternative might be thought of as uncooperative and therefore anti-social behaviour, it can be tempting to work from the implicit assumption that more international cooperation is always better than less. But coherence requires the right balance – international cooperation that is neither excessive nor excessively scarce.

We have already mentioned a number of considerations that make a case for international cooperation. Other factors may also be relevant to decisions about the optimal level of international cooperation to achieve policy coherence. One of these relates to the ability of intergovernmental institutions to manage policy at the international level. This was alluded to above. At least two requirements are indispensable. First, effective cooperation requires that adequate information is available to decision-makers. If information essential to well-informed decision-making does not filter up from the national context in the countries concerned, outcomes will be deficient. Secondly, international institutions need to have appropriate measures at their disposal and adequate enforcement means in order to act effectively.

A second factor influencing the desired level of international cooperation relates to the feasibility of seeking uniform solutions to shared problems when agreement is elusive and compromises suboptimal. Circumstances exist in which attempting to attain particular objectives against a background of dissension about the appropriate distribution of responsibility or burden-sharing will result in less effective action than would be the case under independent decision-making arrangements, even in the presence of international spillovers. This is a delicate issue because the optimal solution may well be constructive cooperation, but if this is unattainable, disengagement from efforts to establish international arrangements may be better than fruitless perseverance, at least in the short or medium term. Moreover, if a shared perception of the desirable terms of cooperation is lacking, persistent efforts to reach agreement may lead to coercive relationships or half-hearted acceptance, and ultimately to instability. Coherence that builds on international cooperation requires that the cooperation is voluntary and seen as being in the national interest.

A third consideration concerns transactions costs, but in a slightly different sense from that referred to above. While it is not difficult to see how cooperation across frontiers could facilitate mutually beneficial exchange in all sorts of ways, it may also be that the transactions costs implicit in the mechanics of international cooperation become sufficiently burdensome as to outweigh benefits from the activity. One hears anecdotally of occasional cooperative efforts among international agencies that are dismissed as time-wasting talk-shops. A more tempered analysis of this kind of problem would balance transactions costs with identifiable benefits. Where the balance is unfavourable, this is presumably because the activity is intrinsically not very helpful or because governments are simply unwilling to cooperate despite the advantages of doing so.

A final general observation concerns the idea that governments may sometimes seek to avoid responsibility and blame by transferring what should be a national policy discourse onto the international scene. Some policy challenges have their origins firmly rooted in a domestic setting and their solution can only be found in the same context. Blame- and responsibility-shifting behaviour in these circumstances will typically lead to a mis-specification of the true nature of a difficulty, and is unlikely to lead to beneficial international cooperation or a solution to an underlying problem.

3. THE CASE OF THE WTO: INTERNATIONAL COOPERATION AND POLICY COHERENCE

This subsection briefly considers the place of the WTO in international governance. The WTO has five core functions.[206] Essentially, these are to provide a set of rules for the conduct of international trade, a forum for negotiating trade liberalization, a dispute settlement system, transparency and greater coherence in global economic policy-making. In all these functions, the WTO can be regarded as an international public good. Governments share an interest in having created and now preserving the system. Staiger (2004) argues that the WTO manifests the characteristics of an international public good[207] in terms of governments' willingness to establish and maintain the institution. According to Staiger, the public good aspect of the WTO resides largely in its contribution to the elimination of a terms of trade prisoners' dilemma, as discussed above. Without a forum to negotiate mutually advantageous tariff reductions and related trade agreements, the argument goes, terms-of-trade considerations would lead to lesser levels of mutually beneficial trade liberalization.

Although it seems clear that the WTO possesses many international public good characteristics, this does not mean that governments agree on such fundamental issues as the appropriate mix of reciprocal tariff reductions in a market access negotiation or the precise content of rules to which governments should submit. Nor do they necessarily agree that the working methods of the institution are sufficiently developed to allow full participation and an effective voice for all parties. These differences have to be ironed out in negotiations.

It is interesting that while Staiger sees the establishment and maintenance of the system as an investment by governments in a public good, he suggests that when governments utilize the system, they are exercising private rights – for example, when Members get together bilaterally and agree on tariff reductions which they later extend to their trading partners through the most-favoured-nation (MFN) principle. A similar argument might be made when governments are negotiating around their differences with respect to the content of rules under the system or the working procedures of the institution. This pursuit of private interests within an institution that supplies public goods is viable as long as outcomes are not such as to negate the value of the institution as a public good in the eyes of Member governments. If this does happen, the system is likely to fail over time as a shared commitment to its maintenance falls away. In simpler parlance, the system only works if all members believe there is something in it for them, and consider the absence of a multilateral agreement an inferior state of affairs.

206 Article III of the Marrakesh Agreement Establishing the World Trade Organization.

207 In other words, the WTO in this context is supported because it commits governments jointly to provide the institutional machinery for mutually beneficial multilateral trading arrangements.

An additional dimension of this distinction between the defence of an international public good and the pursuit of private (national) interests relates to negotiations on the coverage of the system and the use of trade measures for what are essentially non-trade objectives. These are two separate but related questions. Recent experience has amply demonstrated that WTO Members have different views about the desirability of international rule-making in the WTO in areas such as investment, competition policy and transparency in government procurement. Thus for some, international cooperation has not gone far enough. For others, it would go too far if these issues were included in further rule-making activities. It is not the intention here to venture a view on the merits of these positions, but rather to point to this debate as an illustration of important differences of perception as to the degree to which policy coherence requires international cooperation. Solving these differences over time would appear to be a pre-requisite for the effective functioning of the trading system.

Secondly, trade measures carry a particular attraction in international economic relations as an instrument of enforcement of international obligations and, perhaps, of persuasion in situations where views differ as to the nature of appropriate international obligations. Again, without venturing into an analysis that would attempt to determine whether particular international agreements are desirable, or whether the WTO would be the right place for such agreements, a point should be made about the systemic implications of how cooperation is defined. If the WTO were to become a place where trade measures could be taken by members on the basis of unshared definitions of permissible policy behaviour, the system would be destabilized. International cooperation can only lead to coherent policy outcomes in the WTO and elsewhere, including in terms of enforcement, if it is based on a pre-commitment to rules by all the parties involved. Once that pre-commitment to a shared policy standard and obligation has been secured, the question whether trade measures are used as an instrument of enforcement, or whether agreements are struck in the WTO or elsewhere, become much less important and less system-threatening.

F CONCLUSION

The foregoing discussion has identified a range of issues that affect the degree to which trade policy can contribute effectively to growth and development. Macroeconomic policies, management of infrastructure and infrastructural services, policies affecting the structure and functioning of markets in the domestic economy, and effective governance on the basis of sound institutions are all shown to be crucial elements in determining the contribution of trade policies to economic and social progress. The study does not pretend to define exhaustively the perfect policy setting for progress, but it is clear from our treatment of selected topics that relationships among different areas of economic management are close and complex. It is also clear that the causality underlying these relationships is not uni-directional – sometimes poor policy in one area can frustrate the benefits of open trade, and at other times, precipitate or poorly sequenced trade reform can adversely affect outcomes in related areas of activity. The art of good policy-making requires an understanding of the extent to which economies are "linked-up", and therefore of the importance of an integrated and coherent policy mix. The study has also examined the question of how far international cooperation is necessary for coherence. Coherence in this broad sense has two important dimensions – the design and content of mutually supportive policies is crucial to the outcome, and so is effective implementation. In both these dimensions, the capacity of different authorities to work effectively together will play a fundamental role.

Appendix Table 1
Final MFN bound tariff profiles of WTO Members
(Percentage)

Import markets	Binding coverage			Simple average			Share of duty-free HS subheadings			Share of non *ad valorem* duties			*Maximum ad valorem* duty			Share of national peak duties		
	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr
Albania	100.0	100.0	100.0	7.0	9.4	6.6	26.1	10.9	28.4	0.0	0.0	0.0	20	20	20	0.0	0.0	10.1
Angola	100.0	100.0	100.0	59.2	52.8	60.1	0.0	0.0	0.0	0.0	0.0	0.0	80	55	80	0.0	0.0	0.0
Antigua and Barbuda	97.9	99.9	97.6	58.7	105.1	51.4	0.0	0.0	0.0	0.0	0.0	0.0	220	220	206	0.2	0.0	0.1
Argentina	100.0	100.0	100.0	31.9	32.6	31.8	0.0	0.1	0.0	0.0	0.0	0.0	35	35	35	0.0	0.0	0.0
Armenia	100.0	100.0	100.0	8.5	14.7	7.5	34.2	1.2	39.2	0.0	0.0	0.0	15	15	15	0.0	0.0	0.0
Australia	97.0	100.0	96.5	9.9	3.2	11.0	19.8	32.2	17.8	0.4	2.1	0.1	55	29	55	6.1	8.9	6.6
Bahrain	74.8	100.0	71.0	35.5	37.5	35.1	0.0	0.0	0.0	0.0	0.0	0.0	200	200	100	0.2	1.3	0.0
Bangladesh	15.8	100.0	3.0	163.8	188.5	35.7	0.1	0.0	0.8	0.0	0.0	0.0	200	200	200	0.0	0.0	3.1
Barbados	97.9	100.0	97.6	78.1	111.2	73.0	0.0	0.0	0.0	0.0	0.0	0.0	247	223	247	0.4	0.0	0.4
Belize	98.0	100.0	97.7	58.2	101.4	51.5	0.0	0.0	0.0	0.0	0.0	0.0	110	110	110	0.0	0.0	0.0
Benin	39.4	100.0	30.1	28.3	61.8	11.4	1.4	0.0	2.1	0.0	0.0	0.0	100	100	60	2.2	0.0	4.6
Bolivia	100.0	100.0	100.0	40.0	40.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	40	40	40	0.0	0.0	0.0
Botswana	96.5	99.5	96.0	18.8	37.5	15.8	15.0	21.8	13.9	0.0	0.0	0.0	597	597	60	2.6	2.4	2.7
Brazil	100.0	100.0	100.0	31.4	35.5	30.8	0.6	2.2	0.3	0.0	0.0	0.0	85	55	85	0.0	0.0	0.0
Brunei Darussalam	95.3	97.6	95.0	24.3	23.2	24.5	0.0	0.0	0.0	0.3	2.4	0.0	50	50	50	0.0	0.0	0.0
Bulgaria	100.0	100.0	100.0	24.5	35.6	23.0	4.0	4.6	3.9	2.1	15.7	0.0	98	98	40	1.3	0.0	0.0
Burkina Faso	39.2	100.0	29.9	41.9	98.1	13.2	1.4	0.0	2.1	0.0	0.0	0.0	100	100	100	0.0	0.0	4.0
Burundi	21.8	100.0	9.9	68.3	95.1	26.8	3.0	2.5	3.7	0.0	0.0	0.0	100	100	100	0.0	0.0	13.9
Cameroon	13.3	100.0	0.1	79.9	80.0	57.5	0.0	0.0	0.0	0.0	0.0	0.0	80	80	80	0.0	0.0	0.0
Canada	99.7	100.0	99.7	5.1	*3.5*	5.3	31.1	41.8	29.5	3.8	26.0	0.4	238	*238*	20	6.1	*6.4*	6.5
Central African Rep.	62.5	100.0	56.8	36.2	30.0	37.9	0.0	0.0	0.0	0.0	0.0	0.0	70	30	70	0.0	0.0	0.0
Chad	13.5	100.0	0.3	79.9	80.0	75.4	0.0	0.0	0.0	0.0	0.0	0.0	80	80	80	0.0	0.0	0.0
Chile	100.0	100.0	100.0	25.1	26.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	98	98	25	0.1	0.6	0.0
China	100.0	100.0	100.0	10.0	15.8	9.1	5.8	2.8	6.2	0.0	0.0	0.0	65	65	50	1.3	3.1	1.3
Colombia	100.0	100.0	100.0	42.9	91.9	35.4	0.0	0.0	0.0	0.0	0.0	0.0	227	227	104	2.2	0.0	0.0
Congo	16.0	100.0	3.2	27.5	30.0	15.2	0.0	0.0	0.0	0.0	0.0	0.0	30	30	30	0.0	0.0	0.0
Costa Rica	100.0	100.0	100.0	42.8	42.5	42.9	1.9	0.0	2.2	0.0	0.0	0.0	233	233	100	0.1	0.9	0.0
Côte d'Ivoire	33.1	100.0	22.9	11.1	14.9	8.6	1.8	0.1	2.9	0.0	0.0	0.0	64	64	25	0.4	0.9	0.0
Croatia	100.0	100.0	100.0	6.0	9.4	5.5	25.0	15.1	26.5	2.4	18.3	0.0	55	55	25	1.9	5.2	0.3
Cuba	30.9	100.0	20.4	21.3	37.0	9.5	6.8	4.6	8.4	0.0	0.0	0.0	62	40	62	0.0	0.0	3.2

Note: Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty. See Technical Notes for calculation methodology.
Source: WTO - IDB.

Import markets	Binding coverage			Simple average			Share of duty-free HS subheadings			Share of non *ad valorem* duties			*Maximum ad valorem* duty			Share of national peak duties		
	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr
Cyprus	85.9	99.6	83.9	40.4	*58.8*	38.6	2.2	0.0	2.6	7.4	47.9	0.0	245	*245*	50	0.1	*0.3*	0.0
Czech Republic	100.0	100.0	100.0	5.0	10.0	4.2	18.7	38.7	15.7	0.0	0.0	0.0	125	125	29	3.5	8.4	1.8
Dem. Rep. of Congo	100.0	100.0	100.0	96.2	98.2	95.9	0.0	0.0	0.0	0.0	0.0	0.0	100	100	100	0.0	0.0	0.0
Djibouti	100.0	100.0	100.0	40.9	47.3	39.9	0.1	0.3	0.0	0.0	0.0	0.0	450	450	200	0.5	3.2	0.0
Dominica	94.8	100.0	94.0	58.7	112.2	50.0	0.0	0.0	0.0	0.0	0.0	0.0	150	150	100	0.0	0.0	0.0
Dominican Republic	100.0	100.0	100.0	34.9	39.6	34.2	0.0	0.0	0.0	0.0	0.0	0.0	99	99	40	0.0	0.0	0.0
Ecuador	99.8	99.8	99.8	21.7	25.5	21.1	0.0	0.0	0.0	0.0	0.0	0.0	86	86	40	0.2	0.6	0.0
Egypt	98.8	99.7	98.7	37.2	95.3	28.3	0.0	0.0	0.0	0.2	1.3	0.0	3000	3000	160	0.4	2.2	0.1
El Salvador	100.0	100.0	100.0	36.6	42.1	35.7	2.1	0.0	2.4	0.0	0.0	0.0	164	164	80	0.2	1.2	0.0
Estonia	100.0	100.0	100.0	8.6	17.5	7.3	18.3	17.0	18.5	0.0	0.0	0.0	59	59	30	3.5	0.4	0.8
European Union	100.0	100.0	100.0	4.1	*5.8*	3.9	24.3	26.7	23.9	6.0	40.8	0.7	75	*75*	26	3.1	*5.2*	7.1
Fiji	52.3	100.0	45.0	40.1	40.4	40.0	0.0	0.0	0.0	0.6	2.4	0.0	70	70	40	0.0	0.0	0.0
FYR of Macedonia	100.0	100.0	100.0	6.9	11.3	6.2	35.9	34.0	36.2	1.4	10.0	0.1	60	60	25	3.2	9.7	2.3
Gabon	100.0	100.0	100.0	21.4	60.0	15.5	0.0	0.0	0.0	0.0	0.0	0.0	60	60	60	0.0	0.0	1.1
Gambia	13.7	100.0	0.5	102.0	103.5	58.3	0.0	0.0	0.0	0.0	0.0	0.0	110	110	110	0.0	0.0	0.0
Georgia	100.0	100.0	100.0	7.2	11.7	6.5	21.6	8.3	23.6	0.3	2.5	0.0	30	30	20	0.5	0.0	0.3
Ghana	14.3	100.0	1.2	92.5	97.1	35.9	0.0	0.0	0.0	0.0	0.0	0.0	99	99	99	0.0	0.0	0.0
Grenada	100.0	100.0	100.0	56.8	101.0	50.0	0.3	1.9	0.0	0.0	0.0	0.0	200	200	100	0.6	0.0	0.0
Guatemala	100.0	100.0	100.0	42.3	51.6	40.8	0.0	0.0	0.0	0.0	0.0	0.0	257	257	75	0.6	4.0	0.0
Guinea	38.9	100.0	29.6	20.1	39.7	10.0	1.5	0.0	2.2	0.0	0.0	0.0	75	75	40	0.3	0.0	0.6
Guinea Bissau	97.7	100.0	97.4	48.6	40.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	50	40	50	0.0	0.0	0.0
Guyana	100.0	100.0	100.0	56.7	100.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	100	100	100	0.0	0.0	0.0
Haiti	89.2	100.0	87.6	17.6	21.7	16.9	5.5	15.2	3.8	10.9	11.1	10.9	70	70	40	0.0	0.3	0.0
Honduras	100.0	100.0	100.0	32.6	32.3	32.6	0.0	0.0	0.0	0.0	0.0	0.0	60	60	55	0.0	0.0	0.0
Hong Kong, China	45.7	100.0	37.5	0.0	0.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0
Hungary	96.4	100.0	95.8	9.7	27.0	6.9	9.4	7.7	9.7	0.0	0.0	0.0	128	128	68	6.7	1.0	1.2
Iceland	95.0	100.0	94.2	13.4	*43.4*	9.6	39.2	18.6	42.6	3.4	24.5	0.0	229	*229*	175	4.7	*1.8*	7.8
India	73.8	100.0	69.8	49.8	114.5	34.3	2.9	0.0	3.5	7.2	0.3	8.8	300	300	150	6.5	0.0	0.2
Indonesia	96.6	100.0	96.1	37.1	47.0	35.6	2.0	0.0	2.3	0.1	0.4	0.0	210	210	150	0.5	2.8	0.0
Israel	76.4	98.5	73.0	20.8	73.0	9.2	11.8	2.8	13.7	9.9	0.3	11.8	560	560	170	9.0	2.8	4.8
Jamaica	100.0	100.0	100.0	49.8	97.4	42.5	0.6	1.9	0.4	0.0	0.3	0.0	100	100	100	0.0	0.0	0.0
Japan	99.6	100.0	99.5	2.9	*6.9*	2.3	53.6	28.7	57.4	6.2	22.7	3.6	62	*62*	30	8.5	*8.4*	10.4
Jordan	100.0	100.0	100.0	16.3	23.7	15.2	5.6	0.9	6.3	0.2	1.0	0.0	200	200	30	0.5	3.5	0.0
Kenya	14.6	100.0	1.6	95.7	100.0	54.8	0.0	0.0	0.0	0.0	0.0	0.0	100	100	100	0.0	0.0	0.0
Korea, Rep. of	94.4	99.1	93.7	16.1	52.9	10.2	14.2	2.2	16.1	0.7	4.8	0.1	887	887	80	2.5	6.7	3.8

Note: Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty. See Technical Notes for calculation methodology.
Source: WTO - IDB.

Appendix Table 1
Final MFN bound tariff profiles of WTO Members (cont'd)
(Percentage)

Import markets	Binding coverage			Simple average			Share of duty-free HS subheadings			Share of non *ad valorem* duties			*Maximum ad valorem* duty			Share of national peak duties		
	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr
Kuwait	100.0	100.0	100.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100	100	100	0.0	0.0	0.0
Kyrgyz Republic	99.9	100.0	99.9	7.4	12.3	6.7	19.7	1.2	22.5	0.5	2.4	0.2	30	30	20	0.0	0.0	0.0
Latvia	100.0	100.0	100.0	12.7	34.6	9.4	14.3	2.1	16.1	0.1	0.4	0.0	55	55	55	8.6	0.0	1.5
Lesotho	100.0	100.0	100.0	78.6	200.0	60.0	0.0	0.0	0.0	0.0	0.0	0.0	200	200	200	0.0	0.0	0.0
Lithuania	100.0	100.0	100.0	9.3	15.2	8.4	22.5	9.7	24.5	0.4	3.0	0.0	100	100	30	2.2	4.1	0.3
Macao, China	26.8	100.0	15.6	0.0	0.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0
Madagascar	29.7	100.0	18.9	27.4	30.0	25.3	0.1	0.0	0.2	0.0	0.0	0.0	30	30	30	0.0	0.0	0.0
Malawi	31.2	100.0	20.7	76.1	121.7	42.4	0.0	0.0	0.0	0.0	0.0	0.0	125	125	125	0.0	0.0	0.0
Malaysia	83.7	99.9	81.2	14.5	*12.2*	14.9	6.2	12.1	5.1	4.5	27.4	0.2	168	*168*	40	0.6	*4.1*	0.0
Maldives	97.1	100.0	96.7	36.9	48.0	35.1	0.0	0.0	0.0	0.0	0.0	0.0	300	300	300	2.6	6.9	1.9
Mali	40.6	100.0	31.6	28.8	59.2	14.2	1.3	0.0	2.0	0.0	0.0	0.0	75	75	60	0.0	0.0	9.1
Malta	97.2	100.0	96.8	48.3	*34.3*	49.1	0.3	2.2	0.0	8.9	64.8	0.0	88	*88*	88	0.0	*0.0*	0.0
Mauritania	39.3	100.0	30.1	19.6	37.7	10.5	1.4	0.0	2.1	0.0	0.0	0.0	75	75	75	3.8	0.0	0.2
Mauritius	17.9	100.0	5.3	93.8	119.6	19.5	18.2	0.0	70.3	0.0	0.0	0.0	122	122	122	0.0	0.0	29.7
Mexico	100.0	100.0	100.0	34.9	35.1	34.9	0.2	0.3	0.2	1.0	7.5	0.0	72	72	50	0.0	0.0	0.0
Moldova	100.0	99.9	100.0	6.7	12.2	6.0	22.6	3.0	25.6	1.1	8.3	0.0	25	25	20	0.0	0.0	0.1
Mongolia	100.0	100.0	100.0	17.6	18.9	17.3	1.5	0.7	1.6	0.0	0.0	0.0	75	75	30	0.0	0.3	0.0
Morocco	100.0	100.0	100.0	41.3	54.5	39.2	0.0	0.0	0.0	0.0	0.0	0.0	289	289	45	1.4	6.6	0.0
Mozambique	13.6	100.0	0.5	97.5	100.0	11.3	0.0	0.0	0.0	0.0	0.0	0.0	100	100	100	0.0	0.0	5.0
Myanmar	17.3	100.0	4.7	83.6	102.8	22.3	5.4	0.6	21.0	0.5	0.6	0.0	550	550	550	2.7	3.4	1.4
Namibia	96.5	99.5	96.0	19.1	39.8	15.8	15.1	22.4	13.9	0.0	0.0	0.0	597	597	60	3.1	1.5	2.7
New Zealand	99.9	100.0	99.9	10.3	5.7	11.0	42.5	51.3	41.1	4.1	0.7	4.6	55	35	55	5.4	8.3	5.9
Nicaragua	100.0	100.0	100.0	41.7	43.5	41.5	0.0	0.0	0.0	0.0	0.0	0.0	200	200	100	0.1	0.6	0.0
Niger	96.8	100.0	96.3	44.3	83.1	38.1	0.6	0.0	0.7	0.0	0.0	0.0	200	200	200	3.1	0.0	0.0
Nigeria	19.3	100.0	6.9	118.4	150.0	48.8	0.0	0.0	0.0	0.0	0.0	0.0	150	150	150	0.0	0.0	0.3
Norway	100.0	100.0	100.0	3.0	*1.2*	3.1	42.3	21.4	45.5	12.2	75.2	2.5	26	*26*	14	11.1	*5.0*	12.1
Oman	100.0	100.0	100.0	13.8	28.0	11.6	3.6	0.0	4.1	0.0	0.0	0.0	200	200	20	1.5	7.5	0.0
Pakistan	44.3	92.6	37.0	52.4	97.1	35.3	0.0	0.0	0.0	0.0	0.0	0.0	200	200	100	0.0	0.0	0.0
Panama	99.9	99.8	99.9	23.5	27.7	22.9	2.0	0.3	2.2	0.0	0.0	0.0	260	260	81	0.3	1.7	0.0
Papua New Guinea	100.0	100.0	100.0	31.8	43.2	30.1	0.0	0.0	0.0	0.9	6.4	0.1	100	100	100	0.4	0.0	0.3

Note: Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty. See Technical Notes for calculation methodology.
Source: WTO - IDB.

Import markets	Binding coverage			Simple average			Share of duty-free HS subheadings			Share of non *ad valorem* duties			*Maximum ad valorem* duty			Share of national peak duties		
	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr
Paraguay	100.0	100.0	100.0	33.5	33.2	33.6	0.0	0.0	0.0	0.0	0.0	0.0	35	35	35	0.0	0.0	0.0
Peru	100.0	100.0	100.0	30.1	30.8	30.0	0.0	0.0	0.0	0.0	0.0	0.0	68	68	30	0.0	0.0	0.0
Philippines	66.8	99.4	61.8	25.6	34.7	23.4	3.0	0.0	3.8	0.0	0.0	0.0	80	80	50	0.1	0.0	0.0
Poland	96.2	99.9	95.7	11.8	*32.9*	9.6	4.2	2.3	4.5	5.0	36.5	0.0	230	*230*	38	2.7	*2.9*	0.0
Qatar	100.0	100.0	100.0	16.0	25.7	14.5	0.9	0.0	1.1	0.0	0.0	0.0	200	200	200	0.8	5.6	0.0
Romania	100.0	100.0	100.0	40.4	98.4	31.6	0.4	0.1	0.5	0.0	0.0	0.0	333	333	220	4.3	3.4	0.0
Rwanda	100.0	100.0	100.0	89.5	74.3	91.8	0.8	3.0	0.5	0.0	0.0	0.0	100	80	100	0.0	0.0	0.0
Saint Kitts and Nevis	97.9	100.0	97.6	75.9	108.7	70.8	0.0	0.0	0.0	0.0	0.0	0.0	250	250	170	0.1	0.0	0.0
Saint Lucia	99.6	100.0	99.5	61.9	114.6	53.9	0.0	0.0	0.0	0.0	0.0	0.0	250	250	206	0.2	0.0	0.5
St. Vincent & Grenadines	99.7	100.0	99.7	62.5	114.6	54.6	0.0	0.0	0.0	0.0	0.0	0.0	250	250	206	0.2	0.0	0.5
Senegal	100.0	100.0	100.0	30.0	29.8	30.0	0.0	0.0	0.0	0.0	0.0	0.0	30	30	30	0.0	0.0	0.0
Sierra Leone	100.0	100.0	100.0	47.4	40.3	48.5	0.0	0.0	0.0	0.0	0.0	0.0	80	80	80	0.0	0.0	0.0
Singapore	69.2	100.0	64.5	6.9	9.5	6.3	22.4	3.1	26.9	0.7	3.8	0.0	10	10	10	0.0	0.0	0.0
Slovak Republic	100.0	100.0	100.0	5.0	10.0	4.2	18.7	38.7	15.7	0.0	0.0	0.0	125	125	29	3.5	8.4	1.8
Slovenia	100.0	100.0	100.0	23.7	23.3	23.7	2.2	0.6	2.4	1.8	13.3	0.1	45	45	27	0.0	0.0	0.0
Solomon Islands	100.0	100.0	100.0	78.8	70.7	80.0	0.0	0.0	0.0	1.4	3.4	1.1	150	150	120	0.0	0.0	0.0
South Africa	96.5	99.5	96.0	19.1	39.8	15.8	15.1	22.4	13.9	0.0	0.0	0.0	597	597	60	3.1	1.5	2.7
Sri Lanka	37.8	100.0	28.3	29.8	49.7	19.3	0.5	0.0	0.7	1.7	2.7	1.1	100	60	100	0.1	0.0	1.6
Suriname	26.3	100.0	15.1	18.5	19.9	17.0	3.0	0.0	6.0	0.1	0.0	0.1	40	20	40	0.0	0.0	0.0
Swaziland	96.5	99.5	96.0	19.1	39.8	15.8	15.1	22.4	13.9	0.0	0.0	0.0	597	597	60	3.1	1.5	2.7
Switzerland	99.8	100.0	99.7	*0.0*	*0.0*	*0.0*	15.1	17.4	14.8	84.9	82.6	85.2	*0*	*0*	*0*	*0.0*	*0.0*	*0.0*
Taipei, Chinese	100.0	100.0	100.0	6.1	15.3	4.8	28.4	24.5	29.0	2.3	11.1	0.9	500	500	90	4.9	3.8	2.4
Tanzania	13.3	99.8	0.1	120.0	120.0	120.0	0.0	0.0	0.0	0.0	0.0	0.0	120	120	120	0.0	0.0	0.0
Thailand	74.7	100.0	70.9	*25.7*	*35.5*	*24.2*	3.0	0.7	3.5	25.4	45.5	21.1	*226*	*226*	*80*	*1.2*	*2.1*	*0.5*
Togo	14.0	100.0	0.9	80.0	80.0	80.0	0.0	0.0	0.0	0.0	0.0	0.0	80	80	80	0.0	0.0	0.0
Trinidad and Tobago	100.0	100.0	100.0	55.7	90.2	50.5	1.4	4.9	0.9	0.0	0.0	0.0	156	156	100	0.0	0.0	0.0
Tunisia	57.4	98.8	51.1	57.8	116.0	40.6	0.0	0.0	0.0	0.0	0.0	0.0	200	200	180	1.9	0.0	0.1
Turkey	47.3	100.0	39.3	29.4	60.2	17.5	5.4	0.0	7.5	0.0	0.0	0.0	225	225	102	5.6	4.6	1.7
Uganda	15.8	100.0	3.0	73.3	77.7	50.8	0.0	0.0	0.0	0.0	0.0	0.0	80	80	80	0.0	0.0	0.0
United Arab Emirates	100.0	100.0	100.0	14.7	25.4	13.1	0.9	0.0	1.1	0.0	0.0	0.0	200	200	15	0.7	5.6	0.0
United States	100.0	100.0	100.0	3.6	*6.9*	3.2	37.2	28.7	38.5	10.8	49.6	4.8	350	*350*	48	7.1	*1.9*	8.2
Uruguay	100.0	100.0	100.0	31.7	33.9	31.3	0.0	0.0	0.0	0.0	0.0	0.0	55	55	35	0.0	0.0	0.0
Venezuela	99.9	99.0	100.0	36.8	55.7	33.9	0.0	0.0	0.0	0.0	0.0	0.0	135	135	40	1.9	0.0	0.0
Zambia	16.8	100.0	4.1	106.4	123.3	42.7	0.0	0.0	0.0	0.0	0.0	0.0	125	125	125	0.0	0.0	0.0
Zimbabwe	21.0	100.0	9.0	94.1	143.4	11.0	7.5	1.2	18.3	2.5	2.8	2.0	150	150	150	0.0	0.0	5.3

Note: Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty. See Technical Notes for calculation methodology.
Source: WTO - IDB.

Appendix Table 2
MFN applied tariff profiles
(Percentage)

Import markets	Year	Simple average			Share of duty-free HS subheadings			Share of non *ad valorem* duties			Maximum *ad valorem* duty			Share of national peak duties		
		All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr
Albania	2001	7.5	9.0	7.2	1.0	0.0	1.1	0.0	0.0	0.0	15	15	15	0.0	0.0	0.0
Algeria *	2003	18.7	23.4	18.0	1.7	0.2	1.9	0.0	0.0	0.0	30	30	30	0.0	0.0	0.0
Angola *	2002	8.8	9.7	8.7	0.0	0.0	0.0	1.3	0.4	1.4	35	35	35	5.7	9.3	5.2
Antigua and Barbuda *	2003	9.6	14.7	8.8	11.1	21.0	9.2	2.8	0.7	3.2	70	45	70	4.0	16.4	1.6
Argentina *	2003	14.2	10.3	14.8	6.4	8.1	6.2	0.0	0.0	0.0	35	20	35	0.0	0.0	0.0
Armenia *	2001	3.0	7.2	2.3	70.3	27.9	76.8	0.0	0.0	0.0	10	10	10	29.7	72.1	23.2
Australia *	2003	4.2	1.1	4.6	45.7	69.5	42.1	2.4	8.0	1.6	25	5	25	11.3	0.0	12.9
Azerbaijan *	2002	8.7	*12.7*	8.1	1.1	0.1	1.4	8.1	21.7	4.3	35	*35*	22	0.0	*0.0*	0.0
Bahamas	2002	30.5	24.3	31.5	5.9	17.1	4.2	0.1	0.1	0.1	210	210	100	0.3	0.4	0.3
Bahrain *	2001	7.8	9.0	7.6	3.1	7.2	2.2	0.1	0.7	0.0	125	125	50	0.6	3.2	0.1
Bangladesh *	2003	19.5	21.7	19.2	7.2	9.0	6.9	0.0	0.0	0.0	33	33	33	0.0	0.0	0.0
Barbados *	2003	13.1	33.0	10.2	0.0	0.0	0.0	3.8	8.5	2.9	243	243	145	3.3	12.1	1.6
Belarus	2001	10.0	*9.0*	10.1	0.7	1.2	0.6	11.9	23.2	10.1	25	*25*	25	0.0	*0.0*	0.0
Belize *	2003	10.5	17.8	9.4	9.3	12.2	8.7	0.3	1.4	0.0	91	91	70	8.1	28.1	4.2
Benin *	2003	12.0	14.5	11.6	1.3	0.0	1.5	0.0	0.0	0.0	20	20	20	0.0	0.0	0.0
Bermuda *	2001	17.5	7.9	18.9	5.1	18.0	3.1	0.6	3.1	0.3	75	34	75	0.2	0.0	0.2
Bhutan *	2002	16.6	20.1	16.1	7.0	14.7	5.8	0.0	0.0	0.0	100	100	30	0.5	3.9	0.0
Bolivia	2002	9.4	10.0	9.3	3.9	0.0	4.5	0.1	0.0	0.1	10	10	10	0.0	0.0	0.0
Bosnia and Herzegovina *	2001	6.0	4.9	6.2	27.3	31.0	26.8	0.0	0.0	0.0	15	15	15	0.0	0.0	0.0
Botswana	2002	5.8	9.1	5.3	50.7	40.4	52.3	14.4	13.3	14.6	55	55	43	11.2	5.8	10.4
Brazil	2002	13.8	11.7	14.1	2.6	2.6	2.6	0.0	0.0	0.0	55	55	35	0.0	0.3	0.0
Brunei Darussalam	2001	2.6	0.0	3.0	77.1	94.7	74.4	0.8	4.7	0.2	200	30	200	13.7	0.6	15.7
Bulgaria	2003	9.9	18.1	8.8	12.6	15.8	12.1	1.4	10.6	0.0	75	75	27	2.7	2.3	0.1
Burkina Faso *	2003	12.0	14.5	11.6	1.3	0.0	1.5	0.0	0.0	0.0	20	20	20	0.0	0.0	0.0
Burundi	2002	30.8	55.2	27.1	0.0	0.0	0.0	0.2	0.6	0.1	100	100	100	11.9	0.0	8.2
Cambodia *	2002	16.4	19.7	15.9	4.2	3.3	4.4	0.2	0.1	0.2	120	50	120	0.2	0.0	0.2
Cameroon	2001	18.0	22.0	17.5	0.6	0.0	0.7	0.1	0.6	0.0	30	30	30	0.0	0.0	0.0
Canada	2002	4.1	*3.1*	4.2	39.9	49.6	38.5	2.9	20.1	0.3	238	*238*	25	9.5	*8.0*	10.2
Central African Rep. *	2002	18.0	22.3	17.4	0.6	0.0	0.7	0.1	0.5	0.0	30	30	30	0.0	0.0	0.0
Chad *	2002	18.0	22.3	17.4	0.6	0.0	0.7	0.1	0.5	0.0	30	30	30	0.0	0.0	0.0

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. Cut off date: 26/03/2004.
Source: WTO - IDB and UNCTAD.

Import markets	Year	Simple average			Share of duty-free HS subheadings			Share of non ad valorem duties			Maximum ad valorem duty			Share of national peak duties		
		All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr
Chile	2003	6.0	6.0	5.9	0.7	0.0	0.8	0.0	0.0	0.0	6	6	6	0.0	0.0	0.0
China	2002	12.4	19.2	11.3	3.2	2.5	3.3	0.5	0.6	0.5	71	71	51	1.6	2.6	0.9
Colombia	2003	12.3	14.9	11.9	1.1	0.0	1.3	0.0	0.0	0.0	35	20	35	0.0	0.0	0.0
Congo *	2002	18.0	22.3	17.4	0.6	0.0	0.7	0.1	0.5	0.0	30	30	30	0.0	0.0	0.0
Costa Rica	2001	5.5	12.0	4.6	48.5	23.2	52.3	0.0	0.0	0.0	154	154	48	1.3	7.8	17.6
Côte d'Ivoire	2002	12.0	13.9	11.7	1.3	0.0	1.5	0.2	0.0	0.2	20	20	20	0.0	0.0	0.0
Croatia	2002	4.9	10.0	4.3	45.3	18.8	49.3	2.5	18.7	0.0	64	64	33	6.1	6.2	7.6
Cuba	2003	10.9	10.9	10.9	5.8	9.0	5.3	0.0	0.0	0.0	30	30	30	0.0	0.0	0.0
Cyprus	2002	6.2	*20.5*	4.6	18.4	25.5	17.3	4.8	35.6	0.1	261	*261*	100	4.7	*8.0*	1.9
Czech Republic	2003	4.9	10.0	4.1	20.2	40.2	17.1	0.0	0.0	0.0	125	125	29	3.7	9.0	1.6
Dem. Rep. of Congo *	2003	12.0	13.1	11.9	0.0	0.0	0.0	0.5	0.4	0.5	30	20	30	0.0	0.0	0.0
Djibouti *	2002	31.0	20.4	32.6	1.4	9.6	0.1	2.7	2.1	2.8	40	40	40	0.0	0.0	0.0
Dominica *	2003	9.9	19.8	8.4	22.4	23.5	22.2	0.0	0.0	0.0	165	148	165	7.3	30.1	2.9
Dominican Republic	2002	8.5	13.0	7.8	13.6	16.8	13.1	0.0	0.0	0.0	40	40	25	0.4	2.8	0.0
Ecuador	2002	11.9	14.7	11.5	2.3	1.4	2.4	0.0	0.0	0.0	35	20	35	0.0	0.0	0.0
Egypt *	2002	19.9	22.8	19.4	0.5	0.0	0.6	10.6	0.8	12.1	600	600	135	0.7	2.2	0.4
El Salvador *	2002	6.9	10.8	6.3	47.8	24.6	51.9	0.0	0.0	0.0	40	40	30	5.9	7.9	5.6
Equatorial Guinea *	2002	18.0	22.3	17.4	0.6	0.0	0.7	0.1	0.5	0.0	30	30	30	0.0	0.0	0.0
Estonia	2002	1.7	12.2	0.1	93.5	52.8	99.7	0.0	0.0	0.0	59	59	25	6.1	8.7	0.3
Ethiopia *	2002	18.8	22.4	18.3	3.1	0.0	3.6	0.1	0.3	0.1	40	40	40	0.0	0.0	0.0
European Union	2004	4.2	*5.9*	4.0	24.3	25.9	24.0	5.9	39.9	0.7	75	*75*	26	3.2	*4.1*	7.2
FYR of Macedonia	2001	12.6	19.1	11.7	0.6	1.2	0.6	1.5	10.5	0.1	60	60	35	2.8	9.6	0.0
Gabon *	2002	18.0	22.3	17.4	0.6	0.0	0.7	0.1	0.5	0.0	30	30	30	0.0	0.0	0.0
Georgia *	1999	10.6	11.9	10.4	0.0	0.0	0.0	0.2	0.0	0.2	12	12	12	0.0	0.0	0.0
Ghana *	2000	14.6	20.1	13.8	13.5	3.3	15.1	0.0	0.0	0.0	279	40	279	0.2	0.0	0.2
Grenada *	2003	10.5	17.0	9.4	5.6	11.7	4.4	3.0	0.5	3.5	40	40	40	6.7	26.9	2.7
Guatemala *	2002	6.2	10.0	5.6	46.8	23.1	51.0	0.0	0.0	0.0	40	40	21	2.0	3.9	1.6
Guinea	1998	6.5	6.6	6.4	0.6	0.0	0.7	0.0	0.0	0.0	7	7	7	0.0	0.0	0.0
Guinea-Bissau *	2003	12.0	14.5	11.6	1.3	0.0	1.5	0.0	0.0	0.0	20	20	20	0.0	0.0	0.0
Guyana	2002	11.0	20.1	9.6	4.0	8.9	3.3	0.0	0.0	0.0	100	100	70	6.4	3.4	3.3
Honduras	2002	7.0	10.3	6.5	0.0	0.0	0.0	0.0	0.0	0.0	55	55	35	0.5	1.6	14.0
Hong Kong, China	2003	0.0	0.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0
Hungary	2002	9.5	26.2	7.0	10.7	7.8	11.1	0.0	0.0	0.0	128	128	78	6.5	0.9	1.5
Iceland *	2003	3.5	10.9	2.4	70.2	55.5	74.5	0.6	2.7	0.0	76	76	20	11.7	33.5	5.1
India	2002	29.0	36.9	27.7	1.0	2.5	0.8	5.3	0.3	6.0	182	182	160	1.3	1.3	0.4

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. Cut off date: 26/03/2004.
Source: WTO - IDB and UNCTAD.

Appendix Table 2
MFN applied tariff profiles (cont'd)
(Percentage)

Import markets	Year	Simple average			Share of duty-free HS subheadings			Share of non *ad valorem* duties			Maximum *ad valorem* duty			Share of national peak duties		
		All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr
Indonesia	2002	6.9	8.2	6.7	19.3	10.4	20.6	0.2	0.7	0.1	170	170	170	0.9	2.9	0.6
Iran, Islamic Rep. of *	2003	27.3	34.1	26.3	0.0	0.0	0.0	1.1	0.0	1.3	435	435	120	8.0	4.8	8.6
Israel	1999	5.6	*15.9*	4.0	40.8	30.3	42.4	18.2	30.0	16.4	250	*250*	100	3.5	*6.9*	1.8
Jamaica *	2003	7.2	15.9	5.9	58.5	39.9	62.6	0.6	0.1	0.7	75	75	40	9.0	32.6	3.8
Japan	2002	3.2	*7.3*	2.7	45.1	29.2	47.5	6.2	22.6	3.7	50	*50*	30	8.6	*8.8*	9.6
Jordan *	2003	13.1	19.8	12.1	42.4	27.5	44.8	0.2	0.9	0.1	180	180	30	0.4	3.0	0.0
Kazakhstan *	1996	9.5	9.0	9.5	31.3	21.6	33.8	0.0	0.0	0.0	100	100	100	3.8	2.2	4.1
Kenya	2001	17.1	20.1	16.6	3.1	0.1	3.6	0.0	0.1	0.0	100	100	45	0.1	0.4	0.0
Korea, Republic of	2003	11.6	42.1	7.0	5.7	1.7	6.3	0.5	3.0	0.1	897	897	50	2.7	6.5	0.0
Kuwait *	2002	3.6	1.7	3.9	12.5	78.6	2.2	2.1	4.7	1.7	100	100	4	0.2	1.3	0.0
Kyrgyz Republic	2001	4.8	5.9	4.6	54.9	43.3	56.7	0.3	2.1	0.0	65	20	65	4.8	4.4	4.8
Lao PDR *	2001	9.6	19.2	8.2	0.0	0.0	0.0	0.4	1.2	0.2	40	40	40	7.5	41.4	2.3
Latvia *	2001	3.5	11.8	2.2	32.8	6.7	39.9	0.1	0.3	0.0	88	88	25	19.9	56.5	10.0
Lebanon *	2002	5.4	14.7	4.0	38.2	17.4	41.4	0.3	0.1	0.3	75	70	75	7.5	25.7	4.7
Libyan Arab Jamahiriya *	2002	17.0	23.0	16.2	30.6	33.8	30.1	2.1	6.1	1.4	400	300	400	5.5	4.4	5.7
Lithuania	2002	3.3	9.7	2.4	75.0	42.4	79.9	0.4	3.2	0.0	87	87	33	17.0	14.2	15.7
Macao, China	2003	0.0	0.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0
Madagascar	2000	5.7	5.7	5.7	33.6	28.7	34.3	0.4	0.1	0.5	30	20	30	7.3	2.4	8.1
Malawi	2000	13.4	14.8	13.2	3.8	11.4	2.6	0.0	0.0	0.0	30	25	30	0.0	0.0	0.0
Malaysia	2001	7.3	2.1	8.1	53.3	66.0	51.4	0.8	4.9	0.2	300	30	300	10.3	8.7	10.8
Maldives	2002	20.2	18.3	20.5	0.1	0.4	0.0	0.0	0.1	0.0	200	50	200	0.9	0.0	1.1
Mali *	2003	12.0	14.5	11.6	1.3	0.0	1.5	0.0	0.0	0.0	20	20	20	0.0	0.0	0.0
Malta	2002	5.7	4.3	5.9	16.7	52.7	11.3	0.5	0.1	0.6	80	80	25	1.4	13.5	0.5
Mauritania	2001	10.6	12.4	10.3	13.0	11.7	13.3	0.1	0.0	0.1	20	20	20	0.0	0.0	0.0
Mauritius	2001	19.0	19.7	18.9	55.4	43.0	57.3	0.1	0.1	0.0	80	80	80	16.2	12.1	16.9
Mexico	2003	18.0	24.5	17.1	1.2	2.3	1.0	1.1	6.5	0.3	260	260	35	0.8	4.2	0.0
Moldova *	2001	4.9	10.3	4.1	46.1	11.2	51.3	0.7	2.6	0.5	25	25	15	15.2	46.5	10.5
Mongolia	2002	6.9	7.0	6.9	1.0	0.4	1.0	0.1	0.4	0.0	15	15	7	0.0	0.0	0.0
Montserrat *	1999	*18.1*	*21.4*	*17.0*	5.8	11.1	4.7	56.7	30.5	61.8	*52*	*52*	*40*	*0.0*	*0.0*	*0.0*
Morocco	2002	30.2	48.6	27.5	0.0	0.0	0.0	0.3	2.4	0.0	339	339	50	1.0	3.2	0.0

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. Cut off date: 26/03/2004.
Source: WTO - IDB and UNCTAD.

Import markets	Year	Simple average			Share of duty-free HS subheadings			Share of non *ad valorem* duties			Maximum *ad valorem* duty			Share of national peak duties		
		All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr
Mozambique *	2003	12.1	16.7	11.4	2.2	0.8	2.4	0.0	0.0	0.0	25	25	25	0.0	0.0	0.0
Myanmar	2002	5.5	8.5	5.0	3.0	6.6	2.5	0.2	0.6	0.1	40	40	40	5.2	3.2	5.5
Namibia	2002	5.8	9.1	5.3	50.7	40.4	52.3	14.4	13.3	14.6	55	55	43	11.2	5.8	10.4
Nepal	2002	13.6	13.4	13.7	0.9	1.6	0.8	0.4	1.6	0.2	130	130	130	0.7	0.1	0.8
New Zealand *	2003	3.2	1.7	3.4	54.2	60.0	53.3	4.1	7.9	3.5	19	7	19	7.5	0.0	8.7
Nicaragua	2002	4.7	9.1	4.1	49.1	23.0	53.1	0.0	0.0	0.0	170	170	15	18.4	2.2	15.3
Niger	2002	12.1	14.0	11.9	0.0	0.0	0.0	1.3	0.0	1.5	20	20	20	0.0	0.0	0.0
Nigeria *	2002	30.0	53.9	26.3	0.0	0.0	0.0	0.5	0.3	0.6	150	150	100	5.2	34.1	0.7
Norway	2003	1.2	6.9	0.7	86.2	34.2	94.1	8.6	64.5	0.1	555	*555*	15	5.8	*1.9*	5.8
Oman	2001	5.7	10.2	5.0	5.0	29.8	1.2	0.0	0.0	0.0	100	100	100	1.1	7.4	0.0
Pakistan *	2003	17.1	20.4	16.6	0.0	0.0	0.0	0.7	4.9	0.1	200	200	150	0.8	2.1	0.6
Panama	2002	8.3	14.8	7.4	30.0	18.2	31.8	0.0	0.0	0.0	1000	1000	1000	1.2	3.8	0.3
Papua New Guinea *	2003	6.0	14.9	4.6	76.3	45.7	81.7	1.0	6.2	0.1	75	70	75	22.7	48.1	18.3
Paraguay	2003	12.5	11.4	12.6	2.2	2.6	2.2	0.0	0.0	0.0	32	32	28	0.0	0.0	0.0
Peru *	2000	13.7	17.2	13.1	0.0	0.0	0.0	0.0	0.0	0.0	30	30	20	0.0	0.0	0.0
Philippines	2003	4.7	8.0	4.3	2.1	0.0	2.4	0.0	0.0	0.0	50	50	30	2.9	9.3	1.8
Poland	2003	13.4	*39.8*	10.1	4.8	3.0	5.1	4.4	31.0	0.4	544	*544*	277	4.0	*4.5*	1.1
Qatar *	2002	4.2	4.9	4.1	0.0	0.0	0.0	0.0	0.0	0.0	70	70	20	0.5	1.3	0.3
Romania *	2001	16.9	24.1	15.8	9.4	5.5	10.5	0.0	0.0	0.0	248	248	90	1.7	8.3	0.0
Russian Federation	2001	9.9	*8.9*	10.1	0.7	1.2	0.6	11.9	23.2	10.1	20	*20*	20	0.0	*0.0*	0.0
Rwanda	2002	19.2	14.5	19.9	5.0	0.0	5.7	0.4	0.0	0.4	30	30	30	0.0	0.0	0.0
Saint Kitts and Nevis *	2003	9.4	13.2	8.8	23.5	24.8	23.3	0.4	1.8	0.1	400	400	70	3.3	14.4	1.1
Saint Lucia	2002	8.9	14.8	8.0	40.0	27.9	41.9	0.0	0.0	0.0	95	45	95	7.3	1.3	11.4
St. Vincent & the Grenadines *	2003	9.8	15.7	8.9	8.5	11.4	7.9	0.5	1.6	0.3	40	40	40	6.1	25.6	2.3
Saudi Arabia *	2003	6.0	6.3	6.0	5.7	19.9	2.9	1.0	5.3	0.1	100	100	20	6.6	7.3	6.5
Senegal	2002	12.0	13.9	11.7	1.3	0.0	1.5	0.0	0.0	0.0	20	20	20	0.0	0.0	0.0
Serbia and Montenegro *	2001	14.4	22.3	13.2	0.8	3.7	0.4	0.0	0.0	0.0	40	40	40	0.0	0.0	0.0
Seychelles *	2001	28.3	40.0	26.5	0.6	4.3	0.0	1.6	2.7	1.4	225	205	225	4.5	9.3	3.8
Singapore	2002	0.0	0.0	0.0	100.0	99.7	100.0	0.0	0.3	0.0	0	0	0	0.0	0.0	0.0
Slovak Republic	2002	5.0	10.0	4.3	19.2	40.4	15.9	0.0	0.0	0.0	125	125	29	3.5	9.3	1.7
Slovenia	2002	9.6	11.3	9.3	10.0	14.6	9.3	1.5	11.4	0.0	45	45	27	0.9	4.6	0.0
Solomon Islands	1998	22.2	34.0	20.5	0.0	0.0	0.0	1.4	3.6	1.1	70	70	70	7.2	0.0	5.5
South Africa	2002	5.8	9.1	5.3	50.7	40.4	52.3	14.4	13.3	14.6	55	55	43	11.2	5.8	10.4
Sri Lanka	2001	8.2	19.0	6.7	37.2	11.5	41.2	0.6	4.3	0.0	100	100	25	17.2	0.6	10.5
Sudan *	2002	24.5	34.9	22.9	0.5	1.2	0.4	0.0	0.0	0.0	45	45	45	0.0	0.0	0.0

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. Cut off date: 26/03/2004.
Source: WTO - IDB and UNCTAD.

Appendix Table 2
MFN applied tariff profiles (cont'd)
(Percentage)

Import markets	Year	Simple average			Share of duty-free HS subheadings			Share of non *ad valorem* duties			Maximum *ad valorem* duty			Share of national peak duties		
		All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr	All	Agr	Non-agr
Suriname *	2000	*17.5*	*23.5*	*14.5*	5.3	10.4	4.3	74.8	43.6	80.9	*50*	*50*	*40*	*0.0*	*0.0*	*0.0*
Swaziland	2002	5.8	9.1	5.3	50.7	40.4	52.3	14.4	13.3	14.6	55	55	43	11.2	5.8	10.4
Switzerland	2002	*0.0*	*0.0*	*0.0*	16.4	19.5	15.9	83.6	80.5	84.1	*0*	*0*	*0*	*0.0*	*0.0*	*0.0*
Syrian Arab Republic *	2002	19.6	21.3	19.4	0.6	0.0	0.7	0.3	0.2	0.3	200	150	200	8.4	10.3	8.0
Taipei, Chinese	2003	6.9	16.3	5.5	15.6	23.2	14.4	2.3	11.1	0.9	740	740	98	3.5	3.8	2.5
Tajikistan *	2002	8.3	9.6	8.1	0.9	0.7	1.0	2.4	10.9	0.0	30	20	30	0.8	0.0	1.1
Tanzania *	2003	13.6	18.5	12.8	33.3	21.6	35.3	0.0	0.0	0.0	25	25	25	0.0	0.0	0.0
Thailand *	2001	16.1	29.0	14.2	3.6	7.9	3.0	0.7	3.3	0.4	80	65	80	2.6	7.9	1.9
Togo	2002	12.0	14.0	11.7	1.2	0.0	1.4	0.0	0.1	0.0	20	20	20	0.0	0.0	0.0
Trinidad and Tobago *	2003	7.9	15.7	6.7	44.2	37.3	45.8	0.0	0.2	0.0	70	60	70	9.7	31.3	4.6
Tunisia *	2003	28.6	70.4	22.1	14.3	2.5	17.5	0.0	0.0	0.0	215	215	43	5.1	24.5	0.0
Turkey *	2003	10.0	42.9	5.0	19.1	12.0	20.7	2.0	8.8	0.5	228	228	65	11.0	45.2	2.8
Turkmenistan *	2002	5.1	13.5	3.8	80.1	52.8	87.7	1.7	6.9	0.3	150	150	100	14.4	36.0	8.4
Uganda *	2003	8.6	12.1	8.1	19.9	3.4	22.4	0.2	0.4	0.1	15	15	15	0.0	0.0	0.0
Ukraine *	2002	7.0	*10.8*	6.8	16.3	8.4	18.4	16.4	66.5	3.4	70	*70*	50	6.6	*12.6*	5.1
United States	2002	3.9	5.1	3.7	30.9	26.2	31.6	0.3	1.4	0.1	350	350	59	7.9	7.8	7.9
Uruguay	2002	12.8	11.6	13.0	2.2	2.6	2.2	0.0	0.0	0.0	55	55	23	0.0	0.4	0.0
Uzbekistan *	2001	11.0	10.2	11.1	40.1	58.1	37.3	0.0	0.0	0.0	100	30	100	0.1	0.0	0.1
Vanuatu *	2002	13.8	15.7	13.5	20.0	31.1	18.3	2.5	10.1	1.3	250	55	250	1.0	3.9	0.6
Venezuela	2002	12.7	14.8	12.4	0.6	0.0	0.7	0.0	0.0	0.0	35	20	35	0.0	0.0	0.0
Viet Nam *	2002	16.4	23.9	15.3	32.0	12.8	34.8	0.1	0.0	0.1	100	100	100	10.4	20.9	8.9
Yemen *	2000	12.8	15.2	12.4	0.0	0.0	0.0	0.0	0.0	0.0	90	25	90	0.3	0.0	0.3
Zambia *	2003	14.0	18.8	13.2	21.4	2.1	24.3	0.0	0.0	0.0	25	25	25	0.0	0.0	0.0
Zimbabwe	2002	16.6	25.7	15.2	4.1	1.3	4.5	7.4	4.1	7.9	100	100	80	1.1	1.7	1.1

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. Cut off date: 26/03/2004.
Source: WTO - IDB and UNCTAD.

Appendix Table 3
Average MFN applied and bound tariffs for agricultural products by MTN category
(Percentage)

Import markets	(12) Fruit and vegetables		(13) Coffee, tea, maté, cocoa and preparations		(14) Sugars and sugar confectionery		(15) Spices, cereal and other food preparations		(16) Grains		(17) Animals and products thereof	
	Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound
Albania	11.0	12.0	11.9	14.2	6.3	7.3	11.0	12.5	2.0	5.0	9.0	10.0
Algeria *	28.5	-	26.5	-	25.0	-	28.9	-	8.9	-	28.0	-
Angola *	6.3	49.7	18.5	55.0	5.0	55.0	15.0	55.0	2.0	50.0	10.3	53.5
Antigua and Barbuda *	20.5	116.8	10.5	100.0	20.0	100.0	17.2	100.0	8.0	100.0	21.7	104.1
Argentina *	10.4	34.2	13.8	34.2	16.5	33.9	12.6	33.8	5.7	31.1	8.9	27.6
Armenia *	10.0	15.0	10.0	14.2	10.0	14.7	8.8	15.0	0.0	15.0	7.9	14.9
Australia *	1.8	4.1	1.0	3.9	1.9	*7.3*	1.2	2.2	0.0	0.8	0.4	1.6
Azerbaijan *	*14.2*	-	14.8	-	13.1	-	14.5	-	10.1	-	*13.6*	-
Bahamas	26.1	-	17.6	-	21.5	-	27.3	-	17.2	-	8.9	-
Bahrain *	4.9	35.0	5.0	35.0	5.0	35.0	5.0	36.9	4.7	35.0	4.3	35.0
Bangladesh *	26.4	189.2	31.6	187.5	31.3	190.6	25.6	195.6	8.9	158.1	20.6	192.6
Barbados *	39.5	108.0	16.8	100.0	20.3	105.5	19.3	100.1	*17.8*	100.0	87.0	137.1
Belarus	*12.0*	-	*7.5*	-	*5.5*	-	10.1	-	5.0	-	*4.4*	-
Belize *	24.5	101.9	9.2	100.0	20.8	100.6	19.1	99.8	10.5	103.1	28.3	104.8
Benin *	19.4	60.0	15.6	60.0	11.3	60.0	16.3	59.7	5.9	60.0	19.0	60.0
Bermuda *	4.7	-	8.7	-	13.8	-	5.5	-	0.0	-	5.1	-
Bhutan *	18.2	-	25.8	-	23.8	-	20.3	-	0.0	-	10.6	-
Bolivia	10.0	40.0	10.0	40.0	10.0	40.0	10.0	40.0	10.0	40.0	9.9	39.8
Bosnia and Herzegovina *	5.5	-	4.0	-	6.4	-	4.7	-	1.8	-	7.9	-
Botswana	10.3	30.1	9.2	68.9	*4.2*	73.7	10.6	41.2	2.5	28.8	16.1	44.2
Brazil	12.2	34.3	14.8	34.1	18.0	34.4	14.0	40.5	7.0	48.3	10.3	38.2
Brunei Darussalam	0.0	27.5	*0.9*	*21.9*	0.0	27.5	0.0	21.3	0.0	27.5	0.0	26.9
Bulgaria	27.8	47.7	23.9	*21.2*	21.0	*28.8*	22.3	48.0	16.4	27.7	*18.4*	*41.0*
Burkina Faso *	19.4	100.0	15.6	100.0	11.3	100.0	16.3	98.4	5.9	100.0	19.0	100.0
Burundi	61.6	100.0	92.5	97.9	24.0	82.8	45.9	95.5	40.0	100.0	100.0	100.0
Cambodia *	13.7	...	27.0	...	12.3	...	23.6	...	11.9	...	29.3	...
Cameroon	29.8	80.0	29.9	80.0	20.0	80.0	25.4	80.0	15.5	80.0	21.5	80.0
Canada	*2.9*	*3.0*	1.4	*1.8*	*4.3*	*7.1*	*3.8*	*4.3*	11.5	*15.5*	*3.9*	*5.5*
Central African Republic *	29.8	30.0	29.9	30.0	20.0	30.0	25.4	30.0	15.5	30.0	21.5	30.0
Chad *	29.8	80.0	29.9	80.0	20.0	80.0	25.4	80.0	15.5	80.0	21.5	80.0
Chile	6.0	25.0	6.0	25.0	6.0	43.3	6.0	25.1	6.0	25.4	6.0	25.0
China	18.3	16.1	19.5	14.9	33.6	27.4	23.3	20.4	33.7	27.1	17.0	14.8
Colombia	15.9	72.8	17.9	70.0	16.8	106.8	17.0	96.4	13.0	138.0	17.2	98.9
Congo *	29.8	30.0	29.9	30.0	20.0	30.0	25.4	30.0	15.5	30.0	21.5	30.0
Costa Rica	13.7	43.1	12.4	46.0	20.6	45.0	9.8	42.1	10.9	34.0	23.0	57.0
Côte d'Ivoire	19.3	15.0	15.6	15.0	11.3	15.0	16.0	14.5	5.9	15.0	18.8	13.4
Croatia	12.3	11.9	*8.3*	8.0	*10.9*	*14.9*	9.7	11.0	7.3	7.7	*17.6*	*19.3*
Cuba	10.1	39.1	21.0	40.0	20.3	40.0	13.0	38.0	6.0	35.3	9.6	39.5
Cyprus	*46.4*	*89.3*	*13.0*	*45.7*	*24.6*	*50.0*	*26.5*	*59.3*	*0.0*	*170.0*	*27.5*	*32.8*
Czech Republic	5.1	5.3	4.6	4.6	34.2	34.2	10.6	10.9	6.9	6.9	24.8	27.9
Dem. Rep. of the Congo *	15.6	100.0	16.9	100.0	13.1	100.0	15.1	97.2	7.5	65.0	13.4	100.0
Djibouti *	11.0	40.0	31.4	40.0	21.3	40.0	22.3	39.6	5.0	40.0	17.0	40.0
Dominica *	29.9	112.0	28.1	118.8	19.5	112.5	20.1	112.6	8.0	112.5	15.8	118.5
Dominican Republic	19.5	41.6	18.3	40.0	14.6	46.3	13.2	38.8	5.2	51.3	22.3	41.5
Ecuador	15.9	24.9	17.9	26.7	14.5	35.4	17.0	26.5	12.2	31.2	17.1	29.7
Egypt *	28.4	40.1	28.2	36.9	20.9	37.5	22.9	31.0	7.8	11.3	32.4	44.6
El Salvador *	12.9	39.3	13.4	51.3	25.2	66.3	10.5	35.8	10.9	36.6	14.0	51.5
Equatorial Guinea *	29.8	-	29.9	-	20.0	-	25.4	-	15.5	-	21.5	-
Estonia	17.1	20.8	0.0	13.2	0.0	21.6	23.1	28.2	13.9	21.5	24.4	27.1
Ethiopia *	22.4	-	37.7	-	9.4	-	31.0	-	5.0	-	20.2	-
European Union	*9.8*	*9.9*	*5.8*	*5.8*	*11.4*	*11.4*	*5.0*	*5.0*	*5.4*	*5.4*	*5.4*	*5.3*
Fiji	...	40.0	...	40.0	...	40.0	...	40.2	...	41.5	...	40.0
FYR of Macedonia	37.7	23.6	*21.9*	*12.4*	*11.5*	*6.6*	17.8	11.4	19.2	11.0	*17.8*	11.3
Gabon *	29.8	60.0	29.9	60.0	20.0	60.0	25.4	60.0	15.5	60.0	21.5	60.0
Gambia	...	110.0	...	110.0	...	110.0	...	110.0	...	110.0	...	110.0

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. + Duty rates are all non-AV. Cut off date: 26/03/2004.

Source: WTO - IDB and UNCTAD.

Appendix Table 3
Average MFN applied and bound tariffs for agricultural products by MTN category (cont'd)
(Percentage)

(18) Oil seeds, fats & oils & their products		(19) Cut flowers, plants, vegetable materials, lacs, etc.		(20) Beverages and spirits		(21) Dairy products		(22) Tobacco		(23) Other agricultural products		Import markets
Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound	
6.6	2.8	8.6	9.6	14.7	11.6	10.8	10.0	10.4	15.3	6.0	6.6	Albania
19.5	-	7.9	-	27.0	-	22.4	-	25.0	-	14.4	-	Algeria *
5.0	48.6	5.7	55.0	23.4	55.0	5.0	55.0	23.3	55.0	8.1	55.0	Angola *
16.4	101.5	3.7	100.0	21.2	114.1	5.2	100.0	20.6	101.6	3.3	100.0	Antigua and Barbuda *
7.8	34.6	5.9	31.9	17.3	35.0	15.1	35.0	16.8	35.0	7.0	30.5	Argentina *
5.8	13.6	5.3	15.0	10.0	15.0	10.0	15.0	6.7	15.0	1.9	14.6	Armenia *
1.5	2.9	0.2	1.2	*4.2*	9.7	*0.2*	*0.9*	*0.0*	14.9	0.3	2.2	Australia *
8.6	-	11.3	-	*17.5*	-	14.9	-	*15.0*	-	11.8	-	Azerbaijan *
20.0	-	25.1	-	23.8	-	16.5	-	61.7	-	33.3	-	Bahamas
6.4	35.0	4.0	35.0	57.7	77.6	5.0	35.0	100.0	56.7	7.3	35.0	Bahrain *
18.6	186.5	12.7	200.0	32.1	200.0	31.5	149.8	26.7	200.0	12.1	184.8	Bangladesh *
25.7	136.6	7.9	100.0	44.8	102.7	61.8	116.4	*5.0*	100.0	6.9	100.4	Barbados *
8.3	-	9.3	-	*17.9*	-	*14.8*	-	12.5	-	6.4	-	Belarus
15.6	100.1	6.4	100.0	41.7	104.0	5.2	100.0	*5.0*	106.7	5.1	100.4	Belize *
10.7	81.4	5.9	60.0	19.9	58.4	16.3	38.8	12.2	64.4	6.8	60.3	Benin *
5.9	-	15.6	-	*9.2*	-	3.0	-	*33.5*	-	14.3	-	Bermuda *
20.0	-	4.4	-	66.3	-	27.0	-	100.0	-	12.9	-	Bhutan *
10.0	40.0	10.0	40.0	10.0	40.0	10.0	40.0	10.0	40.0	10.0	40.0	Bolivia
2.5	-	0.7	-	14.4	-	9.9	-	15.0	-	1.3	-	Bosnia and Herzegovina *
7.7	45.6	5.1	8.9	*18.9*	123.9	*0.0*	20.0	*35.3*	50.7	2.3	14.8	Botswana
9.2	34.6	7.3	33.0	19.0	38.2	18.6	48.9	18.3	37.9	8.6	28.9	Brazil
0.0	20.0	0.0	20.0	*0.0*	20.0	0.0	21.0	*0.0*	*20.0*	0.1	20.0	Brunei Darussalam
10.1	22.9	3.9	11.2	*29.3*	*57.4*	33.4	79.8	34.7	*87.8*	5.9	20.0	Bulgaria
10.7	98.8	5.9	100.0	19.9	97.1	16.3	62.8	12.2	77.8	6.8	100.0	Burkina Faso *
23.6	99.4	60.0	91.6	77.0	78.5	40.0	22.5	100.0	100.0	37.7	99.6	Burundi
9.5	...	17.4	...	42.3	...	30.8	...	33.6	...	15.7	...	Cambodia *
19.3	80.0	10.1	80.0	28.8	80.0	25.0	80.0	20.4	80.0	13.2	80.0	Cameroon
3.3	3.6	0.8	0.8	*3.8*	*4.7*	*7.4*	*7.5*	7.3	7.3	0.9	1.4	Canada
19.3	30.0	10.2	30.0	28.8	30.0	25.0	30.0	20.4	30.0	13.2	30.0	Central African Republic *
19.3	80.0	10.2	80.0	28.8	80.0	25.0	80.0	20.4	80.0	13.2	80.0	Chad *
6.0	29.1	6.0	25.0	6.0	25.0	6.0	29.2	6.0	25.0	6.0	25.0	Chile
16.6	11.6	10.9	9.9	33.0	21.4	24.5	12.2	39.3	33.3	13.1	12.0	China
16.1	132.5	8.7	71.8	18.9	91.6	19.3	136.7	17.2	70.0	8.9	79.4	Colombia
19.3	30.0	10.2	30.0	28.8	30.0	25.0	30.0	20.4	30.0	13.2	30.0	Congo *
6.2	27.6	1.9	37.4	12.8	47.1	54.4	84.8	13.7	41.7	3.1	35.5	Costa Rica
10.5	14.6	5.9	15.0	19.8	14.8	16.3	9.1	12.2	48.4	6.9	14.9	Côte d'Ivoire
5.2	3.1	6.9	6.5	*25.7*	10.3	*21.0*	*19.6*	22.6	24.1	3.3	3.7	Croatia
8.2	36.0	5.7	38.8	25.0	39.5	22.4	40.0	30.0	40.0	4.4	30.5	Cuba
11.1	58.6	6.6	44.4	*4.2*	*43.3*	*0.0*	+	*39.7*	*116.0*	4.8	*45.4*	Cyprus
5.8	4.5	0.9	0.9	18.5	21.3	27.2	27.2	25.7	25.7	1.5	1.5	Czech Republic
12.2	100.0	6.6	100.0	19.2	100.0	13.5	80.0	15.0	100.0	7.9	100.0	Dem. Rep. of the Congo *
21.5	41.4	25.3	40.0	32.7	190.6	18.1	45.2	*33.0*	51.1	27.2	40.0	Djibouti *
23.5	119.7	4.6	102.9	60.3	124.2	5.7	100.0	30.0	116.7	3.5	103.8	Dominica *
5.9	37.5	6.2	35.9	19.1	40.0	18.7	42.4	17.3	36.7	2.8	36.2	Dominican Republic
15.5	28.5	8.2	18.9	19.0	25.6	18.9	42.8	17.2	27.2	8.7	18.5	Ecuador
10.9	19.7	15.1	19.6	41.8	1427.1	18.8	23.5	*68.8*	*20.0*	13.7	20.7	Egypt *
5.7	49.8	1.9	27.2	19.5	50.6	25.6	38.9	10.1	74.0	3.2	35.7	El Salvador *
19.3	-	10.2	-	28.8	-	25.0	-	20.4	-	13.2	-	Equatorial Guinea *
1.7	3.8	4.0	9.4	3.9	14.6	32.6	32.5	0.0	10.3	2.1	9.6	Estonia
19.5	-	17.9	-	34.7	-	27.5	-	26.7	-	14.5	-	Ethiopia *
3.3	3.2	2.5	2.4	*11.3*	*10.6*	*7.7*	*7.7*	*39.7*	*39.7*	*1.3*	*1.3*	European Union
...	40.0	...	40.0	...	*48.8*	...	40.3	...	*40.0*	...	40.0	Fiji
5.0	1.4	4.5	3.5	*48.1*	*16.2*	*22.6*	*16.1*	41.0	34.9	4.3	1.5	FYR of Macedonia
19.3	60.0	10.2	60.0	28.8	60.0	25.0	60.0	20.4	60.0	13.2	60.0	Gabon *
...	110.0	...	110.0	...	110.0	...	110.0	...	110.0	...	76.8	Gambia

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. + Duty rates are all non-AV. Cut off date: 26/03/2004.

Source: WTO - IDB and UNCTAD.

Appendix Table 3
Average MFN applied and bound tariffs for agricultural products by MTN category (cont'd)
(Percentage)

Import markets	(12) Fruit and vegetables		(13) Coffee, tea, maté, cocoa and preparations		(14) Sugars and sugar confectionery		(15) Spices, cereal and other food preparations		(16) Grains		(17) Animals and products thereof	
	Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound
Georgia *	12.0	13.7	12.0	12.3	12.0	11.6	12.0	14.0	12.0	11.9	12.0	11.8
Ghana *	20.6	99.0	28.3	90.8	12.0	99.0	22.1	98.3	17.5	87.9	19.3	97.5
Grenada *	25.8	106.5	16.3	116.7	20.3	100.0	17.2	108.9	8.0	78.1	22.2	97.9
Guatemala *	12.9	46.0	13.4	40.0	11.2	70.0	10.1	39.5	6.2	69.0	12.3	76.0
Guinea	7.0	40.0	7.0	40.0	7.0	40.0	7.0	39.4	5.8	40.0	6.0	40.0
Guinea-Bissau *	19.4	40.0	15.6	40.0	11.3	40.0	16.3	40.0	5.9	40.0	19.0	40.0
Guyana	26.0	100.0	16.8	100.0	20.9	100.0	17.9	100.0	9.8	100.0	26.5	100.0
Haiti	...	33.5	...	24.2	...	40.0	...	26.7	...	36.3	...	*20.4*
Honduras	13.5	32.4	13.7	33.5	12.1	35.0	10.7	33.1	13.5	32.4	14.9	28.8
Hong Kong, China	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hungary	32.4	33.2	26.8	31.4	60.8	60.8	27.8	29.8	21.9	27.1	37.9	39.9
Iceland *	10.9	*31.3*	5.6	17.2	5.2	88.1	8.6	54.9	18.9	87.5	22.4	*229.0*
India	32.0	105.4	56.3	133.1	48.4	124.7	34.6	126.5	49.4	86.3	30.2	105.0
Indonesia	5.0	47.0	4.9	45.3	9.5	58.3	5.2	39.9	*2.6*	68.4	4.4	44.0
Iran, Islamic Rep. of *	40.7	-	30.2	-	44.4	-	31.4	-	17.7	-	38.9	-
Israel	*26.9*	117.0	*1.3*	9.1	*1.3*	9.7	*10.3*	52.0	5.1	37.2	*28.5*	111.4
Jamaica *	25.0	100.0	15.6	100.0	19.1	100.0	15.1	100.0	6.7	100.0	22.8	100.0
Japan	8.4	8.4	11.7	11.4	*10.2*	*12.4*	*12.6*	*11.1*	*1.0*	*1.5*	7.0	8.8
Jordan *	26.2	24.3	23.1	20.5	12.7	19.1	19.7	21.1	6.3	7.5	14.9	14.2
Kazakhstan *	12.9	-	3.5	-	6.4	-	8.8	-	0.8	-	14.3	-
Kenya	26.9	100.0	16.1	100.0	33.9	100.0	18.9	100.0	24.7	100.0	20.7	100.0
Korea, Republic of	53.6	60.4	54.4	74.1	19.4	24.6	93.6	130.7	188.4	249.8	22.6	27.3
Kuwait *	0.0	100.0	0.0	100.0	0.0	100.0	0.0	100.0	0.0	100.0	0.0	100.0
Kyrgyz Republic	9.2	16.8	7.1	10.6	1.9	9.7	4.5	12.4	5.8	9.7	7.9	10.4
Lao PDR *	33.3	-	25.0	-	12.7	-	11.2	-	5.0	-	25.8	-
Latvia *	10.9	41.5	6.6	30.0	3.4	*36.1*	15.5	35.2	8.1	36.3	24.1	36.9
Lebanon *	34.4	-	7.7	-	7.2	-	8.1	-	3.1	-	10.9	-
Lesotho	...	200.0	...	200.0	...	200.0	...	200.0	...	200.0	...	200.0
Libyan Arab Jamahiriya *	32.2	-	14.4	-	26.6	-	13.2	-	4.7	-	*29.9*	-
Lithuania	4.0	11.3	7.4	11.5	26.2	*64.2*	12.8	17.3	10.6	16.9	28.3	29.1
Macao, China	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madagascar	8.8	30.0	11.1	30.0	6.4	30.0	7.7	30.0	0.3	30.0	4.7	30.0
Malawi	20.4	125.0	21.9	95.2	17.5	125.0	22.0	125.0	5.0	99.1	12.8	125.0
Malaysia	2.9	*10.9*	9.0	*18.5*	2.8	*25.0*	2.6	9.3	0.0	10.8	0.5	34.4
Maldives	15.1	30.0	16.7	30.0	13.1	30.0	15.2	31.5	14.1	30.0	21.6	90.6
Mali *	19.4	60.0	15.6	60.0	11.3	60.0	16.3	59.2	5.9	60.0	19.0	60.0
Malta	6.7	*24.2*	4.2	*38.0*	11.8	+	6.5	*38.0*	0.1	+	2.0	+
Mauritania	17.9	36.3	15.1	46.7	6.3	50.0	14.6	40.7	7.3	75.0	16.8	42.0
Mauritius	25.2	117.8	32.1	118.7	43.1	122.0	22.5	122.0	4.4	100.8	29.4	119.9
Mexico	21.5	37.6	*42.1*	*40.0*	*73.7*	*45.0*	19.7	36.9	32.7	*37.0*	42.3	36.5
Moldova *	13.0	14.9	8.1	10.6	15.0	13.8	10.1	12.7	6.3	10.9	12.8	*14.5*
Mongolia	7.1	18.4	7.0	19.7	7.0	19.7	7.2	19.5	7.0	17.7	6.7	14.4
Montserrat *	*30.6*	-	*21.3*	-	*28.5*	-	*26.1*	-	9.4	-	14.0	-
Morocco	48.6	34.0	43.3	34.0	*35.1*	134.5	47.0	51.2	*18.5*	82.9	126.9	103.9
Mozambique *	24.1	100.0	21.2	100.0	9.7	100.0	19.4	100.0	8.4	100.0	22.5	100.0
Myanmar	13.1	152.0	14.0	151.3	*7.3*	*89.4*	7.9	98.1	0.9	11.5	11.4	127.3
Namibia	10.3	30.1	9.2	68.9	*4.2*	73.7	10.6	41.2	2.5	30.8	16.1	44.2
Nepal	13.5	...	21.9	...	16.7	...	14.6	...	10.0	...	10.9	...
New Zealand *	1.7	6.6	3.1	8.9	1.7	3.7	4.0	11.0	0.0	0.8	1.7	7.1
Nicaragua	12.9	40.5	12.7	40.0	18.2	55.0	8.4	40.9	16.4	45.6	12.7	51.9
Niger	19.4	84.0	15.7	50.0	11.3	200.0	16.2	79.9	5.9	50.0	18.8	146.3
Nigeria *	98.2	150.0	42.5	150.0	31.3	150.0	45.5	150.0	49.1	150.0	42.6	150.0
Norway	*3.2*	*0.3*	*0.0*	*0.6*	*0.0*	*0.0*	*10.7*	*1.7*	*0.0*	*0.0*	*96.6*	*0.0*
Oman	3.2	21.0	4.2	15.0	4.7	13.4	4.7	14.6	1.3	10.9	24.3	60.6
Pakistan *	19.5	100.3	21.4	108.3	22.5	112.5	20.4	100.0	10.6	112.5	18.4	100.0

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. + Duty rates are all non-AV. Cut off date: 26/03/2004.

Source: WTO - IDB and UNCTAD.

Appendix Table 3
Average MFN applied and bound tariffs for agricultural products by MTN category (cont'd)
(Percentage)

(18) Oil seeds, fats & oils & their products		(19) Cut flowers, plants, vegetable materials, lacs, etc.		(20) Beverages and spirits		(21) Dairy products		(22) Tobacco		(23) Other agricultural products		Import markets
Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound	
12.0	3.6	12.0	12.0	12.0	*23.0*	12.0	12.1	12.0	24.0	11.6	10.3	Georgia *
20.3	96.7	15.8	99.0	28.5	99.0	37.8	75.4	20.0	99.0	13.9	98.6	Ghana *
17.6	98.1	6.4	101.0	27.5	88.0	6.0	100.0	25.0	100.0	5.2	96.2	Grenada *
5.8	63.6	1.9	40.0	25.3	39.1	13.2	90.6	9.0	90.0	3.2	39.3	Guatemala *
6.4	39.5	7.0	40.0	6.8	39.0	4.8	26.8	7.0	59.7	6.5	40.0	Guinea
10.7	40.0	5.9	40.0	19.9	40.0	16.3	40.0	12.2	40.0	6.8	40.0	Guinea-Bissau *
18.0	100.0	6.4	100.0	62.3	100.0	14.3	100.0	68.3	100.0	5.2	100.0	Guyana
...	14.6	...	6.4	...	*25.1*	...	12.5	...	31.1	...	10.8	Haiti
6.1	32.5	2.7	33.7	17.4	33.0	15.5	24.3	13.1	43.3	3.8	32.9	Honduras
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Hong Kong, China
8.7	10.1	6.9	7.5	51.3	54.8	54.6	57.3	53.9	54.4	6.6	6.8	Hungary
8.0	99.2	6.1	*4.8*	9.5	9.5	30.0	+	0.0	17.5	5.6	24.4	Iceland *
52.5	168.9	26.0	85.1	78.4	125.8	34.0	65.0	30.0	133.3	24.6	101.0	India
3.8	39.9	5.8	40.7	67.9	98.1	5.0	74.0	10.7	40.0	4.3	40.2	Indonesia
18.3	-	14.6	-	86.9	-	36.3	-	6.7	-	23.1	-	Iran, Islamic Rep. of *
3.5	37.7	4.9	50.4	*13.2*	132.7	111.0	168.1	*4.8*	125.0	3.0	32.2	Israel
16.1	100.0	2.7	97.1	23.5	100.0	25.1	100.0	20.0	100.0	1.7	87.5	Jamaica *
2.2	*2.0*	1.4	1.4	*14.1*	*15.6*	*28.0*	*26.0*	4.2	4.7	1.4	1.1	Japan
10.2	17.4	11.8	17.8	76.4	105.8	17.9	16.1	55.3	135.6	5.1	12.9	Jordan *
1.9	-	6.7	-	13.4	-	12.8	-	20.6	-	5.6	-	Kazakhstan *
14.9	100.0	9.4	100.0	30.4	100.0	25.0	100.0	26.7	100.0	13.7	100.0	Kenya
14.0	22.2	28.0	35.1	31.6	37.4	69.1	69.8	33.0	59.9	10.3	14.5	Korea, Republic of
0.0	100.0	2.3	100.0	*0.0*	100.0	0.0	100.0	73.3	100.0	2.8	100.0	Kuwait *
5.2	11.0	3.2	9.9	*8.7*	*12.8*	10.0	11.5	7.8	12.3	1.9	10.8	Kyrgyz Republic
11.8	-	13.7	-	31.7	-	8.3	-	28.9	-	8.9	-	Lao PDR *
2.7	33.9	12.2	50.0	16.3	30.1	28.5	36.6	5.9	9.3	6.0	24.5	Latvia *
7.3	-	9.6	-	26.2	-	21.0	-	3.3	-	3.9	-	Lebanon *
...	200.0	...	200.0	...	200.0	...	200.0	...	200.0	...	200.0	Lesotho
10.9	-	16.0	-	*54.2*	-	3.9	-	*0.0*	-	24.2	-	Libyan Arab Jamahiriya *
2.4	10.5	4.4	10.6	*10.1*	*12.4*	34.0	30.4	1.7	8.9	1.9	8.0	Lithuania
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Macao, China
4.6	30.0	1.5	30.0	9.1	30.0	5.9	30.0	8.3	30.0	1.6	30.0	Madagascar
9.5	123.0	5.0	114.1	22.3	125.0	16.0	111.8	22.7	125.0	7.8	122.7	Malawi
1.7	6.0	0.0	4.9	*9.4*	*14.5*	3.6	*10.3*	+	+	0.7	5.5	Malaysia
14.1	30.0	23.4	30.0	29.2	169.4	10.0	30.0	50.0	300.0	21.4	33.1	Maldives
10.7	59.3	5.9	60.0	19.9	58.4	16.3	38.8	12.2	64.4	6.8	60.0	Mali *
1.3	*24.8*	2.8	*28.0*	11.1	+	1.3	+	0.0	*0.0*	2.1	*40.9*	Malta
7.0	28.5	6.2	33.3	17.7	56.8	17.2	20.8	18.4	69.4	5.0	29.2	Mauritania
3.2	121.5	5.6	122.0	58.2	122.0	9.9	105.0	75.0	122.0	4.2	122.0	Mauritius
20.4	38.0	13.4	28.8	26.0	40.4	42.2	*33.8*	53.1	52.5	11.7	27.2	Mexico
10.5	11.1	6.6	11.3	12.3	*14.0*	15.0	11.5	*2.5*	*10.0*	5.9	9.3	Moldova *
7.0	19.5	7.0	20.0	7.0	23.2	7.0	16.4	7.0	32.2	7.0	19.5	Mongolia
23.4	-	*10.2*	-	*29.2*	-	7.5	-	+	-	*5.9*	-	Montserrat *
27.8	81.2	30.2	34.1	50.2	34.0	80.5	77.0	22.5	34.0	20.3	33.0	Morocco
10.6	100.0	3.8	100.0	23.3	100.0	20.1	100.0	17.5	100.0	5.6	100.0	Mozambique *
1.7	23.7	4.5	52.8	24.2	326.5	3.3	40.1	25.0	275.0	3.1	41.9	Myanmar
7.7	47.3	5.1	8.9	*18.9*	123.9	*0.0*	94.8	*35.3*	50.7	2.3	15.1	Namibia
11.2	...	9.9	...	*40.0*	...	14.3	...	*40.0*	...	7.5	...	Nepal
0.8	2.0	0.1	0.4	*4.1*	12.6	1.5	10.1	*1.4*	8.8	0.4	1.3	New Zealand *
5.5	41.8	1.6	40.0	11.2	41.5	16.2	66.3	7.1	63.3	3.0	40.0	Nicaragua
10.4	49.4	5.9	58.8	19.9	193.9	16.5	32.8	12.2	61.1	6.8	50.0	Niger
39.0	150.0	22.7	150.0	96.0	150.0	44.2	150.0	89.4	150.0	19.6	150.0	Nigeria *
2.8	*4.0*	7.7	*0.9*	*0.0*	*0.0*	+	+	0.0	*0.0*	*2.9*	*0.6*	Norway
4.6	19.7	4.0	14.7	53.5	104.5	2.0	17.0	100.0	150.0	5.9	14.6	Oman
14.9	100.0	17.6	100.0	62.3	100.0	25.0	100.0	25.0	100.0	12.0	80.6	Pakistan *

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. + Duty rates are all non-AV. Cut off date: 26/03/2004.

Source: WTO - IDB and UNCTAD.

Appendix Table 3
Average MFN applied and bound tariffs for agricultural products by MTN category (cont'd)
(Percentage)

Import markets	(12) Fruit and vegetables		(13) Coffee, tea, maté, cocoa and preparations		(14) Sugars and sugar confectionery		(15) Spices, cereal and other food preparations		(16) Grains		(17) Animals and products thereof	
	Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound
Panama	12.5	25.9	12.2	30.6	24.8	40.2	10.8	25.6	28.5	32.6	18.6	33.2
Papua New Guinea *	33.6	64.5	26.0	58.3	22.1	75.0	13.9	45.2	0.0	29.4	10.0	32.4
Paraguay	11.7	32.1	14.0	34.2	20.8	34.7	13.9	34.6	6.6	32.5	10.3	33.2
Peru *	22.2	30.0	18.9	30.0	14.7	34.8	15.8	31.7	16.8	43.1	24.1	30.0
Philippines	7.1	39.1	14.0	41.2	15.8	44.7	6.1	36.6	16.7	36.7	21.7	36.6
Poland	*44.5*	*41.5*	20.4	*14.3*	*87.9*	+	*36.4*	*31.2*	*25.7*	*23.7*	*42.3*	*31.1*
Qatar *	4.0	14.9	4.0	19.9	4.0	20.0	4.0	17.1	4.0	11.8	4.0	50.8
Romania *	22.1	74.5	19.1	67.7	27.2	139.8	19.6	117.3	11.1	109.0	31.3	154.1
Russian Federation	*11.9*	-	*7.5*	-	*5.0*	-	10.1	-	5.0	-	*4.4*	-
Rwanda	12.1	75.4	21.1	80.0	28.1	69.0	17.4	73.3	7.2	80.0	14.9	80.0
Saint Kitts and Nevis *	16.2	115.6	14.1	99.0	20.9	107.5	21.8	112.5	7.0	100.5	12.6	98.8
Saint Lucia	25.1	121.5	13.4	102.5	18.9	107.5	16.7	114.8	8.0	107.5	11.8	124.6
St. Vincent and the Grenadines *	26.0	121.5	16.8	102.5	19.8	107.5	17.2	114.8	8.0	107.5	12.1	124.6
Saudi Arabia *	3.3	-	5.7	-	6.1	-	6.5	-	0.6	-	7.0	-
Senegal	19.4	30.0	15.6	30.0	10.6	30.0	16.1	29.9	5.9	28.1	18.9	30.0
Serbia and Montenegro *	28.9	-	20.7	-	21.1	-	26.0	-	19.9	-	32.7	-
Seychelles *	32.2	-	50.0	-	41.7	-	38.7	-	21.9	-	25.7	-
Sierra Leone	...	39.8	...	39.8	...	40.0	...	39.5	...	40.0	...	40.0
Singapore	0.0	9.5	0.0	10.0	0.0	10.0	0.0	9.7	0.0	10.0	0.0	9.1
Slovak Republic	5.0	5.3	4.6	4.6	35.9	34.2	10.6	10.9	6.9	6.9	24.8	27.9
Slovenia	14.6	24.5	10.4	19.9	*20.3*	*29.8*	14.4	25.4	6.4	20.2	*16.4*	*29.9*
Solomon Islands	46.5	80.0	28.3	80.0	30.7	61.3	26.5	72.0	5.0	71.9	53.0	87.0
South Africa	10.3	30.1	9.2	68.9	*4.2*	73.7	10.6	41.2	2.5	30.8	16.1	44.2
Sri Lanka	24.4	50.0	25.0	50.0	16.7	50.0	21.8	49.7	19.4	50.0	22.8	49.9
Sudan *	43.8	-	30.8	-	25.7	-	30.5	-	14.1	-	40.0	-
Suriname *	*33.2*	20.0	*22.5*	20.0	*30.0*	20.0	*29.6*	19.9	9.4	20.0	17.2	20.0
Swaziland	10.3	30.1	9.2	68.9	*4.2*	73.7	10.6	41.2	2.5	30.8	16.1	44.2
Switzerland	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Syrian Arab Republic *	30.8	-	30.7	-	18.4	-	21.1	-	7.2	-	12.5	-
Taipei, Chinese	21.4	20.2	9.5	8.4	53.3	49.5	14.0	13.6	*2.6*	*2.8*	*40.9*	37.6
Tajikistan *	14.0	-	7.7	-	5.0	-	7.3	-	5.0	-	12.9	-
Tanzania *	24.3	120.0	23.3	120.0	23.1	120.0	24.0	120.0	13.9	120.0	23.9	120.0
Thailand *	40.2	*50.0*	31.6	*71.2*	26.9	48.9	30.7	*31.6*	*0.0*	35.7	35.2	29.6
Togo	19.4	80.0	15.6	80.0	11.3	80.0	16.2	80.0	5.9	80.0	18.8	80.0
Trinidad and Tobago *	24.4	97.5	15.6	80.7	18.9	100.0	16.1	96.0	7.0	63.4	22.1	91.8
Tunisia *	119.5	141.4	43.3	85.6	36.5	100.0	77.1	128.4	59.3	73.7	97.8	109.4
Turkey *	38.2	40.4	*36.4*	80.2	*53.7*	114.8	*29.9*	51.4	30.3	146.3	128.4	138.4
Turkmenistan *	37.7	-	0.0	-	1.9	-	8.5	-	6.3	-	0.6	-
Uganda *	15.0	79.2	10.0	77.9	11.0	78.1	11.2	78.1	8.2	73.8	13.0	73.3
Ukraine *	*14.3*	-	*10.2*	-	*40.0*	-	*8.9*	-	*8.8*	-	*24.8*	-
United Arab Emirates	...	15.0	...	15.0	...	15.0	...	15.0	...	15.0	...	37.8
United States	6.0	*7.8*	4.9	*2.6*	13.0	*6.2*	4.1	*3.1*	1.5	*2.2*	3.3	*3.4*
Uruguay	12.1	34.0	14.8	34.0	20.2	30.0	14.0	35.2	6.6	43.8	10.3	36.3
Uzbekistan *	27.9	-	10.0	-	3.8	-	6.0	-	0.0	-	0.0	-
Vanuatu *	23.6	-	22.9	-	21.9	-	13.2	-	0.0	-	23.2	-
Venezuela	15.9	36.3	17.9	31.3	16.8	95.1	17.0	71.8	12.9	99.5	17.5	59.0
Viet Nam *	35.8	-	37.9	-	17.7	-	25.0	-	10.0	-	20.9	-
Yemen *	21.3	-	17.5	-	9.8	-	12.3	-	11.3	-	15.3	-
Zambia *	23.6	125.0	22.9	94.2	23.8	125.0	20.5	125.0	5.0	100.0	21.3	125.0
Zimbabwe	34.3	150.0	33.5	139.6	26.9	150.0	25.2	143.3	15.0	142.2	34.8	150.0

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. + Duty rates are all non-AV. Cut off date: 26/03/2004.

Source: WTO - IDB and UNCTAD.

Appendix Table 3
Average MFN applied and bound tariffs for agricultural products by MTN category (cont'd)
(Percentage)

(18) Oil seeds, fats & oils & their products		(19) Cut flowers, plants, vegetable materials, lacs, etc.		(20) Beverages and spirits		(21) Dairy products		(22) Tobacco		(23) Other agricultural products		Import markets
Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound	Applied	Bound	
9.7	23.5	41.5	29.4	13.7	30.6	39.7	42.4	11.7	27.2	8.0	24.6	Panama
6.2	36.0	6.0	35.0	*17.4*	*51.5*	0.0	20.2	+	+	2.9	27.3	Papua New Guinea *
9.1	34.0	7.5	35.0	17.9	30.3	16.6	34.3	17.9	25.2	8.2	33.6	Paraguay
12.0	30.0	12.0	30.0	18.6	30.0	24.8	36.7	12.0	30.0	12.0	30.0	Peru *
4.4	36.6	3.1	29.3	6.0	44.8	4.1	26.4	6.1	45.3	3.1	23.1	Philippines
25.5	25.7	31.7	31.7	*99.2*	*31.5*	*136.0*	*145.5*	*198.6*	*230.0*	18.2	18.4	Poland
4.0	14.7	4.0	14.8	4.0	85.2	4.0	15.1	70.0	200.0	4.0	16.6	Qatar *
12.7	68.7	10.0	35.0	82.6	204.9	39.6	176.7	79.3	110.2	19.0	73.9	Romania *
8.3	-	9.3	-	*11.3*	-	*14.8*	-	12.5	-	6.4	-	Russian Federation
15.7	79.5	9.1	76.7	29.0	63.9	24.8	16.0	22.8	80.0	8.4	76.3	Rwanda
15.3	129.9	4.7	100.0	22.8	113.5	6.9	98.8	18.3	100.0	3.3	98.3	Saint Kitts and Nevis *
17.7	127.9	4.6	100.4	27.4	125.9	5.7	100.0	16.7	104.6	3.5	100.5	Saint Lucia
17.6	127.9	6.7	100.4	23.8	125.7	6.5	100.0	25.0	104.6	5.2	100.5	St. Vincent and the Grenadines *
5.6	-	4.4	-	*7.9*	-	5.6	-	100.0	-	4.6	-	Saudi Arabia *
10.5	30.0	5.9	30.0	19.8	29.5	16.3	27.4	12.2	30.0	6.8	30.0	Senegal
13.2	-	13.5	-	28.0	-	34.1	-	14.9	-	9.5	-	Serbia and Montenegro *
21.1	-	36.0	-	99.4	-	28.6	-	200.0	-	40.2	-	Seychelles *
...	40.0	...	39.7	...	50.3	...	40.0	...	40.0	...	39.6	Sierra Leone
0.0	10.0	0.0	10.0	0.0	*10.0*	0.0	7.0	0.0	*10.0*	0.0	9.3	Singapore
5.8	4.5	0.9	0.9	18.5	21.3	27.2	27.2	25.7	25.7	1.5	1.5	Slovak Republic
4.0	21.4	5.5	22.4	*27.5*	*36.8*	*10.3*	*9.0*	13.3	13.3	4.5	18.5	Slovenia
30.2	78.3	20.0	9.6	*65.8*	*91.4*	17.5	32.5	*40.0*	*80.0*	24.0	63.1	Solomon Islands
7.7	47.3	5.1	8.9	*18.9*	123.9	*0.0*	94.8	*35.3*	50.7	2.3	15.1	South Africa
18.3	49.7	8.0	48.8	*24.0*	50.3	20.9	48.5	*81.3*	50.0	8.2	49.5	Sri Lanka
31.7	-	22.1	-	45.0	-	43.7	-	45.0	-	26.3	-	Sudan *
23.4	19.0	*10.7*	19.9	*38.5*	20.0	*8.4*	20.0	*50.0*	20.0	*5.5*	20.0	Suriname *
7.7	47.3	5.1	8.9	*18.9*	123.9	*0.0*	94.8	*35.3*	50.7	2.3	15.1	Swaziland
0.0	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	+	+	*0.0*	*0.0*	*0.0*	*0.0*	Switzerland
6.9	-	8.9	-	81.4	-	18.8	-	23.4	-	10.4	-	Syrian Arab Republic *
12.5	11.5	6.4	6.3	14.9	13.9	*12.0*	*11.6*	19.4	17.2	3.9	3.7	Taipei, Chinese
5.7	-	9.3	-	*10.0*	-	13.5	-	5.0	-	6.4	-	Tajikistan *
16.8	120.0	1.5	120.0	24.0	120.0	24.0	120.0	16.7	120.0	5.3	120.0	Tanzania *
18.3	*43.1*	26.3	*27.0*	40.1	*42.0*	26.5	*34.0*	60.0	*72.0*	12.9	26.5	Thailand *
10.4	80.0	5.9	80.0	20.0	80.0	16.6	80.0	12.2	80.0	7.0	80.0	Togo
16.4	92.8	2.7	75.2	25.7	100.0	13.7	100.0	20.0	100.0	2.1	78.6	Trinidad and Tobago *
39.7	114.2	37.1	123.5	59.4	112.1	92.6	134.9	35.2	70.4	25.2	95.2	Tunisia *
13.6	24.5	9.8	29.4	37.1	74.7	120.8	169.8	34.8	113.7	6.5	24.6	Turkey *
6.1	-	0.0	-	*43.3*	-	5.0	-	75.0	-	3.5	-	Turkmenistan *
9.9	77.9	5.9	78.2	15.0	80.0	15.0	80.0	15.0	80.0	10.8	77.5	Uganda *
4.3	-	*0.0*	-	*23.8*	-	+	-	*30.0*	-	*6.6*	-	Ukraine *
...	19.9	...	15.0	...	116.5	...	15.0	...	200.0	...	15.0	United Arab Emirates
4.3	*9.1*	1.2	*1.2*	6.3	*1.6*	19.0	*13.5*	47.5	*212.2*	1.5	*0.8*	United States
9.1	34.2	7.3	29.6	18.8	31.6	16.6	43.9	17.5	29.4	8.4	31.0	Uruguay
0.7	-	12.7	-	27.1	-	0.0	-	16.7	-	4.6	-	Uzbekistan *
1.1	-	7.9	-	*41.2*	-	22.5	-	+	-	6.2	-	Vanuatu *
15.9	90.0	9.0	33.7	19.1	40.0	19.3	95.6	17.2	40.0	8.9	43.0	Venezuela
12.7	-	5.8	-	71.6	-	24.0	-	51.4	-	5.2	-	Viet Nam *
11.5	-	11.1	-	17.7	-	14.4	-	25.0	-	12.0	-	Yemen *
14.8	125.0	9.4	125.0	24.0	125.0	22.5	125.0	21.7	125.0	12.9	125.0	Zambia *
13.8	146.2	10.3	117.0	*41.8*	150.0	35.9	150.0	84.8	150.0	11.2	134.2	Zimbabwe

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. + Duty rates are all non-AV. Cut off date: 26/03/2004.

Source: WTO - IDB and UNCTAD.

Appendix Table 4
Average MFN applied and final bound tariffs and binding coverage for non-agricultural products by MTN category
(Percentage)

Import markets	(01) Wood, pulp, paper and furniture			(02) Textiles and clothing			(03) Leather, rubber, footwear and travel goods			(04) Metals			(05) Chemicals and photographic supplies			(06) Transport equipment		
	Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty	
	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage
Albania	9.0	0.5	100	9.8	11.5	100	10.7	13.7	100	10.1	4.4	100	4.0	4.2	100	5.0	8.1	100
Algeria *	19.4	...	...	25.8	...	...	19.3	...	...	16.5	...	...	14.7	...	...	11.0	...	...
Angola *	10.3	60.0	100	5.7	60.2	100	4.9	60.0	100	4.9	60.1	100	2.6	60.0	100	5.1	60.0	100
Antigua and Barbuda *	8.9	52.5	100	10.8	50.2	100	9.3	50.7	100	6.0	50.5	100	6.1	50.6	100	9.8	56.4	100
Argentina *	11.1	33.4	100	27.9	35.0	100	15.6	35.0	100	11.5	34.1	100	8.6	21.3	100	18.3	34.5	100
Armenia *	0.9	3.4	100	5.3	10.8	100	3.3	14.0	100	0.3	4.9	100	0.0	0.3	100	4.6	9.6	100
Australia *	3.5	7.0	100	12.9	24.9	91	7.0	14.4	86	3.4	6.7	98	1.8	9.0	100	4.2	12.6	99
Azerbaijan *	11.1	...	...	12.4	...	...	12.4	...	...	7.1	...	...	4.3	...	...	4.2	...	...
Bahamas	27.8	...	...	26.9	...	...	30.2	...	...	34.7	...	...	32.7	...	...	36.8	...	...
Bahrain *	6.6	37.9	27	9.9	35.0	100	9.1	35.0	38	5.3	35.0	95	5.6	35.0	19	11.8	35.0	100
Bangladesh *	21.0	38.1	5	27.7	37.5	0	19.8	3.0	1	18.8	31.9	1	15.5	43.0	2	16.4	20.1	10
Barbados *	10.3	70.0	100	11.2	70.1	100	10.6	72.0	100	6.6	70.2	100	7.0	70.2	100	10.2	97.2	100
Belarus	13.0	...	...	*10.8*	...	...	*7.9*	...	...	9.5	...	...	6.9	...	...	10.9	...	...
Belize *	10.9	51.6	100	11.0	56.4	100	10.1	50.3	100	5.7	50.0	100	6.2	50.1	100	9.4	50.0	100
Benin *	10.8	5.0	4	17.4	16.7	39	12.9	15.1	26	11.8	4.2	6	7.1	19.7	1	8.7	13.4	73
Bermuda *	19.1	...	...	10.7	...	...	19.6	...	...	22.2	...	...	20.9	...	...	31.0	...	...
Bhutan *	12.5	...	...	19.9	...	...	21.4	...	...	17.2	...	...	13.7	...	...	11.6	...	...
Bolivia	10.0	40.0	100	10.0	40.0	100	10.0	40.0	100	9.9	40.0	100	10.0	40.0	100	8.0	39.9	100
Bosnia and Herzegovina *	5.5	...	...	10.7	...	...	7.8	...	...	5.4	...	...	3.4	...	...	5.8	...	...
Botswana	7.6	10.7	100	*15.2*	29.7	100	13.3	20.9	98	4.5	12.7	100	3.0	12.3	100	6.6	18.4	100
Brazil	12.4	28.8	100	19.2	34.8	100	15.6	35.0	100	13.0	33.0	100	10.1	21.0	100	18.9	33.3	100
Brunei Darussalam	4.1	25.3	98	0.6	27.0	100	3.0	23.6	100	0.0	20.0	98	0.4	21.0	94	13.7	24.5	67
Bulgaria	8.4	18.1	100	16.3	32.6	100	9.9	29.4	100	6.6	23.7	100	7.3	11.6	100	5.8	22.5	100
Burkina Faso *	10.8	83.0	23	17.4	16.7	39	12.9	15.1	26	11.8	4.2	6	7.1	23.4	1	8.7	13.4	73
Burundi	21.9	19.3	9	39.9	25.1	27	28.6	73.1	25	16.1	8.6	1	15.6	7.0	8	22.6	76.3	13
Cambodia *	16.9	...	...	19.8	...	...	24.1	...	...	11.5	...	...	10.1	...	...	19.4	...	...
Cameroon	19.2	...	...	22.9	50.0	0	21.3	...	...	15.8	...	...	11.6	80.0	0	15.1	...	...
Canada	1.4	1.4	100	11.7	12.5	100	5.7	7.6	100	1.9	2.7	100	3.0	4.4	100	5.8	5.6	94
Central African Republic *	19.2	50.0	10	22.9	42.1	1	21.4	48.8	23	15.8	44.8	76	11.6	31.2	84	15.1	38.6	89
Chad *	19.2	80.0	0	22.9	75.0	9	21.4	...	...	15.8	...	...	11.6	...	...	15.1	...	...
Chile	6.0	25.0	100	6.0	25.0	100	6.0	25.0	100	6.0	25.0	100	6.0	25.0	100	5.5	24.9	100
China	8.5	5.0	100	17.5	11.5	100	14.6	13.7	100	7.3	7.1	100	7.5	6.7	100	15.9	11.5	100
Colombia	13.2	35.0	100	18.4	36.9	100	13.7	34.9	100	10.0	35.0	100	8.0	34.9	100	13.6	35.4	100
Congo *	19.2	10.0	2	22.9	30.0	1	21.4	30.0	0	15.8	12.5	1	11.6	10.0	21	15.1	10.0	4
Costa Rica	5.9	43.0	100	9.5	45.0	100	7.5	45.7	100	2.3	41.8	100	1.7	43.7	100	4.6	51.5	100

Import markets	(07) Non-electric machinery			(08) Electric machinery			(09) Mineral products and precious stones and metals			(10) Manufactured articles not specified			(11) Fish and fish products			(97) Petroleum		
	Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty	
	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage
Albania	2.2	3.7	100	5.3	4.5	100	7.6	10.3	100	8.9	9.5	100	12.0	0.1	100	9.2	9.3	100
Algeria *	9.1	...	...	17.3	...	...	16.5	...	...	22.1	...	...	29.2	...	...	19.5	...	...
Angola *	13.0	60.0	100	9.9	60.0	100	31.3	61.1	100	22.5	60.0	100	.	60.0	100	.	70.0	100
Antigua and Barbuda *	5.9	50.6	100	10.3	54.2	100	8.0	54.0	100	13.8	52.4	100	22.6	79.6	100	3.7	.	.
Argentina *	13.0	34.9	100	14.5	34.9	100	7.6	33.2	100	15.9	33.5	100	10.1	33.9	100	1.0	34.9	100
Armenia *	0.2	9.3	100	1.5	9.9	100	3.4	10.9	100	4.4	10.6	100	9.4	15.0	100	0.0	5.0	100
Australia *	3.2	8.2	96	3.3	10.3	98	1.8	6.8	97	1.5	6.3	98	0.0	0.8	100	*0.0*	0.0	100
Azerbaijan *	3.3	...	...	9.3	...	...	10.9	...	...	10.1	...	...	*7.5*	...	...	6.5	...	...
Bahamas	33.1	...	...	35.6	...	...	31.4	...	...	31.6	...	...	26.3	...	...	*19.4*	...	...
Bahrain *	8.6	35.0	100	9.9	35.0	100	5.8	35.0	45	9.0	35.0	98	3.3	35.0	50	5.3	...	...
Bangladesh *	9.9	48.6	6	17.3	26.5	1	18.7	31.3	1	19.7	22.1	6	29.6	41.4	10	30.9	...	...
Barbados *	6.2	72.8	100	9.9	75.7	100	12.5	77.2	100	16.2	77.8	100	38.6	114.0	100	*5.0*	...	...
Belarus	9.1	...	...	12.2	...	...	12.0	...	...	13.3	...	...	10.5	...	...	5.0	...	...
Belize *	5.6	50.0	100	9.7	50.0	100	11.0	50.5	100	15.3	50.4	100	30.4	110.0	5	*0.0*	60.0	100
Benin *	7.0	5.3	91	11.2	7.0	94	11.5	41.1	23	14.9	7.4	2	14.4	6.5	15	7.2	8.0	50
Bermuda *	22.4	...	...	23.9	...	...	16.1	...	...	20.3	...	...	6.4	...	...	*22.3*	...	...
Bhutan *	9.4	...	...	14.8	...	...	22.0	...	...	19.0	...	...	13.5	...	...	10.0	...	...
Bolivia	5.2	39.8	100	8.8	40.0	100	10.0	40.0	100	9.9	40.0	100	10.0	40.0	100	10.0	40.0	100
Bosnia and Herzegovina *	6.0	...	...	6.9	...	...	4.5	...	...	6.5	...	...	2.8	...	...	2.0	...	...
Botswana	1.5	9.2	100	5.4	17.2	100	3.8	9.4	89	3.5	12.9	96	*10.2*	24.7	3	*1.3*	...	...
Brazil	13.4	32.4	100	16.1	32.0	100	8.9	32.7	100	16.9	33.2	100	11.5	33.5	100	0.2	35.0	100
Brunei Darussalam	6.3	28.1	100	14.2	39.0	77	0.5	20.8	99	5.0	24.6	88	0.0	21.0	100	*0.0*	20.0	100
Bulgaria	5.7	21.9	100	6.6	19.4	100	7.1	27.1	100	6.2	25.6	100	11.4	30.0	100	16.4	17.1	100
Burkina Faso *	7.0	5.3	91	11.2	7.0	94	11.5	9.5	5	14.9	44.5	3	14.4	6.5	15	7.2	8.0	50
Burundi	15.8	6.0	3	21.5	2.5	1	29.0	8.1	5	42.4	42.9	5	96.9	6.0	5	15.2	...	...
Cambodia *	14.5	...	...	25.1	...	...	15.9	...	...	17.2	...	...	19.3	...	...	15.1	...	...
Cameroon	12.3	...	...	16.8	...	...	18.7	...	...	22.9	...	...	24.4	...	...	10.0	...	...
Canada	1.5	3.4	100	2.4	4.3	100	1.7	2.8	99	2.8	4.0	100	1.0	1.3	100	3.0	6.9	50
Central African Republic *	12.3	32.0	87	17.0	37.0	93	18.7	29.5	33	22.9	49.8	89	24.4	30.0	100	10.0	...	...
Chad *	12.3	...	...	17.0	...	...	18.7	...	...	22.9	...	...	24.4	...	...	10.0	...	...
Chile	5.9	25.0	100	5.6	25.0	100	6.0	25.0	100	6.0	25.0	100	6.0	25.0	100	6.0	25.0	100
China	9.9	8.4	100	10.4	8.8	100	10.2	9.7	100	13.5	12.3	100	14.6	11.0	100	5.0	3.3	100
Colombia	8.9	35.0	100	10.4	35.0	100	10.1	35.0	100	11.1	35.0	100	19.0	38.2	100	10.1	35.0	100
Congo *	12.3	10.0	1	17.0	16.7	15	18.7	30.0	1	22.9	...	...	24.4	...	...	10.0	...	...
Costa Rica	1.1	41.0	100	2.4	34.2	100	5.0	44.4	100	6.1	40.4	100	8.8	46.1	100	4.1	44.3	100

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. + Duty rates are all non-AV. Cut off date: 26/03/2004.

Source: WTO - IDB and UNCTAD.

Appendix Table 4
Average MFN applied and final bound tariffs and binding coverage for non-agricultural products by MTN category (cont'd)
(Percentage)

Import markets	(01) Wood, pulp, paper and furniture			(02) Textiles and clothing			(03) Leather, rubber, footwear and travel goods			(04) Metals			(05) Chemicals and photographic supplies			(06) Transport equipment		
	Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty	
	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage
Côte d'Ivoire	10.9	5.0	4	17.4	17.3	24	13.1	7.8	20	12.1	4.1	6	7.2	16.5	1	8.7	11.1	67
Croatia	2.9	1.5	100	8.9	8.9	100	5.1	7.5	100	2.9	3.6	100	1.4	4.6	100	6.3	6.7	100
Cuba	8.9	4.0	10	16.9	20.8	8	12.3	8.1	8	7.6	5.7	9	9.5	6.3	12	9.1	7.7	23
Cyprus	1.9	40.0	75	8.4	40.0	63	4.2	40.0	64	2.3	40.0	99	4.7	39.9	94	4.1	40.0	34
Czech Republic	5.0	5.5	100	6.2	6.2	100	4.2	4.1	100	3.6	3.8	100	3.7	4.0	100	6.1	6.2	100
Dem. Rep. of Congo *	15.6	92.1	100	16.0	99.9	100	14.6	100.0	100	11.5	99.7	100	8.5	97.2	100	8.8	87.7	100
Djibouti *	31.2	40.0	100	32.9	40.0	100	33.1	40.0	100	32.9	40.0	100	32.5	40.1	100	34.0	39.1	100
Dominica *	8.7	50.0	86	10.0	50.0	100	10.6	50.0	82	5.5	50.0	98	7.0	50.1	93	8.9	50.0	100
Dominican Republic	8.1	36.4	100	9.4	39.1	100	11.5	38.7	100	7.3	37.4	100	4.9	21.9	100	8.1	39.9	100
Ecuador	12.7	23.6	100	18.2	28.5	100	13.0	24.1	100	9.1	20.6	100	7.5	11.1	100	10.5	23.5	100
Egypt *	22.3	36.4	100	*37.4*	31.2	100	26.4	42.7	90	17.2	28.7	99	13.2	18.9	100	21.7	35.0	94
El Salvador *	6.2	34.8	100	16.9	38.7	100	8.6	40.6	100	2.4	34.9	100	1.9	37.6	100	4.4	34.5	100
Equatorial Guinea *	19.2	-	-	22.9	-	-	21.4	-	-	15.8	-	-	11.6	-	-	15.1	-	-
Estonia	0.0	2.7	100	0.0	10.2	100	0.0	10.4	100	0.0	5.5	100	0.0	5.1	100	0.0	8.4	100
Ethiopia *	12.9	-	-	32.5	-	-	24.4	-	-	11.9	-	-	11.2	-	-	12.7	-	-
European Union	1.1	0.9	100	7.9	7.9	100	4.2	4.2	100	1.9	1.9	100	4.5	4.6	100	4.1	4.1	100
Fiji	...	40.0	87	...	40.0	65	...	40.0	6	...	40.0	99	...	40.0	100	...	40.0	8
FYR of Macedonia	13.0	2.5	100	20.7	11.4	100	15.6	10.3	100	8.1	3.6	100	7.0	3.3	100	8.8	7.0	100
Gabon *	19.2	15.5	100	22.9	15.1	100	21.4	15.0	100	15.8	15.1	100	11.6	15.2	100	15.1	15.0	100
Gambia	...	110.0	0	...	70.9	9	...	42.5	4	...	...	...	...	...	...	...	...	...
Georgia *	12.0	3.6	100	12.0	9.4	100	11.8	10.8	100	11.8	4.2	100	11.7	6.3	100	11.3	10.0	100
Ghana *	19.4	40.9	4	23.2	45.0	0	15.3	40.0	1	11.1	99.0	0	12.9	32.1	6	5.4	30.0	2
Grenada *	9.4	50.0	100	11.0	50.0	100	10.2	50.0	100	6.5	50.0	100	7.0	50.0	100	9.0	50.0	100
Guatemala *	6.4	36.8	100	13.2	44.7	100	8.8	44.2	100	2.3	40.8	100	1.9	38.9	100	6.1	40.4	100
Guinea	6.9	19.7	15	6.5	16.9	40	6.0	15.0	26	6.8	4.1	6	6.8	17.5	1	5.6	13.7	74
Guinea-Bissau *	10.8	50.0	100	17.4	50.0	100	12.9	50.0	100	11.8	50.0	100	7.1	50.0	100	8.7	50.0	43
Guyana	9.4	50.0	100	11.1	50.0	100	10.3	50.0	100	6.5	50.0	100	6.7	50.0	100	10.0	50.0	100
Haiti	...	10.9	70	...	*15.8*	77	...	21.7	86	...	12.0	87	...	22.6	100	...	12.9	100
Honduras	6.6	33.7	100	15.2	34.3	100	9.2	35.0	100	3.1	33.6	100	2.6	32.1	100	6.7	29.1	100
Hong Kong, China	0.0	0.0	96	0.0	0.0	7	0.0	0.0	45	0.0	0.0	77	0.0	0.0	8	0.0	0.0	14
Hungary	5.4	5.4	99	8.3	8.2	98	6.4	6.7	100	4.8	5.0	99	5.1	5.2	96	10.7	11.1	93
Iceland *	2.4	11.5	92	5.2	12.1	90	6.0	11.7	91	0.8	6.2	100	1.0	4.3	99	2.1	9.7	44
India	25.7	36.5	62	*27.1*	*26.6*	66	28.8	35.2	51	29.0	38.7	54	29.2	39.6	89	36.9	35.8	70
Indonesia	5.2	39.4	99	10.5	28.7	100	7.7	39.8	99	7.3	38.4	98	5.4	38.1	97	12.2	38.9	54
Iran, Islamic Rep. of *	21.4	-	-	60.8	-	-	50.0	-	-	16.3	-	-	11.8	-	-	27.9	-	-

Import markets	(07) Non-electric machinery			(08) Electric machinery			(09) Mineral products and precious stones and metals			(10) Manufactured articles not specified			(11) Fish and fish products			(97) Petroleum		
	Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty	
	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage
Côte d'Ivoire	7.0	5.1	77	11.2	7.0	79	11.5	9.2	4	15.1	8.4	4	14.7	5.8	12	3.8	8.1	50
Croatia	3.1	3.9	100	3.2	4.7	100	5.6	7.2	100	2.8	5.3	100	7.4	7.3	100	12.0	6.9	100
Cuba	9.7	8.7	62	10.4	10.8	63	7.8	2.6	14	12.8	15.5	17	4.9	2.6	12	2.4	3.0	50
Cyprus	1.8	37.4	94	2.5	30.9	100	2.6	40.0	76	2.6	36.3	91	24.2	40.0	100	2.2	40.0	50
Czech Republic	3.6	3.6	100	3.4	3.4	100	3.3	3.5	100	3.2	3.3	100	0.1	0.1	100	3.8	2.4	100
Dem. Rep. of Congo *	6.9	85.5	100	10.7	91.4	100	13.0	99.5	100	13.5	97.2	100	16.9	92.6	100	9.0	100.0	100
Djibouti *	33.0	39.6	100	33.0	39.3	100	30.5	40.2	100	35.8	40.0	100	20.2	40.0	100	33.0	0.0	100
Dominica *	3.0	50.0	100	9.3	50.0	100	8.1	50.0	96	12.7	50.0	99	27.2	50.0	100	3.2	...	...
Dominican Republic	3.6	35.4	100	7.5	35.0	100	8.6	32.4	100	12.5	38.0	100	16.2	39.9	100	5.1	40.0	100
Ecuador	7.5	20.0	100	10.1	22.5	100	9.6	19.6	100	13.3	24.2	98	19.0	28.8	100	7.9	17.1	100
Egypt *	10.1	19.4	99	17.8	31.2	93	19.9	36.0	99	19.6	33.3	99	18.8	27.9	100	8.8	20.0	100
El Salvador *	1.3	30.3	100	2.7	26.6	100	5.4	37.5	100	7.9	34.7	100	9.1	45.7	100	8.1	40.0	100
Equatorial Guinea *	12.3	-	-	17.0	-	-	18.7	-	-	22.9	-	-	24.4	-	-	10.0	-	-
Estonia	0.0	5.8	100	0.0	6.4	100	0.0	10.0	100	0.0	7.4	100	3.1	16.9	100	0.0	7.5	100
Ethiopia *	9.1	-	-	17.8	-	-	17.7	-	-	26.0	-	-	30.9	-	-	2.5	-	-
European Union	1.7	1.7	100	2.5	2.4	100	2.0	2.0	100	2.5	2.5	100	11.7	11.2	100	3.1	2.0	100
Fiji	...	40.0	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
FYR of Macedonia	7.1	5.1	100	12.1	7.2	100	12.2	8.5	100	12.1	6.7	100	12.9	0.3	100	12.1	14.0	100
Gabon *	12.3	15.0	100	17.0	15.0	100	18.7	16.1	100	22.9	18.6	100	24.4	15.0	100	10.0	15.0	100
Gambia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Georgia *	5.2	3.4	100	5.0	2.8	100	12.0	11.8	100	8.9	6.9	100	12.0	0.3	100	12.0	12.0	100
Ghana *	2.5	30.0	5	10.1	50.0	0	13.0	...	...	16.2	...	...	15.6	...	...	44.6	...	...
Grenada *	5.9	50.0	100	10.4	50.0	100	9.1	50.0	100	13.4	50.0	100	27.8	50.0	100	7.3	50.0	100
Guatemala *	1.2	36.2	100	2.9	39.5	100	5.6	41.5	100	7.3	44.3	100	9.1	40.7	100	7.4	45.0	100
Guinea	4.7	5.2	91	6.8	7.0	94	6.6	9.5	5	6.9	15.8	3	7.0	6.5	15	7.0	8.0	50
Guinea-Bissau *	7.0	50.0	99	11.2	50.0	100	11.5	50.0	89	14.9	50.0	99	14.4	50.0	100	7.2	.	.
Guyana	5.9	50.0	100	9.6	50.0	100	10.7	50.4	100	15.6	50.0	100	29.3	50.0	100	7.8	50.0	100
Haiti	...	14.2	99	...	15.8	100	...	18.0	82	...	17.1	89	...	*20.7*	37	...	*17.5*	100
Honduras	2.1	30.6	100	3.7	27.6	100	5.8	32.8	100	7.8	33.4	100	9.8	34.7	100	14.4	24.4	100
Hong Kong, China	0.0	0.0	29	0.0	0.0	41	0.0	0.0	51	0.0	0.0	53	0.0	0.0	100	0.0	.	.
Hungary	8.0	8.3	99	9.7	9.5	91	4.7	4.6	96	7.5	7.6	97	16.2	20.7	40	3.2	2.3	100
Iceland *	0.7	5.6	96	2.0	14.9	99	1.8	11.4	91	3.6	20.6	98	1.2	3.5	95	0.0	8.7	50
India	25.2	28.3	94	24.8	26.8	94	26.8	37.6	70	26.9	31.4	42	30.0	100.7	13	18.0	...	...
Indonesia	2.2	34.9	98	6.0	30.3	98	5.1	39.6	98	7.5	35.7	88	4.9	40.0	100	2.1	40.0	100
Iran, Islamic Rep. of *	12.2	-	-	21.7	-	-	16.5	-	-	22.6	-	-	26.8	-	-	5.0	-	-

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. + Duty rates are all non-AV. Cut off date: 26/03/2004.

Source: WTO - IDB and UNCTAD.

Appendix Table 4
Average MFN applied and final bound tariffs and binding coverage for non-agricultural products by MTN category (cont'd)
(Percentage)

Import markets	(01) Wood, pulp, paper and furniture			(02) Textiles and clothing			(03) Leather, rubber, footwear and travel goods			(04) Metals			(05) Chemicals and photographic supplies			(06) Transport equipment		
	Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty	
	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage
Israel	6.0	14.0	74	*4.6*	*11.6*	41	6.0	12.0	75	3.6	8.4	89	2.4	8.2	85	3.3	*13.3*	41
Jamaica *	6.6	49.2	100	8.0	49.6	100	7.5	40.2	100	2.4	45.1	100	2.6	24.7	100	6.7	47.3	100
Japan	1.2	0.9	98	7.4	6.7	100	6.4	6.6	100	1.3	1.0	100	2.5	2.0	100	0.0	0.0	100
Jordan *	15.4	21.5	100	15.4	16.8	100	19.2	24.2	100	11.1	19.2	100	3.0	5.0	100	11.7	13.4	100
Kazakhstan *	12.8	-	-	16.2	-	-	10.6	-	-	9.7	-	-	4.2	-	-	7.4	-	-
Kenya	22.7	...	...	27.5	...	...	18.0	...	...	14.9	...	...	12.3	31.9	2	12.4	62.0	1
Korea, Republic of	3.7	2.8	90	10.1	19.4	99	7.9	12.2	97	4.9	7.0	99	6.9	5.8	97	5.4	13.4	81
Kuwait *	3.9	100.0	100	4.0	100.0	100	4.0	100.0	100	4.0	100.0	100	4.0	100.0	100	4.0	100.0	100
Kyrgyz Republic	0.4	0.7	100	9.6	9.6	100	4.2	9.4	100	2.5	3.3	100	0.4	5.4	100	4.6	9.0	100
Lao PDR *	13.4	-	-	9.2	-	-	10.8	-	-	6.0	-	-	6.8	-	-	13.7	-	-
Latvia *	1.1	3.3	100	5.9	12.6	100	1.2	12.3	100	0.6	6.6	100	0.7	5.4	100	3.0	14.0	100
Lebanon *	7.4	-	-	3.0	-	-	9.8	-	-	3.4	-	-	2.5	-	-	4.1	-	-
Lesotho	...	60.0	100	...	60.0	100	...	60.0	100	...	60.0	100	...	60.1	100	...	60.0	100
Libyan Arab Jamahiriya *	13.3	-	-	18.4	-	-	24.0	-	-	8.0	-	-	8.1	-	-	40.3	-	-
Lithuania	2.9	5.6	100	8.7	11.4	100	2.5	13.6	100	0.1	5.9	100	0.4	4.4	100	0.2	12.0	100
Macao, China	0.0	0.0	8	0.0	0.0	2	0.0	0.0	52	0.0	0.0	17	0.0	0.0	24	0.0	.	.
Madagascar	3.1	2.5	2	14.3	17.5	1	5.7	15.0	3	2.9	15.0	11	1.1	30.0	60	5.7	23.9	39
Malawi	13.9	41.8	11	20.4	45.0	0	19.2	41.8	17	10.6	41.2	6	6.9	40.2	61	14.4	52.7	23
Malaysia	10.9	18.7	88	13.5	19.5	98	14.0	21.5	87	9.3	19.7	62	3.6	11.9	74	18.5	14.2	61
Maldives	16.7	30.0	100	21.0	30.0	100	25.7	31.8	100	22.1	30.0	100	15.5	30.5	100	43.2	134.8	70
Mali *	10.8	52.9	31	17.4	16.7	39	12.9	15.1	26	11.8	31.7	12	7.1	19.7	1	8.7	13.4	73
Malta	4.7	48.8	98	9.7	47.0	100	5.2	51.2	100	4.6	46.9	99	6.4	48.0	99	6.2	54.6	100
Mauritania	9.8	5.0	4	15.0	16.7	39	11.3	20.6	41	10.0	4.2	6	6.1	18.2	1	11.0	16.0	87
Mauritius	23.2	65.0	1	32.0	.	.	31.8	.	.	14.2	65.0	3	9.5	64.3	1	24.3	65.0	2
Mexico	15.7	34.0	100	24.5	35.0	100	20.5	34.9	100	15.6	34.4	100	12.8	35.2	100	17.4	36.9	100
Moldova *	4.2	6.1	100	8.0	9.1	100	7.4	9.0	100	0.7	1.5	100	3.5	4.5	100	2.0	4.3	100
Mongolia	7.0	19.2	100	7.0	21.5	100	7.0	20.1	100	7.0	20.0	100	7.0	5.8	100	7.0	20.0	100
Montserrat *	*14.9*	-	-	*19.6*	-	-	*16.3*	-	-	*15.1*	-	-	*14.1*	-	-	*11.4*	-	-
Morocco	40.5	39.0	100	40.0	41.2	100	41.3	39.8	100	27.8	39.6	100	25.1	39.0	100	20.6	38.7	100
Mozambique *	11.3	100.0	0	20.2	6.6	4	13.3	...	...	7.4	...	...	5.5	...	...	9.4	...	...
Myanmar	6.6	...	...	10.6	26.0	1	5.3	...	...	2.9	20.2	8	2.3	36.9	4	3.9	0.0	3
Namibia	7.6	10.7	100	*15.2*	29.7	100	13.3	20.9	98	4.5	12.7	100	3.0	12.3	100	6.6	18.4	100
Nepal	14.6	...	...	16.0	...	...	15.3	...	...	12.4	...	...	12.8	...	...	24.5	...	...
New Zealand *	3.0	4.9	100	7.3	17.6	100	4.9	16.6	100	2.6	10.0	100	1.0	4.1	100	4.6	16.3	100
Nicaragua	4.6	40.0	100	8.4	46.6	100	7.2	42.1	100	1.7	40.0	100	1.4	40.0	100	3.6	45.2	100

Import markets	(07) Non-electric machinery			(08) Electric machinery			(09) Mineral products and precious stones and metals			(10) Manufactured articles not specified			(11) Fish and fish products			(97) Petroleum		
	Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty	
	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage
Israel	4.2	8.1	75	4.3	5.1	100	3.7	8.0	79	5.6	12.0	78	*4.2*	*39.1*	53	1.6	25.0	50
Jamaica *	1.5	39.1	100	6.3	47.0	100	6.5	49.1	100	11.5	50.0	100	27.1	50.0	100	*0.0*	50.0	100
Japan	0.0	0.0	100	0.2	0.2	100	0.8	0.8	100	1.1	1.0	100	5.7	5.0	91	1.7	3.5	50
Jordan *	7.4	10.3	100	15.6	16.7	100	15.7	19.8	100	19.9	20.6	100	21.1	19.8	100	22.3	14.1	100
Kazakhstan *	0.5	-	-	0.0	-	-	16.9	-	-	15.6	-	-	10.8	-	-	5.0	-	-
Kenya	9.2	...	...	13.9	...	...	14.7	62.0	2	15.9	...	...	15.1	62.0	42	1.7	...	...
Korea, Republic of	6.1	9.5	96	6.0	9.0	74	5.8	8.8	90	6.5	10.0	95	16.1	14.9	53	5.1	12.3	50
Kuwait *	4.0	100.0	100	4.0	100.0	100	4.0	100.0	100	4.0	100.0	100	0.0	100.0	100	4.0	.	.
Kyrgyz Republic	5.1	6.6	100	3.6	6.5	100	6.5	9.4	100	6.1	7.3	100	9.9	10.2	100	0.0	*10.0*	100
Lao PDR *	6.0	-	-	6.7	-	-	5.6	-	-	10.4	-	-	16.6	-	-	7.3	-	-
Latvia *	0.0	7.2	100	0.0	7.3	100	4.6	11.7	100	1.9	11.6	100	8.3	35.7	100	0.0	2.5	100
Lebanon *	3.3	-	-	3.8	-	-	5.6	-	-	5.1	-	-	5.1	-	-	*4.1*	-	-
Lesotho	...	60.0	100	...	60.0	100	...	60.0	100	...	60.0	100	...	60.0	100	...	60.0	100
Libyan Arab Jamahiriya *	10.5	-	-	24.6	-	-	20.8	-	-	32.9	-	-	6.4	-	-	*60.0*	-	-
Lithuania	0.2	8.4	100	0.4	7.9	100	1.3	11.2	100	1.3	9.6	100	4.2	12.9	100	2.0	10.4	100
Macao, China	0.0	0.0	9	0.0	0.0	35	0.0	0.0	5	0.0	0.0	27	0.0	...	...	0.0	...	...
Madagascar	4.9	18.4	33	5.7	19.9	14	3.8	...	...	6.1	17.5	0	3.1	...	...	0.0	5.0	50
Malawi	8.8	49.5	25	13.0	38.2	9	11.8	41.2	10	18.8	61.9	4	12.0	40.0	81	4.2	...	...
Malaysia	3.7	9.1	88	6.7	13.8	89	8.8	15.3	69	5.1	9.9	91	2.4	7.8	56	1.4	5.0	100
Maldives	20.9	34.1	100	21.9	30.0	100	22.5	30.0	100	19.4	53.6	100	16.1	.	.	19.4	30.0	100
Mali *	7.0	5.3	91	11.2	7.0	94	11.5	9.5	5	14.9	45.2	7	14.4	6.5	15	7.2	8.3	50
Malta	3.9	48.9	100	5.7	50.8	100	3.3	52.1	98	5.0	53.2	97	4.1	20.5	3	3.0	50.0	100
Mauritania	5.8	5.3	91	9.6	7.0	94	10.7	9.5	5	12.8	18.1	4	19.9	17.3	26	6.9	8.0	50
Mauritius	7.3	14.4	10	25.6	12.6	36	15.5	52.0	1	24.7	0.0	11	12.5	...	...	5.6	...	...
Mexico	11.9	35.3	100	16.5	34.8	100	14.6	34.4	100	18.4	34.8	100	27.8	34.9	100	11.6	42.5	100
Moldova *	0.1	7.9	100	3.6	5.8	100	5.3	7.0	100	5.8	5.5	100	5.7	4.3	100	0.0	0.0	100
Mongolia	6.9	19.6	100	6.6	18.7	100	7.0	18.8	100	6.7	20.1	100	7.0	20.0	100	7.0	20.0	100
Montserrat *	*11.5*	-	-	*18.9*	-	-	*14.4*	-	-	*16.7*	-	-	28.4	-	-	*3.0*	-	-
Morocco	10.7	36.9	100	15.7	37.7	100	27.3	39.1	100	19.6	39.2	100	49.0	39.6	100	23.6	40.0	100
Mozambique *	6.5	...	...	10.4	...	...	8.2	...	...	17.3	...	...	24.2	...	...	5.8	...	...
Myanmar	1.6	8.6	13	4.2	0.0	0	4.3	31.0	6	6.4	29.6	6	8.1	68.2	5	*2.3*	25.0	100
Namibia	1.5	9.2	100	5.4	17.2	100	3.8	9.4	89	3.5	12.9	96	*10.2*	24.7	3	*1.3*	...	...
Nepal	7.7	...	...	14.7	...	...	14.6	...	...	14.9	...	...	10.8	...	...	*27.5*	...	...
New Zealand *	4.1	15.5	100	3.4	15.1	100	1.5	6.3	100	2.3	10.9	100	0.6	1.7	100	0.2	3.2	100
Nicaragua	0.9	39.8	100	2.3	40.0	100	4.0	40.3	100	6.1	40.0	100	9.6	40.0	100	3.6	40.0	100

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. + Duty rates are all non-AV. Cut off date: 26/03/2004.

Source: WTO - IDB and UNCTAD.

Appendix Table 4
Average MFN applied and final bound tariffs and binding coverage for non-agricultural products by MTN category (cont'd)
(Percentage)

Import markets	(01) Wood, pulp, paper and furniture			(02) Textiles and clothing			(03) Leather, rubber, footwear and travel goods			(04) Metals			(05) Chemicals and photographic supplies			(06) Transport equipment		
	Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty	
	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage
Niger	11.6	48.2	100	17.4	36.0	93	13.3	37.7	74	12.1	47.2	100	7.5	49.7	96	8.9	23.9	100
Nigeria *	22.2	80.0	2	51.5	60.0	1	31.6	53.3	5	22.5	61.8	1	17.4	44.2	33	17.9	58.9	5
Norway	0.0	0.4	100	3.6	8.4	100	0.0	3.4	100	0.0	1.1	100	0.0	2.5	100	0.0	3.3	100
Oman	4.8	7.5	100	5.0	14.9	100	5.7	14.5	100	5.0	14.6	100	5.0	5.4	100	4.7	11.9	100
Pakistan *	19.1	46.8	50	21.6	21.9	96	18.2	41.4	10	15.5	36.2	4	13.6	48.4	53	31.3	33.8	11
Panama	8.0	27.9	100	6.1	28.8	100	9.0	26.3	100	7.3	27.5	100	4.1	6.0	100	12.9	23.1	100
Papua New Guinea *	14.5	55.9	100	10.6	29.9	100	4.7	34.6	100	1.7	26.1	100	1.3	19.3	100	0.7	36.3	100
Paraguay	12.0	33.2	100	19.1	33.6	100	14.4	34.8	100	12.4	34.5	100	9.5	33.8	100	10.8	31.3	100
Peru *	12.0	30.0	100	17.6	30.0	100	13.4	30.0	100	12.0	30.0	100	12.0	30.0	100	12.0	30.0	100
Philippines	4.8	24.2	40	6.9	28.0	97	4.8	32.7	36	3.6	25.7	32	3.5	19.6	74	8.0	19.1	39
Poland	7.9	8.1	100	13.0	12.9	99	11.3	11.6	100	9.6	9.7	100	8.6	8.7	100	17.6	8.7	59
Qatar *	4.0	17.0	100	4.0	16.4	100	4.0	16.8	100	4.4	15.1	100	4.0	7.6	100	4.0	13.6	100
Romania *	12.8	31.4	100	23.6	32.9	100	16.0	32.1	100	14.1	32.6	100	14.5	30.9	100	23.6	33.5	100
Russian Federation	13.1	-	-	*10.8*	-	-	*8.0*	-	-	9.5	-	-	7.0	-	-	10.5	-	-
Rwanda	20.5	95.5	100	21.7	74.5	100	23.2	95.1	100	20.2	99.3	100	16.7	92.8	100	23.4	96.9	100
St. Kitts and Nevis *	10.2	78.1	100	11.6	71.1	100	9.7	70.0	100	5.7	70.0	100	5.8	70.1	100	10.0	70.0	100
Saint Lucia	7.9	62.5	100	11.5	52.7	100	10.2	50.9	100	3.3	50.7	100	6.1	50.9	100	12.4	57.8	100
St. Vincent & the Grenadines *	9.4	63.5	100	11.0	52.7	100	10.2	50.9	100	5.8	50.8	100	6.3	51.0	100	9.1	59.3	100
Saudi Arabia *	7.3	-	-	5.8	-	-	6.1	-	-	7.5	-	-	5.9	-	-	5.0	-	-
Senegal	11.0	30.0	100	17.4	30.0	100	13.1	30.0	100	12.1	30.0	100	7.2	30.0	100	8.7	30.0	100
Serbia and Montenegro *	13.8	-	-	19.2	-	-	16.1	-	-	11.8	-	-	7.8	-	-	10.9	-	-
Seychelles *	29.7	-	-	20.9	-	-	43.2	-	-	22.8	-	-	29.7	-	-	36.7	-	-
Sierra Leone	...	49.4	100	...	50.0	100	...	49.9	100	...	48.3	100	...	49.2	100	...	49.3	100
Singapore	0.0	3.0	96	0.0	10.0	74	0.0	10.0	21	0.0	5.4	62	0.0	5.1	97	0.0	6.0	12
Slovak Republic	5.4	5.5	100	6.5	6.2	100	4.2	4.1	100	3.7	3.8	100	3.9	4.0	100	6.2	6.2	100
Slovenia	9.5	23.5	100	12.7	24.4	100	10.6	25.8	100	7.5	25.1	100	7.7	24.9	100	11.5	24.2	100
Solomon Islands	27.7	80.0	100	28.7	79.9	100	33.2	80.0	100	8.7	80.0	100	11.5	77.9	100	*18.3*	80.0	100
South Africa	7.6	10.7	100	*15.2*	29.7	100	13.3	20.9	98	4.5	12.7	100	3.0	12.3	100	6.6	18.4	100
Sri Lanka	10.8	30.8	15	5.3	12.1	97	15.5	50.0	9	6.3	52.2	5	3.0	9.1	5	7.2	18.3	5
Sudan *	26.4	-	-	31.5	-	-	29.3	-	-	25.4	-	-	15.7	-	-	14.5	-	-
Suriname *	*11.0*	22.5	2	*14.3*	29.3	24	*11.2*	10.7	10	*11.5*	6.6	13	*10.6*	5.8	3	*12.0*	22.2	34
Swaziland	7.6	10.7	100	*15.2*	29.7	100	13.3	20.9	98	4.5	12.7	100	3.0	12.3	100	6.6	18.4	100
Switzerland	*0.0*	*0.0*	100	*0.0*	*0.0*	100	*0.0*	*0.0*	100	*0.0*	*0.0*	100	*0.0*	*0.0*	100	*0.0*	*0.0*	100
Syrian Arab Rep. *	18.8	-	-	40.7	-	-	31.3	-	-	10.2	-	-	6.7	-	-	28.2	-	-
Taipei, Chinese	2.3	0.5	100	9.0	8.7	100	5.4	5.4	100	4.3	2.9	100	3.3	2.8	100	12.5	7.8	100

Import markets	(07) Non-electric machinery			(08) Electric machinery			(09) Mineral products and precious stones and metals			(10) Manufactured articles not specified			(11) Fish and fish products			(97) Petroleum		
	Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty	
	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage
Niger	7.0	9.6	100	11.3	10.2	100	11.5	48.2	90	15.4	49.4	99	14.8	43.5	100	8.3	29.0	100
Nigeria *	13.1	50.3	14	20.1	50.0	2	29.8	...	...	23.4	...	...	25.2	...	...	22.5	...	...
Norway	0.0	2.7	100	0.0	2.2	100	0.0	0.6	100	0.0	2.2	100	0.0	0.0	100	0.0	0.0	100
Oman	5.0	11.0	100	5.0	9.7	100	4.5	14.1	100	5.0	12.4	100	5.0	19.1	100	4.7	20.0	100
Pakistan *	12.7	50.0	14	16.5	50.0	23	15.0	39.1	10	15.9	49.4	11	12.0	100.0	10	16.4	...	...
Panama	5.0	25.9	100	8.0	25.4	100	6.8	26.1	100	15.0	27.3	100	12.9	17.4	100	3.2	28.0	100
Papua New Guinea *	0.4	28.5	100	0.0	32.4	100	3.5	31.3	100	2.2	32.9	100	27.7	53.8	100	0.0	32.5	100
Paraguay	8.5	33.1	100	12.3	32.7	100	8.6	33.8	100	15.2	32.8	100	11.5	34.6	100	0.2	35.0	100
Peru *	12.4	30.0	100	12.0	30.0	100	12.0	30.0	100	12.0	30.0	100	12.0	30.0	100	12.0	30.0	100
Philippines	2.1	19.0	75	2.9	18.1	65	3.7	23.0	39	3.7	24.9	54	5.5	31.0	5	2.8	...	...
Poland	8.0	8.2	99	7.6	8.1	100	6.9	6.8	99	10.7	10.3	97	20.1	18.5	5	*13.7*	0.0	20
Qatar *	4.0	14.9	100	4.0	18.6	100	4.0	18.9	100	4.0	14.9	100	4.0	15.0	100	4.0	15.0	100
Romania *	13.1	31.3	100	10.2	29.4	100	10.7	32.2	100	14.3	30.1	100	21.0	28.1	100	2.1	35.0	100
Russian Federation	9.1	-	-	12.2	-	-	12.0	-	-	13.4	-	-	10.5	-	-	5.0	-	-
Rwanda	13.0	97.0	100	28.2	98.7	100	16.2	95.4	100	27.0	96.3	100	16.4	87.6	100	14.4	100.0	100
St. Kitts and Nevis *	4.8	70.0	100	11.9	70.0	100	7.7	70.0	100	15.1	70.9	100	11.6	71.8	100	4.3	...	...
Saint Lucia	1.9	50.7	100	7.2	50.0	100	7.2	54.8	100	12.8	55.1	100	28.4	111.6	79	3.6	79.4	100
St. Vincent & the Grenadines *	5.6	50.8	100	9.6	54.5	100	8.3	55.0	100	13.4	55.5	100	27.1	118.2	87	6.4	60.5	100
Saudi Arabia *	5.2	-	-	5.9	-	-	6.2	-	-	5.2	-	-	3.3	-	-	6.6	-	-
Senegal	7.0	30.0	100	11.2	30.0	100	11.5	30.0	100	14.8	30.0	100	14.7	30.0	100	3.9	30.0	100
Serbia and Montenegro *	9.5	-	-	13.4	-	-	14.3	-	-	17.3	-	-	15.6	-	-	5.0	-	-
Seychelles *	16.9	-	-	19.2	-	-	24.3	-	-	32.1	-	-	85.5	-	-	*25.0*	-	-
Sierra Leone	...	43.3	100	...	48.1	100	...	48.4	100	...	49.4	100	...	50.0	100	...	50.0	100
Singapore	0.0	6.3	64	0.0	5.4	60	0.0	7.9	15	0.0	3.1	32	0.0	10.0	100	0.0	...	...
Slovak Republic	3.6	3.6	100	3.5	3.4	100	3.4	3.5	100	3.3	3.3	100	0.1	0.1	100	3.8	2.4	100
Slovenia	9.2	21.3	100	9.5	18.8	100	5.7	25.1	100	10.6	23.3	100	7.1	21.1	100	6.2	26.7	100
Solomon Islands	10.7	80.0	100	22.3	80.0	100	23.5	74.4	100	27.9	87.0	100	66.4	85.0	100	*40.0*	+	100
South Africa	1.5	9.2	100	5.4	17.2	100	3.8	9.4	89	3.5	12.9	96	*10.2*	24.7	3	*1.3*	...	...
Sri Lanka	5.6	7.7	14	7.3	*25.8*	12	10.0	45.2	9	8.7	32.9	19	9.8	50.0	95	7.9	28.3	50
Sudan *	12.4	-	-	17.0	-	-	25.6	-	-	23.8	-	-	43.7	-	-	10.0	-	-
Suriname *	*3.4*	6.2	32	*11.9*	17.7	20	*14.6*	8.0	1	*15.3*	20.0	17	31.4	22.7	11	*7.0*	*18.0*	50
Swaziland	1.5	9.2	100	5.4	17.2	100	3.8	9.4	89	3.5	12.9	96	*10.2*	24.7	3	*1.3*	...	...
Switzerland	*0.0*	*0.0*	100	*0.0*	*0.0*	100	*0.0*	*0.0*	97	*0.0*	*0.0*	100	*0.0*	*0.0*	100	0.0	+	50
Syrian Arab Rep. *	11.4	-	-	19.0	-	-	17.0	-	-	23.2	-	-	14.4	-	-	8.0	-	-
Taipei, Chinese	3.6	3.7	100	4.6	4.1	100	3.6	3.4	100	4.0	3.3	100	*25.3*	*23.0*	100	3.8	6.2	100

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. + Duty rates are all non-AV. Cut off date: 26/03/2004.

Source: WTO - IDB and UNCTAD.

Appendix Table 4
Average MFN applied and final bound tariffs and binding coverage for non-agricultural products by MTN category (cont'd)
(Percentage)

Import markets	(01) Wood, pulp, paper and furniture			(02) Textiles and clothing			(03) Leather, rubber, footwear and travel goods			(04) Metals			(05) Chemicals and photographic supplies			(06) Transport equipment		
	Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty	
	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage
Tajikistan *	5.8	-	-	14.7	-	-	5.0	-	-	6.9	-	-	5.4	-	-	7.1	-	-
Tanzania *	15.0	120.0	0	19.4	120.0	1	13.0	120.0	0	15.1	120.0	0	4.8	...	...	7.1	...	...
Thailand *	15.1	*18.5*	85	24.0	*28.0*	95	22.0	*29.9*	59	13.8	23.9	53	7.3	*29.4*	58	28.3	48.3	25
Togo	11.1	...	...	17.2	...	...	13.1	80.0	6	12.3	80.0	5	7.2	80.0	0	9.0	...	...
Trinidad and Tobago *	6.9	50.8	100	8.4	56.2	100	8.1	50.2	100	4.2	47.2	100	3.0	50.2	100	7.4	51.8	100
Tunisia *	33.2	37.1	44	32.3	57.1	94	29.6	38.3	45	18.7	30.8	34	15.0	30.0	42	20.2	30.9	44
Turkey *	1.5	28.5	37	8.2	27.4	15	4.2	22.1	45	4.1	18.8	17	4.6	17.8	58	4.1	18.0	57
Turkmenistan *	0.6	-	-	15.8	-	-	4.4	-	-	0.0	-	-	0.7	-	-	4.0	-	-
Uganda *	10.0	50.0	2	12.8	50.0	4	9.2	50.0	4	7.2	42.0	12	6.5	43.1	5	6.0	51.4	8
Ukraine *	7.9	-	-	6.4	-	-	10.3	-	-	5.3	-	-	6.0	-	-	7.3	-	-
United Arab Emirates	...	12.0	100	...	14.9	100	...	15.0	100	...	15.0	100	...	7.1	100	...	13.8	100
United States	0.7	0.4	100	9.6	8.6	100	4.3	4.4	100	2.1	1.5	100	3.4	2.9	100	3.2	3.1	100
Uruguay	12.3	29.1	100	19.1	34.6	100	15.5	33.7	100	12.8	33.7	100	9.7	22.3	100	12.0	32.8	100
Uzbekistan *	9.2	-	-	20.7	-	-	11.3	-	-	6.1	-	-	9.3	-	-	11.4	-	-
Vanuatu *	15.0	-	-	11.4	-	-	8.4	-	-	13.1	-	-	11.2	-	-	14.6	-	-
Venezuela	13.3	33.9	100	18.4	35.3	100	13.5	34.4	100	12.6	33.5	100	8.4	33.9	100	13.7	33.5	100
Viet Nam *	16.9	-	-	35.4	-	-	19.0	-	-	8.1	-	-	4.8	-	-	22.2	-	-
Yemen *	14.2	-	-	11.5	-	-	15.0	-	-	13.6	-	-	10.0	-	-	20.0	-	-
Zambia *	17.2	40.0	4	18.9	40.0	0	17.4	43.7	13	10.4	40.0	1	7.7	45.0	1	10.8	40.0	5
Zimbabwe	21.2	12.3	16	*20.0*	28.0	3	18.2	5.0	17	16.0	12.3	6	8.9	15.9	3	18.1	13.6	22

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. + Duty rates are all non-AV. Cut off date: 26/03/2004.

Source: WTO - IDB and UNCTAD.

Import markets	(07) Non-electric machinery			(08) Electric machinery			(09) Mineral products and precious stones and metals			(10) Manufactured articles not specified			(11) Fish and fish products			(97) Petroleum		
	Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty		Applied Duty	Bound Duty	
	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage	Average	Average	Coverage
Tajikistan *	5.0	-	-	5.0	-	-	10.6	-	-	8.2	-	-	10.6	-	-	5.0	-	-
Tanzania *	6.0	...	...	15.6	...	...	11.8	...	...	18.0	...	...	24.2	...	...	0.8	...	...
Thailand *	8.4	20.2	89	13.1	18.2	73	11.8	*25.4*	46	13.1	24.9	74	10.4	8.8	93	*7.6*	...	...
Togo	7.0	...	...	11.3	80.0	0	11.5	...	...	15.1	...	...	14.9	...	...	3.9	...	...
Trinidad and Tobago *	2.3	50.0	100	8.9	53.0	100	7.3	43.1	100	12.3	49.1	100	27.9	50.0	100	6.9	31.6	100
Tunisia *	10.2	27.2	54	21.0	33.7	55	23.8	34.2	15	22.3	35.2	52	40.3	56.4	7	6.8	...	...
Turkey *	1.7	11.1	63	2.5	11.0	67	2.0	19.2	30	2.5	14.3	41	46.6	57.1	18	3.1	...	...
Turkmenistan *	0.0	-	-	2.2	-	-	3.7	-	-	0.2	-	-	2.5	-	-	0.0	-	-
Uganda *	0.9	72.9	4	5.8	49.2	11	10.9	...	...	8.5	...	...	14.8	...	...	8.4	...	...
Ukraine *	4.7	-	-	8.0	-	-	8.4	-	-	10.1	-	-	*10.4*	-	-	*0.0*	-	-
United Arab Emirates	...	14.3	100	...	15.0	100	...	14.4	100	...	14.3	100	...	15.0	100	...	15.0	100
United States	1.2	1.2	100	1.9	1.6	100	2.0	1.9	100	2.5	2.0	100	1.1	1.1	100	1.9	*6.4*	50
Uruguay	8.9	33.3	100	13.9	33.8	100	8.8	32.6	100	16.0	33.8	100	11.5	35.0	100	0.2	35.0	100
Uzbekistan *	0.5	-	-	9.0	-	-	17.7	-	-	15.4	-	-	0.0	-	-	7.2	-	-
Vanuatu *	7.8	-	-	20.1	-	-	12.9	-	-	23.2	-	-	27.9	-	-	*0.0*	-	-
Venezuela	9.1	32.7	100	11.3	33.8	100	10.4	34.0	100	11.4	33.1	100	19.0	34.6	100	9.9	35.0	100
Viet Nam *	4.9	-	-	13.4	-	-	13.2	-	-	15.5	-	-	31.1	-	-	16.6	-	-
Yemen *	7.9	-	-	14.0	-	-	13.6	-	-	14.7	-	-	23.2	-	-	9.2	-	-
Zambia *	8.1	44.8	20	14.8	35.0	7	12.4	...	...	17.5	...	...	22.9	...	...	11.4	...	...
Zimbabwe	8.8	9.5	14	17.0	2.8	11	17.0	13.9	2	20.7	*23.7*	8	13.0	1.9	70	27.0	...	...

Note: * Applied data sourced from UNCTAD. Italicized data means more than 20% of 6-digit HS subheadings have at least one non-AV duty for IDB data and more than 20% of national tariff lines have non-AV duty for UNCTAD data. + Duty rates are all non-AV. Cut off date: 26/03/2004.

Source: WTO - IDB and UNCTAD.

TECHNICAL NOTES

(a) Composition of country groups

(i) Regions

North America: Canada, United States of America, and territories in North America n.e.s.

Latin America, of which Mexico; *Central America*: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama; *Caribbean Countries:* Antigua and Barbuda, Aruba, Bahamas, Belize, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Netherlands Antilles, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago and *South America*: Argentina, Barbados, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela and other countries and territories in Latin America and the Caribbean n.e.s.

Western Europe: Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, Bosnia and Herzegovina, Croatia, Former Yugoslav Republic of Macedonia, Serbia and Montenegro, Slovenia (the last five countries mentioned comprise the former Yugoslavia), and territories in Western Europe n.e.s.

Transition economies, of which *Central and Eastern Europe*: Albania, Bulgaria, Czech Republic, Hungary, Poland, Romania and the Slovak Republic; *the Baltic States*: Estonia, Latvia and Lithuania; and *the Commonwealth of Independent States (CIS)*: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Republic of Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan. The grouping *former USSR* refers to the Baltic States and the CIS.

Africa, of which *North Africa*: Algeria, Egypt, Libyan Arab Jamahiriya, Morocco and Tunisia; and *Sub-Saharan Africa* comprising: *Western Africa*: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo; *Central Africa*: Burundi, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Rwanda, and Sao Tome and Principe; *Eastern Africa*: Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Seychelles, Somalia, Sudan, United Republic of Tanzania and Uganda; and *Southern Africa:* Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia, Zimbabwe and territories in Africa n.e.s.

The Middle East: Bahrain, Iraq, Islamic Republic of Iran, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates, Yemen and other countries and territories in the Middle East n.e.s.

Asia, of which *West Asia*: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka; and *East Asia (including Oceania)*: Australia; Brunei Darussalam; Cambodia; China; Fiji; Hong Kong Special Administrative Region of China (Hong Kong, China); Indonesia; Japan; Kiribati; Lao People's Democratic Republic; Macao, China; Malaysia; Mongolia; Myanmar; New Zealand; Papua New Guinea; Philippines; Republic of Korea; Samoa; Singapore; Solomon Islands; Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu (Taipei, Chinese); Thailand; Tonga; Tuvalu; Vanuatu; Viet Nam and other countries and territories in Asia and the Pacific n.e.s.

(ii) Regional integration agreements

APEC: Australia; Brunei Darussalam; Canada; Chile; China; Hong Kong, China; Indonesia; Japan; Republic of Korea; Malaysia; Mexico; New Zealand; Papua New Guinea; Peru; Philippines; Russian Federation; Singapore; Taipei, Chinese; Thailand; United States of America and Viet Nam.

ASEAN: Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam.

CACM: Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua.

CARICOM: Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname and Trinidad and Tobago.

CEFTA: Czech Republic, Hungary, Poland, Romania, Slovenia and the Slovak Republic.

CEMAC (UDEAC): Cameroon, Central African Republic, Chad, Congo, Equatorial Guinea and Gabon.

COMESA: Angola, Burundi, Comoros, Democratic Republic of the Congo, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Namibia, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia and Zimbabwe.

ECCAS: Angola, Burundi, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Rwanda and Sao Tome and Principe.

ECOWAS: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo.

European Union: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom.

GCC: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates.

LAIA: Argentina, Bolivia, Brazil, Chile, Colombia, Cuba, Ecuador, Mexico, Paraguay, Peru, Uruguay and Venezuela.

MERCOSUR: Argentina, Brazil, Paraguay and Uruguay.

NAFTA: Canada, Mexico and the United States of America.

SAARC: Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka.

SADC: Angola, Botswana, Democratic Republic of the Congo, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia and Zimbabwe.

UEMOA: Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo.

(iii) Other country groups

Least-developed countries: Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Cape Verde, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lao People's Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Maldives, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Samoa, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, Sudan, Togo, Tuvalu, Uganda, United Republic of Tanzania, Vanuatu, Yemen and Zambia.

The designations used in this report do not imply an expression of opinion by the Secretariat concerning either the status of any country, territory or area, or the delimitation of its frontiers.

(b) Tariff calculations

The tariff calculations were based on data available in the WTO's Consolidated Tariff Schedules database (CTS) and the Integrated Data Base (IDB), as well as the United Nations Conference on Trade and Development (UNCTAD) Trade Analysis and Information System (TRAINS).

Tariff profiles for MFN final bound duties were taken from the CTS, which include final bound duties and other information such as implementation periods and initial negotiating rights. In early 2004 most Members have already fully implemented all their commitments. For some Members, in particular those who joined recently, some commitments will only be implemented by 2010. The CTS covers all WTO Members, contains all commitments on goods including pre and post Uruguay Round negotiations and is updated regularly.[1] The tariff profiles for bound duties are shown for 130 Members.[2]

Tariff profiles for MFN statutory applied duties are sourced from the IDB. The IDB, based on Members' notifications, contains MFN applied and current bound duties and import statistics. It also includes preferences and *ad valorem* equivalents (AVEs) for non *ad valorem* tariff lines if provided by Members on a voluntary basis. The database covers WTO Members and Acceding countries for which processed information is available. In each case the latest available year has been selected.

UNCTAD's TRAINS database containing tariff, non-tariff measures and trade information is used to supplement the IDB for data on applied tariffs for: WTO non-members, cases in which the IDB has received no notification from the Member or where their data is more recent than that of the WTO by two years. UNCTAD's tariff information is compiled from national, inter-governmental and other sources and is available at the tariff line level.

The first step in the calculations consisted of aggregating all tariff line duties up to the level of 6-digit subheadings of the Harmonized System (HS) thereby creating a common structure that is not biased by the different levels of disaggregation in Members' tariffs. Only HS chapters 01 to 97 were taken into account. For the calculation of HS 6-digit duty averages and maxima, only *ad valorem* duties, including AVEs if supplied by the Member, were used. However, the incidence of non *ad valorem* duties (specific, mixed, or compound duties) is indicated in related tables. With respect to indicators for bound duties, only bound tariff lines were taken into account in the calculations. No assumptions were made as to the duty of unbound tariff lines. Therefore, any 6-digit subheading was considered to be bound if at least one tariff line within that subheading was bound, and the duty averages were calculated only on bound tariff lines. Any 6-digit subheading where no tariff line within that subheading was bound was considered to be unbound. Unbound subheadings were not included in the calculations in Appendix Tables 1, 3, and 4. All subsequent steps in the calculations were based on these 'pre-aggregated' HS 6-digit duty averages.

(c) Chart specific technical notes

Non *ad valorem* duties were not taken into account in the data and calculations shown in the tables and charts of Section IB1.

Chart IB1.1 Landscape of non-reciprocal preference schemes, 2002

The preference granting countries retained are the Quad (2002), Australia (2001) and New Zealand (1999). For the purpose of this Chart, a country is said to receive GSP, LDC or any other non-reciprocal preference scheme if it is eligible in at least one of the six donors. In addition to GSP and LDC regimes, the following non-reciprocal preference schemes have been considered:

[1] Data for Cambodia and Nepal, two recently acceded countries are not yet ready for publication and are not included in the tables.

[2] The Member states of the European Union are counted as one, and Switzerland and Liechtenstein are also counted as one.

- Canada: Commonwealth Caribbean Countries Act;
- European Communities: ACP countries;
- New Zealand: SPARTECA countries (Cook Islands, Fiji, Micronesia, Nauru, Niue, Papua New Guinea, Samoa, Salomon Islands, Tonga and Vanuatu);
- US: Caribbean Basin Economic Recovery Act, Andean Trade Preference Act and African Growth and Opportunity Act.

Chart 1B1.2 Average applied tariff by tariff regime for major developed markets, 2002

The year 2002 was selected given that it is the latest year for which data is available for all countries, except Australia (2001). A number of recent initiatives on non-reciprocal market access, especially for least-developed countries have not been taken into account in the 2002 tariff data. Where possible, these initiatives have been taken into account by adjusting the data accordingly.

Chart IB1.3 Number of international and national peaks by tariff regime for major developed markets, 2002

As stated in the text, an international peak is defined as any duty that exceeds 15 per cent. A national peak is defined as three times the national average for *each* regime. Hence, the international peak is an absolute standard, whereas the national peak is a relative one. This difference explains why the number of national peaks for a non-reciprocal scheme could exceed the number of national peaks for an MFN regime.

Chart IB1.4 Average tariff for international and national peaks by tariff regime, major developed markets, 2002

The averages have been calculated on a regime basis. For the first chart (international peaks) the averages were taken for all tariff lines above 15 per cent for each regime. A similar methodology was adopted for the second Chart, except in this case all tariff lines above three times the national average were selected.

Table IB1.1 Duty free imports by major developed markets, non-reciprocal scheme and beneficiaries, 2002

The calculations in this Table were done for each of the four markets. Since an exporter to each market may benefit from at least two tariff regimes (MFN and non-reciprocal) an allocation rule was required to analyze the trade flows. The one adopted for this Table was to assume that in the first instance if an imported product into a market was eligible for duty free treatment under MFN basis, it passed through customs at that rate. The next tariff regime that was considered was GSP, and then subsequently the LDC scheme, and finally other non-reciprocal schemes. The iterative process was based on the assumption that better than MFN treatment was offered first on a GSP basis and then on a LDC basis.

Table IB1.4 Highest preference margins by product in major developed markets, 2002

The preference margins did not incorporate *ad valorem* equivalents for non *ad valorem* duties.

Appendix Tables 1-4 :

The description of each of the column headings is provided in Technical Note Table 1. The HS headings used for each category is provided in Technical Note Table 2.

Technical Note Table 1
Description of table headings and calculation methods in Appendix Tables

COLUMN HEADING	DESCRIPTION OR METHOD OF CALCULATION
Binding coverage	Number of HS 6-digit subheadings containing at least one bound tariff line divided by the respective total number of HS 6-digit subheadings of the corresponding version of the HS nomenclature for all products and by the corresponding breakdown. Definition of agriculture was based on WTO Agreement on Agriculture extended to the different HS nomenclatures.
Simple average	Simple average of the *ad valorem* HS 6-digit duties.
Share of duty free HS subheadings	Number of HS 6-digit subheadings for which all tariff line duties are equal to zero, divided by the respective total number of HS 6-digit subheadings.
Share of non *ad valorem* duties	Number of HS 6-digit subheadings having at least one non *ad valorem* duty without *ad valorem* equivalent, divided by the respective total number of HS 6-digit subheadings. Duties not provided were treated as non *ad valorem*.
Maximum *ad valorem* duty	Maximum *ad valorem* duty based on tariff line duties.
Share of national peak duties	Number of HS 6-digit duties at least three times higher than the Member's simple average, divided by the respective total number of HS 6-digit subheadings. Simple averages are calculated separately for total, agricultural and non-agricultural products.

Technical Note Table 2
Description of the Different Categories[3]

CATEGORY NUMBER	DESCRIPTION	HARMONIZED SYSTEM NOMENCLATURE HS 2002
01	Wood, pulp, paper and furniture	Ch.44, 45, 47, Ch. 48 (except 4815), Ch.49, 9401-04 (except 940490).
02	Textiles and clothing	300590, 330620, 392112-13, 392190, 420212, 420222, 420232, 420292, Ch. 50-63 (except 5001-03, 5101-03, 5201-03, 5301- 02), 640520, 640610, 640699, 6501-05, 6601, 701911-19, 701940-59, 870821, 8804, 911390, 940490, 950291, 961210.
03	Leather, rubber, footwear and travel goods	Ch. 40, Ch. 41 (except 4101-4103), 4201-05 (except 420212, 420222, 420232, 420292), 4302-04, Ch. 64 (except 640520, 640610, 640699), 9605.
04	Metals	2601-17, 2620, Ch. 72-76 (except 7321-22), Ch. 78-83 (except 8304-05).
05	Chemicals and photographic supplies	2705, Ch. 28-30 (except 290543-45 and 300590), Ch. 32-33 (except 3301 and 330620), Ch. 34 (except 3403, 3406), 3506-07, 3601-04 and Ch. 37-39 (except 380910, 3823, 382460 and 392112-13, 392190).
06	Transport equipment	Ch. 86 (except 8608), 8701-08 (except 870821), 8711-14, 8716, 8801-03, Ch. 89.
07	Non-electric machinery	7321-22, Ch. 84 (except 846721-29), 8608, 8709.
08	Electric machinery	846721-29, Ch. 85 (except 8519-24).
09	Mineral products and precious stones and precious metals	Ch. 25, 2618-19, 2621, 2701-04, 2706- 08, 2711-15, Ch.31, 3403, Ch. 68-71 (except 6807, 701911-19, 701940-59), 911310-20.
10	Manufactured articles not elsewhere specified	2716, 3406, 3605-06, 4206, Ch. 46, 4815, 6506-07, 6602-03, Ch. 67, 6807, 8304-05, 8519-24, 8710, 8715, 8805, Ch. 90-93 (except 9113), 9405-06 and Ch. 95-97 (except 950291, 9605 and 961210).
11	Fish and fish products	Ch. 03, 0509, 1504, 1603-05, 230120.
12	Fruit and vegetables	Ch. 07, Ch. 08, 1105-06, 2001-08.
13	Coffee, tea, mate, cocoa and preparations	0901-03, Ch. 18 (except 1802), 2101.
14	Sugars and sugar confectionery	Ch. 17.
15	Spices, cereal and other food preparations	0407-10, 0904-10, 1101-04, 1107-09, Ch. 19, 2102-06, 2209.
16	Grains	Ch. 10.
17	Animals and products thereof	Ch. 01, Ch. 02, 1601-02.
18	Oil seeds, fats and oils and their products	1201-08, Ch. 15 (except 1504), 2304-06, 3823.
19	Cut flowers, plants, vegetable materials; lacs, etc.	0601-03, 1211, Ch. 13, Ch. 14.
20	Beverages and spirits	2009, 2201-08.
21	Dairy products	0401-06.
22	Tobacco	Ch. 24.
23	Other agricultural products	Ch.05 (except 0509), 0604, 1209-10, 1212-14, 1802, 230110, 2302-03, 2307-09, 290543-45, 3301, 3501-05, 380910, 382460, 4101-03, 4301, 5001-03, 5101-03, 5201-03, 5301-02.
97	Petroleum	2709-10.

[3] These categories are commonly referred to as the Multilateral Trade Negotiations categories. Non-agricultural products are those classified under categories 01-11 and 97. The others are classified as agricultural products. Ch refers to HS Chapter.

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