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Trading Up

ECONOMIC PERSPECTIVES ON DEVELOPMENT ISSUES IN THE MULTILATERAL TRADING SYSTEM

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FOREWORD

Since the OECD published *The Development Dimensions of Trade* in 2001, the multilateral trading system has been buffeted by turbulent discussions on the potential shape of a negotiated package under the World Trade Organisation's Doha Development Agenda. Developing countries facing an increasingly competitive and complex global trading environment have challenged the system to deliver a package that will boost their development prospects. Yet, the situation of individual developing countries varies widely, as does the commentary on the impact of past liberalisation and the potential for future liberalisation to deliver substantial gains.

This publication seeks to shed light on some of the most pressing trade and development issues, presenting a new set of analyses grounded in empirical approaches and updated modelling techniques. It aims to disaggregate impacts of multilateral liberalisation and to consider the variation among and within the various developing economies, as well as related policy implications. In addressing a broad range of developing country concerns with respect to multilateral trade liberalisation, it draws on recent work from across the OECD and includes a special chapter with new modelling results prepared by a team from the World Bank. Beyond the main chapter themes, a set of short *Special Focus* features highlight related OECD research findings.

Douglas Lippoldt of the OECD Trade Directorate edited the publication. Jacqueline Maher of the OECD Trade Directorate handled the compilation and formatting of the various elements. The individual chapters and *Special Focus* segments were authored by members of several OECD directorates and the World Bank, whose names figure on the title pages of their contributions. The attention of readers is drawn to the notes and acknowledgements presented in the individual chapters, which are too numerous to reiterate here. A number of chapters draw on closely related OECD documents prepared in collaboration with additional experts; in such cases, these are recognised in the notes. This publication represents a team effort and the contribution of each participant is gratefully acknowledged by the OECD Trade Directorate, which had the lead in managing the project.

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EXECUTIVE SUMMARY: A WORLD OF TRADE LIBERALISATION

Douglas Lippoldt, OECD Trade Directorate

In an April 2006 press release on world trade developments, World Trade Organisation (WTO) Director-General Pascal Lamy provided a succinct characterisation of the global trading system as undergoing a period of transition and being in need of a new multilateral trade accord (WTO, 2006):

> *"Shifting economic circumstances, major advances in technology and the emergence of new players on the global scene all underscore that we are on the cusp of big changes. Persistent imbalances, driven largely by macro-economic factors, continue to be a cause for concern in some major economies. In such a climate of uncertainty, one thing is certain, [WTO] Member governments must strengthen the global trading system by making it more equitable and relevant for those who trade in the 21st century. There can be no doubt that the best way to do this would be to conclude this year an ambitious agreement in the Doha round of global trade negotiations."*

Recent years have indeed witnessed striking changes in the global economic landscape, confirming the role of trade as a driving force in economic development and providing an indication of the potential for further trade liberalisation, under the right conditions, to benefit the global economy broadly. Given this situation, the OECD – with input from the World Bank – has undertaken to review recent work on trade and development and to examine in more depth selected trade issues faced by developing countries. This publication presents the results of this investigation.

Kym Anderson, in an article in the Journal of World Trade (2005), asks the question, "What Roles for Economists?" in setting the trade policy agenda. While providing a useful review of the post-World War II contributions of economists to understanding the economics of trade and advancing the trade policy agenda, the article's conclusions point to the important role played by trade policy analysts in bridging the gap between the research community and trade policy makers. The present volume was prepared with this in mind and aims to communicate the findings and conclusions in language that is accessible to trade policy makers, advisors and informed observers equipped with a basic understanding of economics. The intention is to help illuminate issues in the ongoing discussions on trade liberalisation by addressing key concerns and considering options that would permit a reduction in harmful distortions to the world economy that result from barriers to trade.

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The economic well-being of a nation is linked closely to the availability of resources and the productivity of its workforce. Trade operates in a variety of ways to support the development process. For example, it boosts competition and the associated impetus to innovation and specialisation, and it provides an important channel for international technology transfer.[1] Consequently, it is not surprising

[1] Increasing the stock of available technology is critical to development, because technology plays a central role in boosting output per worker and is an important determinant of income levels. See WTO (2002) for a discussion and bibliographic references.

that economists include trade among the classic drivers of economic growth.[2] The positive results from trade liberalisation are not automatic, and policy choices – including those with respect to complementary policies – do make a difference. Among the most fundamental is the establishment of an adequate system of economic governance, including institutions and rule of law, which are crucial for property rights and for lowering transaction costs, among other baseline conditions. Beyond the basic framework, other policies can be employed to boost the ability to adjust or strategically promote the conditions for development.[3] For example, a sound regulatory framework and appropriate labour market, macroeconomic and investment policies can help facilitate structural adjustment and the associated reallocation of resources to increasingly productive employment (OECD, 2005).

In view of the complexity of modern economies and the interplay among the various policies, care must be taken in assessing the relationship between trade and development. While it is clear that the impacts of further trade liberalisation will vary among countries according to the situation of each country, there will also be variation within countries. Changes in trade policies, such as import tariffs, may have consequences in various other policy domains, such as fiscal policy (relating to government revenue) or social policy (related to distributional concerns). The analyses presented in this volume are broadly framed and attempt to tackle some of the wider concerns raised by the prospect of further trade liberalisation. These analyses often point to policy options that can improve outcomes globally or address risks of negative outcomes for specific stakeholders. In some cases, international action may be required (*e.g.* building a particular approach into multilateral trade liberalisation), but in others a country's own reforms are critical in determining outcomes.

A key point confirmed in all of the analyses in the present volume is that trade liberalisation has the potential to contribute to improved economic welfare. Through modelling results, statistical assessments and concrete case studies, these chapters add to the growing body of literature that points to a positive relationship between a nation's openness or progressive integration into the world economy and its growth or economic development (*e.g.* OECD, 1998; 2001; WTO, 2003).

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This volume begins with two chapters containing broad assessments of the potential welfare gains from global liberalisation. These studies emphasise different assumptions and computable general equilibrium models and their conclusions differ as well; this is perhaps most evident in the contrasting findings concerning developing countries' potential gains from liberalisation of trade in industrial goods and those from liberalisation in agriculture. The discussion in these chapters includes some attempt to reconcile differences among the various modelling approaches used to consider the welfare implications of trade liberalisation for developing countries. Although differences remain, it is interesting that the range of aggregate gains is of roughly the same order of magnitude in both studies. Moreover, the estimates of gains are more modest than some that circulated at the time of the Uruguay Round of trade negotiations (1986-94). This is partly due to the trade liberalisation that has since occurred (*i.e.* the remaining barriers are now less onerous than those in place prior to the Uruguay Round). But it also reflects the growing sophistication of the models and associated data sets, which now take more dimensions of the actual trade policy landscape into account. For example, the extent

2 Timmer (2006), for example, summarises these conditions as trade and specialisation; investment in machines; and increasing returns to knowledge.

3 For example, policies to facilitate "moving up the value chain" can play a role in development. For examples in the textile and apparel sectors see OECD (2004). A more general study by Hausmann *et al.* (2006) examines the importance of the structure of exports in terms of value and productivity.

of regional and unilateral preferential trading relationships is now more fully incorporated into the analyses.[4]

The next three chapters examine particular concerns for developing countries with respect to trade liberalisation in the context of the multilateral trading system: preference erosion, possible government revenue losses due to tariff liberalisation, and realising the potential benefits from expanded South-South trade. These chapters make clear that developing countries as a whole stand to benefit from trade liberalisation. At the same time, there is significant variation in the extent to which each of these issues affects individual developing countries. In some cases, there is a potential for net losses if appropriate policy frameworks are not in place. Outcomes are influenced in part by the choice of liberalisation scenario and each country's complementary policy mix. Fortunately, these chapters also point to policy approaches that can assist in addressing the challenges while promoting new market opportunities through trade liberalisation. For example, developing countries that rely particularly on tariff revenue to fund the functioning of government can take heart from Chapter 4, which underscores the potential to mitigate negative impacts from liberalisation by developing alternative sources of government revenue and taking care in establishing the structure of post liberalisation tariffs.

The following two chapters consider separately trade liberalisation in services and in agriculture. In some ways, trade liberalisation may tend to be less advanced in these two sectors than in the industrial goods sector. While noting the potential for economic gains from liberalisation, these chapters also underscore important economic relationships among economic actors. In the case of the service sector, these concern the taxing effect that services trade barriers have on other sectors of the economy (especially industries for which services comprise an important input). The chapter on agriculture brings in a new dimension by considering the impact of agricultural liberalisation on households, as well as more aggregate impacts. The analysis at the household level underscores the complexity of the economic outcomes from trade policy reforms. Whereas further agricultural trade liberalisation is found to be generally beneficial at the aggregate level, outcomes across households vary. Some groups will be at risk of losing out, especially among those that are dependent on protected and non-competitive agricultural production. Developing country policy makers aiming for improved economic efficiency through trade reform in agriculture will face a challenge for putting in place complementary adjustment policies if they are to avoid negative welfare impacts on certain poor households dependent on agricultural activity.

The final chapter considers the role of special and differential treatment and aid for trade as complements to multilateral trade liberalisation. As underscored in *Trade and Structural Adjustment* (OECD, 2005), the requisites for successful trade liberalisation include an array of complementary policies and institutions. Owing to resource constraints and other impediments, developing countries sometimes face difficulties in adequately meeting these needs. Participants in the multilateral trading system have sought to address these difficulties via a number of initiatives, including special and differential treatment and aid for trade.[5] While the results of these initiatives to date have been mixed, the persistent nature of certain development challenges and the need to advance trade reform continue to drive efforts to enhance their functioning and effectiveness.

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4 For another example, see Chapter 1 of this volume for a discussion of modelling of liberalisation scenarios taking into account the difference in bound and applied tariffs.

5 In recent years, some economists have come to approach such measures with a degree of caution because of the potential for introducing further distortions into the global economy. Anderson (2005) provides some illustrations. Also, concerns about the effectiveness of trade-related development assistance are raised by Easterly (2005), Rajan and Subramanian (2005) and Sen (2006), among others.

Supplementing the main chapters are seven *Special Focus* sections that provide a window onto OECD work on related trade topics. Each delivers a snapshot of key messages from OECD research along with references for further reading. These sections reveal instances of progress made by certain developing countries seeking better integration into the global economy as well as areas for improvement or additional study. Some point to economic processes which, in conjunction with trade liberalisation, can work to transform economies and promote development. Examples include structural adjustment, technology transfer and innovation associated with improved intellectual property rights, and the interaction of trade and foreign direct investment. Other sections refer to more "traditional" trade policy issues including trade facilitation, export credits and customs fees or charges, which can have a significant impact on trade flows and, hence, the development impacts of trade.

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Overall, *Trading Up* has a positive story to tell. Trade can contribute to economic development. The impact of liberalisation can be enhanced by appropriate complementary policies, a point that applies both to maximising the gains from trade and reducing adjustment costs. Moreover, developing countries control many of the policy levers that can work to ensure positive outcomes for themselves; their own actions are critical in establishing the essential conditions for growth. Developed countries have an important role to play as well by improving market access, avoiding damaging actions (*e.g*. through barriers to trade or harmful market interventions), and provision of effective, targeted assistance.

The multilateral trading system plays an essential function in defending and promoting the interests of all trading nations, including developing countries. While regional trade arrangements can expand market access and integrate member countries, they are inherently discriminatory (World Bank, 2006). By starting from the principles of national treatment and non-discrimination, providing a forum for *global* market opening negotiations, and extending balanced treatment of member countries (including recourse in cases of violations of the rules), the WTO can help to ensure that trade works more broadly as an engine of growth and development. The conclusions from the analyses presented here support the pro-development case for the multilateral trading system, underscoring the economic value of further carefully crafted, ambitious, multilateral liberalisation.

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Chapter 1

THE DOHA DEVELOPMENT AGENDA: WELFARE GAINS FROM FURTHER MULTILATERAL TARIFF LIBERALISATION[6]

Przemyslaw Kowalski
OECD Trade Directorate

This paper considers the welfare gains form trade liberalisation with particular emphasis on reduction of tariff protection. The first part of the paper examines the present structure of tariffs, outlines the DDA work in the area of tariffs, briefly discusses the various approaches to tariff reduction used in past rounds of multilateral trade negotiations and considers a sample of the existing literature on the effects of various trade liberalisation scenarios involving tariff reductions. The second part presents a quantitative assessment of the potential welfare gains from trade liberalisation involving tariff reduction and trade facilitation. This assessment takes into account certain negotiating realities in the WTO including the fact that negotiations focus on bound tariffs while the main focus for many actors in the economy is on the applied tariffs. A number of generic tariff reduction scenarios are examined to reflect elements of some proposals now under consideration in the WTO. The results point to the importance of market access for all regions, particularly developing countries. While improved market access for agricultural products is found to yield substantial potential benefits, the results highlight that potential gains from further liberalisation with respect to industrial goods may be even larger. The findings also indicate the potential welfare benefits from progress in trade facilitation, which can exceed the gains from tariff reduction for some regions under some scenarios. Overall the study underscores the importance to developing countries of both greater access to developed countries' markets as well as their own engagement in making substantive commitments under the DDA.

Introduction

The multilateral trade negotiation process can be viewed as having three phases or components: conceptual, technical and political (Meilke *et al.*, 1996). Economic analysis is especially useful in the non-political aspects of negotiation: it can deliver information on the stakes involved in order to help frame the negotiations and highlight the distribution costs and benefits of various options. Continuing enhancements in modelling approaches and data quality are helping economists provide more integrated views of the implications of changes in the world trading system and in the levels of trade protection. This is true even if the abundance of modelling approaches and the associated estimates of gains appear to undermine confidence in the numerical results. However, differences in results from alternative modelling exercises must be considered taking into account the various economic assumptions or parameters (such as trade elasticities) and, sometimes, differences in the underlying data. Similarities and differences in estimates of gains from trade can be reconciled in a systematic way (*e.g.* van der Mensbrughhe, 2006) thereby making alternative estimates desirable and helpful to both trade negotiators and the public.

6 Portions of this chapter draw on, and update, an earlier paper by Lippoldt and Kowalski (2003).

Computable general equilibrium (CGE) models are used to evaluate potential gains from multilateral trade liberalisation scenarios. Using systems of equations to represent the behaviour of economic agents and to mimic their constraints, CGE models enable users to gain an approximate view of the impact of trade-related changes on the economy. They also help organise thinking about and discussion of various alternative economic assumptions that lead to differences in the estimated impact. As a general rule, estimates of gains resulting from the use of CGE models should not be taken at face value but rather as an order of magnitude that a policy change can mean for economic welfare or trade (*e.g.* Piermartini and Teh, 2005).

Market access is at the top of the trade liberalisation agenda. It is a key issue in the multilateral trade negotiations launched in November 2001 at the 4th Ministerial Conference of the World Trade Organisation (WTO) in Doha. In spite of substantial progress in reducing tariffs over eight completed rounds of multilateral trade negotiations since World War II, economists continue to affirm that substantial gains are to be had from further reductions (Francois *et al.* 2003; Cernat *et al*., 2002, Dessus *et al*., 1999; Fernandez de Cordoba *et al*., 2004; Lippoldt and Kowalski, 2003; Vanzetti and Fugazza, 2005; Anderson *et al*., 2006]. Most existing studies agree that developing countries that maintain higher and more dispersed tariff barriers are particularly well positioned to benefit from tariff reform. Improvements to the allocation of resources, enhanced competition, wider product variety and benefits of scale economies associated with tariff reform improve economic outcomes and create a better base for implementing development and poverty reduction strategies.

This chapter focuses on reduction of tariff protection in the context of trade liberalisation. First, it examines the present structure of tariffs, outlines the Doha Development Agenda (DDA) work on tariffs, briefly discusses the various approaches to tariff reduction used in past rounds of multilateral trade negotiations, and considers a sample of the literature on the effects of various trade liberalisation scenarios involving tariff reductions. It then presents a quantitative assessment of potential welfare gains from trade liberalisation involving tariff reduction and trade facilitation. The assessment takes into account certain negotiating realities in the WTO, including the fact that negotiations focus on bound tariffs[7] while many actors in the economy focus on applied tariffs. A number of generic tariff reduction scenarios are examined to reflect elements of some proposals now under consideration in the WTO.

Where do we stand? The post-Uruguay Round structure of tariff protection

Successive rounds of multilateral trade negotiations have helped to increase the emphasis on non-discriminatory tariffs as a principal means of trade protection and have achieved substantial cumulative reductions in such tariffs. Once Uruguay Round (1986-93) commitments are fully implemented, the average (trade-weighted) most-favoured-nation (MFN) tariff rate on industrial goods will be reduced to 4% (OECD, 2001). Advances in tariff reductions for agricultural products have been slower than for industrial goods, but progress has been made. The range of tariffs on agricultural trade varies substantially, both within the OECD area and among non-OECD countries. (Measurement of agricultural tariffs is complicated by the extensive use of tariff rate quotas (TRQs) for agricultural products, with differential tariff rates inside and outside of the quotas.)

In spite of the remarkable reductions in tariffs under the auspices of the GATT, market access continues to represent one of the most important trading issues between OECD and non-OECD

7 A tariff binding reflects a country's legally committed maximum tariff rate for a particular tariff line. Following the Uruguay Round, the share of bound tariffs in all tariff lines was as follows: 99% for developed countries, 73% for developing economies and 98% for transition economies (WTO, 2001).

countries (OECD, 2001). It is seen as the area which offers the most significant global gains to both developing and developed WTO members and which will enable a balanced distribution of gains.[8] Both developing and developed countries' demands are for increased access to partner markets. However, their different starting points and abilities to implement trade reforms may help explain the divisions apparent in the current tariff negotiations. Certain developing countries have expressed concerns about the loss of tariff revenue, adverse terms-of-trade effects, potential erosion of preferential access margins and the overall distribution of gains from this reform.

Regional tariff profiles

Tariffs continue to play an important role in trade patterns, both through the absolute levels of protection they afford and through distortions associated with the structure of tariffs.[9] Tables 1.A.1-1.A.8 present the estimated structure of world tariffs, based on the most recent information available in the World Integrated Trade Solution (WITS) database. In general, developing countries tend to impose higher tariffs on imports of both agricultural and non-agricultural products. Particularly high MFN rates are levied on imports in the low- and middle-income countries of North Africa, the Middle East and South Asia. The gap in MFN tariff rates between developed and developing countries was reinforced by the Uruguay Round, as average tariff reductions among OECD countries were 45%, compared to 30% among non-OECD countries (OECD, 2001). This outcome was partly the result of the failure or inability of some developing countries to engage fully in the negotiating process.

As discussed in Chapter 5, high tariffs imposed by developing countries restrict access not only of developed countries' exports but also access of other developing countries, thereby impeding South-South trade. While certain qualifications need to be kept in mind when using trade-weighted tariff averages[10] as indicators of trade restrictiveness, they do indicate that, especially in the agricultural sector, tariffs imposed by both least developed countries (LDCs) and low- and middle-income countries on imports originating from other low-income countries are on average significantly higher than those imposed on imports from high-income countries (Tables 1.A.2-1.A.5). For example, the average trade-weighted tariff imposed by LDCs on agricultural imports originating from other LDCs is 18.9% while that imposed on imports from developed countries is 10.8%. This suggests that high tariffs in developing countries not only restrict access for developed countries' products but have a disproportionately harmful effect on South-South trade. The tariff profiles of developing countries are also characterised by a higher dispersion of tariff rates (Table 1.A.7). This is compounded by a greater incidence of international tariff peaks (*i.e.* tariffs exceeding 15%)[11] in developing countries than in developed countries (Table 1.A.8).

Tariff profiles by sector

In general, both in developing and developed economies, tariffs tend to be higher on imports of agricultural products than on industrial products (see Tables 1.A.2-1.A.5).[12] The agricultural sector

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8 See, for example the view expressed in the letter of the US Trade Representative Robert B. Zoellick to Ministers (11 January 2004).

9 As Tables 1.A.1-1.A.8 show, the simple average rates tend to be higher than the trade-weighted rates, reflecting in part the tendency for higher tariffs to restrict trade.

10 In this methodology, low trade values, which may themselves be a result of trade restrictiveness, imply low weights.

11 15% is the commonly used definition of an international tariff peak in the WTO context.

12 Although agricultural tariffs are generally higher than tariffs on industrial goods, several categories of agricultural products enjoy relatively low tariff rates. These include: coffee, fibre, spices and live

also suffers from a higher incidence of tariff peaks. The world average agricultural bound (applied) tariff is estimated at 62% (17%) compared to 29% (9%) for industrial products (WTO, 2003c). As Table 1.A.1 shows, import duties levied on agricultural products by low- and middle-income countries (22.6%) and LDCs (16.6%) are significantly higher than those imposed by developed countries (7.5%). The bias in the tariff profile towards high rates on agricultural imports is a consequence of the exclusion of agriculture from multilateral trade negotiations prior to the Uruguay Round (UR). The modality for cuts agreed in the UR converted non-tariff barriers (NTBs) into tariff barriers; this often resulted in setting high initial rates (WTO, 2003c).

Estimated average tariffs imposed on industrial products by low- and middle-income countries (11.1%) and LDCs (13.2%) are also much higher than those imposed by developed economies (3.8%) (Table 1.A.9). However, in contrast to the agricultural sector, where almost all tariff rates are bound, the binding of tariffs for industrial goods remains a negotiating issue. For example, many African and Asian countries have bound only a limited number of tariff lines (WTO, 2003c). Industrial tariffs are generally lower than agricultural tariffs, but there is a considerable degree of heterogeneity within the industrial product categories. Bacchetta and Bora (2003) report that simple average bindings in textiles and clothing, leather, rubber, footwear and travel goods, transport equipment, and fish and fish products are significantly higher than those on other industrial products. In terms of applied rates, textiles and clothing have the highest or the second highest applied tariff averages in most countries. This sector is also reported to have the highest incidence of international tariff peaks (WTO, 2003c).

Tariff dispersion

Observers continue to express concern about certain other aspects of the structure of tariff regimes.[13] First, tariff dispersion remains a problem, particularly as it is associated with substantial numbers of tariff peaks (both so-called "international peaks" with duties above 15% and "national peaks" with duties three times the national mean tariff or more). Second, the practice of tariff escalation, whereby tariff rates vary positively according to the degree of processing of a product, continues to plague some sectors. High levels of effective protection can result from an uneven tariff structure in which some high nominal rates are stratified along the different stages of production., As pointed out by the IMF and the World Bank (2002, p. 14), "[t]he pattern of protection creates particular hurdles for countries taking the first steps up the technology ladder". Tariffs tend to be higher for low-technology labour-intensive food processing and light industries than for primary products. Together with tariff escalation within product categories, such a structure may sometimes hinder advancement. Finally, highly dispersed tariff rates are often associated with complications for collection of duties.

Like tariff levels, tariff dispersion varies significantly across regions and sectors. Developing countries' tariff schedules generally tend to be less uniform than those of developed countries (Table 1.A.7). Additionally, coefficients of variation of tariff rates in agricultural sectors significantly exceed those in industrial products, including in developed countries where the dispersion of tariffs reaches levels observed in some developing regions (Table 1.A.7). However, tariff dispersion does not in itself indicate an irrational tariff policy. In fact, it may sometimes indicate a finely tuned tariff policy that taxes imports differently depending on each product's sensitivity to price changes or other

horticulture (WTO, 2003). Similarly, a few countries do not conform to the general pattern and levy lower import duties on agricultural products than on industrial goods. Among them are Australia and New Zealand and Switzerland has a zero tariff policy in both sectors.

13 For example see Cernat *et al.* (2002); IMF and World Bank (2002); OECD (1999); OECD (2001).

policy concerns such as taxation of monopolies. Nevertheless, highly dispersed tariff rates or practices such as tariff escalation may lead to higher effective protection.

Bound versus applied tariffs

While this chapter has focused so far on applied MFN rates that directly affect trade flows, it is crucial to distinguish them from the bound tariffs that are the basis of WTO market access commitments. The distinction between applied and bound rates is important owing to the considerable differences between bound and applied rates (binding overhangs) as these have implications for the trade, welfare and revenue impacts of any tariff reduction agreed in the WTO.

As a result of commitments under the Agreement on Agriculture, binding in the agricultural sector is close to 100%,[14] in contrast to industrial products for which a number of (mostly) developing countries have chosen not to bind all their tariff lines and the binding of tariffs remains a negotiating issue. At the same time, as a result of the tariffication process in the UR (see above) binding overhangs tend to be very high in the agricultural sector. As a general rule, bound rates tend to be more uniform, as many countries set uniform rates across a wide range of products (Table 1.A.7).

Differences between bound and applied rates are particularly large in LDCs where, expressed as a percentage of their applied duties, they reach 365% for agricultural products and around 290% for industrial products (Table 1.A.6). In addition, because many industrial tariff lines are not bound, the reported overhangs may underestimate the extent of uncertainty with respect to commercial policy. Among lower- and middle-income countries, existing overhangs expressed in relative terms are highest in the Latin America and Caribbean and East Asia and Pacific regions and in the agricultural sectors of South Asia. Developed countries maintain single-digit overhangs which are, however, significant if expressed as a percentage of the corresponding applied rate.

Larger binding overhangs in developing countries require bolder tariff cuts in order to obtain reductions in applied rates. Indeed, the binding overhang is estimated at three times the average applied rate in the agricultural sectors of South Asian low- and middle-income countries (Table 1.A.6); this implies that, on average, the bound rates would have to be cut by as much as 75% to affect applied rates. It is therefore necessary to have a robust formula in the context of the Doha Round to secure real market access and resulting welfare gains for participants. At the same time, large binding overhangs imply that unused protection can be significantly reduced and thus give greater certainty about the future levels of tariff protection without implying any losses in government tariff revenue (see Chapter 4).

Formula approaches to tariff reductions and tariff reductions in the Doha work programme

Although tariff reductions can be achieved by negotiating concessions for individual countries and sectors, the practice of multilateral and regional trade negotiations indicates that there is a greater probability of success when using a formula approach to obtain commitments across countries and sectors. This dilutes the force of special interest groups, facilitates monitoring of the balance of concessions, and enables the effective participation of smaller countries that would be unable to negotiate bilateral deals effectively. Francois and Martin (2003) point to the effectiveness of a formula approach by comparing the 35% reduction in average tariffs in the Kennedy Round, when a 50% proportional formula was agreed, with the average of 2.5% in rounds two to five of GATT negotiations conducted under the request and offer approach.

[14] Approximately 99% of tariff lines have been bound by 23 countries (WTO, 2003c).

In the past, a number of approaches to tariff cuts have been used or discussed. The most prominent are summarised in Box 1.1 and Figure 1.1. The initial tariff negotiations under the GATT followed the request-and-offer procedure: members negotiated bilateral market access concessions and subsequently extended them to all members on the MFN principle. A linear formula approach was introduced in the Kennedy Round (1963-67) and a 50% cut was agreed on all manufactured goods except sensitive goods including steel, clothing, textiles and footwear. The linear formula yields higher absolute cuts in initially high tariffs (Panagariya, 2002)[15] as well as higher proportional reductions in duty-paid prices on high-tariff items. In principle this leads to economic efficiency. However, with the linear formula high and low rates are cut in the same proportion, thereby maintaining the initial dispersion across sectors and countries.[16]

The Swiss formula, which was first adopted in the Tokyo Round, has a number of desirable properties. It maintains the linear formula's advantage of a greater absolute decrease in high tariffs, but it also ensures a greater relative decrease and thus more effectively reduces tariff dispersion. Additionally, the coefficient "a" in the Swiss formula provides an upper ceiling on the maximum post-reform tariff rate. The general linear approach also leads to higher proportional cuts in higher tariffs and was considered in the Tokyo Round. Unlike the Swiss formula, this approach implies that some low rates may actually increase (see Figure 1.1). Proponents of this approach advocated its application only to tariffs higher than 5% (Francois and Martin, 2003, citing Laird and Yeats, 1987).

The Uruguay Round approach involved setting broad tariff reduction goals, such as a 30% average reduction on industrial products, leaving the distribution of the cuts across sectors to the negotiations. It brought about substantial tariff reductions but was less successful in achieving larger proportional cuts in higher tariffs and in lowering dispersion (Francois and Martin, 2003). The Uruguay Round agreement on agriculture also included a range of formula-type elements such as average cuts in tariffs, a minimum cut in each tariff line, formulas for establishing bindings, and ceiling bindings options.

Other formulas discussed in the literature include the so-called flexible Swiss formula (Francois and Martin, 2003) and the formula that defines liberalisation in terms of foregone tariff revenue (Panagariya, 2002). The flexible Swiss formula, in addition to preserving the attributes of the standard Swiss formula (*i.e.* a maximum tariff equal to the "a" parameter and higher proportional cuts for higher initial tariff rates), introduces more flexibility with respect to the depth of cuts. The key practical advantage of such a formula, as argued by Francois and Martin (2003), is that the impact of tariff reduction on peak tariffs can be moderated by adjustments to the "a" parameter while compensating the trading partners through reductions in lower tariffs (by adjusting the "b" parameter) sufficient to achieve a target reduction in the average tariff (see Box 1.1 for more details). If the objective is to keep the percentage reduction in the average tariff constant, the choice of a higher maximum tariff would require larger reductions in the relatively low rates.

15 More protected sectors are liberalised more in absolute terms. Additionally, effective protection is unlikely to rise because input tariffs decline proportionately more than output tariffs.

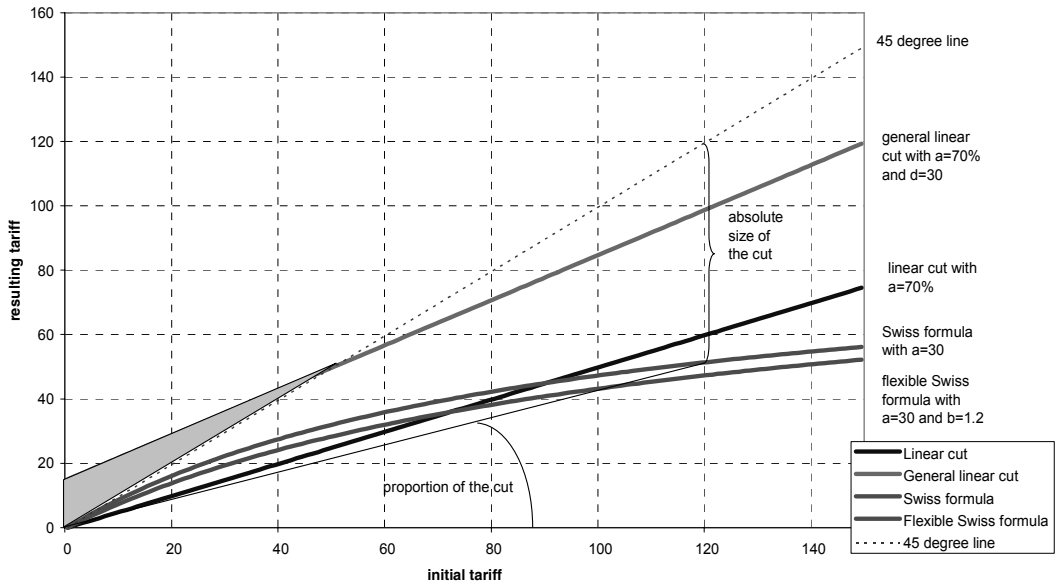
16 Technically, a proportional cut in tariffs does not decrease the coefficient of variation (the ratio of standard deviation to the average) of tariffs.

Box 1.1. Selected formula approaches to tariff cuts

	Formula	Description
Simple linear approach	$T_{i\,1}=aT_{i\,0}$	$T_{i\,1}$ and $T_{i\,0}$ are the final and initial tariff respectively and $0<a<1$, subject to negotiation, is a percentage reduction in tariff which is constant for all initial tariffs $T_1/T_0=a$.
General linear approach	$T_{i\,1}=d+aT_{i\,0}$	*d* is a positive constant and $0<a<1$. This approach leads to larger percentage reductions in higher tariff rates but could also lead to increases in the lowest rates.
Swiss formula	$T_{i\,1}=aT_{i0}/(a+T_{i\,0})$	*a* is the negotiated coefficient and the level of maximum resulting tariff. The formula implies higher percentage cuts for high rates but does not require increases in the lowest rates.
Flexible Swiss formula	$T_{i\,1}=aT_{i0}/(a*b+T_{i\,0})$	This formula maintains the attribute of the standard Swiss formula where *a* sets a maximum resulting tariff but it also permits additional flexibility through *b*: as b increases the formula tends to increase the reduction in the lower tariffs allowing for higher maximum rates with the same target reduction in the average tariff (source paper: Francois and Martin, 2003).
Tariff revenue formula	$T_{i\,1}= T_{i\,0} - c/V_{i\,0}$	*c* is a constant and $V_{i\,0}$ is the value of initial imports at world prices.

In the lead-up to the Cancun Ministerial, the work of the WTO Negotiating Group on Market Access (NGMA) focused on the issue of "modalities" and particularly on a harmonising formula for tariff cuts applied on a line-by-line basis. Several countries submitted proposals outlining a range of market access priorities (WTO, 2003c). In May 2003, the chairman of the NGMA released, under his own responsibility, draft elements of modalities for negotiations on non-agricultural products (WTO, 2003b). Key elements of the proposal included: a distinction between developed, developing and least developed countries; a proposed formula for tariff reductions; and proposals for sectoral tariff reductions and special and differential treatment (SDT) for developing countries. Built into the formula was an element that took into account the current average level of tariffs for each country and a negotiated coefficient implying that countries with relatively high levels of average tariffs would in principle be able to maintain higher tariff rates unless they agreed in the negotiations to accept a lower value of the negotiated coefficient.

Figure 1.1. Formulas for tariff cuts: relationship between initial and resulting tariffs



Tariff cuts in the Doha work programme

The meetings of NGMA in the run-up to Cancun revealed differences among members with respect to the depth of the formula tariff cuts.[17] Significant North-South differences emerged on tariff liberalisation and SDT aspects of the proposal. Some developing countries felt that the proposal went too far and did not sufficiently address their concerns. Many developed countries, on the other hand, felt that the proposal would not guarantee better market access. A number of proposals drew the attention of the negotiating group to exemptions of sensitive products for vulnerable economies. Concerns were also raised about the need to preserve the existing preference margins for developing country exports (see Chapter 3 for a detailed discussion of preference erosion).

The July Framework, adopted by the WTO General Council on 1 August 2004, built on the progress in NGMA negotiations achieved in the run-up to the Cancun Ministerial and stipulated that additional negotiations would be required to reach agreement on the specifics of negotiated modalities. In particular, it reaffirmed that negotiations would continue to focus on a non-linear formula approach to tariff cuts applied on a line-by-line basis which should take fully into account the special needs and interests of developing and least-developed countries, including through less than full reciprocity in reduction commitments. The Doha Work Programme Ministerial Declaration adopted on 18 December 2005 in Hong Kong reaffirmed the commitment to the mandate for negotiations on market access for non-agricultural products set out in the July Framework. It makes explicit reference to the Swiss formula with coefficients at levels that deliver meaningful reductions in tariffs, tariff peaks and

17 For the sectoral approach (the seven sectors proposed for a complete elimination of tariffs), positions were far apart. A number of developing countries preferred a voluntary approach to participating in the sectoral tariff reductions, while developed countries preferred it to be mandatory. Most members, however, were willing to address the sectoral approach only once the overall tariff reduction formula had been approved.

escalation while taking fully into account the special needs and interests of developing countries, including through less than full reciprocity in reduction commitments.

Potential for future gains from tariff reductions

The economic literature univocally points to significant scope for further benefits from future multilateral tariff liberalisation. This is so even if the abundance of modelling approaches and differences in estimates of gains may appear to undermine confidence in the specific numerical results with respect to levels. Across the various examples of modelling work, the highest degree of harmonisation seems to have been achieved in the area of the data used for simulations. Most analyses employ the Global Trade Analysis Project (GTAP) database as a key input, although several include supplemental or alternative data for specific indicators (*e.g.* concerning trade protection) or project the database to a future year. Owing to its widespread use and public good character, the GTAP database is subject to continuing peer review, and each new release contains improvements over the previous versions.

Most existing studies employ a static modelling approach, but a few consider dynamic effects such as the interaction of trade liberalisation with investment or changes in total factor productivity (Dessus *et al*., 1999; Fontagne *et al*., 2002; and most recently Anderson *et al*., 2005). Estimates of welfare gains from trade liberalisation tend to be greater with models that take into account dynamic effects, but productivity shocks are often introduced tentatively (by adding a positive productivity shock of a certain magnitude if the ratio of exports to GDP increases as a result of the initial trade policy shock). Studies incorporating such dynamic effects and generating more noteworthy results are often more readily picked up by the media but, as Hertel and Winters (2005) point out, "the impact of trade reform on growth through channels such as the effect on productivity or the benefits of increasing the range of available goods remains a lively topic for current research on which consensus has yet to emerge".

Beyond the welfare gains due to reduction of tariffs in manufacturing and agriculture, additional gains tend to accrue with the introduction of scenarios that consider trade liberalisation in the services sector (OECD, 2005), reduction of non-tariff barriers or trade facilitation (*e.g.* Lippoldt and Kowalski, 2003; Walkenhorst and Yasui, 2003). Nevertheless, in contrast to tariffs, it is very difficult to consistently measure the economic impact of such types of trade barriers (Dihel and Shepherd, 2005; Ferrantino, 2006). Consequently, results arising from such scenarios may be more uncertain.

In addition, while some models assume perfect competition and thus do not allow for capturing the potential gains from increased competition and economic activity due to trade liberalisation, others assume an imperfectly competitive market structure which makes it possible to estimate these gains. Such approaches tend to be more data-intensive, as they require information on market structure. Apart from Brown *et al.* (2002), which is global in scope, such studies tend to focus on the effects of a particular trade reform in one country or region for which the researchers have been able to collect or estimate the necessary data.

Two relatively recent literature surveys concerned with simulations of the potential effects of the Doha Round, Lippoldt and Kowalski (2003) and Piermartini and Teh (2005), examined the main features of selected studies, based on a variety of trade liberalisation scenarios and completed by 2003, that were concerned with potential welfare gains.[18] Among these early studies, depending on the

[18] The sample of recent literature was selected to cover a range of approaches and institutional perspectives with respect to tariff reduction.

modelling approach and the liberalisation scenario considered, annual global welfare gains associated with the DDA ranged from around USD 170 billion, obtained from the standard static GTAP model with perfect competition (OECD, 2003), to USD 2 155 billion, obtained from the Michigan model with imperfect competition and increasing returns to scale (Brown *et al*., 2003).

Interestingly, although differences in estimates of nominal gains sometimes reach an order of magnitude, the "relative" results that refer, for example, to the relative performance of specific countries, the share of the global gains accruing to developing countries or the relative contributions to gains of agricultural and industrial sectors tend to be less dispersed. Indeed, it can be argued that the "relative" results from CGE simulations are more likely to be accurate than the nominal results since some of the errors associated with simulation results will cancel out.

The most recently available data suggest that some past estimates may have overstated the gains in nominal terms (*e.g.* van der Menbrughhe, 2006). CGE studies before 2004 are typically based on earlier releases of the GTAP database that did not accurately account for the extensive (and constantly expanding) network of preferential trade agreements. For example, Version 5 of the database, on which most studies in 2001-03 were based, included only selected agreements such as the Australia-New Zealand Closer Economic Relations Trade Agreement (ANZCERTA), the North American Free Trade Agreement (NAFTA), the European Union (EU), EU-European Free Trade Association (EFTA) and the South Africa Customs Union (SACU). The current Version 6 includes all agreements that existed in 2001, the base year of the database. More generally, the world trading system is changing rapidly and in most cases the changes reflect progress in liberalisation through implementation of multilateral commitments agreed in the past, through commitments associated with recent WTO accessions or through the continuing proliferation of regional agreements. Inevitably, increasing liberalisation is likely to reduce estimates of potential gains to be realised through the DDA.

While the various studies indicate substantial potential welfare gains from reductions in tariff protection, several offer some general rules for optimising the tariff liberalisation process. Rae *et al.* (2001) consider the early voluntary sector liberalisation for grains and oilseeds initiated within the Asia-Pacific Economic Cooperation (APEC) Forum (but implemented on an MFN basis), as well as scenarios involving removal of barriers on some "downstream" products. They conclude that selective liberalisation can lead to a worsening of resource allocation or an increase in tariff escalation (*i.e.* a tariff structure with a positive association between the level of tariffs for a product and the degree of processing). Therefore, multilateral trade liberalisation with broad product coverage would be preferable.

Moreover, a consensus seems to have emerged that a substantial part of the gains that can be achieved in the DDA is associated with liberalisation by developing countries (OECD, 2003; Fernandez de Córdoba e*t al*., 2004, Vanzetti and Fugazza, 2005; Hertel and Winters; 2005; Anderson *et al*., 2005). This is because a country's own liberalisation typically has the most direct impact on its welfare and because barriers to trade between developing countries seem to be particularly distortive.[19] While these countries may face adjustment costs associated with trade liberalisation, the evidence indicates that the costs tend to be short-term and outweighed on average by the potential welfare gains from liberalisation (see Special Focus section on Trade and Adjustment).

Another consensual finding is associated with the relatively large magnitude of gains accruing to developing countries. In two early studies, Hertel and Martin (2000, 2001) found that developing

19 One qualification to this argument is that a country's liberalisation may sometimes lead to negative terms-of-trade effects, particularly if only a specific country or group of countries implements the liberalisation.

countries were the biggest gainers in relative terms. These findings seem to be confirmed by more recent studies (Lippoldt and Kowalski, 2003; Anderson *et al*., 2005) and results presented later in this chapter.

A number of studies consider sectoral aspects of trade liberalisation. Agriculture is an area of particular focus, given its potential contribution to development. Hertel and Martin (2001) found that sequencing of trade liberalisation across sectors (agriculture, manufacturing, services is not crucial for realising gains. In a highly publicised study, the IMF and the World Bank (2002) estimated that developing country policies account for about 71% of their total income loss associated with agricultural trade distortions; up to 95% of developed countries' income loss may be due to their restrictive agricultural policies.

Hertel and Martin (2000) and later Shakur *et al.* (2002) offer an interesting line of argument with respect to sectoral approaches to liberalisation. Contrary to common perceptions, they argue that developing countries may achieve comparatively high gains from tariff reductions on industrial products, whereas developed countries may obtain comparatively greater gains from agricultural liberalisation. Part of the explanation is the increasing role of developing countries as a location for manufacturing activities and the relatively high tariffs faced by developing country for exports of manufactured goods (to both developed and developing country markets). Subsequently, the finding that industrial tariff liberalisation accounts for the bulk of welfare gains accruing to developing countries was confirmed in CGE simulations discussed in Lippoldt and Kowalski (2003). More recently, however, Anderson *et al*. (2005) estimated that most of the global gains come from lifting agricultural market access barriers.

As discussed in the next part of this chapter, some of these divergences may be due to the different sets of trade elasticities used in the simulations and the fact that agriculture is characterised by relatively high tariff barriers; in studies assuming higher elasticities, more pronounced tariff changes are likely to result in more pronounced terms-of-trade changes, which would tilt the balance of gains towards agricultural products.

Francois *et al.* (2003) and more recently Hertel and Winters (2005) point to likely regional divergences in the impact of agricultural liberalisation. In most studies, however, liberalisation of manufacturing and services trade as well as trade facilitation yield favourable results in nearly all regions. This suggests the importance of seeking a broad scope of negotiations in order to make trade-offs in liberalisation "concessions" possible so that participants can negotiate mutually advantageous agreements.

While these quantitative studies tend to highlight the potential benefits of trade liberalisation for developing countries at an aggregate level, the evidence in the literature on the effects on poverty is more mixed. Based on a number of CGE simulations of DDA scenarios, Hertel and Winters (2005) point out that poverty is more likely to be reduced in countries with agricultural export potential which export to the markets that liberalise the most, while net importers of agricultural products and countries that presently benefit from preferential market access are more vulnerable to increasing poverty.

The preceding discussion examines the existing evidence on the economic importance of further trade liberalisation and some consequences of various approaches to liberalisation. The next section presents a quantitative assessment of the effects of alternative trade liberalisation scenarios. This assessment is intended to contribute additional perspectives to the body of literature analysed above by taking into account: *i)* the fact that negotiations are conducted on bound tariff rates rather than applied

rates; *ii)* approaches similar to certain of those currently under consideration in the present multilateral trade negotiations; and *iii)* scenarios under which progress is achieved in the move towards trade facilitation.

Quantitative assessment

Introduction

The objective of this section is to present estimates of welfare gains from a number of generic scenarios for trade liberalisation in the context of the DDA. The standard static, multi-region, multi-sector GTAP model reflecting an assumption of perfect competition is used.[20] The choice of modelling strategy implies that the estimates of gains from liberalisation will be conservative. Since, as Hertel and Winters (2005) point out, consensus on the relation between openness and productivity growth has not been reached, productivity is kept constant. The static nature of the exercise is also determined by the fact that countries' primary factor endowments (land, capital stock and labour) are kept constant. Hence, the estimated gains can be directly attributed to the relative price changes associated with the tariff reduction scenarios considered and are not directly comparable to estimates from simulations that assume trade-related productivity growth and capital accumulation (*e.g.* Anderson *et al*., 2005). The standard GTAP trade elasticities are used. These were recently revised for the purposes of this model and are documented in Hertel *et al*. (2003). The sensitivity of model results with respect to these parameters is also discussed. Finally, there is a discussion of the differences between bound and applied tariff rates. In some cases of less aggressive tariff cut scenarios, applied rates are sometimes reduced only to a certain extent or not at all.

The data are from Version 6 of the GTAP database, with a base year of 2001,[21] augmented by information on bound tariffs contained in the World Integrated Trade Solution (WITS) database. Version 6 covers 57 broad economic sectors and 92 countries and for the first time fully integrates the information on bilateral *ad valorem* tariffs (both MFN and preferential), *ad valorem* equivalents of specific tariffs (MFN and preferential), as well as tariff rate quotas from the CEPII/ITC Market Access Maps (MAcMaps) database.[22] The resulting *ad valorem* equivalent measure of applied protection is thus a comprehensive measure which fully covers tariff preferences in 2001 and is consistent across all bilateral trade flows.

To facilitate the interpretation of simulation results, countries are aggregated into 12 regional groupings and industry categories are aggregated into ten sectors (Tables 1.A.9 and 1.A.10).[23] The aggregation grouped countries with some degree of geographic proximity and economic similarity.[24]

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20 This model is documented in detail in Hertel (1997).

21 The baseline against which the gains from potential DDA scenarios are measured is also adjusted for trade policy changes associated with China's accession to the WTO, the phase-out of the Agreement on Textiles and Clothing and EU enlargement in 2004.

22 The dataset is documented in detail in Bouët *et al*. (2002)

23 Aggregation of sectors and geographic areas also permits some reduction of error in the estimates while increasing ease of computation.

24 The GTAP database contains 92 world regions. Thus, even in its most basic form there is some aggregation, especially with respect to the relatively small economies. However, the structure does not permit strict adherence to WTO self-declarations of developing country status. Owing in part to limitations in the database, developed countries are defined to include four regional groupings covering all OECD countries except Mexico and Korea, as well as some WTO developing and transition countries

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

Applied and bound tariffs

Overestimates of the potential gains from trade liberalisation occurred during the Uruguay Round in part because researchers concerned with applied tariffs assumed that negotiated reductions in bound tariffs would yield proportionate cuts in applied tariffs.[25] In fact, cuts in bound tariffs did not always result in similar cuts in the applied tariff rates that traders actually face. To obtain more conservative and hopefully more realistic estimates, this assessment employs a conditional applied tariff procedure similar to the one adopted in Walkenhorst and Dihel (2002), Lippoldt and Kowalski (2003) and more recently Anderson *et al*. (2005). This methodology entails an initial calibration of the model to applied rates. Next, the trade policy changes defined with respect to bound rates are translated into conditional applied rates. For each line, the applied rate is reduced only if the tariff bindings fall below the initial applied threshold. The resulting applied rates are thus conditioned on the pre-shock level of unused protection (*i.e.* the difference between the bound and applied rates). For example, a tariff line in country *x* might have a tariff binding of 40% and an applied rate of 20%. If an agreement results in a 20% reduction in the binding [40 * (1 - 0.20) = 32], the applied rate remains unchanged. However, if an agreement results in a 75% reduction in the binding [40 * (1 - 0.75) = 10], the applied rate will be reduced to 10%.

Table 1.A.11 presents average MFN applied and bound tariff rates, highlighting the variation across sectors and regions in the spread between the two rates. In terms of sector, the spread is greatest for natural resources, chemical products and other manufacturing products.[26] By region, the difference is greatest in North Africa and the Middle East. It is shown as zero for North and East Asia where the average MFN applied levels in the base year (2001) were higher than the corresponding bindings.[27] Overall, the variation in unused protection shown in Table 1.A.11 underscores the point that an across-the-board reduction in average MFN bound tariffs does not necessarily lead to a proportional reduction in the corresponding applied rates.

Policy scenarios

Options for reducing tariff protection and implementing enhanced trade facilitation are presented using two sets of scenarios (Box 1.2). The first considers "benchmark" tariff cuts that reflect ambitious scenarios, with all regions participating. The second emphasises options for implementing Swiss formula cuts in tariff protection, including a scenario with differentiated coefficients for

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such as Hong Kong (China), Chinese Taipei and the members of the Central European Free Trade Area. The Rest of Europe category is considered as developed and the Rest of the World category is considered as developing.

25 For example see the observation in Anderson *et al*. (2005), p. 8.

26 The rates for agriculture are based on in-quota rates, where applicable.

27 Consequently, the implementation of UR commitments would require downward adjustment of average MFN applied levels to equal the bindings, at a minimum.

developing regions and for developed regions. In total, six scenarios are considered. In each case, the reductions in applied tariff protection are based on negotiated reductions in bound tariffs.

The DDA experiments with the Swiss formula defined here do not mimic specific proposals submitted by members for discussion in the WTO (*e.g.* WTO (2003a)). Rather, they aim to be sufficiently generic to provide useful inputs to the discussion. The goal is to facilitate discussion of the benefits of lowering the remaining tariff barriers in agriculture and industrial products, with special focus on the division of welfare gains between the developed and developing countries.[28]

The first two scenarios (A1, A2) assume full participation in liberalisation by developing countries. Scenario A1 considers complete removal of tariffs on all merchandise trade in all regions and, as such, establishes a benchmark against which to compare welfare gains under all other scenarios. Scenario A2 considers the impact of liberalisation of manufactured goods trade only and enables estimation of sectoral contributions to overall gains from tariff reductions.

The second set of scenarios (B1, B2, B3 and B4) is based on the Swiss formula of tariff reduction with coefficients, respectively, of 30%, 15% and 5%. As spelled out by Francois and Martin (2003) and WTO (2002) and recognised in the Ministerial Declaration adopted in Hong Kong (China), this formula has a number of desirable features for tariff negotiations, including simplicity and effectiveness in reducing tariff peaks. The Swiss formula implies that high tariffs are reduced by a higher percentage than low ones. Three variations of the Swiss formula are modelled (each with a different coefficient) in order to show that the choice of coefficient has important consequences for the size and regional distribution of gains. This variance in results is due to regional differences in initial tariff structures, the initial gap between bound and applied tariffs (*i.e.* the amount of unused protection) and the differing magnitudes of cuts to high and low tariffs implied by the three versions of the Swiss formula.

A final Swiss formula-based scenario (B4) is added to reflect the potential effects of different levels of commitment with respect to tariff cuts in developed and developing countries in order to capture the potential effects of non-reciprocity by developing countries. In this scenario developed countries adopt a coefficient of 5% and developing countries adopt a coefficient of 30%. The choice of coefficients attempts to echo recent discussions of the formula approach as reported in Annex B of the Doha Work Programme Ministerial Declaration adopted on 18 December 2005. The coefficients adopted are the lowest of those mentioned in the discussions concerning the formula for developed countries (5%) and the highest mentioned for developing countries (30%).

To address the issue of gains from trade facilitation and to compare these with gains from tariff cuts, the tariff reduction scenarios in this chapter are supplemented with a simulation of progress in trade facilitation. This simulation takes the form of a cut in unobserved trading costs.[29] In the literature, estimates of costs savings from trade facilitation range from 1.6% to 10% of the total value of trade (Francois *et al.,* 2003, Table 3-4). The simulation of trade facilitation in the scenarios below employs a uniform reduction of unobserved trade costs equal to 1% of the value of trade (see Lippoldt and Kowalski, 2003 for a detailed description of the methodology). The same rate of reduction is applied for all regions and sectors. No assumptions are made about the specific types of trade facilitation policies that might be implemented. On average, however, this simulation uses a lower

28 The services sector is also indirectly affected by shocks to tariffs and trade costs (trade facilitation) in the agricultural and industrial sectors.

29 The approach used here is based on the methodology of Hertel *et al*. (2001).

bound figure and probably yields a conservative estimate of the potential gains. A more sophisticated range of trade facilitation policies has been recently considered by Walkenhorst and Yasui (2003).

Box 1.2. Policy scenarios

Two sets of DDA policy experiments are modelled. A total of six scenarios are considered for potential implementation under the DDA. Each reflects a specific combination of reductions in tariffs and a reduction in trade costs equivalent to 1% of the value of trade (assumed as a consequence of progress in trade facilitation).

A. Scenarios without regional differentiation in liberalisation

- *A1. Full liberalisation*: 100% reduction in all merchandise tariffs in all regions and reduction in trade costs equivalent to 1% of value of trade.
- *A2. Global liberalisation just in manufactured goods trade*: 100% reduction in tariffs on manufactured goods and reduction in trade costs equivalent to 1% of value of trade.

B. Swiss formula variations

- *B1. Swiss formula with a coefficient of 30*; reduction in trade costs equivalent to 1% of value of trade.
- *B2. Swiss formula with a coefficient of 15*; reduction in trade costs equivalent to 1% of value of trade.
- *B3. Swiss formula with a coefficient of 5*; reduction in trade costs equivalent to 1% of value of trade.
- *B4. Swiss formula* with coefficient *of 5* for developed regions and *coefficient of 30* for developing regions; reduction in trade costs equivalent to 1% of value of trade.

Discussion of results

It is widely accepted that countries benefit from an opening of their own markets, especially if liberalisation is conducted in a non-discriminatory fashion and with appropriate complementary policies (*e.g.* macroeconomic, social and labour market policies). These benefits arise from changes in production and consumption patterns. The direct effects of trade liberalisation can be described as follows. On the production side, when tariffs are reduced or removed in previously protected markets, imports of the goods in question rise and their prices fall. By the same token, production increases and prices rise in countries which are efficient producers of these goods. As a result, resources in the importing country are reallocated to more efficient uses. This gives rise to allocative gains for the importing country. (Similarly, exporting countries will experience efficiency gains as more resources are devoted to the liberalised sector in which they have a comparative advantage.) In addition to allocative gains on the consumption side, declining import prices result in increased consumer surplus.

However, a number of second-round effects make the welfare analysis of trade liberalisation more complex. First, many commodities serve as inputs in production of others. Hence, changes in relative prices of inputs affect the production of final goods. In this context, for example, Shakur *et al.* (2002) demonstrate that selective tariff liberalisation may have a negative impact on global welfare gains. Second, changes in world prices of commodities resulting from trade liberalisation affect countries' terms of trade. The removal of tariffs results in rising world prices of some traded goods and falling world prices of others. Depending on their composition of trade, some countries gain from these changes and some lose.

The measure of change in welfare used in the present assessment is the equivalent variation in income.[30] At a less abstract level, welfare gains from trade liberalisation can be broken down into the

30 Equivalent variation in income represents "the money metric equivalent to the utility change brought about by the price change" (GTAP documentation). That is, it does not necessarily indicate that the recipient's income would change by this amount; rather, it represents the change in utility.

change in efficiency with which countries utilise their resources and changes in their terms of trade (Hertel and Martin, 1999). The efficiency gains from trade liberalisation are expected to be highest in the most protected economies. The largest terms-of-trade gains are usually expected in countries whose exports benefit from the most substantial tariff cuts (*i.e.* demand for these products will increase, raising the world price). The largest terms-of-trade losses may be expected in countries that implement the deepest tariff cuts, as they reduce export prices in order to sell more and finance their increased imports.

In the baseline scenario in which all merchandise tariffs are removed and trading costs are reduced (Scenario A1 and Table 1.A.12a,b), total welfare gains amount to over USD 162 billion. About USD 42 billion of this gain can be attributed to tariff cuts and USD 120 billion to cuts in costs of trading. Closer inspection of Table 1.A.12a reveals the distribution of gains from tariff cuts between particular regions. In absolute terms, the biggest winners are Asian newly industrialising economies (NIEs) (a region that includes China), Middle East and North Africa and Western Europe. The negative gains from tariff removal predicted for North America are associated with unfavourable terms-of-trade effects in the motor vehicles, other manufacturing and services sectors as the prices of some of these products produced in North America tend to decrease.[31]

The negative terms-of-trade effects are more than outweighed if the generic trade facilitation scenario is considered together with reduction of tariffs (Table 1.A.12b). In such a scenario the bulk of the gains continues to accrue to Asian NIEs, followed by Western Europe and North and East Asia. This is not surprising since in the assumed uniform reduction of trade costs across all the world regions welfare gains are largely related to trade volumes. In this context it is interesting to note that for all developing regions the potential gains from tariff removal account for 30% to 40% of welfare gains from the joint tariff reduction and trade facilitation scenario. In contrast, in most developed regions tariffs are already low and the reduction of trade costs accounts for the lion's share of welfare gains that accrue to these countries.

When the initial size of the economies is taken into account (*i.e.* in the initial equilibrium), developing countries enjoy a comparatively large expansion of economic activity, amounting on average to 0.54% of their annual GDP (Table 1.A.14). For developed countries, the corresponding gains amount on average to 0.08% of their GDP. A similar pattern is observed for per capita welfare gains. Developing regions gain on average 0.50% while developed regions gain around 0.16%.

Even if agricultural goods are excluded (Scenario A2), estimated global welfare gains from tariff reduction still amount to USD 23 billion (or USD 126 billion if tariff reductions are accompanied by reduction in trade costs). This means that approximately 56% of global gains originate from the liberalisation of industrial tariffs. For developing countries this share is slightly lower (53%), which suggests that, for them, agricultural tariffs are relatively more important, even if they are marginally less important than industrial tariffs in absolute terms. These averages certainly mask some regional differences. For example, industrial tariffs account only for 22% of gains that could accrue to Sub-Saharan Africa while comparable shares for Middle East and North Africa and Asian NIEs are 69% and 71%, respectively.

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

The contribution of agriculture to the overall gains from tariff reductions discussed above is a little lower that the share obtained by Anderson *et al.* (2005) who estimated that agriculture accounted approximately for 63% and 64% of gains accruing respectively to developing and developed regions. The present results lend support to the argument of Hertel and Martin (1999) that, from the point of view of developing countries, the potential for welfare gains may be greater from a reduction of manufacturing tariffs than of agricultural tariffs. More prosaically, however, because tariffs (and thus the depth of potential tariff cuts) tend to be larger in agriculture (Table 1.A.11), the contribution of agricultural tariffs to overall gains is likely to be affected by the magnitude of the assumed trade elasticities. An auxiliary simulation of the model that assumes trade elasticities that are 50% higher than the elasticities in Version 6 of the GTAP database assumed in scenarios A1 and A2 brings the share of industrial tariffs to 49% globally and 44% if only gains accruing to developing regions are concerned.

The Swiss formula scenarios assuming uniform coefficients for all countries (Scenarios B1-B3) generate welfare gains ranging from USD 20 billion to USD 36 billion (or from USD 96 billion to USD 116 billion if tariff reductions are accompanied by reduction in trade costs), depending on the coefficient used. As shown in Table 1.A.12a, the scenario with a maximum resulting tariff of 5% (B3) yields gains that are relatively close to the full liberalisation scenario (A1).

In terms of welfare gains from tariff liberalisation alone using the Swiss formula, the lower the formula coefficient, the higher the total gains for every region in the model. This is an intuitive result since low Swiss formula coefficients translate into more ambitious tariff reductions. A less intuitive result is associated with the distribution of gains among developing and developed regions. The simulation results suggest that more ambitious Swiss formula coefficients are associated with lower shares of gains accruing to developing regions. This is so even though the absolute gains tend to increase for both developing and developed regions. As Table 1.A.13 demonstrates, this is because more ambitious liberalisation scenarios generate deeper tariff cuts in developing countries and benefit both developing and developed regions. However, gains accruing to developed regions increase more quickly with more ambitious cuts.

This tendency is also evident in the results pertaining to the Swiss formula scenario with a 5% coefficient for developed countries and a 30% coefficient for developing countries (Scenario B4). The absolute gains accruing to developing regions in this scenario are lower than those obtained with the Swiss formula with a coefficient of 5% applied across all the regions. Nevertheless, in the scenario with the differentiated Swiss formula coefficients, developing regions capture approximately 89% of the global gains.

Under all of the scenarios, the combination of trade facilitation with reduced tariff protection yields welfare gains for all regions. However, there are cases in which tariff liberalisation that is not accompanied by trade facilitation policies may leave some countries worse off. Among the developed regions, North America and, to a lesser extent, Latin America are potential losers in such cases (see Table 1.A.12, scenarios A1 and A2). These welfare losses are attributed to unfavourable changes in the terms of trade, mostly in manufacturing. Liberalisation scenarios based on the Swiss formula, however, generate smaller terms-of-trade losses which are in all cases compensated by substantial efficiency gains.

As Table 1.A.12 indicates, around 75% of total gains arising from the full tariff liberalisation scenario (A1) accrue to developing countries.[32] Under the Swiss formula 5% scenario (B3),

[32] The share is even higher when only gains from tariff reduction are assessed.

developing countries reap less in absolute terms and a marginally smaller share of the overall welfare gains (74 %) than under the full liberalisation scenario. In addition, among the six scenarios, the scenario with differentiated coefficients offers developing countries the greatest share of the total welfare gains (89%) but lower absolute gains than with the Swiss formula scenario with the coefficient of 5%.

The conditional applied tariff methodology used in this study highlights the limitations of tariff reductions based on a Swiss formula approach with a high coefficient (see Table 1.A.12, Scenario B1, which uses a coefficient of 30%). The benefits of a high coefficient approach are limited because the resulting cuts in the bound rates are not deep enough to induce substantial cuts in applied rates. This reinforces the point that cuts in bound rates will need to be substantial if they are to generate substantial changes in applied rates.

Conclusion

This chapter has aimed to provide a broad perspective on the issue of potential tariff reductions under the DDA negotiations. It has examined the present structure of tariffs, outlined the DDA work in the area of tariffs, briefly discussed the various approaches to tariff reduction used in past rounds of multilateral trade negotiations, and considered a sample of the existing literature on the effects of various trade liberalisation scenarios involving tariff reductions. The second part presented a quantitative assessment of the potential welfare gains from trade liberalisation involving tariff reduction and trade facilitation.

The modelling strategy adopted here generates rather conservative estimates of gains. This is because, unlike other studies, it assumes nothing about dynamic gains from trade, an area in which economic research has not yet reached a consensus. Hence, the estimates of gains reported here can be directly attributed to the relative price changes associated with the tariff reduction scenarios considered. Additionally, this assessment takes into account certain negotiating realities in the WTO, including the fact that negotiations focus on bound tariffs while the main focus for many economic actors is on the applied tariffs. A number of generic tariff reduction scenarios are examined to reflect elements of some proposals now under consideration in the WTO. All these assumptions should be borne in mind when interpreting the results of our exercise.

A comparison of the policy scenarios modelled in this chapter demonstrates the potential of well-specified approaches to trade liberalisation to yield win-win outcomes. The results point to the importance of market access for all regions, particularly developing countries. While improved market access for agricultural products is found to yield substantial potential benefits, the results highlight that potential gains from further liberalisation of industrial goods may be even larger. The findings also indicate that the potential welfare benefits from progress in trade facilitation can exceed the gains from tariff reduction for some regions under some scenarios.

Overall the study underscores the importance to developing countries of greater access to developed countries' markets as well as their own engagements in making substantive commitments under the DDA. To engage in such commitments is in their interest and in the interest of the multilateral trading system as a whole. The stakes involved are indeed large and may influence development prospects for years to come.

ANNEX TABLES

Table 1.A.1. Simple tariff averages

	Agricultural products		Non-agricultural products	
	Bound	Applied	Bound	Applied
Reporter				
Developed countries (DEV)	22.33	7.46	8.54	3.81
Low and middle income economies	58.94	22.56	30.68	11.1
of which				
East Asian & Pacific countries	39.98	14.88	28.79	13.48
Europe	34.98	28.09	10.15	6.96
Latin America and Caribbean	63.36	16.36	39.1	10.42
Middle East and North Africa	59.44	32.05	33.99	21.3
South Asian countries	98.59	24.64	33.65	18.75
Least Developed Countries	77.38	16.62	51.53	13.18

Source: WITS.

Table 1.A.2. Trade-weighted averages of MFN applied rates on agricultural products

	Country source of imports							
	DEV	LDC	LMEAP	LMEurope	LMLAC	LMMNA	LMSA	LM
Reporter:								
Developed countries (DEV)	5.58	10.09	6.67	11.76	5.08	4.86	2.6	5.88
Least Developed Countries (LDC)	11.52	18.93	13.51	12.51	13.49	16.52	10.25	13.26
Low and middle income economies (LM)	19.64	23.97	28.81	22.46	15.87	18.9	15.53	20.25
of which:								
East Asian & Pacific (LMEAP)	11.86	17.29	17.32	15.4	12.64	16.41	12.56	15.14
Europe (LMEurope)	20.65	18.67	15.81	22.21	24.33	19.5	12.58	20.53
Latin America and Carribbean (LMLAC)	23.17	15.93	11.78	34.15	14.62	13.19	9.26	14.79
Middle East and North Africa (LMMNA)	28.81	19.26	28.27	23.41	11.56	17.64	10.66	17.8
South Asia (LMSA)	19.92	30.58	69.12	23.38	35.89	21.13	22.55	48.33

Source: WITS.

Table 1.A.3. Trade-weighted averages of MFN bound rates on agricultural products

	Country source of imports							
	DEV	LDC	LMEAP	LMEurope	LMLAC	LMMNA	LMSA	LM
Reporter:								
Developed countries (DEV)	8.3	13.99	7.22	21.07	6.78	8.65	3.19	7.62
Least Developed Countries (LDC)	66.48	106.14	107.34	72.84	153.1	48.06	149.01	121.33
Low and middle income economies (LM)	39.37	79.15	79.97	36.97	43.72	43.59	68.1	54.62
of which:								
East Asian & Pacific (LMEAP)	25.87	18.36	27.42	29.97	17.33	17.54	27.56	23.07
Europe (LMEurope)	27.96	19.57	23.92	32.21	28.9	26.38	22.36	28.68
Latin America and Carribbean (LMLAC)	45.29	64.18	38.63	32.33	47.7	39.18	35.53	46.75
Middle East and North Africa (LMMNA)	40.97	29.36	27.23	60.58	49.59	23.83	16.37	41.98
South Asia (LMSA)	79.16	118	205.72	86.04	102.51	96.52	132.71	160.22

Source: WITS.

Table 1.A.4. Trade-weighted averages of MFN applied rates on industrial products

	Country source of imports							
	DEV	**LDC**	**LMEAP**	**LMEurope**	**LMLAC**	**LMMNA**	**LMSA**	**LM**
Reporter:								
Developed countries (DEV)	2.19	9.79	3.5	3.1	4.02	1.86	6.37	3.7
Least Developed Countries (LDC)	10.8	8.78	17.5	7.48	8.61	8.67	18.74	14
Low and middle income economies (LM)	10.98	7.6	10.53	6.41	10.44	6.39	11.42	8.9
of which:								
East Asian & Pacific (LMEAP)	9.56	5.4	8.88	6.2	5.09	6.66	9.03	7.46
Europe (LMEurope)	7.1	6.48	6.58	5.21	4.43	1	6.91	5.19
Latin America and Carribbean (LMLAC)	12.8	10.04	12.82	7.62	11.48	2.77	13	11.07
Middle East and North Africa (LMMNA)	20.85	18.94	25.9	24.1	21	14.67	19.94	20.63
South Asia (LMSA)	24.28	21.96	19.65	26.67	16.7	17.41	17.77	20.88

Source: WITS.

Table 1.A.5. Trade-weighted averages of MFN bound rates on industrial products

	Country source of imports							
	DEV	**LDC**	**LMEAP**	**LMEurope**	**LMLAC**	**LMMNA**	**LMSA**	**LM**
Reporter:								
Developed countries (DEV)	2.91	10.17	3.73	3.51	3.92	3.44	6.64	3.89
Least Developed Countries (LDC)	28.69	20.29	32.94	28.23	29.4	26.95	33.57	31.19
Low and middle income economies (LM)	19.22	7.28	14.92	9.17	27.4	13.27	14.86	16.49
of which:								
East Asian & Pacific (LMEAP)	8.29	1.71	7.74	7	5.23	2.61	6.15	6.35
Europe (LMEurope)	9.09	12.28	7.48	6.92	7.15	7.26	11.75	7.14
Latin America and Carribbean (LMLAC)	33.39	32.67	33.24	26.71	31.9	33.23	32.1	32.12
Middle East and North Africa (LMMNA)	28.79	27.82	31.21	30.46	22.98	27.99	22.13	28.4
South Asia (LMSA)	31.63	33.15	25.33	33.43	33.68	35.18	26.55	30.43

Source: WITS.

Table 1.A.6. Differences between bound and applied rates

	Agricultural products		Non-agricultural products	
	absolute	**as % of applied rate**	**absolute**	**as % of applied rate**
Region:				
Developed countries (DEV)	14.87	1.993297587	4.73	1.241469816
Low and middle income economies	36.38	1.612588652	19.58	1.763963964
of which				
East Asian & Pacific countries	25.1	1.686827957	15.31	1.135756677
Europe	6.89	0.245283019	3.19	0.458333333
Latin America and Caribbean	47	2.872860636	28.68	2.752399232
Middle East and North Africa	27.39	0.854602184	12.69	0.595774648
South Asian countries	73.95	3.001217532	14.9	0.794666667
Least Developed Countries	60.76	3.655836342	38.35	2.909711684

Source: WITS.

Table 1.A.7. Coefficients of variation

	Agricultural products		Non-agricultural products	
	Bindings	MFN Applied	Bindings	MFN Applied
Region:				
Developed countries (DEV)	2	2.9	1.3	1.7
Low and middle income economies of which	1	2.4	0.7	1.1
East Asian & Pacific countries	1.1	17.69375	0.8	1.3
Europe	1.4	1.3	1	1.1
Latin America and Caribbean	0.6	1.4	0.4	0.9
Middle East and North Africa	2.7	4.3	0.5	0.9
South Asian countries	0.7	0.9	0.8	0.7
Least Developed Countries	0.7	0.7	0.6	0.8

Source: WITS.

Table 1.A.8. Incidence of international tariff peaks (% of total number of lines)

	Agricultural products		Non-agricultural products	
	Bindings	MFN Applied	Bindings	MFN Applied
Region:				
Developed countries (DEV)	0.210441207	0.187247204	0.04823184	0.079923088
Low and middle income economies of which	0.725818934	0.809758458	0.24119081	0.368876152
East Asian & Pacific countries	0.69162467	0.701647006	0.255352643	0.244295141
Europe	0.225486981	0.550962986	0.089506085	0.354805298
Latin America and Caribbean	0.948954225	0.961906927	0.264585503	0.333071214
Middle East and North Africa	0.863261032	0.597225544	0.498148904	0.475378915
South Asian countries	0.866990291	0.973040578	0.525200261	0.598798089
Least Developed Countries	0.883461011	0.966526195	0.349861229	0.418639095

Source: WITS.

Table 1.A.9. Regional aggregations

Country group	Original GTAP regions
Asian Newly industrialised economies (NIEs)	Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam, China, Republic of Korea
South-East Asia	Bangladesh, India, Pakistan, Sri Lanka; Rest of South Asia
Western Europe	EU15 (including country detail for Austria, Belgium, Denmark, Finland, France, Germany, United Kingdom, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden), Switzerland, Rest of EFTA
Rest of Europe	Albania, Bulgaria, Croatia, Cyprus, Czech Republic, Hungary, Malta, Poland, Romania, Slovakia, Slovenia, Estonia, Latvia, Lithuania
North America	Canada, United States
Sub-Saharan Africa	Botswana, South Africa, Rest of SACU, Malawi, Mauritius, Mozambique, Tanzania, Zambia, Zimbabwe, Rest of SADC, Madagascar, Nigeria, Uganda, Rest of Sub-Saharan Africa
Oceania	Australia, New Zealand
North Africa and Middle East	Turkey, Iran, Rest of Middle East, Morocco, Tunisia, Rest of North Africa
Latin America	Mexico, Bolivia, Colombia, Ecuador, Peru, Venezuela, Argentina, Brazil, Chile, Uruguay, Central America, Rest of South America
North & East Asia	Japan, Hong Kong (China), Chinese Taipei
Former Soviet Union	Russian Federation, Rest of Former Soviet Union
Rest of the World	Rest of Oceania, Rest of North America, Rest of FTA of Americas, Rest of the Caribbean

Table 1.A.10. Sectoral aggregations

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

Table 1.A.11. Average initial applied and bound tariff rates used in the modelling exercise (%)

By sector	Applied	Bound	Difference between applied and bound	
			% pts	% of bound rate
Natural resources	1.2	7.5	6.3	84.4
Primary agriculture1	12.3	21.6	9.3	43.1
Processed agriculture	11.1	23.3	12.1	52.1
Textiles & Clothing	7.6	14.4	6.8	47.1
Chemical products	2.8	9.9	7.2	72.2
Wood products	1.7	5.2	3.5	67.0
Motor vehicles & parts	3.4	9.5	6.1	64.4
Other machinery	2.4	7.6	5.3	69.2
Other manufacturing	2.1	7.0	5.0	70.6

By region	Applied	Bound	Difference between applied and bound	
			% pts	% of bound rate
Oceania	4.7	9.6	4.9	50.9
Rest of world	11.3	24.8	13.5	54.5
Asian NICs	6.4	12.2	5.8	47.5
North & East Asia2	4.0	2.2	-	-
South East Asia	19.9	55.5	35.6	64.2
North America2	1.7	3.3	1.6	48.4
Latin America	7.4	34.0	26.6	78.3
Western Europe2	1.1	3.5	2.4	68.6
Rest of Europe	1.9	7.0	5.2	73.2
Former Soviet Union	7.7	26.6	18.9	71.2
Middle East and North Africa	8.7	36.3	27.7	76.2
Sub-Saharan Africa	12.4	47.4	35.0	73.9

1. The rates shown for agriculture are based on in-quota tariff rates, where applicable.
2. The negative difference between average MFN applied and bound rates in these regions reflects a situation in which the 2001 average applied rates were higher than the corresponding bindings. At a minimum, the implementation of UR commitments would require downward adjustment of average MFN applied levels to equal the bindings.
Sources: GTAP Version 6 and World Integrated Trade Solution Database, author's calculations.

Table 1.A.12a, Panel A. Welfare gains from tariff liberalisation by scenario and regional grouping (equivalent variation, millions of dollars)

Scenario	Full removal of *merchandise* tariffs	Full removal of *manufacturing* tariffs	Swiss formula (coefficient 30%)	Swiss formula (coefficient 15%)	Swiss formula (coefficient 5%)	Swiss formula (developed countries coefficient 5%; developing countries coefficient 30%)
	A1	A2	B1	B2	B3	B4
Oceania	2 419.86	566.59	1 337.43	1 572.91	1 994.15	1 723.97
Rest of world	962.96	11.86	1 080.92	1 148.07	1 107.68	1 363.02
Asian NICs	18 619.68	13 251.55	8 530.81	11 521.62	15 415.81	12 030.83
North & East Asia	8 555.85	8 676.37	2 001.79	2 514.84	5 106.95	2 417.87
South East Asia	1 327.93	433.39	1 139.44	1 410.48	1 477.65	1 560.36
North America	-3 860.60	-6 789.00	1 707.92	1 499.21	-1 300.48	875.63
Latin America	3 243.83	-1 101.12	2 357.38	3 078.00	3 791.33	2 726.95
Western Europe	3 183.81	4 602.58	-684.60	317.78	3 578.60	-2 383.89
Rest of Europe	-304.03	-683.52	-95.45	-71.26	192.14	-227.64
Former Soviet Union	2 144.72	1 342.32	475.77	890.18	1 394.97	641.51
Middle East and North Africa	3 896.50	2 713.95	1 406.04	2 127.12	2 819.06	1 625.38
Sub-Saharan Africa	1 388.51	316.97	1 072.41	1 396.97	1 410.74	1 286.16
All regions	41 579.02	23 341.94	20 329.86	27 405.92	36 988.60	23 640.15
Developed countries	9 994.89	6 373.02	4 267.09	5 833.48	9 571.36	2 405.94
Developing countries	31 584.13	16 968.92	16 062.77	21 572.44	27 417.24	21 234.21

Sources: GTAP simulation results, author's calculations.

Table 1.A.12b, Panel B. Welfare gains from tariff liberalisation and trade facilitation by scenario and regional grouping (equivalent variation, millions of dollars)

Scenario	Full removal of *merchandise* tariffs	Full removal of *manufacturing* tariffs	Swiss formula (coefficient 30%)	Swiss formula (coefficient 15%)	Swiss formula (coefficient 5%)	Swiss formula (developed countries coefficient 5%; developing countries coefficient 30%)
	A1	A2	B1	B2	B3	B4
Oceania	5 844.76	2 133.27	2 335.56	2 571.72	2 995.18	2 723.54
Rest of world	2 728.09	822.62	1,884.11	1 951.09	1 910.39	2 166.58
Asian NICs	47 477.83	36 707.54	18 739.76	21 741.96	25 648.46	22 248.08
North & East Asia	23 698.38	23 947.43	8 557.90	9 073.63	11 678.12	8 976.68
South East Asia	4 132.31	2 333.31	2 597.41	2 874.44	2 948.98	3 019.16
North America	6 219.65	325.93	15 604.27	15 402.51	12 610.92	14 780.07
Latin America	10 920.52	2 207.58	6 777.14	7 500.78	8 221.44	7 147.66
Western Europe	37 801.66	40 649.08	30 772.20	31 777.73	35 041.91	29 059.72
Rest of Europe	2 391.25	1 631.12	2 908.57	2 932.87	3 196.90	2 775.51
Former Soviet Union	5 649.21	4 040.46	1 834.78	2 250.27	2 754.60	2 001.32
Middle East and North Africa	11 513.06	9 139.97	5 122.59	5 846.94	6 537.83	5 341.21
Sub-Saharan Africa	4 080.35	1 930.69	2 380.33	2 704.56	2 716.05	2 594.87
All regions	162 457.07	125 869.00	99 514.62	106 628.50	116 260.78	102 834.40
Developed countries	75 955.70	68 686.83	60 178.50	61 758.46	65 523.03	58 315.52
Developing countries	86 501.37	57 182.17	39 336.12	44 870.04	50 737.75	44 518.88

Sources: GTAP simulation results, author's calculations.

Table 1.A.13. Sources and destinations of welfare gains from tariff liberalisation by scenario Equivalent variation, (millions of USD)

	Full removal of *merchandise* tariffs		Full removal of *manufacturing* tariffs		Swiss formula (coefficient 25%)		Swiss formula (coefficient 15%)		Swiss formula (coefficient 5%)		Swiss formula (developed countries coefficient 5%; developing countries coefficient 30%)	
	A1		A2		B1		B2		B3		B4	
	Source region for gains (*i.e.* region taking tariff liberalisation action)											
	Developed countries	Developing countries	Developed countries	Developing countries	Developed countries	Developing countries	Developed countries	Developing countries	Developed countries	Developing countries	Developed countries	Developing countries
Oceania	2 006.55	413.31	99.30	467.29	1 495.44	-158.01	1 630.22	-57.31	1 877.09	117.06	1 882.87	-158.90
Rest of world	1 299.14	-336.18	304.28	-292.42	864.81	216.11	957.09	190.98	1 122.31	-14.63	1 150.69	212.33
Asian NIEs	11 254.32	7 365.36	10 654.36	2 597.19	3 140.72	5 390.09	4 328.13	7 193.49	6 492.71	8 923.10	6 667.55	5 363.28
North & East Asia	3 223.64	5 332.21	4 029.31	4 647.06	1 401.39	600.40	1 438.14	1 076.70	1 798.00	3 308.95	1 827.79	590.08
South East Asia	1 129.20	198.73	1 257.54	-824.15	26.01	1 113.43	88.90	1 321.58	431.08	1 046.57	446.88	1 113.48
North America	-3 187.63	-672.97	-4 312.84	-2 476.16	1 408.93	298.99	1 254.93	244.28	624.49	-1 924.97	579.12	296.51
Latin America	2,099.10	1 144.73	-537.42	-563.70	1 219.89	1 137.49	1 250.05	1 827.95	1 587.26	2 204.07	1 576.46	1 150.49
Western Europe	-6 176.10	9 359.91	-4 005.91	8 608.49	-1 322.65	638.05	-1 724.15	2 041.93	-3 081.07	6 659.67	-3 023.69	639.80
Rest of Europe	-934.13	630.10	-1 159.09	475.57	-74.93	-20.52	-101.38	30.12	-206.35	398.49	-208.58	-19.06
Former Soviet Union	800.05	1 344.67	703.85	638.47	88.16	387.61	127.33	762.85	246.78	1 148.19	255.43	386.08
Middle East and North Africa	1 382.74	2 513.76	776.60	1 937.35	325.07	1 080.97	396.28	1 730.84	542.53	2 276.53	546.15	1 079.23
Sub-Saharan Africa	874.65	513.86	39.87	277.10	492.43	579.98	552.16	844.81	687.90	722.84	706.81	579.35
All regions	11 764.98	27 394.18	7 750.55	15 024.80	7 569.83	11 422.60	8 567.48	17 265.53	10 245.64	24 748.81	10 524.61	11 391.57
Developed countries	4 393.36	2 982.05	569.16	-566.23	2 123.94	2 834.12	2 321.99	4 133.48	3 181.08	4 782.69	3 220.88	2 843.32
Developing countries	7 371.62	24 412.13	7 181.39	15 591.03	5 445.89	8 588.48	6 245.49	13 132.05	7 064.56	19 966.12	7 303.73	8 548.25

Sources: GTAP simulation results, author's calculations.

Table 1.A.14. Percentage change in real GDP by region and scenario

Scenario	Full removal of *merchandise* tariffs	Full removal of *manufacturing* tariffs	Swiss formula (coefficient 30%)	Swiss formula (coefficient 15%)	Swiss formula (coefficient 5%)	Swiss formula (developed countries coefficient 5%; developing countries coefficient 30%)
	A1	A2	B1	B2	B3	B4
Oceania	0.15	0.15	0.05	0.08	0.12	0.12
Rest of world	0.57	0.43	0.24	0.37	0.52	0.28
Asian NIEs	0.75	0.35	0.39	0.49	0.63	0.46
North & East Asia	0.09	0.02	0.08	0.08	0.08	0.08
South East Asia	0.79	0.49	0.30	0.51	0.71	0.32
North America	0.00	0.01	0.00	0.00	0.00	0.01
Latin America	0.14	0.14	-0.01	0.04	0.13	-0.01
Western Europe	0.04	0.01	0.04	0.04	0.05	0.05
Rest of Europe	0.12	0.04	0.04	0.06	0.10	0.09
Former Soviet Union	0.58	0.33	0.11	0.23	0.44	0.11
Middle East and North Africa	0.44	0.29	0.14	0.23	0.37	0.14
Sub-Saharan Africa	0.49	0.29	0.16	0.33	0.49	0.16
All regions average	0.35	0.21	0.13	0.21	0.30	0.15
Developed countries	0.08	0.05	0.04	0.05	0.07	0.07
Developing countries	0.54	0.33	0.19	0.31	0.47	0.21

Source: GTAP simulations.

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Special Focus: Quantifying the Effects of Trade Policy Scenarios: Alternative Modelling Approaches

Przemyslaw Kowalski, OECD Trade Directorate

What are the economic effects of trade policy changes and what are their magnitudes? These issues are of unquestionable interest for trade negotiators, policy makers responsible for non-trade areas of economic management and, perhaps most importantly, individuals, whose employment, income and consumption may be affected. A combination of economic theory and quantitative methods has resulted in the development of powerful analytical tools that help to answer such questions. Two approaches commonly used in quantitative research on the broad effects of alternative trade policy changes centre on computable general equilibrium (CGE) models and gravity models.[33]

The CGE approach combines detailed information on the structure of selected economies as well as policy instruments, integrating it in a multi-country, multi-sector, market-clearing framework with a sophisticated representation of demand and supply relations. In the CGE approach, each result can be traced back to theoretical assumptions and to the structural characteristics of the economies analysed, and as such, it is an implication, rather than an empirical verification, of the underlying economic theory. This approach is usually used for *ex ante* predictions of the future effects of a set of economic policies and enables a rich analysis of various trade liberalisation scenarios at both aggregate and sectoral levels.

CGE studies typically capture the impact of trade policy changes on substitution between imports and domestic production, imports from various foreign sources, changes in demand for intermediate inputs, reallocation of productive resources across industrial sectors, and the terms of trade and the balance of payments. They can therefore account for some of the costs inherent in trade distortions such as a trade-policy-driven concentration of resources on relatively uncompetitive activities. In such a framework, in addition to the impact on a particular sector or market (*e.g.* in terms of output reduction or changes in relative prices) and the economy-wide implications of price changes, the reallocation of productive resources towards other activities and technological progress are evaluated. This important advantage of the CGE approach makes it possible to account for the "package" nature of multilateral trade agreements, which makes it possible to analyse the potential effects on a particular sector or country in conjunction with other effects. Additionally, in contrast to the gravity approach, CGE analysis enables a direct assessment of the welfare effects of trade reforms.

Most existing CGE studies of trade policy assume static resource allocation and treat countries' resources, technology and institutions as given. A few dynamic studies consider effects such as the interaction of trade liberalisation with investment or changes in total factor productivity, which tend to alter the effects of trade policy changes. In addition, while some of the models assume perfect competition and thus do not allow for capturing the potential gains from increased competition and the larger scale of economic activity due to trade liberalisation, others assume an imperfectly competitive market structure which makes it possible to estimate these gains. On the other hand, an important drawback of CGE modelling is that it has large data and computational requirements. To reduce this burden somewhat, the models employ a fairly high level of aggregation of different types of economic activity. This may be particularly problematic in studies that focus on selected product categories and

[33] Other approaches exist for specific purposes. For example, partial equilibrium approaches can be used to assess trade policy impacts on markets for individual commodities in isolation.

a limited group of small countries. Additionally, the results of CGE simulations tend to be sensitive to the assumed trade elasticities and the quality of the underlying economic data.

As an alternative, gravity modelling can be used to analyse the effects of trade policies. As in the case of CGE modelling, the gravity approach is also based on certain theoretical assumptions. But, in contrast to the CGE approach, it uses historical data to validate the statistical significance and estimate the magnitude of hypothesised causal relationships between trade and the various potential determinants predicted by the theory, including the effects of implemented trade policies. The basic version of the gravity model – an analogy to the Newtonian theory of gravity – relates the volume of bilateral trade flows to the economic size of trading countries as well as to measures of economic distance measured with indicators of various trade costs. The attractiveness of the gravity models stems from their consistency with both the classical and new trade theories as well as their relatively high empirical explanatory power. This approach can be seen as helpful in understanding historical trends and in particular for separating the effects of trade policy changes from other factors affecting trade volumes. Its shortcoming is that it is not directly useful for assessing the welfare implications or distributional aspects of trade policy changes – the estimated trade impacts are only broad proxies for potential welfare effects.

Thus, each approach has strengths and weaknesses for particular purposes. Depending on the particular issues of interest, each has a place in the trade policy analyst's toolkit.

Chapter 2

GLOBAL MERCHANDISE TRADE REFORM: DISAGGREGATING THE WELFARE IMPACTS

Dominique van der Mensbrugghe, Will Martin and Kym Anderson†
The World Bank

The welfare impacts of global trade policy reforms are typically compared to two reference situations, a current baseline and one following full merchandise trade reform. The first purpose of this chapter is to illustrate the gains that can be achieved in the latter situation and to highlight the sources of these gains, i.e. what proportion comes from different regions (e.g. high-income versus developing), what proportion comes from different sectors (e.g. agriculture versus manufacturing) and what proportion can be attributed to the so-called three pillars (market access, domestic support and export subsidies). In addition, the paper disaggregates the terms of trade impacts for each region by export versus import channels and across broad sectors. The latter breakdown highlights the role of the Armington trade elasticities and the balance of payments constraint. The second purpose of the chapter is to illustrate the roles of key model assumptions and how the choices made here compare with those of other global trade modelling studies, especially the GTAP model-based results. Among the key assumptions are flexibility of land (i.e. agricultural supply response), trade elasticities, and labour market flexibility.

Introduction

This chapter highlights some of the key results from full global merchandise trade reform using the World Bank's LINKAGE model. It summarises a significant amount of research over the last 18 months in the context of the World Bank's programme of analysis on the Doha Round of multilateral negotiations and their potential impacts for developing countries and poverty. The focus is on global merchandise trade reform. Other World Bank studies (and additional research) have concentrated on related topics such as possible Doha scenarios, impacts on agricultural markets and incomes, poverty impacts, and why estimates have changed since 2004 (Anderson *et al*., 2006a,b,c,d; van der Mensbrugghe, 2006).

While the chapter focuses on global merchandise trade reform, the first part highlights several key aspects driving the results. One is the overall importance of agriculture as a source of welfare gains. Second, the chapter demonstrates the importance of liberalising market access, despite developing countries' emphasis early in the Doha negotiations on cutting subsidies. Third, it provides a breakdown of the terms-of-trade impacts of global reform in order to demystify some results that do

† Dominique van der Mensbrugghe, Lead Economist, Development Prospects Group, Will Martin, Lead Economist, Development Research Group and Kym Anderson, Lead Economist, Development Research Group, The World Bank. The authors gratefully acknowledge discussions with and suggestions from Bill Cline, Uri Dadush, Tom Hertel, Richard Newfarmer, Alexander Sarris, Hans Timmer and participants at seminars at the World Bank and the FAO. The views and findings in this paper are those of the authors and not necessarily those of the World Bank, its Executive Board, or member country governments.

not conform to the conventional wisdom, for example concerning the terms-of-trade impact of higher food import prices on poor countries. The model results verify that there is a negative impact for developing countries, but it is more a consequence of real exchange rate movements than higher world food prices. Finally, the focus is mainly on welfare impacts, but it is the other impacts – distributional, trade and structural – that largely drive the opposition to reform and should be the basis of a more complete, economy-wide analysis.

The second part of the chapter highlights a few of the specific features of the LINKAGE model and how they distinguish the present results from other models. To make this chapter's results more readily comparable with those of the majority of other models, which are run as comparative static models, a comparative static version of the model is used to compare results with the standard results from a recursive dynamic model that takes the world economy through 2015. The chapter then illustrates the relative impact of reducing land flexibility, using the standard Global Trade Analysis Project (GTAP) Armington elasticities and the presence of an unlimited supply of unskilled workers (and assuming fixed real wages). The first two modifications to the assumptions – lower land flexibility and lower Armington elasticities, along with the comparative static version – mimic quite closely the GTAP model that is widely available and used. The authors' results are therefore very similar to those based on the GTAP model. The last modification to the authors' standard model is an attempt to respond to criticisms of the use of full employment models. It hardly does justice to the complex labour market dynamics in many countries – both developed and developing – but it does illustrate how important labour market closure can be in determining the gains from trade reform.

The next section provides a brief overview of the LINKAGE model. It is followed by a summary of the key welfare results from global merchandise trade reform using the standard dynamic LINKAGE model. The following section focuses on the comparative static version of the model. First, the differences between the dynamic version and the comparative static version are shown in order to highlight the relative importance of using a future horizon for benchmarking the results. Then, alternatives to the default assumptions – land and labour flexibility and trade elasticities – are examined. The final section draws some conclusions.

The global LINKAGE model for assessing effects of future trade reform

The model used for this analysis is the World Bank's global dynamic computable general equilibrium (CGE) model, known as LINKAGE (van der Mensbrugghe, 2005). It is a relatively straightforward CGE model but with some characteristics that distinguish it from standard comparative static models such as the GTAP model. A key difference is that it is recursive dynamic, so while it starts with 2001 as its base year it can be solved annually through to 2015. The dynamics are driven by exogenous population and labour supply growth, savings-driven capital accumulation and labour-augmenting technological progress (as assumed for the World Bank's Global Economic Prospects exercise in 2004). In any given year, factor stocks are fixed. Producers minimise costs subject to constant returns to scale production technology, consumers maximise utility, and all markets – including for labour – are cleared with flexible prices. There are three types of production structures. Crop sectors reflect the substitution possibility between extensive and intensive farming. Livestock sectors reflect the substitution possibility between ranch and range feeding. All other sectors reflect standard capital/labour substitution (with two types of labour: skilled and unskilled). There is a single representative household per modelled region, allocating income to consumption using the extended linear expenditure system. Trade is modelled using a nested Armington structure in which aggregate import demand is the outcome of allocating domestic absorption between domestic goods and aggregate imports; aggregate import demand is then allocated across source countries to determine the bilateral trade flows.

There are six sources of protection in the model. The most important involves bilateral tariffs. There are also bilateral export subsidies. Domestically, there are subsidies only in agriculture, where they apply to intermediate goods, outputs and payments to capital and land.

Three closure rules are used. First, government fiscal balances are fixed in any given year. The fiscal objective is met by changing the level of lump sum taxes on households. This implies that losses of tariff revenues are replaced by higher direct taxes on households. Second, the current account balance is fixed. Given that other external financial flows are fixed, this implies that *ex ante* changes to the trade balance are reflected in *ex post* changes to the real exchange rate. For example, if import tariffs are reduced, the propensity to import increases. Additional imports are financed by increasing export revenues, and this is typically achieved by a real exchange rate depreciation. Finally, investment is savings-driven. With fixed public and foreign saving, investment will be driven by two factors: changes in the savings behaviour of households, and changes in the unit cost of investment. The latter can play an important role in a dynamic model if imported capital goods are taxed. Because the capital account is exogenous, rates of return across countries can differ over time and across simulations. The model only solves for relative prices. The numéraire, or price anchor, in the model is given by the export price index of manufactured exports from high-income countries. This price is fixed at unity in the base year and throughout time.

The newest version of the LINKAGE model, Version 6.0, is based on the latest release of the GTAP dataset, Release 6.0.[1] Compared with Version 5 of the GTAP dataset, with a 1997 base year, Version 6 has a 2001 base year, updated national and trade data and, importantly, a new source for protection data. The new protection data come from a joint CEPII (Paris)/ITC (Geneva) project. The product of this joint effort, known as MAcMap (Bouët *et al*., 2004), is a tariff level detailed database on bilateral protection that integrates trade preferences, specific tariffs and a partial evaluation of non-tariff barriers (NTBs), such as tariff rate quotas (TRQs). In summary, the new GTAP database has lower tariffs than the previous database because of the inclusion of bilateral trade preferences and major reforms between 1997 and 2001. These reforms include continued implementation of the Uruguay Round Agreement, especially the elimination of quotas on textile and clothing trade, and China's progress towards WTO accession (which contributed to the rise in the ratio of global exports plus imports to GDP from 44% to 46% over those four years).

The version of the LINKAGE model used for this study is comprised of a 27-region, 25-sector aggregation of the GTAP data set (see Table 2.A.1). There is a strong emphasis on agriculture and food, which represent 13 of the 25 sectors, and a focus on the largest commodity exporters and importers.

Global welfare gains

This chapter focuses on the gains to be achieved from complete removal of protection, both at the border and domestic support. It therefore provides an additional benchmark to compare partial reforms, for example a successful conclusion of the Doha Round. A baseline is constructed that describes the evolution of the global economy from the base year, 2001, through to 2015. Some known policy changes are integrated into the baseline and are phased in between 2001 and 2005. The most prominent are the WTO accession commitments of China and Chinese Taipei, EU expansion to

[1] The GTAP database is a product of an international consortium of universities, research think tanks and national and international agencies hosted at the Global Trade Analysis Program, Purdue University. The GTAP programme also supports a global trade model, known as GTAP, which is similar in many respects to the LINKAGE model. For more information, see Hertel (1997) and www.gtap.org.

EU25, and the end of textile and clothing quotas. No policy changes are assumed to occur after 2005. The deviations from full merchandise trade reform are then compared to the baseline situation in 2015.[2]

Table 2.A.2 reports the distribution of the standard economic welfare or real income (equivalent variation) effects of removing all merchandise trade barriers and agricultural subsidies globally. Of the USD 287 billion gain in income that reform would generate for the global economy in 2015, two-thirds would accrue to the high-income countries. However, as a share of income, developing countries do somewhat better than high-income countries, with an average increase of 0.8% compared to 0.6%.[3] The results vary widely across developing countries, ranging from little impact in the case of Bangladesh and Mexico to 4% or 5% increases in parts of East Asia. The second column of numbers in Table 2.A.2 show the amount of the welfare gain that is due to changes in the international terms of trade for each country. For developing countries as a group the terms-of-trade effect is negative, reducing somewhat the gains from improved efficiency of domestic resource use, especially in China and India. That effect would dissipate over time, however, as developing countries diversify their exports in the course of their continuing economic growth and industrialisation.

The final two columns of Table 2.A.2 split the total effect into that due to liberalising markets for agricultural and processed food products and that due to other merchandise. It shows that nearly two-thirds of the welfare gain for both developing and high-income countries comes from freeing up farm markets. For Sub-Saharan Africa the ratio is four-fifths, and for Latin America (and Australia/New Zealand) it is more than 90%. By contrast, for the more densely populated developing countries that already engage in export-oriented manufacturing, it is the reform of non-agricultural markets that boosts their welfare most.

These gains from global merchandise reform are significantly lower than previous estimates with the LINKAGE model (see World Bank, 2002, 2004). The later of those two sources shows an estimated gain of USD 413 billion at the global level in 2015, and much larger relative and absolute gains for developing countries. Three main reasons explain the roughly USD 125 billion decline in the estimated global welfare impact (described in greater detail in van der Mensbrugghe, 2006). Two of the reasons are linked and have to do with the new GTAP database. A new base year, 2001, instead of 1997, captures trade liberalisation of the intervening four years resulting from unilateral, regional and multilateral reforms (for example continuing implementation of the Uruguay Round agreement). Also, the new database has a more comprehensive incorporation of preferences, both reciprocal and non-reciprocal. The third reason relates to the baseline policy changes described above, *i.e.* those phased in between 2001 and 2005. In rough terms, the base year changes in the GTAP database account for

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2 The final section focuses on a comparative static version of the LINKAGE model. In the comparative static version, a pre-simulation shock is undertaken which implements the known policy changes, and then full merchandise trade reform is compared with the structure of the global economy after the pre-simulation shock.

3 There is an ongoing debate regarding adjusting the gains for purchasing power parity (PPP) differences across countries. PPP adjustments would have no impact on the gains accruing to an individual country in percentage terms, but would shed a somewhat different light on the allocation of absolute gains between developed and developing countries. If the real income gains are adjusted for their purchasing power (using 2001 PPP weights), the gains to high-income countries rise to USD 246 billion (from USD 202 billion), and those to developing countries rise to USD 257 billion from USD 96 billion (with an implicit weighted average PPP of around 3). The global gains therefore are USD 503 billion and are almost evenly divided between developed and developing countries. As a percent of baseline income (expressed in PPP terms), the PPP adjustment makes almost no difference even for the aggregate gains (the global gains are 0.72% versus 0.67%).

about 25% of the decline, expanded coverage of preferences for about 32%, and the remaining 43% is determined by the baseline policy changes.[4]

There are several ways to disaggregate the real income gains from global trade reform so as to better understand the sources of the gains. One way is to assess the impacts of liberalisation in different economic sectors in developing and high-income countries; another is to do a breakdown by policy instrument. The next two sections describe the main findings from these disaggregations.

Disaggregation of global gains by broad sector and liberalising region

The disaggregation of results by sector and liberalising region is provided in Table 2.A.3. The results suggest that global liberalisation of agriculture and food yields 63% of the total global gains.[5] This is consistent with the high tariffs in agriculture and food (17% global average) as compared to other sectors, but is nonetheless remarkable given the low shares of agriculture in global GDP (4%) and global merchandise trade (9%). Three-quarters of the gains are accounted for by the farm policies of high-income countries. Moreover, as much of the gain from farm reform is due to South-South agricultural liberalisation as would be due to developing countries' unrestricted access to high-income country markets. This is almost equally true for manufacturing in aggregate, despite the big gains from textiles and clothing reform (USD 15 billion from market access to high-income countries compared with USD 9 billion due to growth in South-South textiles trade). In other words, reforms by developing countries are nearly as important in terms of economic welfare gains to the South as reforms by high-income countries. It is clear that reforming agricultural policies in both sets of countries is crucial for developing countries, with textile reforms in high-income countries only half as important as agricultural reforms.

Disaggregation of global gains with respect to the three pillars

A result that has raised considerable discussion is that market access provides 93% of the overall gains, with domestic support accounting for 5% and export subsidies the residual 2%.[6] The results are very similar to those reported in Hertel and Keeney (2006, Table 2.7), and in Hoekman *et al*. (2004, Table 4) even though the latter study used a partial equilibrium framework and only halved all agricultural distortions.

The discussion of the relative importance of market access and subsidies is due in part to the widely cited estimates of support produced by the OECD known as the producer support estimate (PSE). Direct producer subsidies are only one element of the PSE. The main additional element is provided by market price-supporting trade measures. The latter are calculated by comparing domestic and border prices of like products so as to capture the total domestic market price effect of all trade distortions, including tariff and non-tariff import barriers as well as export subsidies. According to the OECD, domestic support in OECD countries totalled USD 89 billion in 2001. To that needs to be

4 The exact breakdown is not straightforward. First, the two GTAP databases differ because of price and exchange rate adjustments (for example, the dollar was particularly strong in 2001 compared with 1997, giving greater weight to dollar-based economies). Second, Release 5 included some preferential arrangements (for example NAFTA) as an integral part of the basic protection indicators; however, if Release 6 is considered without preferences (*i.e.* for purposes of comparison with Release 5), then all preferential arrangements are excluded except for the EU.

5 This is similar to Hertel and Keeney's 66% (2006).

6 This study's disaggregation is path-dependent but, as suggested in the rest of the section, the findings are nonetheless robust. See Harrison *et al*. (2000) for a path-independent breakdown technique.

added domestic support to primary agriculture in non-OECD countries, another USD 7 billion in 2001 according to the GTAP database (Huang, 2006).

For market price support provided through trade measures, the GTAP database relies on applied tariff rates, including preferential rates where applicable, plus export subsidy notifications by members to the WTO Secretariat (Elbehri, 2006; Bouët *et al.*, 2006). By contrast, the OECD relies on domestic-to-border price comparisons to capture the combined effect of all trade measures. It estimates that for primary agriculture in OECD countries, this amounted to USD 139 billion in 2001, whereas the GTAP database suggests USD 118 billion.[7] It is necessary to go beyond primary agriculture when evaluating the consequences of reforms under WTO, because the WTO negotiations on agriculture involve potential liberalisation of a wide range of processed agricultural products as well. In OECD countries domestic subsidies are not given for processed agricultural products, but the extent of border protection for processing activities is substantial: according to the GTAP database, in 2001 that assistance amounted to USD 343 billion, which is more than the estimated total support to primary agriculture for that year. The remaining important element to consider is the market price support provided to the agricultural and food sectors of non-OECD countries. At USD 96 billion for primary agriculture plus USD 110 billion for food processing, this support is a substantial addition to the support through import barriers of USD 118 billion provided to OECD agriculture and USD 285 billion to OECD processed food. Because there are almost no export subsidies in non-OECD countries, this increases the prominence of market access.

In summary, the OECD and GTAP databases are very similar in their estimates of the extent of direct support to farmers in OECD member countries; but the GTAP database also includes support via the food-processing sector in those countries plus the support to both sets of activities in non-OECD countries. In total, the GTAP database suggests that less than 14% of the dollar value of the transfers to those producers from taxpayers and consumers is in the form of domestic support and that only 4% comes via export subsidies.

These numbers are laid out in Anderson *et al*. (2005), which also offers several other important observations. One is that domestic support only affects the production side of the market, whereas tariffs distort both production and consumption and thereby have a larger welfare impact. Another is that the welfare cost of distortions increases with their variability, in other words the cost of a uniform set of tariffs is lower than the cost of a set of variable tariffs of the same average rate.[8] They show that because there is more variability in the tariff structure than in domestic support, the relative importance of the weight of market access increases. Third, since tariffs are a trade tax and are dominant globally, export subsidies can be globally welfare-enhancing insofar as they offset the anti-trade effects of tariffs, even though they are usually welfare-reducing for the country that imposes them. The offsetting element thus reduces the contribution of export subsidies to the global welfare cost of farm support programmes.

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7 One reason for the difference is that by using only tariffs, the GTAP method does not capture the protective effect of non-tariff barriers such as sanitary and phytosanitary (SPS) measures or other technical barriers to imports that may provide additional economic protection. The OECD measure based on price comparisons, by contrast, captures the domestic price-raising effects of all trade distortions, including any NTBs. The other key difference between the OECD and the GTAP measures has to do with the weighting procedures used to aggregate across product categories: the GTAP method uses import weights that understate the importance of highly protected commodities, while the OECD uses production weights that overstate the importance of highly protected commodities.

8 This is because the cost of a tariff distortion increases with the square of the tariff.

Disaggregation of terms-of-trade impacts

An important feature of almost all global general equilibrium models is the terms-of-trade impact. It is generated by the so-called Armington assumption, *i.e.* exporters from each country, no matter how small, have some market power because their products are differentiated from those of other countries. This implies that each country could potentially have an optimal tariff above zero, below which countries would suffer welfare losses.[9] Of particular concern to many is that net food-importing countries could lose when agricultural protection is removed, as international food prices would tend to rise under most circumstances.

As shown in Table 2.A.2, the overall negative terms-of-trade impacts for developing countries amount to roughly USD 30 billion, a not insignificant cost compared to the net welfare gain of roughly USD 90 billion.

Table 2.A.4 shows how terms-of-trade impacts are allocated between export and import price effects and across broad categories of goods and services. Focusing first on the aggregate impact for all developing countries, one sees that almost all of the net effect comes from the export side, *i.e.* declining export prices, rather than rising import prices, explain the terms-of-trade impacts. Nonetheless, rising food import prices raise the cost of imports by USD 9 billion, which is only partially offset by rising export prices that raise revenues by USD 5 billion.[10] The regions with the largest increase in their food import bill are those with the largest import volume (such as East Asia and Pacific) and/or those with the highest import distortions (such as the Middle East and North Africa, and South Asia).

The terms of trade disaggregation also suggests that the terms-of-trade losses for developing countries are perhaps not so much due directly to the Armington assumption, but are more linked to the specific external closure rule of the model, *i.e.* the fixity of the trade balance. As tariffs fall (to zero), the desire to import increases. With the given closure rule, only an increase in export supply can balance the *ex ante* increase in import demand; this implies a real depreciation that is reflected in a decline in export prices. Manufacturing is the most obvious case since it is manufacturing prices that decline the most, and manufacturing is the largest component of trade for developing countries taken in aggregate. Given that on average tariffs are higher in developing countries than in developed countries, it is logical that the terms-of-trade impacts work against developing countries.

Clearly, the assumption of fixed trade balances or the capital mobility constraint could be relaxed.[11] This would be consistent with the model results since the returns to capital increase more rapidly in developing countries than in developed countries as a consequence of trade reform. This relative change in prices would typically induce international capital movements that could compensate for the real exchange rate's effect on the terms of trade.

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9 For recent reviews of the Armington assumption, see Lloyd and Zhang (2006) and Zhang (2006).

10 A negative in the import columns implies rising import costs.

11 There is a version of the LINKAGE model with international capital mobility. It was most recently used to look at demographics, savings and investment (World Bank, 2003). Like LINKAGE, the standard GTAP model has limited international capital mobility in a myopic framework. The G-Cubed model has fully integrated capital markets and forward looking behaviour (McKibbin and Wilcoxen, 1992).

Factor market assumptions and comparisons with other models

This section focuses on the robustness of some of the key model assumptions and provides an insight into how the present results compare with the GTAP model. It first compares the dynamic version of the model with the comparative static version so as to assess the relative importance of the simple dynamics of the LINKAGE model. This also makes possible a more transparent comparison with GTAP, which is comparative static in its standard version.

Next, two key sets of elasticities are modified, as well as the role of labour market closure. The first set of elasticities concerns land flexibility, in terms of both aggregate volume and mobility across agricultural sectors. The second concerns the Armington trade elasticities.

Dynamic versus static

The comparative static version of LINKAGE has model parameters that are intended to reflect some medium- or long-term horizon to line up approximately with the recursive dynamic version. In production, this implies that higher substitution elasticities[12] are imposed and that land, labour and capital are mobile across sectors (though not across regions). A pre-simulation shock is imposed for the baseline policy changes and the impacts of global merchandise trade reform are compared with the model results from the pre-simulation shock. One immediate result of the comparative static exercise is that the dollar amounts for the real income gains will be significantly smaller because they reflect the size of the global economy in 2001, not that of (projected) 2015,[13] though the percentage changes will be of the same order, depending on the differences induced by the dynamics.

The gain of USD 287 billion in 2015 – from the standard dynamic scenario – is equivalent to USD 176 billion relative to the 2001 economy (Tables 2.A.5a and 2.A.5b).[14] The second column of each of these tables shows the impact of global merchandise trade reform in a pure comparative static framework, but using the standard LINKAGE elasticities. A comparison of columns 1 and 2 provides an assessment of the static versus dynamic gains. Essentially, these come from two sources. The first is the increase in savings and investment generated by higher growth and a reduction in the price of capital goods (owing to the elimination of tariffs), which combine to raise the capital stock and therefore contribute to the dynamic gains. The second effect comes from the nature of the dynamic baseline itself. The baseline has countries growing at different rates, assumes an increase in the trade-to-GDP ratio and incorporates other structural changes that would tend to increase the gains from trade reform over time, particularly for developing countries, where the comparative static gains are considerably lower than the dynamic gains, *i.e.* only USD 23 billion versus USD 45 billion, or 0.4% of baseline income versus 0.8% in the dynamic simulation. There are also some potential losers, such as India.

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12 The dynamic version of the model has a vintage structure for capital distinguishing between installed, or old, capital and new capital with typically lower substitution elasticities for old capital than for new.

13 The global economy is about 55% larger in 2015 than in 2001 (evaluated at 2001 market exchange rates).

14 There can be confusion about terminology since dynamic gains are sometimes called static gains. Here, the term "static" gain is used to refer to the gains in 2015 under the assumption of no changes to productivity induced by trade reform. These "static" gains are different from the comparative static gains that compare two different equilibrium conditions in the same model year.

Land flexibility and sensitivity to trade elasticities

Column 3 in Tables 2.A.5a and 2.A.5b shows the impact of restraining land flexibility. In the standard version of the model, there is perfect mobility of land across sectors, *i.e.* land will be allocated such that its return is uniform in all agricultural sectors.[15] There is also an upward sloping land supply curve (which determines the aggregate supply of land) with varying elasticities depending on the land constraints in individual countries.[16] In the constrained version, the land supply elasticity is set to 0 for all countries and the land mobility parameter is set to 1 (consistent with the standard GTAP mobility parameter).[17] The gains for high-income countries do not vary much from the default land mobility assumption. In part, this is due to the fact that the land supply elasticity in the EU, Japan and newly industrialising economies (NIEs) is set to a low initial level owing to their limited possibilities for land expansion. The gains to developing countries drop by (another) half, from USD 23 billion to USD 12 billion. The largest losses occur for some of the key agricultural exporters, particularly in Latin America. Agricultural production in the high-income countries will decrease less than in the case of high land flexibility. This implies that market access (in agriculture) will be more difficult for the developing countries, all else being equal, and they will therefore require a greater real depreciation that will be reflected in a greater terms-of-trade impact.

The next two simulations are intended to line up the LINKAGE model with the standard GTAP model to facilitate comparison. The first imposes the GTAP Armington elasticities. The standard LINKAGE model uses its own set of Armington trade elasticities; these have evolved over time based on previous studies, but have been more or less constant over the last few years (and in recent World Bank estimates). Those elasticities are in the mid-to-high range of those used in global models, between 4 and 6.[18] GTAP has revised its Armington elasticities upward – they had been in the 2–4 range. The new estimates are based on more recent econometric evidence and are closer to the LINKAGE elasticities.[19] The LINKAGE elasticities are still higher, an average of 35% overall, but 75% higher in primary agriculture and 23% higher in processed foods. All else being equal, this will raise the gains from global reform relative to the GTAP model.

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15 In some countries and for some sectors there can be agro-ecological constraints on the degree of land mobility, such as the availability of water. Implementing these constraints would require more detailed knowledge at the local level than it is currently feasible to implement.

16 The supply elasticities are not differentiated depending on whether land is expanding or contracting; one would expect the latter to be higher than the former. It is also costless to increase land supply, so that ignoring the investment cost of increasing productive land may mean that overall gains are overestimated.

17 Intersectoral land supply allocation is driven by a CET supply function. In GTAP the transformation elasticity is 1. The default in LINKAGE is a transformation elasticity of infinity.

18 Both models use the so-called rule of two. The top-level CES elasticity measures the degree of substitution between domestic goods and the aggregate import bundle. The second-level CES elasticity measures the degree of substitution of imports by individual trading partner. The rule of two is that the second-level elasticity is twice the top-level elasticity. Hence, if the latter is four, the elasticity across trading partners is eight.

19 The authors have resisted converting to the GTAP elasticity for essentially two reasons. One is to ensure consistency of results over time by minimising changes to model specification and elasticities. The second is that the level of some of the GTAP's econometrically estimated elasticities appear questionable and contrary to intuition to the extent that the elasticities reflect the degree of homogeneity of goods. For example, the GTAP's elasticity for sugar is 2.7, somewhat lower than for motor vehicles and parts (2.8) and chemicals, rubber and plastics (3.3).

The impact of using the GTAP trade elasticities is shown in the fourth column of Tables 2.A.5a and 2.A.5b. Given that these are lower than the standard LINKAGE elasticities, one would anticipate a decline in the gains from global trade reform. The global gains are about 30% lower, but the gains to developing countries are lower by 55%, with a number of country/regions exhibiting negative gains, for example China, India, and Sub-Saharan Africa.

The final column shows the joint impact of using the GTAP Armington elasticities and land flexibility assumptions. The gains to developing countries are eviscerated, with three of the six regional aggregates showing losses. Reducing land flexibility lowers the ability of some of the developing regions, particularly Sub-Saharan Africa and Latin America, to respond to new agricultural market opportunities.

Flexible versus rigid wages

Labour market imperfections could potentially have an important impact on welfare gains. While most global trade models have assumed fixed employment (or market-clearing wages), some (*e.g.* Ackerman, 2005) have questioned this assumption. One (perhaps extreme) alternative is to assume fixed (real or nominal) wages and an unlimited supply of labour (at least within some limit). The issue is quite complex. In most developing countries, the family is typically the only safety net and not working is often not an alternative. The issue is really the choice of finding work in the formal sector or the informal sector, and there is sufficient evidence to show wage flexibility in the latter. In developed countries the situation is also complex and not readily amenable to easy modelling solutions. There are sometimes rigid labour market regulations, varying safety nets and also informal employment that is often poorly measured.[20] Another potential labour market imperfection is the degree of labour mobility across sectors, particularly between rural and urban sectors (or in the case of the LINKAGE model, between agriculture and non-agriculture). Like limiting land mobility, limiting labour flexibility across sectors could lower gains to specific regions and globally. If the highly distorted agricultural sectors in certain OECD regions do not shed excess labour to more efficient uses in industry and services, allocative efficiency gains will be reduced, and this will also reduce the gains to those regions that have less opportunity to gain market share.

The final set of simulations tests the role of flexibility of labour markets using the comparative static version of the model with the standard Armington trade elasticities and assumptions on land flexibility. Two polar cases are discussed. The first is the standard case with fully flexible wages and a fixed supply of labour. The second assumes fixed real wages and unlimited labour supply (at least within the range of changes in labour demand implied by the reform simulation).[21] These assumptions

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20 See the recent debate in the EU on the low VAT rate in some sectors – notably construction – with proponents arguing that this would reduce informal employment (*Wall Street Journal Europe*, 25 January 2006, "EU at stalemate over VAT: Deal proves elusive on cuts in some rates; test of French clout").

21 The modelling of less than full employment is somewhat more complicated than described. In the case of unemployed labour, a minimum wage function is assumed. The minimum wage depends on two factors: the overall price index and the level of unemployment. With full indexation, the elasticity of the minimum wage with respect to the price level is 1. In the simulations described here, the elasticity of the minimum wage with respect to unemployment is 0. If it were less than zero, a rise in unemployment would tend to put downward pressure on the minimum wage and move it nearer the market equilibrium wage. The model has endogenous regime switching such that should the labour market clear, the minimum wage function is no longer binding (van der Mensbrugghe, 2006). For the purposes of this simulation, the initial level of unemployment is (arbitrarily) set at 10% in each region so as to ensure that

only affect unskilled workers. Skilled workers are assumed to have fully flexible wages in both simulations. Additionally, labour is perfectly mobile across all sectors, *i.e.* there is no rural to urban migration function.

The main results are displayed in Table 2.A.6 At the global level, real income increases by 0.8% with fixed real wages for unskilled workers instead of 0.5% in the case of full employment, *i.e.* a comparative static gain of USD 220 billion instead of USD 127 billion. The increase for developed countries is only 0.1 percentage point, from 0.5% to 0.6% relative to baseline income (an increase worth around USD 30 billion). The increase for developing countries is much more significant – from 0.4% to 1.6% – a near quadrupling of their comparative static gain with flexible wages. The main reason is that all economies are operating under their production possibility frontier, hence any reform that leads to an increase in the demand for labour will have greater impact than simply a movement along the frontier. The multipliers can also be substantial. In the case of Sub-Saharan Africa the gains jump to 2.6% of baseline income from 0.3% under the standard assumptions. This reflects the relatively unskilled intensity of these economies as well as the unskilled intensity of their consumption.

Comparing the wage impacts from the standard simulation to the volume impacts from assuming fixed wages illustrates the duality of one assumption over the other. In most regions the wage impact is almost identical to the demand impact. For example, in Canada the real (unskilled) wage increases by 0.6% in the standard closure and labour demand rises by 0.6% under the assumption of fixed real wages. In developing countries, there tend to be additional multiplier effects, as noted above. But this will depend on the relative intensity of unskilled labour in production and consumption and the impacts of trade reforms on individual sectors, *i.e.* whether unskilled sectors have been protected or not.

The final column in Table 2.A.6 also shows the potential impact on an increased volume of unskilled workers.[22] According to these results, global merchandise trade reform would create some 84 million unskilled jobs worldwide, almost all of them in developing countries (except the NIEs).[23] In percentage terms, the highest increase is in Sub-Saharan Africa: an increase of 6.4%, presumably enough to put a significant dent in the unemployment rate.

Concluding remarks

To summarise the above findings, the following key messages emerge:

- The potential gains from further global trade reform are huge.
- Developing countries could gain disproportionately from further global trade reform.
- Benefits could be as much from South-South as from South-North trade reform.
- Cuts in trade distorting measures are most needed in agriculture.
- Market access is at the heart of the welfare gain from removing farm support programmes.

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there is no regime switching, *i.e.* to ensure that the minimum wage is binding (and fully indexed to prices).

22 These data should be treated with additional caution since the volume data in the GTAP data are based on some strong assumptions. They nonetheless provide some orders of magnitude.

23 These are in the "Other high-income countries" aggregate region.

As the terms-of-trade impacts are largely driven by the fixity of the trade balance, they could be readily offset by modest transfers of capital, consistent with model results showing relatively higher returns to capital in developing countries as a result of trade reform.

The second half of the chapter also highlights the importance of the model structure and the need for more empirical validation. The gains for developing countries depend crucially on the future structure of the global economy as illustrated by the difference between the dynamic and comparative static impacts. More econometric work needs to be undertaken to improve estimates of the Armington trade elasticities, particularly for developing countries, and of the flexibility of land supply in aggregate and across sectors.

Despite these import caveats, and others not mentioned,[24] the simulations clearly demonstrate that potential gains from further trade reform, for example under the auspices of the Doha Round of negotiations, are substantial, and could benefit a wide range of countries.

[24] For example, such considerations as returns to scale and imperfect competition, services regulations, increases in product varieties, pro-productivity impacts, etc.

ANNEX TABLES

Table 2.A.1. Model aggregation of regions and sectors

Regions	Sectors
High-income	**Primary agriculture**
Australia and New Zealand	Rice
EU 25 plus EFTA	Wheat
United States	Other grains
Canada	Oil seeds
Japan	Sugar
Korea and Taiwan	Plant-based fibres
Hong Kong and Singapore	Vegetables and fruits
	Other crops
Developing countries	Livestock
Argentina	
Bangladesh	**Processed foods**
Brazil	Processed meats
China	Vegetable oils and fats
India	Dairy products
Indonesia	Other food, beverages and tobacco
Thailand	
Vietnam	**Textile, clothing and footwear**
Russia	Textile
Mexico	Wearing apparel
South Africa	Leather
Turkey	
	Natural resources and other manufacturing
Developing regions	Other natural resources
Rest of South Asia	Fossil fuels
Rest of East Asia	Chemicals rubber and plastics
Rest of LAC	Iron and steel
Rest of ECA	Motor vehicles and parts
Middle East and North Africa	Capital goods
Selected SSA countries	Other manufacturing
Rest of Sub Saharan Africa	
Rest of the World	**Non-tradables**
	Construction
Output aggregations	Utilities and services
High-income countries	
Other high-income countries (NIEs)	
Developing countries	
Middle-income countries	
Low-income countries	
East Asia and Pacific	
South Asia	
Europe and Central Asia	
Middle East and North Africa	
Sub Saharan Africa	
Latin America and the Caribbean	
World total	

NIEs = newly industrialising economies

Table 2.A.2. Impacts on real income from full liberalisation of global merchandise trade, by country/region, 2015

Impacts in 2015 relative to the baseline, in 2001 dollars first two columns, % of baseline income last three columns

	Total	Due to change in terms of trade	Total as % of baseline income	Due to liberalisation of agriculture & food	Due to liberalisation of all other merchandise
	USD billions	USD billions	%	%	%
Australia and New Zealand	6.1	3.5	1.04	1.00	0.04
EU 25 plus EFTA	65.2	0.5	0.65	0.38	0.26
United States	16.2	10.7	0.11	0.05	0.07
Canada	3.8	-0.3	0.41	0.63	-0.22
Japan	54.6	7.5	1.10	0.72	0.37
Korea and Chinese Taipei	44.6	0.4	3.52	2.62	0.90
Hong Kong (China) and Singapore	11.2	7.9	2.60	0.46	2.13
Argentina	4.9	1.2	1.15	0.96	0.19
Bangladesh	0.1	-1.1	0.19	0.21	-0.03
Brazil	9.9	4.6	1.52	1.51	0.02
China	5.6	-8.3	0.21	0.05	0.15
India	3.4	-9.4	0.37	-0.25	0.62
Indonesia	1.9	0.2	0.71	0.31	0.41
Thailand	7.7	0.7	3.91	2.09	1.82
Vietnam	3.0	-0.2	5.25	2.49	2.76
Russia	2.7	-2.7	0.54	0.23	0.31
Mexico	3.6	-3.6	0.41	0.22	0.20
South Africa	1.3	0.0	0.87	0.35	0.52
Turkey	3.3	0.2	1.32	0.81	0.51
Rest of South Asia	1.0	-0.8	0.51	0.27	0.23
Rest of East Asia	5.3	-0.9	1.85	1.63	0.22
Rest of LAC	10.3	0.0	1.21	1.24	-0.04
Rest of ECA	1.0	-1.6	0.30	0.67	-0.37
Middle East and North Africa	14.0	-6.4	1.16	0.27	0.89
Selected SSA countries	1.0	0.5	1.53	1.64	-0.11
Rest of Sub Saharan Africa	2.5	-2.3	1.12	0.97	0.15
Rest of the World	3.4	0.1	1.53	1.23	0.30
High-income countries	**201.6**	**30.3**	**0.62**	**0.40**	**0.23**
Developing countries	**85.7**	**-29.7**	**0.83**	**0.52**	**0.31**
Middle-income countries	69.5	-16.7	0.84	0.56	0.28
Low-income countries	16.2	-12.9	0.81	0.38	0.43
East Asia and Pacific	23.5	-8.5	0.69	0.37	0.32
South Asia	4.5	-11.2	0.38	-0.14	0.52
Europe and Central Asia	7.0	-4.0	0.67	0.51	0.16
Middle East and North Africa	14.0	-6.4	1.16	0.27	0.89
Sub-Saharan Africa	4.8	-1.8	1.09	0.85	0.24
Latin America & the Caribbean	28.7	2.2	1.02	0.94	0.08
World total	**287.3**	**0.6**	**0.67**	**0.43**	**0.25**

LAC = Latin America and Caribbean
ECA = East and Central Asia
SSA = Sub-Saharan Africa

Table 2.A.3. Regional and sectoral source of gains from full liberalisation of global merchandise trade, developing and high-income countries, 2015

Change in real income in 2015 relative to the baseline scenario

	Gains by region (USD billions)			Share of global gain (%)		
	Developing	High-income	World	Developing	High-income	World
Developing countries liberalise:						
Agriculture and food	28	19	47	33	9	17
Textile and wearing apparel	9	14	23	10	7	8
Other merchandise	6	52	58	7	26	20
All sectors	43	85	128	50	42	45
High-income countries liberalise:						
Agriculture and food	26	109	135	30	54	47
Textile and wearing apparel	13	2	15	15	1	5
Other merchandise	4	5	9	3	2	3
All sectors	43	116	159	50	57	55
All countries liberalise:						
Agriculture and food	54	128	182	63	64	63
Textile and wearing apparel	22	16	38	25	8	14
Other merchandise	10	57	67	12	28	23
All sectors	86	201	287	100	100	100

Note: Small interaction effects are distributed proportionately and numbers are rounded to sum to 100%.

Table 2.A.4. Breakdown of the terms of trade impacts, 2015

Revenue impacts of terms of trade changes in 2015, USD billions

	Impact of changes in export prices				Impact of changes in import prices				Sum of all changes in terms of trade
	Agriculture and food	Other merch.	Non tradeables	Total	Agriculture and food	Other merch.	Non tradeables	Total	
Australia and New Zealand	2.1	0.7	0.5	3.4	-0.1	0.1	0.0	0.	3.5
EU 25 plus EFTA	1.3	-6.4	-7.3	-12.3	-0.9	12.0	1.7	12	0.5
United States	7.2	-4.1	-0.9	2.1	-0.1	8.4	0.3	8.	10.7
Canada	1.0	-1.8	-0.2	-1.0	-0.5	1.1	0.1	0.	-0.3
Japan	-0.4	5.4	0.6	5.6	0.2	1.4	0.2	1.	7.5
Korea and Chinese Taipei	-5.8	4.8	1.4	0.5	-0.9	0.8	0.1	0.	0.4
Hong Kong (China) and Singapore	0.1	4.0	3.4	7.5	-0.1	0.2	0.2	0.	7.9
Argentina	0.8	0.3	0.0	1.2	-0.1	0.0	0.0	0.	1.2
Bangladesh	-0.1	-0.8	-0.2	-1.1	-0.1	0.1	0.0	0.	-1.1
Brazil	2.7	1.0	0.5	4.2	-0.1	0.5	0.1	0.	4.6
China	0.0	-2.9	0.3	-2.7	-3.9	-1.1	-0.6	-	-8.3
India	-0.5	-7.7	-1.4	-9.7	-0.3	0.7	0.0	0.	-9.4
Indonesia	0.2	0.4	0.1	0.8	-0.4	-0.2	0.0	-	0.2
Thailand	0.5	-0.7	0.7	0.5	0.0	0.2	0.0	0.	0.7
Vietnam	0.3	-0.9	0.3	-0.2	-0.1	0.1	0.1	0.	-0.2
Russia	-0.2	-2.7	-0.2	-3.2	-0.4	0.8	0.1	0.	-2.7
Mexico	0.6	-3.8	-0.2	-3.4	-0.9	0.6	0.1	-	-3.6
South Africa	0.0	-0.1	0.0	-0.2	-0.1	0.2	0.0	0.	0.0
Turkey	0.0	-0.2	0.2	0.0	-0.3	0.5	0.0	0.	0.2
Rest of South Asia	0.0	-0.8	-0.2	-1.0	-0.1	0.3	0.0	0.	-0.8
Rest of East Asia	0.1	-0.8	0.8	0.1	-0.5	-0.6	0.1	-	-0.9
Rest of LAC	1.5	-1.6	0.0	-0.1	-0.7	0.7	0.1	0.	0.0
Rest of ECA	-0.4	-2.5	-0.6	-3.5	0.3	1.4	0.1	1.	-1.6
Middle East and North Africa	-0.3	-6.7	-0.4	-7.4	-1.5	2.3	0.2	1.	-6.4
Selected SSA countries	0.2	0.0	0.0	0.3	0.0	0.2	0.0	0.	0.5
Rest of Sub Saharan Africa	-0.4	-2.2	-0.4	-2.9	0.0	0.6	0.0	0.	-2.3
Rest of the World	0.0	-0.1	0.0	-0.1	0.2	0.1	0.0	0.	0.1
High-income countries	**5.7**	**2.7**	**-2.5**	**5.9**	**-2.4**	**24.0**	**2.8**	**24**	**30.3**
Developing countries	**5.0**	**-32.9**	**-0.5**	**-28.4**	**-9.0**	**7.5**	**0.3**	**-**	**-29.7**
Middle-income countries	5.2	-20.7	1.1	-14.4	-8.1	5.6	0.1	-	-16.7
Low-income countries	-0.2	-12.2	-1.6	-14.0	-0.9	1.8	0.1	1.	-12.9
East Asia and Pacific	1.1	-4.9	2.2	-1.6	-4.8	-1.7	-0.4	-	-8.5
South Asia	-0.6	-9.4	-1.7	-11.8	-0.6	1.1	0.0	0.	-11.2
Europe and Central Asia	-0.6	-5.4	-0.7	-6.7	-0.5	2.8	0.3	2.	-4.0
Middle East and North Africa	-0.3	-6.7	-0.4	-7.4	-1.5	2.3	0.2	1.	-6.4
Sub-Saharan Africa	-0.2	-2.3	-0.3	-2.8	-0.1	1.0	0.1	1.	-1.8
Latin America & the Caribbean	5.5	-4.0	0.4	1.9	-1.8	1.8	0.2	0.	2.2
World total	**10.7**	**-30.1**	**-3.0**	**-22.4**	**-11.4**	**31.4**	**3.0**	**23**	**0.6**

EFTA = European Free Trade Association
LAC = Latin America and Caribbean
ECA = East and Central Asia
SSA = Sub-Saharan Africa

Table 2.A.5a. Dynamics, land mobility and trade elasticities: impacts on real income

Change in real income, billions of 2001 USD, relative to base year income

	Scaled dynamics	Comparative static			
		LINKAGE trade elasticities		GTAP trade elasticities	
		Flexible land	*Fixed land*	*Flexible land*	*Fixed land*
World total	**176.0**	**126.8**	**111.8**	**88.1**	**77.3**
High-income countries	**129.1**	**103.6**	**99.8**	**77.8**	**75.7**
Australia and New Zealand	3.5	2.2	1.9	1.8	1.7
EU25 plus EFTA	45.3	44.0	39.9	32.9	30.2
United States	9.8	4.1	5.8	4.5	5.1
Canada	2.4	2.1	1.5	1.0	0.8
Japan	37.9	30.8	30.4	25.1	25.3
Other high-income countries	27.9	20.4	20.4	12.6	12.7
Developing countries	**44.8**	**23.2**	**12.0**	**10.3**	**1.6**
East Asia and Pacific	9.8	6.8	2.6	3.7	0.6
China	2.2	0.5	-2.9	-0.5	-2.6
South Asia	2.2	-1.2	-0.3	-2.2	-1.6
India	1.6	-0.8	0.2	-1.5	-0.9
Europe and Central Asia	3.8	3.8	3.3	2.2	1.8
Middle East and North Africa	8.2	3.8	3.3	2.1	1.6
Sub-Saharan Africa	3.0	0.7	0.4	0.2	-0.1
Selected SSA countries	0.6	0.3	0.2	0.4	0.3
South Africa	0.8	0.7	0.6	0.5	0.4
Rest of Sub-Saharan Africa	1.6	-0.3	-0.4	-0.6	-0.8
Latin America & the Caribbean	17.9	7.9	2.0	3.9	-0.7
Argentina	2.9	1.6	1.0	1.0	0.7
Brazil	6.1	4.7	2.3	5.0	2.2

EFTA = European Free Trade Association
SSA = Sub-Saharan Africa

Table 2.A.5b. Dynamics, land mobility and trade elasticities: impacts on real income

% change in real income relative to base line income

	Scaled dynamics	Comparative static			
		LINKAGE trade elasticities		GTAP trade elasticities	
		Flexible land	*Fixed land*	*Flexible land*	*Fixed land*
World total	**0.7**	**0.5**	**0.4**	**0.3**	**0.3**
High-income countries	**0.6**	**0.5**	**0.5**	**0.4**	**0.4**
Australia and New Zealand	1.0	0.7	0.6	0.5	0.5
EU25 plus EFTA	0.6	0.6	0.6	0.5	0.4
United States	0.1	0.0	0.1	0.1	0.1
Canada	0.4	0.4	0.3	0.2	0.1
Japan	1.1	0.9	0.9	0.7	0.7
Other high-income countries	3.3	2.4	2.4	1.5	1.5
Developing countries	**0.8**	**0.4**	**0.2**	**0.2**	**0.0**
East Asia and Pacific	0.7	0.5	0.2	0.3	0.0
China	0.2	0.0	-0.3	-0.1	-0.3
South Asia	0.4	-0.2	-0.1	-0.4	-0.3
India	0.4	-0.2	0.0	-0.4	-0.2
Europe and Central Asia	0.7	0.7	0.6	0.4	0.3
Middle East and North Africa	1.2	0.5	0.5	0.3	0.2
Sub-Saharan Africa	1.1	0.3	0.2	0.1	0.0
Selected SSA countries	1.5	0.7	0.5	1.0	0.8
South Africa	0.9	0.8	0.7	0.5	0.5
Rest of Sub-Saharan Africa	1.1	-0.2	-0.3	-0.4	-0.6
Latin America & the Caribbean	1.0	0.5	0.1	0.2	0.0
Argentina	1.2	0.7	0.4	0.4	0.3
Brazil	1.5	1.2	0.6	1.3	0.5

EFTA = European Free Trade Association
SSA = Sub-Saharan Africa

Table 2.A.6. Impact of labour market closure on real income, wages and labour demand

Change in real income, wages and labour demand in 2001, comparative static

	Real income				Labour market		
					Real wage	Demand for unskilled workers	
	USD billion		%		%	%	Millions
	Flexible wage	Fixed wage	Flexible wage	Fixed wage	Flexible wage	Fixed wage	Fixed wage
World total	126.8	220.4	0.5	0.8	0.8	3.0	84.2
High-income countries	103.6	132.5	0.5	0.6	0.3	0.5	1.9
Australia and New Zealand	2.2	5.2	0.7	1.5	2.5	2.3	0.2
EU25 plus EFTA	44.0	42.0	0.6	0.6	-0.1	-0.1	-0.2
United States	4.1	4.2	0.0	0.0	0.0	0.0	0.0
Canada	2.1	3.6	0.4	0.6	0.6	0.6	0.1
Japan	30.8	45.7	0.9	1.3	0.9	0.9	0.5
Other high-income countries	20.4	31.7	2.4	3.7	3.8	3.9	1.4
Developing countries	23.2	87.9	0.4	1.6	2.9	3.4	82.3
East Asia and Pacific	6.8	31.9	0.5	2.2	3.6	3.8	37.3
China	0.5	18.2	0.0	1.8	2.5	3.4	26.4
South Asia	-1.2	3.3	-0.2	0.6	1.8	2.0	12.1
India	-0.8	2.5	-0.2	0.6	1.8	2.0	9.1
Europe and Central Asia	3.8	9.2	0.7	1.7	1.9	2.5	4.0
Middle East & North Africa	3.8	12.2	0.5	1.7	2.9	3.1	3.4
Sub-Saharan Africa	0.7	7.1	0.3	2.6	3.9	6.4	18.4
Selected SSA countries	0.3	1.2	0.7	3.2	3.9	5.3	3.3
South Africa	0.7	1.8	0.8	1.9	2.1	2.4	0.4
Rest of Sub-Saharan Africa	-0.3	4.1	-0.2	3.0	5.0	7.0	14.7
Latin America & the Caribbean	7.9	21.3	0.5	1.2	2.3	2.5	4.9
Argentina	1.6	3.2	0.7	1.3	1.3	1.6	0.2
Brazil	4.7	7.3	1.2	1.8	1.4	1.4	1.0

EFTA = European Free Trade Association
SSA = Sub-Saharan Africa

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Special Focus: Customs Fees and Charges on Imports

Michael Engman, OECD Trade Directorate

GATT Article VIII requires customs fees and charges on imports in WTO member states to be limited to the approximate cost of services rendered and to represent neither indirect protection for domestic products nor taxation for fiscal purposes. However, various types of customs fees and charges still continue to affect world trade. Low- and middle-income countries in particular apply high *ad valorem* fees that can negatively affect both South-South and North-South trade.

How customs fees and charges affect trade and their relevance to development

Customs fees are normally applied to recover some of the costs incurred by customs authorities when providing inspection and customs clearance services. However, depending on the nature and the extent of the measures used, customs fees and charges may sometimes constitute a nuisance for traders or act as an outright barrier to trade. Some countries collect customs fees and charges to increase government revenue. Others use them to protect domestic markets. Surcharges are occasionally applied to stabilise low commodity prices, and several countries use import charges to help finance national projects.

Customs fees and charges not only inflate import prices through their direct costs but also give rise to indirect costs. Their application also adds an extra administrative layer, which may delay delivery of goods. The lack of a comprehensive and trusted central registry of customs fees and charges presents transparency issues for importers, gives rise to search costs and increases financial risk. This is particularly a problem in poorer countries where customs fees and charges may change at short notice. Lax control over the administration of fees at customs points also provides opportunities for corruption. Some countries require importers to pay customs fees in advance and this increases transactions costs and financial risk. In addition, domestic taxes are sometimes based on the import price inclusive of additional fees and charges. Consumer prices in such cases tend to increase by a greater margin than the customs fees applied might suggest.

Several types of customs fees and charges exist and their use has changed over time

An OECD study (2005) has analysed the types of customs fees and charges applied by WTO member states. Data were collected from WTO Trade Policy Reviews published between 1995 and mid-September 2004 and show that:

- Fees for customs-related services are applied in nearly half of the 90 countries reviewed. Customs surcharges were applied in one-third of the countries and taxes on sensitive product categories were found in one-fifth. Stamp taxes, import licence fees, statistical taxes, taxes on transport facilities and foreign exchange transactions, community levies and consular invoice fees were applied less often.
- The great majority of the fees are *ad valorem* rather than based on the underlying costs of the services rendered. This was the case for 54% of the fees and charges applied by high-income economies, for 71% of those charged by upper-middle-income economies, 76% of those charged by lower-middle-income economies, and 83% for those charged by low-income economies.
- A further breakdown of the data based on national income shows that:

- In low-income economies, 55% applied various fees related to customs procedures, 41% applied customs surcharges, and 31% applied statistical taxes and community levies.
- In lower-middle-income economies, 38% applied various fees related to customs procedures, 27% applied customs surcharges and 19% applied statistical taxes. This income group also had the highest share of import licence fees and consular invoice fees, although these were relatively uncommon.
- In upper-middle-income economies, seven out of ten charged various fees related to customs procedures and just under half applied customs surcharges and taxes on sensitive product categories.
- In high-income economies, few fees and charges were recorded although some countries applied taxes and charges for sensitive product categories and various fees related to customs procedures.

If one compares this information with the data collected in the early 1980s by Kostecki and Tymowski (1985), the use of both customs surcharges and consular invoice fees has markedly declined. On the other hand, more countries now charge fees for the use of various customs-related services. The OECD study discerned no clear trend concerning the use of stamp taxes, import licence fees, statistical taxes or taxes on transport facilities. Taxes on foreign exchange transactions that existed in the early 1980s generally appear to have been abolished.

Trade policy implications

Many *ad valorem* customs fees and charges do not differ from customs duties other than by name and the procedural and legal grounds on which they are used. Several low– and middle-income countries apply high *ad valorem* fees and charges that may obstruct trade with high-income countries and other low- and middle-income countries.

GATT Article VIII states that fees and charges in connection with importation shall be "limited in amount to the approximate cost of services rendered and shall not represent an indirect protection to domestic products or a taxation of imports or exports for fiscal purposes". The frequent application of high *ad valorem* fees and charges seems to signal that clearer guidelines on how customs fees and charges should be calculated are needed to remove some of the uncertainties regarding the nature of their application. A more precise definition in Article VIII:1(a) of what constitutes the "services" whose costs are intended to be reflected in the fees would also remove some of the uncertainties in the interpretation of the article and potentially lead to a reduction in the costs of trading.

The OECD findings indicate that countries have moved slowly in the direction laid out in GATT Article VIII:1(b) which states that "contracting parties recognise the need for reducing the number and diversity of fees and charges". Nevertheless, a great variety of fees and charges are still applied and most are proportional to the value of the imported goods. Prospective modifications to GATT Article VIII are currently being discussed in the Negotiating Group on Trade Facilitation in the WTO.

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Chapter 3

TRADE PREFERENCE EROSION: POTENTIAL ECONOMIC IMPACTS[1]

Douglas Lippoldt
OECD Trade Directorate

Several recent OECD Trade Directorate studies have considered the potential impact of preference erosion on developing countries, particularly where preference erosion might arise as a consequence of multilateral tariff liberalisation. Drawing on these studies, the present chapter presents key findings as well as some updates. The chapter underscores that although most developing regions would benefit if major preference-granting countries reduced their tariffs, a few – particularly in Sub-Saharan Africa – could face comparatively modest net welfare losses due to reduced preference margins in some sectors. It suggests that in most cases the best policy response may be to promote an environment where economic actors can capitalise on new opportunities from liberalisation, while facilitating adjustment for sectors on the negative side of the equation and developing an appropriate social safety net. Some countries, however, face particular economic challenges in view of their geography (e.g. being landlocked or small island economies) or their reliance on a narrow range of exports (such as sugar, bananas or textiles). In such cases, development assistance and transitional arrangements may play a role in supporting reforms needed to promote growth.

Introduction

In the lead-up to the WTO's recent Hong Kong Ministerial Conference, Director General Pascal Lamy characterised preference erosion as a horizontal issue of particular importance to developing countries, one that "remains very divisive".[2] This may seem a bit surprising given that a significant share of imports from developing countries enters the OECD area without preferential treatment. However, some developing countries have come to rely on non-reciprocal tariff preferences on certain goods – whereby a lower tariff is applied to their goods than to similar goods from other countries – as a means of breaking into or maintaining market shares in key destination markets. Such preferential treatment can help a developing country with a natural competitive advantage to gain a foothold in the international market and build a position that allows it to compete without the need for preferential

1 This chapter draws on and updates various OECD papers on preference erosion, which are cited by author in the references for this chapter (Kowalski and/or Lippoldt). The OECD preference erosion project benefited from statistical assistance provided by Karinne Logez and research assistance provided by Ursula Hönich and Caroline Mirkovic. The team gratefully acknowledge assistance in the use and interpretation of the WITS trade data provided by staff at UNCTAD and the World Bank, and national-level data and assistance provided by the Australian Bureau of Statistics, the Canadian Department of Finance, and the United States International Trade Commission. Several OECD member delegations also submitted helpful suggestions. The chapter does not necessarily reflect the views of the OECD or its member countries.

2 Director General Lamy, report to Heads of Delegations on 10 November 2005, available as of 20 January 2006, at: www.wto.org/english/news_e/news05_e/stat_lamy_nov05_e.htm.

treatment. However, preferences can also encourage countries to develop and rely on sectors in which they will never be fully competitive.

As might be expected, discussions about preference erosion arose in Hong Kong between developing and developed country representatives, but also among developing country representatives. Two developing country groups (the ACP countries[3] and the Africa Group) submitted simulations to show their vulnerability to negative impacts from preference erosion. However, in his report to the Trade Negotiations Committee, the chairman of the Negotiating Group for Non-agricultural Market Access (NAMA) noted that certain other developing countries objected to the prospect of less than full tariff reductions for vulnerable product areas. He stated, "Some developing Members expressed concern that the tariff lines listed covered the majority of their exports, or covered critical exports to those markets and were also precisely the lines on which they sought MFN cuts." That is, some members' desire for improved market access for sensitive products stood in opposition to other members' desire to protect their preferential access. As the chairman of the NAMA negotiating group noted, "This subject is highly divisive precisely because the interests of the two groups of developing Members are in direct conflict."[4]

Fortunately, the WTO's Doha Development Agenda (DDA) is a single undertaking aimed at producing a package deal that permits a wide range of trade-offs and concessions. The evidence generally indicates that further trade liberalisation, particularly non-discriminatory, multilateral trade liberalisation, promises to help developing countries better integrate the global economy. With a few possible exceptions, such liberalisation is expected to improve their welfare. OECD analysis has found that tariff liberalisation will benefit most developing regions. The exceptions, such as some parts of Sub-Saharan Africa, may suffer some losses – at least in the short to medium term – or may face particular adjustment challenges as a consequence of tariff-related preference erosion. However, through a combination of trade-offs and concessions across all negotiating areas, as well as appropriate policies to promote adjustment, the DDA still appears to have the potential to yield substantial win-win scenarios for developed and developing countries, including those that might suffer negative impacts from preference erosion.

This chapter draws on and updates work carried out for the OECD Trade Directorate's preference erosion project, which has focused on developing country concerns about the economic impacts of most-favoured-nation (MFN) tariff reductions under the Doha Development Agenda.[5] The project considered selected major non-reciprocal preference programmes of the Quad countries (Canada, the European Union, Japan and the United States) and Australia with a view to identifying trade partners that are particularly vulnerable to problems of preference erosion, analysing sectors or products likely to be most affected, and assessing possible first-round economic impacts. In light of this focus, preference erosion is defined – for the purposes of the present chapter – as a decrease in the margin between a preferential tariff rate and the tariff rates "normally" applied as a consequence of multilateral tariff liberalisation. Owing to constraints in the two main data sets used in the research presented here, "normally applied tariffs" are defined either as the most-favoured-nation rates or as the trade-weighted average tariff rates.

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3 "ACP" refers to the African, Caribbean and Pacific countries that benefit from EU preferences.

4 WTO, *Hong Kong Ministerial Declaration*, Adopted 8 December 2005, Annex B: Market Access for Non-Agricultural Products, Report by the Chairman of the Negotiating Group on Market Access to the TNC.

5 The MFN principle states that the best access conditions conceded to one country must automatically be extended to all other participants in the system.

The chapter begins with an overview of the issue and highlights from the literature. A brief statistical summary follows, giving some key indicators on the extent of the main preferential programmes of Australia and the Quad countries. The chapter then presents findings from OECD research on the potential economic implications of preference erosion for the welfare of developing countries. The conclusions highlight the OECD's analysis of the types of policies that may be useful for promoting adjustment to a more open multilateral trading environment.

Overview of the issue and selected literature

Eight rounds of multilateral trade negotiations since 1947 have succeeded in substantially reducing import duties as a barrier to trade. The DDA is currently under way, with a mandate to seek further multilateral tariff reductions. Under provisions permitting derogation from the MFN principle, WTO members can accord additional tariff concessions to specific trading partners. Developed countries have often granted such tariff preferences to developing economies in a non-reciprocal manner, either via the Generalised System of Preferences (GSP) or on a categorical, regional or bilateral basis. However, as multilateral trade negotiations progress and MFN tariffs are reduced, the margins between the MFN tariff rates and the preferential tariff rates are squeezed.[6]

The literature on various types of trade preferences has been extensively referenced or reviewed (*e.g.* Lippoldt and Kowalski, 2005a; Achterbosch *et al.*, 2003; Hoekman *et al.*, 2003; OECD, 2001). Therefore, this chapter primarily aims to provide an update, emphasising selected recent references that are particularly useful for establishing the context for the subsequent analysis. Emphasis is given to cross-cutting references that help to highlight the use of Quad country and Australian preferential arrangements. Four subsections provide overviews of key concepts, evidence on the economic impacts of preferences, rules of origin (ROOs), and reliance by least developed countries (LDCs) on preferences.

Framing the discussion

The literature on preference erosion highlights three dimensions of preferential programmes and the associated trade flows: coverage, utilisation and utility. Inama (2003) provides an overview of these dimensions, although there is some variation in the application of these concepts by various authors. Inama defines product coverage as "the ratio between imports that are covered by a preferential trade arrangement and total dutiable imports from beneficiary countries". This gives an indication of the extent of eligibility for preferences. The utilisation rate, according to Inama, is "the ratio between imports actually receiving preference and covered imports". This gives an indication of the take-up by importers of the offer of preferential access. Inama defines the utility rate as "the ratio of imports actually receiving preference and all dutiable imports (covered or not)". This gives an indication of the importance of preferences in relation to all trade subject to duties. However, in order to consider preferences more broadly, the OECD analyses presented in the following sections consider preferences in relation to total imports.

Candau *et al.* (2004) provide an example of the application of coverage, utilisation and utility concepts in European Union (EU) trade preference programmes. Cumulatively these programmes may provide extensive preferential access even where take-up for a given programme is modest. For example, a recent OECD study by Bureau and Gallezot (2004) focuses on agricultural and food products and provides a detailed examination of utilisation rates under US and EU preferential

6 Other factors, such as outcomes of dispute settlement cases, may also contribute to preference erosion. (See for example the UK Department of Trade and Industry summary on EU banana preferences available at: www.dti.gov.uk/ewt/bananas.htm as of 3 February 2006.

agreements. Whereas utilisation of certain programmes can be quite limited for certain products and countries, the authors found that if all preferential schemes are taken together, the rate of utilisation across eligible imports reaches 89% in the European Union and 88% in the United States. At the same time, for certain countries (especially some LDCs), the authors found that utilisation rates may be quite high but the corresponding trade flows relatively small.

A number of recent empirical studies on non-reciprocal tariff preferences do not give them a favourable assessment. While many of these studies focus on just a few preference programmes (or even a single one), they nonetheless provide more generally relevant insights. There are broad concerns that preferences can encourage specialisation in activities in which countries are not competitive in the long term and create vested interests that are opposed to multilateral trade liberalisation (OECD, 2001).[7] The literature also includes a number of studies that underscore the constraints on the potential of some preferential schemes that are due to limitations on the range of eligible products, to the exclusion of some potential beneficiary countries, or to the conditions of usage. For example, in some cases ROOs have discouraged the utilisation of preferences. In others, graduation of GSP beneficiaries and/or products has reduced some countries' access to preferences. Such constraints have limited the potential impacts of preferences on developing countries, both the positive impacts and the risks of losses from future preference erosion (to the extent that the developing countries do not rely on preferences). Several studies point to the high shares of products already entering Quad markets on an MFN duty-free or low tariff-rate basis. At the same time, even where preferences are utilised, the exporting country may not be able to capture a substantial share of the price advantage conferred by the tariff breaks. Nevertheless, there are cases in which preferences are heavily used and beneficiaries rely to a considerable extent on them (*e.g.* in terms of their total exports). For these countries, erosion of preferences could entail a reorientation of trade that may negatively affect the corresponding sectors or even the economy more broadly. In a number of such cases, preferential trade flows essentially concern a small range of products or beneficiary countries.

Benefits from preferences?

Hoekman *et al.* (2006) provide an overview of the debate on preference erosion. They draw on recent literature, including several papers from an international symposium organised by the World Bank, the WTO and the OECD in Geneva, 13-14 June 2005. They point to divisions among developing countries with respect to the benefits of preferences, noting in particular that "middle-income countries are increasingly concerned about the discrimination they confront in OECD markets as a result of the better access granted to preferred countries, whether developing or other industrialised countries covered under regional free trade agreements". At the same time, they note that in the past concerns about preference erosion among preference-reliant countries following multilateral liberalisation could be addressed by further reducing the remaining trade barriers under preferential access programmes. However, more recently, new preference measures such as the EU's "Everything But Arms" (EBA) initiative or the United States' African Growth and Opportunity Act (AGOA) provide duty-free and quota-free access for nearly all products, such that MFN tariff reductions cannot be offset by reducing tariffs or quotas under the preferential programmes. The authors underscore that the transfer of revenue from industrial to developing countries as a

7 Hedi Bchir *et al*. (2004) model the impact of preference erosion on Sub-Saharan Africa under a scenario of liberalisation in non-agricultural goods. Preference erosion (especially for textiles and clothing in the EU and US markets) and relative price declines for key exports (primary and agricultural products) put the Sub-Saharan countries at risk of welfare losses. The more ambitious the liberalisation globally, the stronger the impact. Losses can be fairly large in cases of preference-induced over-specialisation.

consequence of preferences is very small, especially in comparison to the relatively large gains for developing countries that would result from comprehensive trade reform.

Low *et al*. (2005) consider impacts of preference erosion on beneficiary countries, taking into account the best treatment available to competing suppliers. They find that "developing countries do not lose from preference erosion following MFN liberalisation, although significant gains and losses underlie the estimate of the average". They model a liberalisation scenario using the Swiss formula with a coefficient of 10 (effectively reducing all tariffs to 10% or less in a non-linear fashion) and covering non-agricultural imports into the Quad countries and Australia. While developing countries enjoy a net gain in terms of the value of adjusted preference margins under this scenario, LDCs as a group suffer a net loss of some USD 170 million, although 15 countries in this group suffer few or no losses and two actually register a gain. Preference erosion is most significant in the clothing sector. In terms of trade solutions, the authors note that, with a few exceptions, there is a limited potential for improved utilisation to offset the erosion of preference margins.

Alexandraki and Lankes (2004) identify middle-income developing countries that are potentially vulnerable to export losses from preference erosion. They use partial equilibrium simulations, by product, to estimate the impact of changes in trade-weighted preference margins between each of the countries in question and the Quad countries. They find that vulnerability to preference erosion among this group of developing countries is particularly strong for sugar and banana exports (especially into the EU and US markets); in many cases the producers are small island economies that may have significant difficulties in adjusting. They also find vulnerability to preference erosion among middle-income countries for textiles and clothing, but "to a far lesser extent" than for the preceding products. Similarly, a Commonwealth Secretariat study of August 2004 found significant value (measured by quota rents) for beneficiary countries in preferences for sugar, bananas, textiles and clothing (as well as beef). It also found that many preference-dependent economies would face multiple economic handicaps when adjusting to a more liberalised trading environment.

Rules of origin

Rules of origin are employed under preferential tariff schemes in order to require a minimum level of local content in products imported from eligible suppliers.[8] They help to ensure that the products imported under these schemes are not merely transhipped from non-eligible countries via eligible suppliers with little or no local value added. That is, ROOs can play an important role in ensuring that the intended beneficiary countries actually reap the benefits of preferential programmes. Where developed country imports from beneficiary countries are indeed stimulated because of preferences, ROOs can work to boost local productive activity. However, Inama (2003) suggests that where preferences are underutilised, tight rules of origin are often the main reason.

Much of the recent literature on ROOs focuses on EU and US preference schemes that benefit low-income countries. Brenton and Ikezuki (2004) provide an example, underscoring trade expansion under the US AGOA preferences. They point out that a key factor in the growth of clothing exports from Africa to the United States, a main source of benefits under AGOA, has been the relatively liberal rules of origin available to selected countries. When considering EU agricultural imports, Gallezot (2003) examines declarations by importers to consider the extent to which they prefer to use MFN when they could also use preferences. He points to tariff headings covered by preferences that,

8 Annex 3 of Lippoldt and Kowalski (2005a) provides an overview of selected features of the rules of origin for the preferential programmes of the Quad countries and Australia.

with a 100% take-up rate, would account for 36% of EU imports, but in reality seem to account for only 24%. Looking only at imports for which MFN duties are greater than zero, preferential imports account for a third of the European Union's agricultural and agri-food imports and 42% of developing countries' exports to the European Union. He notes that products covered by preferences may nonetheless be imported under MFN arrangements because of small preferential margins, administrative transaction costs or the inconvenience of complying with rules of origin.[9] Similarly, Candau *et al.* (2004) find that use of preferences in the European Union is lower when the preference margin is small, which they view as suggesting that compliance costs are not negligible.

The special case of the least developed countries

In recent years, many developed countries have deepened their trade preferences for LDCs. Hoekman *et al.* (2003) underscore the tension between deepening preferences for LDCs and MFN-based liberalisation, with the latter eroding the benefits of the former. Preferential schemes can have significant positive effects on specific beneficiaries, but much depends on their supply-side capacity, their ability to reinvest rents usefully and the nature of administrative requirements such as ROOs. Overall, such constraints have limited many LDCs' actual benefits from preferences. This leads the authors to suggest the erosion of current preferences when it comes as a consequence of MFN liberalisation should be of limited concern. Indeed, they note that MFN liberalisation would offer some advantages over approaches aimed at enhancing preferential programmes.[10]

Cernat *et al.* (2003) point to the European Union as the most important market for LDC exports (it absorbed over 50% of total exports and around 70% of agricultural exports in 2000). They note that the EBA initiative added 900 additional agricultural tariff lines to the GSP for LDCs. However, only 3% of existing LDC exports faced an EU tariff prior to the EBA initiative. Achterbosch *et al.* (2003) also highlight the broad product coverage for LDC exports available under EU preferences prior to the EBA initiative, but note that utilisation rates were quite low (less than a third in 1999, according to one estimate). As the EBA amendment to the GSP does little to simplify rules of origin and cumulation of value added, these authors feel that utilisation rates for LDCs are unlikely to rise substantially, except for sugar and the fruit and vegetable sector. They also consider studies on possible removal of Quad country tariff and non-tariff barriers to LDC trade. While there is potential for trade creation and diversion with negative effects on producers in other countries, the weight of LDCs in global trade is too small for substantial losses to accrue.

UNCTAD (2003) acknowledged the broad LDC product coverage provided by the EU's EBA initiative (effective from 5 March 2001) and noted that "improvements" introduced in the GSP programmes of Canada and Japan in 2003 would close most of the gaps in LDC product coverage in

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9 It should be noted that a reduction in preference margins does not necessarily lead to a *proportional* reduction in benefit. For example, a preference that is valuable at a margin of 6% may not be useful at all if the margin is reduced to say 4% (*e.g.* if the costs of compliance exceed 4%). Alternatively, there may be economies of scale in compliance so that some producers may still benefit at lower margins.

10 Hoekman *et al*. (2003). Increased MFN market access could address tariff peaks and escalation in a cross-cutting fashion, and, as part of a package, such issues as agricultural subsidies. Negotiation of such MFN tariff reductions would require reciprocity by developing countries, which is in their own interest (much of the benefit of such reform is generated by a country's own liberalisation). The authors find that MFN liberalisation offers greater prospects for sustainable gains than expanded preferences.

those countries.[11] Where products were covered but preferences were not utilised, the authors suggest that ROOs and related administrative procedures were the main reason for low utilisation.

- In Canada, from 1 January 2003 duty-free and quota-free access was extended to imports from all LDCs (except Myanmar) with the exception of a few agricultural products. The ROOs for textiles and clothing were modified, introducing an innovative cumulation system allowing inputs from all beneficiary countries. The UNCTAD report anticipates that with the enhanced preferences, LDC imports would benefit from nearly full coverage by preferences.
- The EU's EBA initiative of 2001 improved preferential access for LDCs beyond the former ACP and GSP preferences for LDCs. EBA grants duty-free and quota-free market access for all types of exports from LDCs, with the exception of arms and ammunition, and phased-in liberalisation (subject to increasing tariff quotas) for bananas, rice and sugar. Textiles and apparel products from LDCs are granted duty-free access. The UNCTAD report, however, considers that the continued application of existing GSP ROOs under EBA leaves products "subject to strict rules of origin impeding the utilisation of the most competitive inputs and suppliers".
- For Japan, the UNCTAD report highlights the expanded coverage of preferences in 2003, with 200 new products added to the list of products. Substantial benefits were expected for prawn exports from Myanmar, Bangladesh and Mozambique (but the preference margin is limited, as the MFN rate is 1%), fish fillets from Tanzania and jellyfish from Myanmar.
- In the United States, enhancements introduced in 1997 helped to expand coverage of the GSP programme for LDCs. By the time of the UNCTAD study, the coverage rate had risen to 44%, with a utilisation rate of over 90%. A substantial part of the improvement can be attributed to the expanded coverage of petroleum. Textiles, clothing, footwear and some other products of interest to LDCs are excluded from the scheme and most LDC exports would continue to face MFN rates in the absence of other measures. AGOA was a key additional measure benefiting African LDCs through its coverage of petroleum and textiles (the latter subject to certain conditions). The study points to the rise in the utilisation rate for apparel between 2001 and 2002 from 55% to more than 90%, indicating a learning-by-doing effect.

In a follow-up paper, UNCTAD (2005) provided further analysis of the possible effects on LDCs of preference erosion and the measures to assist them. UNCTAD estimates that as of 2003 the sectors in LDCs that were exposed to risk of preference erosion accounted for about 33% of the foreign exchange earnings of these countries. Moreover, nearly half of all goods exports from LDCs under market access preferences originated in 11 countries and belonged to 17 product categories. The paper further notes that of the 50 LDCs, 11 depend on international services (*e.g.* related to tourism) for over half of their foreign exchange earnings. Thus, there was substantial variation across the LDCs with respect to their reliance on preferences.

Australia revised its preferential treatment in July 2003 to extend duty-free and quota-free treatment to all products of LDC origin imported from LDCs. Using the GTAP model to consider the potential impacts, Zhang and Verikios (2003) conclude that, given existing patterns of trade and

[11] Moreover, at the WTO's Hong Kong Ministerial Conference in 2005, developed and developing country members agreed to implement duty-free and quota-free market access for products originating from LDCs subject to certain conditions. See Annex F of the Ministerial Declaration for details, available at: www.wto.org/english/thewto_e/minist_e/min05_e/final_annex_e.htm#annexf .

tariffs, the overall effects on the Australian economy were likely to be small. This is because of the small share of Australian imports coming from LDCs and the small impacts that the tariff cuts were estimated to have on domestic prices. Similarly, the effects on other non-LDC suppliers of imports to Australia were estimated to be modest. The model revealed that some countries that competed with LDCs (*e.g.* China) may not lose in terms of real GDP from the policy change, because they can boost their exports of intermediate inputs to the exporting sectors in LDCs. On the other hand, the model indicated that LDCs generally benefit, with the major LDC clothing exporters (*e.g.* Bangladesh or Cambodia) in particular showing gains.

Preference reliance: a statistical review

The extent of a developing country's reliance on tariff preferences provides an indication of the potential impact of preference erosion. Therefore, this statistical review of preference reliance focuses on tariff lines for which there were imports from developing countries into Australia and the Quad countries in 2002.[12] The primary emphasis is on identifying developing countries and sectors that make particular use of preferences. Countries and sectors that rely most heavily on preferences may suffer from adjustment or other costs in the event of substantial erosion of preferences.

Differences in data sources, formats and levels of aggregation mean that particular care should be taken when comparing the programmes of different countries on the basis of these statistics. The frame of reference is therefore shifted away from detailed comparisons of the schemes of Quad countries. Rather, the main concern is the extent of concessions across preferential tariff programmes in individual Quad countries and the exporting countries and sectors that rely on these non-reciprocal arrangements. The assessment proceeds along several dimensions, taking into account the basic structure of preferential schemes, the overall use of these schemes by individual beneficiaries and the top exporters by sector.

For Australia (Box 3.1), Canada (Box 3.2) and the United States, the statistical review is based on data from official government sources for preferential trade flows, taking into account the tariff classification at time of import. For the European Union and Japan, the statistical review was complicated by the lack of detailed and consistent data from official government sources on actual trade flows, including whether the goods were classified as preferential at the time of import. Consequently, for the purposes of this review, preferential trade flows were inferred for the European Union and Japan using TRAINS tariff and trade data accessed via the World Integrated Trade Solution (WITS) system developed by UNCTAD and the World Bank. At the level of product group (the 6-digit level of the Harmonised System, HS), this database provides indicators for average MFN tariff rates and the average effectively applied tariff rates, taking into account the available preferential tariffs rates. However, the TRAINS database does not provide data on the actual tariff treatment that imports received. To provide an estimate of the potential preferential trade flows from developing countries into the European Union and Japan, it was assumed that imports entered at the best available rate. In cases where the preference margin was zero, it was assumed that the imports entered at the MFN rate.[13]

It is anticipated that the method used to infer the preferential import flows for the European Union and Japan for the purposes of the statistical review will result in an overestimation, because not

[12] Given the volume of information and the associated computations, the statistical review focuses on a single year, providing significant detail on preference coverage and utilisation by country and product.

[13] A more detailed discussion of the data sources and methods applied in the statistical review of preferential trade can be found in Lippoldt and Kowalski (2005a).

all available preferences are claimed. In some cases, for example, suppliers or importers may fail to request preferential treatment or may not fulfil the necessary administrative requirements. For the United States, a trial comparison of the two methods (one using TRAINS data and the other using US national data) indicated the extent of overestimation of preferential flows through the TRAINS data, which ranged from zero to 35% for most sectors. In the case of textiles and apparel, the "inferred" method data underestimated the preferential flows; this may have been due to use of preferential quota treatment even when the MFN and preferential tariff treatments were equal.

Box 3.1. A closer look at Australian preferences

Compared to the Quad countries, Australia is a relatively small market for developing countries. Lippoldt (2005) provides an assessment of Australian preferences and finds that non-preferential access plays an important role for developing country exporters wishing to sell to the Australian market. In 2004, over one-half of imports from developing countries entered Australia under non-preferential tariffs, either because of a failure to claim a preference or because the goods were not eligible for preferences. The share of imports from developing countries without preferential treatment increased between 1996 and 2004 from 41% to 57% of the total. Many of these non-preferential imports entered under duty-free or low MFN rates. There are also provisions under the Australian Customs Tariff for concessional rates for certain products that are not produced in Australia or that are desired for purposes of industrial policy. In 2004, about 11% of developing country imports into Australia entered without preferential treatment but at generally low concessional rates; a further 6% entered under preferential schemes at concessional rates.

Nevertheless, Australian preferential schemes provide an important additional channel for certain developing countries that export goods that would otherwise be subject to MFN tariffs. Most of these countries have not come to rely on the Australian preferences for a large share of their global exports. However, a few smaller countries, particularly some that are geographically with some degree of concentration in specific sectors. Fiji and Papua New Guinea are the most preference-reliant exporters. Other examples close to Australia, have come to rely on the Australian preferential regime for fairly significant shares of exports, in recent years include East Timor, Vietnam , Swaziland and, in some years, Samoa.

Source: Lippoldt (2005).

The tariff schemes of Australia and the Quad countries offer preferences to developing countries, as an examination of some basic parameters presented in Tables 3.A.1 to 3.A.5 clearly shows. In each case, the tariff rate indicators (average, minimum and maximum) refer only to lines for which there was trade in 2002.[14] Moreover, when preferential tariff schemes and MFN tariffs are compared, the indicators are calculated for the same lines (*e.g.* the simple average tariff for the GSP is compared to the simple average MFN tariff for the corresponding lines). For four of the five countries, these tables include the full range of preferential access as of 2002. The exception is the European Union, which has many preferential initiatives, including a number of country-specific arrangements. Consequently, the relevant table includes only the main non-reciprocal preference programmes and two illustrative country-specific arrangements. The tables are based on available *ad valorem* rates, but the number of non-*ad valorem* (specific or mixed) duties is noted. The broad coverage of preferences in these five tables helps to situate the extent of the preferential tariff concessions accorded developing countries in the tariff schedules of Australia and the Quad countries.

[14] Australian, Canadian and US data reflect tariffs upon import and not subsequent reclassifications (*e.g.* due to change or denial of a preference). For the United States, an estimate by an International Trade Commission expert concluded that such restatements would imply at most a 1% change in the "as claimed" data.

Box 3.2. A closer look at Canadian preferences

Kowalski (2005) provides an assessment of the welfare impact of Canadian preferences on developing countries and finds that it is very small for most of them. The potential economic impact of Canada's preferential schemes on beneficiary countries appears to have been limited by the relatively low levels of protection afforded to other trading partners, whether on an MFN basis or through reciprocal trade agreements. Indeed, several developing countries rely extensively on MFN access to Canada's market. Heavy reliance on preferential trade with Canada is limited to few LDCs for which the bulk of their exports, and especially textiles and clothing, enter the Canadian market via preferential schemes. Among other interesting conclusions, Kowalski finds:

- In certain cases, the problem of preference erosion could be addressed via a simultaneous lowering of MFN tariffs and the corresponding preferential rates in order to preserve preference margins. For imports from developing countries in 2003, simultaneous reductions of MFN and preferential rates would be feasible in principle on tariff lines covering up to 66% of total imports from developing countries entering under non-reciprocal preferential schemes; about 24% of preferential trade would not be affected by MFN cuts since the corresponding tariffs are zero for both the MFN and preferential rates; declines in preferential margins would be inevitable on tariff lines covering 20% of total preferential imports from developing countries, including all preferential trade with LDCs.

- In value terms, the main beneficiaries include several more advanced developing economies such as Mexico, Korea, China, India, Brazil, Israel, Malaysia and Hong Kong (China) as well as some LDCs such as Bangladesh, Cambodia and Haiti. The value of each beneficiary's preferential exports to Canada, expressed as a percentage of each beneficiary's world exports, does not typically exceed 1% (the median value is less than 0.1%). Nevertheless, several LDCs exhibit higher-than-average ratios of value of preferential exports to Canada to their global exports (0.52% in Bangladesh, 0.43% in Cambodia, 0.28% in Haiti, 0.23% in People's Democratic Republic of Laos, 0.22% in Maldives, 0.20% in Lesotho). For each of these LDCs (except Haiti) there was a large increase in the use of preferences in 2003, which appears to be associated in part with the extension of the LDC scheme to textiles and clothing.

- High tariff-line concentration of value of preferences in the case of the LDC tariff scheme and, to a lesser extent, the general preferential tariff schemes suggests that the exclusion of relatively few lines from MFN liberalisation could alleviate a substantial part of the potential negative effects of preference erosion in the Canadian market. However, the benefits of such an option should be compared with the benefits (to Canada and its other trading partners) that could be obtained by reducing MFN tariffs on these lines.

For Australia (Table 3.A.1), the simple average MFN tariff rate (*i.e.* the maximum general rate) for HS 10-digit tariff lines for which it received imports from preference-eligible countries was 6.9% (not shown in the table),[15] with tariffs for these lines ranging from zero to 25%. The "developing country" scheme offered the broadest range of preferential access in terms of the lines with imports and the number of eligible countries, but offered less than a two percentage point simple average preference margin. (The "historical" developing country rates provide additional access for a group of less developed countries for a limited number of tariff lines.) In 2002, the forum island country scheme offered imports from selected Pacific island nations duty-free access for a group of 608 lines, which had a corresponding simple average MFN rate of 11.5%. Eight other economies (including six developing or emerging economies in Asia) were eligible for special rates on nearly 5 000 tariff lines, with a simple average preference margin of about 1.5 percentage points. As the table indicates, for the lines with imports, the number of non-*ad valorem* tariffs was quite limited across all tariff treatments.

Canada's simple average MFN tariff rate for the HS 8-digit tariff lines for imports receiving MFN treatment in 2002 was 4.2%, with a range from zero to 26.5% (Table 3.A.2).[16] The General

15 For Australia, analysis of MFN rates was complicated by the structure of the data. At the product level and the countries covered for the year 2002, the system did not provide a MFN rate; rather, most lines included a reference to the "maximum general rate of duty" (*i.e.* the rate available to all countries, applicable if no preference or concession was invoked; thus, it provides an MFN-comparable rate). For 1 142 lines out of a total of 6 775 with imports from preference-eligible countries, this rate is not available (*i.e.* no imports from preference-eligible countries entered under the maximum general rate).

16 Tariffs under the British Preferential Tariff programme were not included in the OECD database.

Preferential Tariff (GPT) rates were available on many more lines than those covered by the other Canadian preferences. On a simple average basis compared to the MFN rates, the main developing country preferences (GPT and Caribbean Countries Tariff, Caribcan) offered a smaller percentage point advantage than the various country-specific tariffs. The Least Developed Country Tariff (LDCT), however, offered the second largest advantage among all the treatments, albeit on a relatively small number of lines. Under the Canadian tariffs, few MFN lines have specific tariffs and the proportion of specific tariff lines for the various preferential programmes range from small under the GPT to non-existent under Caribcan.

For the European Union (Table 3.A.3), the tabulations involved a special procedure based on the TRAINS database and inferred preferential trade flows (described above). On this basis, in 2002 the simple average MFN tariff rate for the HS 6-digit lines for imports from preference-eligible countries was 4.7%. The difference between the simple average GSP and MFN tariff rates on comparable tariff lines was 3 percentage points, while for both the EBA and ACP programmes the difference was close to 6 percentage points. The three preferential programmes (GSP, EBA and ACP) cover substantial shares of the tariff lines. Increasingly, the EU preferential trade arrangements for developing countries are embodied in bilateral preferences.[17] For illustrative purposes, Table 3.A.3 references two of these agreements concerning Morocco and South Africa. They contain relatively few non-*ad valorem* tariffs in comparison with the ACP preferences, but they also cover fewer tariff lines. In terms of the differences between the simple average bilateral and MFN rates for the lines for which there was trade in 2002, these bilateral preferences are more generous than the GSP programme. For both of the bilateral preference agreements, the simple average tariff (for lines belonging to product groups for which there was trade in 2002) was less than 1%.

Table 3.A.4 presents similar data for Japan, also based on the procedure using TRAINS data. In 2002, the simple average MFN rate was 5.0% for HS 6-digit tariff lines for which Japan received imports entering from preference-eligible countries. The MFN tariffs ranged from zero to 40%. The difference between the simple average of GSP rates and MFN rates on corresponding HS lines was about 5 percentage points. In the case of the GSP programme for LDCs (GSP-LDC), the difference was about 14 percentage points. In 2002, the GSP programme offered preferential tariffs in about 2 000 of the lines which involved trade, whereas the GSP-LDC programme was available for just 224 lines.

The United States' simple average MFN rate was 4.6% for the tariff lines for which it received imports in 2002 from preference-eligible countries (Table 3.A.5). The various preferential arrangements covered a fairly limited number of HS-8 digit lines, but in some cases offered large margins. For example, the Caribbean Basin Trade Partnership Act (CBTPA) programme and special provisions for selected African countries under AGOA offered simple average margins of about 15 percentage points, owing largely to benefits extended to eligible partners for textiles and clothing. Similarly, the Andean Trade Promotion and Drug Eradication Act extended a simple average 9 percentage point margin to certain countries for a limited number of fuel and apparel tariff lines for which there were imports in 2002. The simple average margins available under other non-reciprocal programmes range from about 4 percentage points for GSP to 7.6 percentage points under the basic AGOA programme.

Tables 3.A.1 to 3.A.5 also present information on the use of preferential tariff schemes for imports into Australia and the Quad countries during 2002, and the inferred usage for EU and Japanese programmes. In all cases, MFN imports accounted for more than 40% of the value of total

[17] These agreements extend preferential treatment but provide for increased reciprocity by partner countries.

imports from the preference-eligible countries. Whereas most imports into Australia and the European Union from preference-eligible countries entered under preferential arrangements, in Canada, Japan and the United States imports under MFN treatment accounted for a majority of imports from preference-eligible countries (more than 70% of the total in all three). In absolute terms, there are substantial flows under preference programmes for all five destination markets, particularly when seen from the perspective of certain developing country exporters.

For Australia, Canada and the United States, the OECD preferential trade database permits a breakdown of actual trade flows by type of tariff treatment and programme.[18] For Australia, the two MFN-type categories combined are, by a slim margin, the largest tariff treatment category for imports. The developing country preference represents the single largest preferential treatment category. The special country preference category ranks third among the Australian tariff treatments. After MFN tariff treatment, the Canadian GPT and US GSP treatments rank second among the various treatments available in their respective import markets. In both Canada and the United States, flows under preferences for Caribbean countries rank third among available tariff treatments. Imports under US preferences for Caribbean countries (CBTPA and the Caribbean Basin Initiative – CBI) amount to about two-thirds of the comparable US GSP flows. Import flows under Canada's Caribcan preference amount to less than 2% of the imports under Canada's GPT programme. In the United States, imports under AGOA and the GSP for LDCs rank third and fourth, respectively. Flows under the LDCT in Canada are comparatively modest.

In order to assess the extent of concentration in the use of preferences, a further statistical analysis of imports into Australia and the Quad countries was conducted for 2002, disaggregating the data by exporting country and the tariff treatment granted (or inferred as being granted for the European Union and Japan). To obtain an indication of the utility of preferences, the assessment compared the percentage of imports entering under preferential treatments from each developing economy into each of the five developed country markets. In order to situate the importance of preferences for each exporter's overall relationship to the destination market, the percentage was calculated on the basis of total imports from each developing economy into each destination market.[19]

- For Australia, the biggest users of non-reciprocal preferences in absolute terms included 16 economies with more than USD 100 million of imports entering under preferences. However, the list changes substantially when the criterion shifts to reflect preference reliance as a share of total imports from the supplier. Among the 14 economies for which more than two-thirds of total imports into Australia entered under preferences with at least USD 10 million in preferential imports, only three are also on the list of biggest Australian preference users.[20]
- For Canada, the biggest non-reciprocal preference users in absolute terms included just six countries with more than USD 100 million of imports receiving preferential treatment in 2002. However, the list changes dramatically when the largest users are defined on the basis of preferential imports as a share of each economy's total imports into Canada. Among the preference-eligible countries with at least USD 10 million of imports into Canada, Trinidad

18 For the European Union and Japan, data limitations prevent a breakdown by programme.

19 In the literature, utility is generally calculated as the share of dutiable imports in order to highlight preferential trade as a share of maximum potential preferential trade. In assessing the broad economic implications, the present exercise focused instead on the importance of preferences in overall trade.

20 For the Australian market, economies on the list of the most preference-reliant in terms of both volume and shares in total imports included China, India and Chinese Taipei.

and Tobago was the only one for which preferences accounted for more than two-thirds of total imports.

- For the European Union, among countries eligible for non-reciprocal preferences, 85 had inferred preferential export volumes to the European Union exceeding USD 100 million in 2002. In 46 of these cases, it was estimated that these countries shipped more than two-thirds of their total imports into the European Union via preferential arrangements. A further 13 countries exported for between USD 10 million and USD 100 million, with more than two-thirds of the total inferred as entering under preferential arrangements.[21]
- For Japan, 20 countries were inferred as exporting more than USD 100 million under preferential arrangements in 2002. The countries that were inferred to have exported more than two-thirds of their total exports under preferential arrangements, with total export volumes above USD 10 million, included four countries, none of which was on the list of the biggest users of Japanese preferences: Cambodia, Kazakhstan, Latvia and Mauritania.
- For the United States, there were 38 users of non-reciprocal preferences whose preferential imports in absolute terms amounted to more than USD 100 million in 2002. Seven of these economies also relied on non-reciprocal preferences for more than two-thirds of their imports into the United States.[22] In addition, Malawi exported about USD 70 million to the United States, with more than two-thirds entering under preferential arrangements.

The individual country data reveal that certain large developing countries export large volumes of imports to Australia and the Quad countries under preferential arrangements. Brazil, India and Indonesia all export for more than USD 100 million to each of the five destination markets studied. China, Israel, Malaysia, Thailand and the Philippines export similar amounts under preferences to four of the destination markets.[23] Chile, Mexico (excluding NAFTA), Saudi Arabia, Singapore, South Africa, and Vietnam export similar amounts to three of the five destination markets.

When considering the share of total imports from each supplier entering the five destination markets under preferential arrangements, the list is quite different. With a few exceptions, the countries that export the most under preferential arrangements to these markets are not among those that are most reliant on preferences in terms of shares of total exports to these destinations. Rather, the countries that have the largest shares of trade entering the destination markets under preferential arrangements tend to be dominated by medium and small suppliers. A number of them fall into the LDC or small island categories such as Haiti or Samoa. China and India are an exception, as they are large suppliers with high shares of preferential trade in their total exports to both Australia and the European Union. Indonesia is also a large supplier with a high preferential share in its total exports

21 The 59 countries relying on preference for more than two-thirds of their exports to the EU, valued at more than USD 10 million in 2002, were: Albania, Aruba, Antigua & Barbuda, Bahamas, Bahrain, Bangladesh, Belarus, Belize, Bermuda, Bosnia & Herzegovina, Cambodia, Cape Verde, Cayman Islands, China, Columbia, Comoros, Cuba, Dominica, Ecuador, Fiji, Gambia, Georgia, Guyana, India, Indonesia, Jamaica, Kenya, Lao PDR, Liberia, FYR Macedonia, Madagascar, Malawi, Marshall Islands, Mauritius, Moldova, Morocco, Mozambique, Myanmar, Nepal, Netherlands Antilles, Nigeria, Pakistan, Panama, Senegal, Seychelles, Sri Lanka, St. Kitts-Nevis, St. Lucia, St. Vincent & Grenadines, Surinam, Swaziland, Tanzania, Thailand, Trinidad & Tobago, Turkmenistan, United Arab Emirates, Vietnam, Yugoslavia and Zimbabwe.

22 The large-volume, preference-reliant exporters to the United States included: Angola, Equatorial Guinea, Haiti, Jordan (including via the West Bank & Gaza), Kenya, Lesotho and Swaziland.

23 China and Malaysia are not eligible for the US GSP programme. Israel exports less than USD 100 million to Canada under preferences, although it is eligible for the Canadian GPT programme.

into the European Union. Indeed, the European Union stands out among the five destination markets as having the largest number of large suppliers importing under preferences as well as a large number of countries that rely on preferences for a high share of their imports into the European Union.

In order to assess sector-specific reliance on preferences, the top imports under the preferential tariff schemes of the five countries were identified by HS 2-digit product group and by supplier. A sector was considered preference-reliant when an average tariff margin of 1 percentage point or more was applicable and imports into the destination market amounted to more than 0.85% of the supplier's total exports. By considering these trade flows relative to the supplier's global exports, it was possible to get a sense both of the scale of these flows from the perspective of the exporting country and of the sector's potential vulnerability to erosion of preferences in a given destination market.

Users of preference programmes in Australia, Canada and Japan exhibited comparatively little reliance on preferences in terms of their shares of global exports of specific product groups. That is, with a couple of exceptions, there is relatively little sectoral concentration in the reliance on preferences into these markets. Notable exceptions include Samoa, where in 2002 some 30% of global exports were shipped to Australia under preferences available for electrical machinery, equipment and parts (HS 85) through the forum island country scheme, and Fiji, where 13% of global exports consist of apparel and footwear entering Australia under the Forum Island Country preferences. While a few developing countries export substantial amounts under the preferences available in these three destination markets, use of these preferences tends to be dominated by big exporters and countries that do not exhibit significant sector-specific reliance on preferences.

For the European Union, however, there were 458 cases of sector-specific preference reliance identified on the basis of the inferred preferential trade flows (excluding EU pre-accession countries). Among them, 56 of these flows amounted to more than 10% of an exporter's global exports. This is a far greater number than for the other destination markets covered. The sectors concerned are fairly diverse, ranging from knit and non-knit apparel, to fish and crustaceans, edible fruit and nuts, mineral fuels and oils, and ships and boats, among others. The geographic range of exporters concerned is also quite broad, although the largest volume exporters and the South American countries are absent from the list. Among the seven countries most reliant on EU trade preferences in terms of vulnerability to welfare losses from preference erosion (see below), six were in Africa. In each of these countries, agricultural products figure among the leading preferential exports to the European Union, while four of the countries also list textiles and/or wearing apparel. Mozambique was unique in that a large share of its preferential exports was in the "Metals nec" product group. Only in the case of certain agricultural exports from Uganda was substantial MFN trade also inferred.[24]

For the United States, developing countries appeared to exhibit particular sector-specific preference reliance in 80 cases, including 12 for which a sector's flows amounted to more than 10% of the country's global exports. The sectors most frequently identified included knit apparel, non-knit apparel, and natural or cultured pearls and precious stones. The biggest cases generally concerned apparel exports, with the exception of electrical machinery, equipment and parts from St. Kitts and Nevis. They generally involved preferences for Caribbean and African countries, with the exception of apparel from Jordan which enters under a special preference scheme. In some cases, the concentration of a given country's exports in just one or two sectors is quite striking. This is the case, for example, for the Dominican Republic and Honduras; 36% and 41% of their global exports, respectively, are sent to the United States under CBTPA preferences for apparel product groups. For Lesotho, exports to the

[24] Exports from Uganda are eligible for EBA preferences, but a portion enter the EU under MFN tariffs, particularly when MFN duty-free access is available (*e.g.* for coffee).

United States of products in the "apparel and clothing accessories" knit and non-knit product groups represented about 57% and 32%, respectively, of its global exports in 2002 (see Box 3.3). These products benefited from preference margins under AGOA of 20 and 17.5 percentage points, respectively.

Box 3.3. AGOA and the experience of Lesotho

Since becoming eligible for AGOA in October 2000 and for the AGOA textile provisions in April 2001, Lesotho has capitalised on its access to preferential treatment. Some 99% of all US imports from Lesotho entered with AGOA preferential treatment in 2002. US imports from Lesotho grew by 129% between 2000 and 2002, driven by apparel imports that amounted to USD 321 million in 2002. In that year, Lesotho supplied 40% of all apparel imports receiving AGOA preferential treatment. Lesotho is now the leading supplier of apparel products under the US AGOA programme. These imports were fairly concentrated, with just six HS 8-digit lines accounting for 80% of the total apparel imports from Lesotho. The growth of exports has had a positive impact on economic conditions in the country. According to the IMF, the rate of economic growth rose by about 0.5% in the year 2002/03 "due mainly to strong clothing exports to the United States under [AGOA]". At the same time, the IMF lists as one of Lesotho's "daunting medium term problems", "the growth of the textile industry [which] is driven by preferential treatment under AGOA and may not be sustainable as trade preferences by the United States are phased out".

Source: IMF (2004), "IMF Concludes 2003 Article IV Consultation with Lesotho", Public Information Notice No. 04/6, Washington, DC, 5 February.

Summing up

This statistical review of preference reliance has underscored the availability of preferences to developing countries across a fairly broad range of tariff lines. Nevertheless, in terms of utilisation, they are sometimes confined to a limited number of tariff lines because of the availability of attractive alternative rates under MFN treatment. In all of the preference-granting countries examined here, MFN trade flows account for a large share of the imports from preference-eligible countries. Indeed, MFN imports are estimated to account for more than two-thirds of the imports from eligible countries into Canada, Japan and the United States, almost half of the trade flows from eligible countries into the European Union and about three-sevenths of imports from eligible countries into Australia.

In absolute terms, the use of preferences tends to be dominated by a few economically large developing countries. Their reliance on preferential access, however, is relatively limited in that they tend to export substantial shares under MFN treatment. China and India are exceptions in that they are large suppliers with high shares of preferential trade in their total exports to both Australia and the European Union. Indonesia also exports large volumes with a high preferential share in its total exports to the European Union. The countries with the highest shares of trade entering the destination markets under preferential arrangements tend to be dominated by medium and small suppliers. These include a number of economically vulnerable countries falling into the LDC or small island categories (*e.g.* Haiti or Samoa) or located in Sub-Saharan Africa.

When considering the use of trade preferences by product group and relative to each supplier's global exports, the statistical review found few cases of sector-specific reliance on Australian, Canadian or Japanese preferences. The European Union stands out as having the largest number of suppliers exhibiting instances of sector-specific preference reliance across a range of products (*e.g.* apparel, fish and crustaceans, and edible fruit and nuts). There are a number of instances of preference reliance with respect to the US market as well (notably, certain countries that benefit from Caribbean or African preferences for apparel).

CGE assessment of the economic implications of preference erosion

Introduction

This section describes the results of a computable general equilibrium (CGE) modelling exercise undertaken with a view to understanding the overall economic impact of preference erosion on developing countries. For the modelling exercise, the preference-granting country coverage still includes Australia, Canada, Japan and the United States, but Europe is represented by a combination of the European Union and the European Free Trade Association as of 2001 (EU15 & EFTA).[25]

Methodological issues

modelling employs detailed information on endowments, economic structures and policy instruments and integrates this information them in a multi-country, multi-sector market-clearing framework with a sophisticated representation of demand and supply relations. In such a framework, the evaluation of an MFN liberalisation scenario takes into account the effects of substitution between imports and domestic production, substitution between imports from preferential and non-preferential sources, changes in demand for intermediate inputs, reallocation of productive resources across industrial sectors, and the effects of terms of trade and balance of payments. This approach can capture some of the costs inherent in preferential trading arrangements such as, for example, preference-driven concentration of resources in relatively uncompetitive activities. In addition to the potentially negative impact in a preference-receiving sector, the model evaluates the economy-wide implications of reallocation of productive resources towards other activities. This important methodological advantage enables accounting for the "package" nature of multilateral trade agreements whereby potential negative effects associated with a particular sector or preferential scheme are seen in conjunction with other effects.[26]

The following assessment involves separate CGE simulations of: *i)* individual, unilateral liberalisation by each of the five preference-granting countries; *ii)* simultaneous liberalisation by all five preference-granting countries (which permits an assessment of an exporting country's new opportunities in alternative markets); and *iii)* global liberalisation that includes participation by developing countries. The results emphasise the potential for broad gains under multilateral approaches.

Preferential market access in the GTAP framework

The data set used for the simulations in this section is the latest version (6.05) of the GTAP database. It reflects a base year of 2001 and covers 57 broad economic sectors and 87 countries. The database offers trade protection data that integrate information on bilateral *ad valorem* tariffs (both MFN and preferential), *ad valorem* equivalents of specific tariffs (MFN and preferential), and tariff-rate quotas from the Centre d'Etudes prospectives et d'informations internationales/International Trade Commission (CEPII/ITC) Market Access Maps (MAcMaps) database.[27] The resulting *ad valorem* equivalent measure of applied protection is thus a comprehensive measure of protection

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25 This synthetic region includes the members of the EU15 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom) and EFTA (Iceland, Liechtenstein, Norway, Switzerland). The EU15 countries accounted for 96.3% of the imports from developing countries into the EU15 & EFTA region in 2001.

26 This approach has several limitations, which are described in more detail in Bora *et al*. (2002), p. 49.

27 The data set is documented in detail in Bouët *et al*. (2002).

that is consistent across all bilateral trade flows. Owing to the level of data aggregation, each bilateral *ad valorem* equivalent measure of applied protection included in the database by necessity combines in a single indicator the information on MFN and preferential market access, taking into account the actual composition of trade within each product category. Thus, bilateral protection rates for a given product category vary from one country pair to another. To illustrate the extent of protection and preferential access for each product category and trading partner, preference margins are calculated as the difference between the trade-weighted average rates of protection and the rate applicable for a given trading partner.

Preference margins calculated as the difference between the trade-weighted *ad valorem* equivalent and bilateral rates provide a better indication of preferential market access than the simple difference between the official MFN and bilateral rates. As discussed above, MFN rates typically apply only to a share of the actual trade flow, and corresponding indicators of protection often do not account for the existence of specific duties. The margins used in the present exercise provide an indication of the extent of preferential treatment enjoyed by a given beneficiary country for a particular product relative to other suppliers.[28] For example, the European Union offers duty-free access to its market for natural resources. Because margins are nil across all source countries, none of the partners receives preferential treatment. In contrast, for paddy rice several developing countries benefit from preferential margins reaching up to 36 percentage points. At the same time, several industrialised countries face *ad valorem* rates that are several percentage points higher than the average. Such an approach makes it possible to identify product categories and source countries that may be vulnerable to erosion of preference margins.

Preferential access by product categories: agricultural versus manufactured products

There are large margins between the average and bilateral protection measures applied to developing countries' exports for paddy rice and processed rice. They are 755 and 834 percentage points, respectively, in Japan, 36 and 49 percentage points in EU15 & EFTA, and 4 percentage points each in the United States. Australia and Canada afford duty-free access in these product categories to imports from all sources. For sugar, the differences range from a high of 244 percentage points in Japan, 62 in the European Union, 25 in the United States to less than 2 percentage points in Australia and Canada. These margins are, however, spread less evenly among the developing countries, indicating that there are significant variations in preferential access within this product group. For EU15 & EFTA, for example, Uganda and Mozambique enjoy significant margins of 63 and 41 percentage points, respectively, while (as of 2001) imports from Tanzania, Zambia or Zimbabwe are actually disadvantaged and face rates that are 33 to 53 percentage points higher than the average.[29]

In other agricultural sectors, several developing countries enjoy significant preference margins in the Japanese market for wheat, cereal grains and vegetables, fruits and nuts (up to 183, 39 and 14 percentage points, respectively). More moderate preference margins are enjoyed by developing countries in the EU15 & EFTA market (5, 6 and 8 percentage points, respectively). In the United States, Canada and Australia, most developing countries do not enjoy a great deal of preferential access in these product categories. Bovine cattle, sheep and goat meat as well as meat products record significant preference margins in Japan (43 and 50 percentage points, respectively), the EU15 & EFTA (up to 17 and 6 percentage points, respectively) and Canada (7 and 51 percentage points). In the

28 As indicated above, because of the level of aggregation, these margins may also reflect different structures of trade within aggregated product categories.

29 Since 2001, the EU's EBA initiative has changed this situation. Tanzania and Zambia are both eligible for EBA preferences; treatment now should not be less favourable than for Uganda and Mozambique.

United States and Australia, margins in these product categories do not exceed 3 percentage points. For dairy products, margins are significant across the five destination markets. They reach up to 110 percentage points in Canada, 53 percentage points in Japan, and 18 percentage points in the United States. In EU15 & EFTA and Australia, the margins are 4 and 1 percentage points, respectively.

Even though there is considerable variation across the five destination markets, the preference margins granted to manufactured products are generally lower than those for agricultural products. (However, Australia has very low trade barriers in the agricultural sectors and grants moderately large preference margins to several developing countries in a number of manufacturing sectors.) This does not mean that the margins are negligible. In Japan, Australia and Canada, for example, exports of beverages and tobacco products from several African and South Asian countries benefit from preference margins that reach up to 15 percentage points. For textiles and wearing apparel, preference margins reach up to 13 and 22 percentage points, respectively, in Australia, 5 and 14 percentage points in Canada, 4 and 9 percentage points in the United States, 7 and 10 percentage points in Japan, and 2 and 3 percentage points in EU15 & EFTA. For leather products, the margins reach up to 13 percentage points in Japan, 12 percentage points in the United States, 10 percentage points in Australia, 9 percentage points in Canada and 3 percentage points in EU15 & EFTA. Thus, in spite of the generally smaller margins in manufacturing, significant preferential access is extended to selected developing country exporters in these sectors, which account for a large and increasing share of exports from most beneficiary countries.

Preferential access by destination and beneficiary country

Building on the already calculated product-level margins, it is possible to calculate average trade-weighted preference margins for each of the beneficiary countries in each of the preference-granting countries discussed. To do so, the product-level margins in destination markets are weighted by the shares of these products in the overall exports of a given beneficiary to each of the destination markets, thereby yielding an average preference margin enjoyed in a particular preference-granting market. Hence, the country-level margins calculated for each of the five preference-granting countries make possible a comparison of beneficiaries' vulnerability to preference erosion.

Preference margins calculated at the individual product level indicate that substantial trade advantages accrue to a number of developing country exporters in several product categories in each preference-granting country. However, average export-share-weighted preference margins calculated across the entire range of product categories for each of the beneficiaries indicate that, at the country level, the significance of preferential schemes is lower than what is indicated by the size of the product-level margins. The trade structures of most developing countries are diversified enough to result in single-digit average export-weighted margins. Large differences between the calculated product- and beneficiary-level preference margins suggest that while liberalisation may mean significant reallocation of productive resources across product categories, the country-level impacts are likely to be more moderate.

Simulation results

This section presents an evaluation of the economy-wide welfare[30] implications of tariff reform.

30 The measure of change in welfare is the equivalent variation in income, which is the money metric equivalent of the utility change brought about by the price change. At a less abstract level, welfare gains from trade liberalisation can be broken down into two main components: the change in efficiency with which countries utilise their resources and the change in its terms of trade (Hertel and Martin, 1999).

It looks at: *i)* individual, unilateral liberalisation by EU15 & EFTA, the United States, Japan, Australia and Canada; *ii)* multilateral liberalisation by all five preference-granting markets collectively; and *iii)* worldwide liberalisation. Across all three simulation exercises, liberalisation refers to a 50% reduction in measures of applied protection on a bilateral basis.[31] The individual liberalisation scenarios highlight the welfare implications for beneficiary countries of preferential access in each individual preference-granting market. The multilateral scenario illustrates how differences in the design of preferential schemes across countries can influence the overall outcome: negative effects from preference erosion in one market may be outweighed by positive effects of liberalisation in other markets. The worldwide liberalisation scenario mimics the multilateral character of the ongoing WTO negotiations.

The simulation of separate episodes of liberalisation in each of the Quad countries and Australia (unilateral cuts of 50% in protection on all merchandise trade) revealed significant variation in outcomes. The largest impacts concerned EU15 & EFTA. In particular, most of the countries enjoying positive average margins were affected negatively in terms of per capita welfare (percentage change). Negatively affected developing country regions included: Mozambique (-0.21), Bangladesh (-0.21), Zambia (-0.14), Madagascar (-0.14), Morocco (-0.11), Uganda (-0.11), Tanzania (-0.07), rest of Sub-Saharan Africa (-0.02) and Venezuela (-0.01). It is noteworthy, however, that for the majority of developing countries, liberalisation by EU15 & EFTA results in positive welfare gains (including Tunisia which gains even though it initially enjoyed significant preferential access to the EU15 & EFTA market).

In the simulation of unilateral tariff cuts by the United States, Japan, Canada and Australia (each country in turn), the impacts on developing countries were comparatively modest. The results for the United States confirm a negative correlation of per capita welfare impacts and the size of the initial preferential margin. Nevertheless, only three developing country regions are affected negatively: rest of Sub-Saharan Africa (-0.02), rest of Middle East and North Africa (-0.01), and South Africa (-0.01). Most developing countries gain from US liberalisation, including several countries that gain even though they initially enjoyed significant preferential access to the United States (*e.g.* Zambia, India, Singapore).

The simulation for Japan finds a large number of cases of negligible welfare impacts. These results are driven by the relatively small Japanese share in some countries' exports. Several countries with initially positive preferential margins still benefit from liberalisation (*e.g.* Vietnam, Philippines, Malaysia, China). Nevertheless, a number of countries that currently enjoy preferential treatment in the Japanese market are affected negatively: Malawi (-0.04), Mozambique and Madagascar (-0.02), and Bangladesh, Peru, rest of the South Africa Customs Union (SACU), Tanzania and Zambia (-0.01).

The simulation of liberalisation by Australia shows a number of cases with mildly positive impacts (Indonesia, Sri Lanka, rest of Oceania) as well as negative, albeit marginal, impacts: Singapore (-0.02) and rest of North America, Botswana, rest of SACU, Malawi, Mozambique, Zambia and Zimbabwe (each by -0.01). The simulation of liberalisation by Canada indicates that most developing countries would not be affected or would benefit. Marginal negative impacts are recorded in rest of North America (-0.03), Malawi (-0.01) and rest of Sub-Saharan Africa (-0.01).

In the scenario of a simultaneous liberalisation by the Quad (with EFTA) and Australia, there were several cases of avoided welfare losses that may have occurred under one of the unilateral liberalisation scenarios. That is, the potential losses *vis-à-vis* one of the destination markets are

[31] The simulations do not include any change in export credits or non-tariff barriers.

outweighed by gains from liberalisation by other preference-giving countries. Thus, Bangladesh and Madagascar experience non-negligible welfare losses as a result of liberalisation by EU15 & EFTA (and to a lesser extent Japan) but at the same time benefit significantly from liberalisation by the United States. Malawi would have lost from an individual liberalisation by Japan, but is more than compensated by liberalisation in EU15 & EFTA and the United States.

Eight developing regions experience a negative impact on per capita welfare under the Quad (with EFTA) plus Australia. These include the rest of Sub-Saharan Africa (-0.01), Tanzania (-0.08), Morocco (-0.09), Uganda (-0.11), Zambia (-0.14), and Mozambique (-0.21). In most of these cases, the negative impacts are in large part due to liberalisation in the EU15 & EFTA market. These countries enjoyed positive preferential margins in each of five destination markets in the initial (pre-reform) equilibrium; therefore the welfare losses that may have occurred under one of the unilateral liberalisation scenarios are deepened, not outweighed, by multi-country liberalisation.

Figure 3.1 presents the results of a tariff liberalisation scenario in which all regions, including other OECD and developing countries, engage in a 50% reduction of *ad valorem* measures of protection. The welfare results are noticeably larger than in the previously considered scenarios, with the largest per capita gain of 2.6% accruing to Vietnam. Overall, most developing countries gain significantly more than with liberalisation by EU15 & EFTA, the United States, Japan, Canada or Australia alone. For Morocco, Bangladesh or Zambia, including the remaining regions further counterbalances the potential negative effects of liberalisation in the selected preference-granting countries. However, in countries such as Tanzania or Uganda, the negative results associated primarily with liberalisation by EU15 & EFTA are deepened in the worldwide liberalisation scenario (in both cases the estimated per capita welfare loss is of the order of -0.29).

A closer look at the most vulnerable countries

Next, the analysis turns to the developing countries that, according to the modelled scenario, are most likely to experience negative economic impacts from preference erosion as a consequence of multilateral tariff liberalisation. These countries are defined to include those non-OECD countries for which the estimated welfare impacts associated with liberalisation by one of the preference-granting countries are negative and equivalent to at least 0.05% of per capita welfare. (The median overall welfare change among the non-OECD regions was +0.31%.). Such a selection criterion is inevitably somewhat arbitrary. The aim was to select a relatively inclusive definition of countries at risk by selecting a relatively low threshold of loss as a cut-off point. This resulted, for example, in the selection of three developing countries with overall net welfare gains, but losses associated with liberalisation in an individual preference-granting market that initially afforded substantial preferential access (*i.e.* the EU15 & EFTA). Given the focus here on preferences granted by the Quad (with EFTA) plus Australia, developing regions considered as facing net welfare losses associated primarily with liberalisation in other markets were excluded (Colombia,[32] rest of Sub-Saharan Africa and rest of North America[33]).

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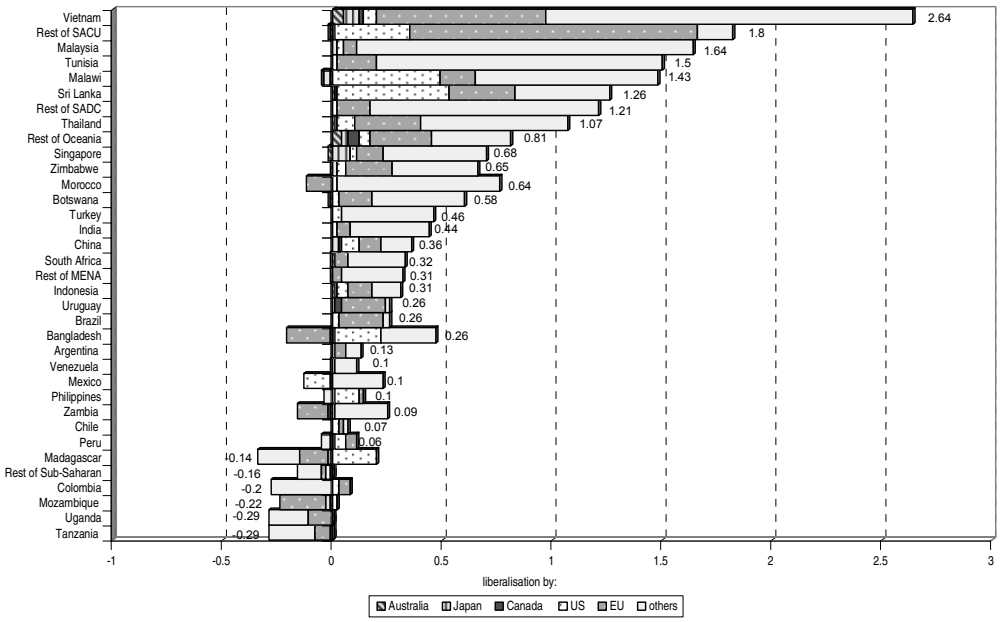
32 Colombia has modest welfare gains from tariff liberalisation by EU15 & EFTA and the United States (no change vis-à-vis Australia, Canada and Japan), but suffers net welfare losses due to liberalisation elsewhere. After the United States, its 2 largest trading partners are Venezuela and Ecuador.

33 Rest of North America is a residual category of small economies comprising Greenland, St. Pierre et Miquelon, and Bermuda.

Figure 3.1. Per Capita welfare gains from a global 50% reduction in tariffs
(Percentage Change In Per Capita Welfare)



Note: Welfare gains are shown with particular reference to the impact of liberalisation by Australia and the Quad countries entailing significant preference erosion for developing countries and regions. The term "welfare gains" here refers to the equivalent variation in income.
Regional groupings include: *Rest of Middle East & North Africa*: Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Palestinian Territory, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates & Yemen; *Rest of Oceania*: American Samoa, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Federated States of Micronesia, Nauru, New Caledonia, New Zealand, Norfolk Island, Northern Mariana Islands, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu & Wallis and Futuna; *Rest of South African Development Community*: Angola, Democratic Republic of the Congo, Mauritius & the Seychelles; *Rest of South African Customs Union*: Lesotho, Namibia & Swaziland; *Rest of Sub-Saharan Africa*: African countries not shown elsewhere. EU refers to the15 EU countries and the EFTA countries as of 2001, combined.
Source: Lippoldt and Kowalski (2005a).

Countries included in the following analysis using the "at risk" criterion include: Bangladesh, Madagascar, Morocco, Mozambique, Tanzania, Uganda and Zambia. In each case, the loss of at least 0.05% in per capita welfare is attributable to liberalisation by EU15 & EFTA. Moreover, Madagascar, Mozambique, Tanzania and Uganda are identified as net losers in the worldwide liberalisation scenario.[34] Since welfare results depend to a large extent on the observed trade shares, the basic structure of exports for the seven selected countries was examined using the GTAP database with data for 2001.

All of these countries rely heavily on the EU15 & EFTA markets, a region that accounts for exports shares of between 50% and 70%. These shares are notably higher than those observed for the United States (2% to 23%), Japan (2% to 6%), or Canada and Australia (up to 1%). Moreover, exports to the EU15 & EFTA region are quite concentrated in certain product categories. Textiles and wearing

34 The rest of Sub-Saharan Africa exhibits some characteristics similar to those of the selected countries. Yet, it experiences only a small net negative welfare change *vis-à-vis* the Quad countries and Australia under multilateral liberalisation, and bigger losses *vis-à-vis* third countries.

apparel together account for 82% of Bangladesh's exports to EU15 & EFTA, 48% of Madagascar's and 37% of Morocco's. Primary agriculture accounts for 46% of Uganda's and 19% of Tanzania's exports to that region, while other manufacturing[35] accounts for 82% of Zambia's, 67% of Mozambique's, 33% of Tanzania's and 20% of Morocco's. Other relatively important categories include services and food products nec. Overall, the examination of preferential trade flows confirms the importance of preferential trade with EU15 & EFTA for the seven selected developing countries, and it underscores that these countries' use of preference is quite concentrated in a limited number of product groups.[36]

Using an index of structural change, Lippoldt and Kowalski (2005b) considered the extent of the implied change in output and employment in the leading preference-reliant sectors as a consequence of a 50% multilateral tariff liberalisation.[37] Overall, these tend to be modest. Among the seven selected "at risk" developing countries, the model simulation predicts that up to 1.5% of output will be reallocated between sectors as a consequence of multilateral liberalisation. The scores ranged from 0.3% in Uganda, 0.4% in Madagascar and Zambia, 0.5% in Tanzania and Mozambique, to 1.4% in Bangladesh and 1.5% in Morocco. Scores calculated on the basis of sectoral shares of the expenditure on labour (a proxy for employment) tended to be similar to those for changes in output. They range from 0.2% in Uganda, 0.3% in Tanzania and Madagascar, 0.4% in Mozambique and Zambia, and 0.6% in Bangladesh, to 1.5% in Morocco.[38] For both output and employment, there is a notable tendency for shares in other manufacturing to contract somewhat.

Summing up

The variation in preference schemes across countries provides opportunities for preference-reliant countries to offset losses from preference erosion in one market through liberalisation in others. Under the scenario of a 50% liberalisation, the results of simultaneous liberalisation by the five destination markets tend to be more positive for developing countries than for a scenario of unilateral liberalisation by one of the preference-granting economies. Bangladesh and Madagascar, for example, experience non-negligible welfare losses as a result of liberalisation by the European Union, but benefit significantly from liberalisation by the United States. Malawi would have lost from a unilateral liberalisation by Japan, but is more than compensated by liberalisation by the European Union and the United States. These results emphasise that potential losses associated with specific cases of preference erosion may be mitigated in a multilateral approach.[39] As modelled, most

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35 Other manufacturing includes such sectors as wood products, paper products, publishing, petroleum and coal products, chemical, rubber and plastic products, mineral products, metals and metal products, motor vehicles and parts, transport equipment, machinery and equipment, and miscellaneous manufactures.

36 A separate statistical review of the exports from the selected countries confirms significant concentration: the estimated preferential trade flows for the top four preferential exports to the EU15 (alone) amounted to between ¼ and ½ of the exporter's global trade. For more details, see Lippoldt and Kowalski (2005b).

37 The structural change index is given by the formula: $SCI = \frac{1}{2}\sum|x_{i,t} - x_{i,t-1}|$

where *xi,t* and *xi,t-1* represent each industry's share of total value added after and before the trade shock under consideration (respectively, *t* and *t-1*) (Productivity Commission, 1998; OECD, 1994). The scores are internationally comparable and describe the percentage of productive resources reallocated within each economy as a result of adjustment to the analysed trade shock. The exercise drew on values from the CGE modelling exercise. For details, see Lippoldt and Kowalski (2005b).

38 The model holds overall employment constant and does not provide for unemployment.

39 Similarly, a recent World Bank study (2004) underscores the importance of multilateral liberalisation in helping most developing countries improve their market access and reduce the discrimination they face

developing regions experience welfare gains as a consequence of the multilateral tariff liberalisation scenario.[40]

Where net losses occur in per capita welfare, in particular in certain African countries and Bangladesh, they tend to be associated primarily with preference erosion in the European Union. This is due to the combination of the European Union's high shares in exports of the beneficiary countries and positive EU preference margins for key product groups (*e.g.* textiles, apparel, agricultural products). The preferential schemes of the European Union have a more significant impact on beneficiaries than those of the United States, Japan, Canada or Australia. Thus, MFN liberalisation by the European Union may be associated with more sizeable negative welfare impacts for a number of developing countries, predominantly in Africa. At the same time, even among the most vulnerable economies considered in this exercise, the scale of welfare loss and structural change (employment and output) associated with preference erosion is fairly modest (a maximum of 0.29% and 1.5%, respectively).

What policy response?

The aim of this chapter is to assess vulnerability to preference erosion. Compared to the magnitude of potential welfare gains for developing countries from further multilateral trade liberalisation, the present analysis supports the notion that this vulnerability is relatively limited. Trade liberalisation entails adjustment; nonetheless, most developing regions stand to gain. Moreover, as Hoekman *et al*. (2006) note, "Adjustment to MFN trade liberalisation will affect many countries and not just those that have benefited from preferences. … In most cases the shocks that regularly confront countries can be expected to exceed those associated with preference erosion." Thus, the focus should be on establishing a robust and competitive economy that can weather change.

Difficulties arising as a consequence of preference erosion may take many forms: dealing with resource misallocation, supply constraints, limitations in social protection or failure to identify opportunities for diversification, among others. Often, the appropriate policy response will entail preparing to deal with adjustment and promotion of sound economic framework conditions. In this regard, the best policy response for a developing country facing an erosion of its trade preference advantage may well be similar to that recommended in response to trade liberalisation more generally: to capitalise on new opportunities and diversify, while taking steps to facilitate adjustment for sectors on the negative side of the equation.

The OECD's recent *Trade and Structural Adjustment* (2005) presents an overview of concrete experience in this regard (See the Special Focus section on this topic in this book)**.** It shows that trade policy reform yields the best results when accompanied by complementary domestic policies to promote macroeconomic stability and to develop an appropriate social safety net for those who lose their livelihoods. If a sector that previously benefited from trade preferences has demonstrated a

from the prevailing web of regional trade agreements. At the same time, the report acknowledges that for some, generally smaller, developing countries there are risks of net losses from preference erosion.

40 The finding from the present CGE analysis contrasts with other analyses conducted using a partial equilibrium framework that do not take into account offsetting gains from liberalisation in other areas. CGE modelling experiments employ a fairly high level of regional aggregation and therefore do not provide detailed information on outcomes for some of the individual countries identified as potentially vulnerable in the statistical analysis above and in such partial equilibrium studies as Alexandraki and Lankes (2004). Under the CGE exercise, the OECD study aggregated the countries of the world into 44 regions; it is possible that certain smaller countries within these regions might stand to lose out in per capita welfare, even though the overall region gains. Given the relatively aggregated nature of the GTAP database, it is not possible to provide a full breakdown of all of these economies.

degree of international competitiveness, policy makers may seek to reinforce that competitiveness through support for upgrading infrastructure or human resources (*e.g.* through training). When new opportunities arise in alternative sectors, a focus on facilitating adjustment, redeploying resources and promoting entrepreneurship may be appropriate.[41]

International action can help to ensure that trade liberalisation favours development and works to offset the loss of preferences. It might include strengthening WTO rules, recognising that resource constraints in small- and low-income countries may require temporary exemptions from multilateral rules, and greater efforts to tie trade-related assistance to national development priorities. Donors can also support adjustment bilaterally; the EU, for example, has made development assistance available to finance sectoral restructuring in some countries affected by preference erosion. In UNCTAD (2005), policy recommendations to mitigate negative effects point to the potential for actions to boost supply capacity, overcome competitive disadvantages and diversify exports. Such actions might include improvement of preference programmes, financial assistance, enhanced special and differential treatment, and engagement via the Integrated Framework for trade-related assistance. At the same time, Hoekman *et al.* (2006) caution against relying on trade solutions in the multilateral trading system that may extend discrimination or reduce the level of ambition in the DDA (which would entail costs in terms of global efficiency). Moreover, Low *et al.* (2005) see little potential to effectively expand preference schemes because they generally already cover the sectors with high tariffs in the Quad countries and Australia. Still, there may be some room to offset losses through expanded exports to other markets.

Conclusions

This chapter has considered the risk to developing countries of negative economic impacts from preference erosion as a consequence of multilateral tariff liberalisation. There is some vulnerability, but it is less frequent than a quick glance at aggregate preferential trade flows might suggest. Most developing countries have limited dependence on preferential tariff schemes for a number of reasons. First, substantial shares of imports from developing countries enter Australia and the Quad countries via duty-free or low MFN tariff rates. Second, large shares of the preferential imports into Australia and the Quad countries enter under a rather limited number of tariff lines. Third, in volume terms imports under preferential programmes are often dominated by large developing countries such as Brazil, China, India, Indonesia, Thailand or South Africa, which may be better able to adjust than less diversified economies. Fourth, the literature suggests that constraints built into the preferential programmes sometimes limit their utility because of the exclusion of products of particular interest or difficulties faced in satisfying the programme conditions (*e.g.* ROOs).

A multi-country liberalisation scenario can open new opportunities for improved resource allocation and diversification of export markets. Generally, these changes offset the negative effects of preference erosion. Potential positive outcomes are further enhanced under a global liberalisation scenario that includes developing country participation. However, in a few cases, net negative changes in welfare, in particular *vis-à-vis* the European Union, appear to be associated with preference erosion. For certain Sub-Saharan African countries, Morocco and Bangladesh, a combination of high EU shares in total exports and positive EU preference margins in certain sectors results in preference reliance. In such cases, a variety of policy options exist to address the adjustment issues and create the potential for win-win liberalisation scenarios. Overall, it appears that, globally and for a majority of developing regions, liberalisation by preference-granting countries will result in positive welfare gains.

41 For a discussion of the textile and clothing sector in this regard, see OECD (2004).

ANNEX TABLES

Table 3.A.1. Overview of preferential tariffs, for product groups (HS 10-digit) with imports in 2002 – Australia

Treatment: type of duty	Number of lines concerned[1]	Simple average tariff[2] %	Average MFN tariff, concerned lines[3]%	Min. tariff %	Max. tariff %	Count of *ad valorem* tariffs	Count of non *ad valorem* tariffs	Imports, in USD thousands[4] 2002	Share in total imports %
MFN-type treatments									
The general rate was used, special rate that applies was not claimed	5 748	5.7	--	0	25	5 715	33	10 705 481	40.5
No preferential rate was claimed	1 673	1.5	--	0	25	1 652	21	724 704	2.7
Preferential treatments									
Developing country preferential rate	6 056	5.7	7.3	0	25	5 993	63	10 820 192	40.9
Special rates for the specific countries	4 944	4.6	6.2	0	25	4 919	25	4 053 010	15.3
Forum Island Country preferential rate	608	0.0	11.5	0	0	604	4	119 582	0.5
Developing country preferential rate, historical[5]	536	5.7	9.9	0	20	530	6	32 733	0.1
Total								26 455 701	100.0

1. Number of lines at the HS 10-digit level for which there are imports entering under the treatment indicated.
2. Simple average of lines for which there were imports. Calculation based on *ad valorem* tariffs only.
3. "MFN" tariffs refer to the maximum general rate. This column presents simple averages of MFN tariffs for the lines corresponding to those in the preferential programmes with imports. Calculation is based on *ad valorem* tariffs.
4. Total imports refer to imports from all countries (156).
5. "Historical" covers a set of developing countries that tend to be less developed and were traditionally treated as developing under the Australian system; they receive special preferences. Country eligibility for Australian preferences is shown in Lippoldt and Kowalski (2005a).

Source: Australian Bureau of Statistics (ABS), International Trade; OECD calculations.

Table 3.A.2. Overview of preferential tariffs, for product groups (HS 8-digit) with imports in 2002 – Canada

Tariff treatment[1]	Number of lines concerned[2]	Simple average tariff[3] %	Average MFN tariff, concerned lines[4] %	Min. tariff %	Max. tariff %	Count of *ad valorem* tariffs	Count of non-*ad valorem* tariffs	Imports, in USD thousands, 2002[5]	Share in total imports%
MFN[6]	6 931	4.2		0.0	26.5	6 735	167	26 775 787	72.8
General preferential	4 122	1.5	3.5	0.0	16.5	4 040	71	5 686 962	15.5
Mexican	3 166	0.2	5.5	0.0	3.0	3 150	11	3 192 370	8.7
Mexican-United States	657	0.0	4.0	0.0	2.5	656	1	474 883	1.3
Commonwealth Caribbean Countries[7]	206	0.0	3.4	0.0	0.0	206	0	97 789	0.3
Canada-Israel Agreement	761	0.0	6.7	0.0	5.0	757	4	93 769	0.3
Chile	174	0.6	5.5	0.0	19.0	170	4	71 317	0.2
LDC	170	0.0	6.6	0.0	0.0	169	1	5 980	0.0
Total								36 768 497	100.0

1. Tariffs not shown: US, British Preferential, General, Costa Rican and informal entries & aggregated records. Total value of imports for these lines in 2002 was USD 369.7 million, about 1% of total imports.
2. Number of lines at HS 8-digit level with imports entering under treatment indicated.
3. Simple average of lines with imports. Calculations based on *ad valorem* tariffs.
4. Simple average of MFN tariffs in these lines.
5. Total imports refer to imports from countries eligible for Canadian GSP.
6. Imports from 181 countries eligible for Canadian GSP.
7. CARIBCAN.

Source: Canadian Department of Finance; OECD calculations.

Table 3.A.3. Overview of preferential tariffs, for product groups (HS 6-digit) with imports in 2002 – European Union

Treatment	Number of lines concerned[1]	Average tariff[2] %	Average MFN tariff, concerned lines[3] %	Min. tariff %	Max. tariff %	Count of *ad valorem* tariffs	Count of non-*ad valorem* tariffs	Imports, in USD thousands, 2002[4]	Share in total imports %
MFN[5]	5 144	4.7		0.0	74.9	4 976	168	171 006 311	47.88
Preferential[5]								186 150 287	52.12
Total								357 156 599	100.00
Trade preferences for groups of developing countries									
GSP	3 945	2.7	5.7	0.0	52.4	3 907	38	n.a.	n/a
"Everything but arms", GSP for LDCs	2 233	0.0	6.2	0.0	0.0	2 233	0	n.a.	n/a
Agreement with African, Caribbean, & Pacific states	2 732	0.1	5.7	0.0	17.0	2 679	53	n.a.	n/a
Illustrative bilateral trade preferences									
South Africa	2 379	0.9	5.1	0	16.3	2 355	24	n.a.	n/a
Morocco	1 960	0.0	6.1	0	15.3	1 942	18	n.a.	n/a

n/a = not available

1. Number of lines at the HS 6-digit level where there are imports eligible for entering under the treatment indicated.
2. Simple average based on ad valorem tariffs only.
3. Simple average of MFN tariffs in these lines (see (2)). Calculation based on ad valorem tariffs only.
4. Reflects imports from all economies eligible for EU GSP preferences (a total of 178 economies).
5. Each bilateral import flow, by product, is inferred to enter at the best available rate and thereby classified as MFN or preferential.

Source: WITS; OECD calculations.

Table 3.A.4. Overview of preferential tariffs, for product groups (HS 6-digit) with imports in 2002 – Japan

Treatment	Number of lines concerned[1]	Avg. tariff[2] %	Avg. MFN tariff in concerned lines[3] %	Min. tariff %	Max. tariff %	Count of *ad valorem* tariffs	Count of non *ad valorem* tariffs	Imports, in USD thousands, 2002[4]	Share in total imports %
MFN	4 695	5.0		0.0	40	4 639	56	114 482 827	81.44
Preferential								26 084 637	18.56
Total								140 567 465	100.00
Preferential programme characteristics									
GSP	2 004	1.4	6.5	0.0	15.0	1 995	9	n.a.	n.a.
GSP LDC	224	0.0	14.4	0.0	0.0	224	0	n.a.	n.a.

1. Number of lines at the HS 6-digit level for which imports are inferred as entering under the treatment indicated.
2. Simple average of lines for which there have been imports. Calculation based on *ad valorem* tariffs only.
3. Simple average of MFN tariffs in these lines. Calculation based on *ad valorem* tariffs only.
4. Calculations based on imports from countries eligible for Japanese GSP preferences (a total of 147 economies).

Source: WITS; OECD calculations.

Table 3.A.5. Overview of preferential tariffs, for product groups (HS 8-digit) with imports in 2002 – United States

Treatment	Number of lines concerned[1]	Average tariff [2]%	Average MFN tariff in concerned lines[3]	Min. tariff %	Max. tariff %	Imports, in USD thousands, 2002[4]	Share in total imports %
MFN	7 889	4.6		0.0	131.8	139 951 297	79.4
GSP	2 701	0.0	4.0	0.0	0.0	14 054 914	8.0
Caribbean Basin Trade Partnership Act[5]	301	0.2	15.1	0.0	15.0	7 035 213	4.0
African Growth & Opportunity Act	163	0.0	7.6	0.0	0.0	4 121 836	2.3
GSP LDC	254	0.0	4.7	0.0	0.0	3 381 327	1.9
Caribbean Basin Initiative	1 235	0.3	5.3	0.0	22.5	2 916 244	1.7
Israel	1 969	0.0	6.6	0.0	0.0	2 206 407	1.3
AGOA 2[6]	158	0.0	15.9	0.0	0.0	798 161	0.5
Andean Act	680	0.3	5.5	0.0	17.5	762 026	0.4
Pharmaceuticals	163	0.0	6.3	0.0	0.0	507 186	0.3
West Bank and Gaza	100	0.0	16.1	0.0	0.0	376 474	0.2
Andean Trade Promotion & Drug Eradication Act	22	0.0	9.3	0.0	0.0	175 749	0.1
Civil Aircraft	76	0.0	3.0	0.0	0.0	31 049	0.0
Jordan	128	5.9	10.8	0.0	23.4	12 601	0.0
Dyes	36	0.0	7.6	0.0	0.0	9 945	0.0
Puerto Rico-CBI	21	0.0	7.0	0.0	0.0	6 854	0.0
Total						176 347 286	100.0

1. Number of lines at the HS 8-digit level for which there are imports entering under the treatment indicated.
2. Simple average of lines for which there have been imports. Calculation based on *ad valorem* tariffs only.
3. Simple average of MFN tariffs in these lines. Calculation based on *ad valorem* tariffs only.
4. Imports from 144 countries eligible for US trade preferences.
5. For selected countries in the region, CBTPA provides duty-free and quota-free treatment for certain other sensitive items not covered previously under CBI such as footwear or certain apparel items from US and regional fabric, subject to certain conditions.
6. AGOA 2 refers to the special duty-free treatment in HS chapters 61, 62 and 65 for certain African countries (Botswana, Cameroon, Cape Verde, Ethiopia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Senegal, South Africa, Swaziland, Tanzania, Uganda, Zambia).

Source: USITC Trade Database; OECD calculations.

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Special Focus: Trade and Structural Adjustment

Kiichiro Fukasaku, OECD Development Centre, and
Osamu Onodera, OECD Trade Directorate

Trade liberalisation has the potential to deliver substantial benefits by allowing countries to benefit from reallocation of labour and capital to economic activities where they have a comparative advantage. Trade liberalisation also affects each nation's terms of trade through changes in prices. By stimulating competition, it may spur innovation and productivity growth. Generally, trade liberalisation has tended to improve overall welfare, provided the requisite complementary policies are in place such as sound macroeconomic framework and flexible labour markets (which help facilitate adjustment).

The combined effects of the reallocation of resources (including labour) and price changes do not affect everyone equally. Some individuals – such as workers dislocated from non-competitive sectors – are at risk of losing out, particularly in the short to medium term. The poor may face particular difficulties in the adjustment process. Because of this, some countries may find themselves in a difficult situation, unless appropriate and well-timed supporting government policies are adopted and accompanied, as necessary, by effective development assistance from the international community.

Seen from a macro perspective, the adjustment costs tend to be modest and more readily overcome when domestic policies complement liberalisation. For example, Matusz and Tarr (1999) review more than 50 studies on adjustment costs and trade liberalisation. They note that virtually all of the studies find adjustment costs to be small relative to the benefits of trade liberalisation. This is because adjustment costs are typically short-term and welfare gains from liberalisation permanent. Moreover, the employment opportunities flowing from trade liberalisation help to reduce spells of unemployment that dislocated workers might face.

The OECD Trade and Structural Adjustment Study

In 2005, the OECD completed a major study entitled *Trade and Structural Adjustment: Embracing Globalisation*. The aim was to identify, for both developed and developing countries, the requirements for successful trade-related structural adjustment. It addresses ways to reallocate labour and capital to more efficient uses in response to the emergence of new sources of international competition, accelerating technological change and shifting consumer preferences, while limiting adjustment costs for individuals, communities and societies as a whole.

In considering the policy options available to respond to the challenge of trade-related structural adjustment, the OECD study found that a broad menu of options was relevant across developed and developing countries. However, variation in the situation of countries means that a degree of tailoring and weighting in emphasis will be necessary. For the poorest countries – and LDCs in particular, building sound institutions, fostering an appropriate macroeconomic framework and developing human capital are key to easing the adjustment process.

Implementation is most effective when conducted with an appropriate pace and sequence, accompanied by social dialogue and assistance to those negatively affected by adjustment. Although targeted measures may prove effective in some cases, governments are encouraged to rely, as much as

possible, on generally applicable measures to address adjustment costs, for reasons both of equity and efficiency.

With respect to sequencing, there is no master blueprint and the particular context will need to be taken into account in designing a reform scenario. Simultaneous pursuit of reform across a range of policy areas can help to promote acceptance of change, by providing opportunities for those disadvantaged by one reform in one area to benefit potentially from reform in another and by developing synergies between different arms of policy and so helping labour and capital to move from declining to expanding areas of activity.

OECD findings – core policy elements

The OECD study confirms that while freer trade and investment can have specific negative effects, the transfers thus induced are small in the context of the overall changes in global economic activity. Experience with structural adjustment is illustrated by sectoral case studies covering, among others: the agro-food industry (Chile), cut flowers (Kenya), avocados (Mexico-United States), sea food (Thailand), textiles and clothing (Bangladesh, Colombia, Lesotho, Mauritius), motor vehicles (South Africa), health (Japan-Thailand/Philippines), and international outsourcing (India). The sectoral analysis highlights the range of adjustment challenges faced by developing and developed countries and discusses policy packages to address these challenges and related implementation issues. While the appropriate policy mix, emphasis and institutional capacity for implementation may vary, the broad policy framework remains largely applicable across countries and includes the following core elements:

- ***Macroeconomic policies*** that promote stability and growth.

Macroeconomic reform is often a necessary prerequisite to a successful structural adjustment process, because the private sector – the main driver of the structural adjustment process – needs a stable macroeconomic environment for long-term investment. In a number of developing countries, economic restructuring and integration into the world economy were underpinned by early efforts to secure macroeconomic stability, reform tax regimes to address government revenue declines (associated with tariff liberalisation), remove anti-export policy bias and adopt an appropriate exchange rate policy. These initiatives were reinforced by complementary policy measures that improved domestic conditions for international business and encouraged long-term investment in non-traditional export sectors. For example, the case of Bangladesh illustrates how domestic tax reform, fiscal discipline, and appropriate adjustments in exchange rate were key requisites for trade liberalisation and development of its textile and clothing sector.

- ***Labour market policies*** that help develop workers' skills and facilitate labour mobility.

In conjunction with trade liberalisation, the reallocation of labour to a more efficient pattern of deployment can be facilitated and supported through labour market policies, such as safety nets (*e.g.* unemployment benefit schemes) and active labour market programmes (*e.g.* job search assistance, counselling, training). Budget constraints may make it more difficult for developing countries to implement elaborate social safety net programmes, but governments can facilitate adjustment through labour and education policies. Developing countries often start to grow by utilising a pool of cheap labour. However, as industries develop, they may face shortages of skilled labour and rising wage levels. Human resource development is thus a major challenge for developing countries if they are to improve productivity and climb up the value chain to meet rising competition and market demands.

- An efficient ***framework of regulation*** and an ***institutional and governance framework*** that favours structural reform.

Successful structural adjustment often entails moves to reform the regulatory and competition environment in order to enable firms to respond flexibly to changing circumstances. Anti-competitive product market regulations may restrain countries' ability to take advantage of new possibilities arising from trade liberalisation or technological advances, while trade openness can contribute to competitive and dynamic product markets. In this regard, recent OECD work on regulatory reform in a trade context (*e.g.* Nicholas-Gervais with Moïsé, 2003) has highlighted the importance of six policy-oriented principles: *i)* transparency of regulations and openness of regulatory decision making; *ii)* non-discrimination; *iii)* reduction of unnecessarily trade-restrictive regulations; *iv)* use of internationally harmonised measures or standards wherever possible; *v)* streamlined conformity assessment procedures; and *vi)* vigorous application of competition principles.

- Liberal ***trade and investment policies*** that support structural adjustment by contributing to growth, innovation and competitiveness.

Trade and foreign direct investment (FDI) help the adjustment process by *i)* fostering competitiveness and innovation; *ii)* improving access to essential inputs; and *iii)* stimulating exports by offering enlarged market opportunities or encouraging synergies between countries with different areas of comparative advantage. As a general rule, barriers to trade have not been effective in facilitating the adjustment process or in obviating the need for adjustment. High trade barriers lead to less competition and less innovation, and may distort resource allocation by diverting scarce resources from potentially competitive sectors. Thus, liberal trade policy appears to be a key element of structural adjustment in all of the studies, albeit with variation in approach (partial and gradual versus deep or cross-cutting). In relation to liberalisation, FDI has played a key role as a source of capital, technological know-how and access to foreign markets and buyers, especially in developing countries. Here, the importance of services trade liberalisation should also be underscored both in relation to liberating the economic potential in that sector but also in reducing the cost of service inputs to industry and agriculture. More broadly, Engman *et al.* (2006, forthcoming) provide evidence that multilateral and plurilateral trade agreements and rules can facilitate structural adjustment by increasing transparency, locking in reforms and fostering business confidence.

Managing structural adjustment through diversification – selected case studies

In a background paper prepared for the OECD (2005) study, Anderson *et al.* (2005) present a synthesis of five case studies of trade and structural adjustment achieved through production and export diversification in developing economies. The studies focus on the expansion or emergence of agro-food in Chile, cut flowers in Kenya, garments in Lesotho and in Mauritius, and seafood in Thailand. These represent notable examples of trade-induced structural adjustment which has resulted in the emergence of non-traditional, dynamic export sectors, and they apply some of the core policy elements discussed above. The analysis brings out a number of critical requirements with respect to the management of structural adjustment and the implementation of core policy elements.

Creating an enabling policy framework

All five countries pursued import-substitution strategies prior to, or in parallel with, outward-oriented strategies in some sectors. In addition to securing macroeconomic stability, removing the anti-export bias and restoring realistic exchange rates played a key role in the initial efforts to put economies onto broader outward-oriented growth paths. Complementary policy measures and

initiatives – such as regulatory reform and development of adequate export and investment support services – were also implemented to improve domestic conditions for development of international business and to encourage long-term investment in non-traditional export sectors.

Establishing a well-functioning consultative process between the government and the private sector is essential for effective policy formulation and for managing and sustaining an effective structural adjustment process. For the consultative process to work, it must actively involve business organisations. Such organisations exists in all five industries reviewed (some with direct government support) and play an important role both in promoting business interests to the government and in providing business services to members. Relevant sector-specific organisations include, for example, the Kenya Flower Council, the Lesotho Textile Exporters' Association, and the Thai Frozen Food Association. Beyond sector-specific organisations, there is also a range of more general industry organisations and chambers of commerce that represent and support the private sector. In addition to associations, networks of private service providers have also developed.

Implementing trade reform

Trade reform is part and parcel of the requirements for managing structural adjustment, although the countries reviewed have taken different approaches. In the early stage of reform, Mauritius undertook a policy of partial opening by instituting an export processing zone (EPZ) in the protected domestic economy. Similarly, the Thai economy has been liberalised only gradually. Among the five countries, only in Chile did the government pursue a policy of full import liberalisation. This policy, together with a range of measures that further opened up the economy and promoted exports, contributed to the development of fresh fruit, wine and other agro-food export industries. It was not until the mid-1980s, however, after adopting a set of corrective regulatory measures that promoted product market competition and innovation, that these exports became a source of economy-wide growth. The Chilean case underscores the importance of policy complementarities and the need to assure coherence across different policies.

Facilitating private-sector development

The range and depth of the support schemes implemented for private-sector development have varied, but in none of the five cases did the government intervene directly in production or sales. In other words, it mainly played a facilitating role. Investment capital originated primarily from domestic sources in all the sectors studied, except in Lesotho, where the garment sector is mainly in the hands of foreign investors. It is noteworthy that the capital often originated from already strong export sectors, such as the sugar sector in Mauritius, the agro-industry corporations in Thailand and the horticulture industry in Kenya. In particular, the experience of Mauritius highlights the importance of not killing the "cash cow" and ensuring that domestic sources of risk capital are adequately mobilised and complement FDI.

While domestic investments dominated in terms of quantity, foreign investments seem to have made an important "qualitative" contribution. FDI and expatriate expertise provided capital, managerial and technological know-how, as well as access to foreign markets and buyers. The Dutch and Israelis helped to develop cut flower expertise in Kenya, East Asians helped the garment industry in Mauritius and Lesotho, Americans offered fruit packaging techniques in Chile and the Japanese assisted with shrimp farming in Thailand. The governments also assisted by attracting FDI with fairly open and non-discriminatory investment regimes put in place in the 1980s.

Investing in infrastructure and human resource development

International transport facilities and other physical infrastructure played an important role in the development of the five industries surveyed, in particular for perishable products such as fresh fruit and cut flowers. The case studies seem to indicate that adequate infrastructure facilities and services were in place at the time of industry growth, though further investments were undertaken by the government, alongside deregulation of infrastructure services. In Mauritius, the Development Bank of Mauritius was directly involved in building and managing the industrial estates for the EPZ sector. In the case of Kenya's cut flowers, the industry was able to take advantage of the international air traffic created by tourism and early horticultural exports. In Thailand, companies co-operated to negotiate lower international freight costs. In Lesotho, the Lesotho National Development Corporation provided factory space and utility services to investors, even though the recent rapid growth of the garment industry has created a shortage of facilities.

In terms of human resources, the challenges appear to be quite similar across industries. When the industries first started to grow, they all had access to a pool of relatively well-educated and cheap labour. Literacy and primary education levels were all relatively high. As the industries developed, they faced shortages of skilled labour and rising wage levels. Human resource development has thus become a major challenge for improving productivity and climbing up the value chain in the face of rising competition and market demands. Governments can help overcome this challenge by investing in secondary and tertiary education as well as establishing appropriate labour market policies (*e.g.* in relation to vocational training).

Managing social and environmental impacts

Industrial growth has had significant social and environmental impacts. Perhaps the most striking social impact is seen in Mauritius, where unemployment was significantly reduced in the course of the 1980s. A noteworthy social feature common to most of the case studies is the high dependence on female labour. While the jobs created were precarious in some cases (*e.g.* linked to seasonal agricultural production), the export sectors reviewed provided women with opportunities and income they did not previously enjoy and thus contributed to poverty reduction.

Expansion of the examined industries has sometimes had harmful environmental effects, such as water pollution, depletion of fish stocks and destruction of mangrove ecosystems, which have in turn raised concerns regarding the sustainability of some of these industries (shrimp farming in Thailand is probably a case in point). Buyers and consumers in importing countries are now putting pressure on producers to comply with a wide range of health, environmental and social standards. To deal with these issues, the governments in the surveyed countries are developing institutional frameworks, including legislation, identification of good practices and establishment of appropriate quality control systems in co-operation with the private sector and in some cases with the support of external aid.

Developing countries and adjustment

In light of new sources of competition, such as China and India, rising domestic wage levels, environmental constraints, technological advances and demanding product and process standards, countries (both government and industry) are compelled to adapt continuously. Anderson *et al.* (2005) found that policy makers in most of the countries studied are aware of this challenge. As a consequence, some have taken the step to set up specific mechanisms or programmes to further enhance the competitiveness of existing export sectors and/or promote emerging non-traditional export industries (*e.g.* the Economic Agenda for the New Millennium launched in 2000 in Mauritius; the

National Competitiveness Committee established in 2003 in Thailand; the Consejo para la Innovacion Agraria in Chile).

Anderson *et al.* (2005) also found that bilateral donors, multilateral agencies and regional and international financial institutions had provided valuable assistance to policy makers, entrepreneurs, business associations and technical bodies. Directly relevant activities include, among others, road construction in Chile, support to the Horticultural Crops Development Authority and business associations in Kenya, and technical assistance to shrimp farmers in Thailand. In Lesotho, the Integrated Framework for Trade-related Technical Assistance, a multi-donor programme, aims to play an important role in strengthening the country's trade policy process and institution building. To ensure aid effectiveness in the face of structural adjustment challenges, donors need to adapt to the changing circumstances and needs of partner countries as well. These needs are being identified in national strategies and development plans, which in turn are helping to improve co-ordination and complementarity among the various assistance programmes.

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Chapter 4

IMPACT ON GOVERNMENT REVENUE OF CHANGES IN TARIFFS IN DEVELOPING COUNTRIES

Przemyslaw Kowalski
OECD Trade Directorate

This chapter addresses tariff revenue concerns that some countries have been expressing in the context of the current multilateral trade negotiations under the Doha Development Agenda. It presents empirical estimates and analysis of the nature and scope of revenue reduction that might be associated with tariff reductions negotiated under the DDA. First, it provides a discussion of the global pattern of tariff protection devoting special attention to developing countries' tariff profiles as they affect both their level of protection and their fiscal situation. Second, the paper provides a discussion of tax reform policies that could accompany tariff reform and lessen potential revenue losses follows. In the empirical part, we present selected results of simulations of tariff revenue and welfare effects using the Swiss tariff reduction formulas for a sample of 24 developing countries. We discuss cross-country differences in revenue impact and sensitivity with respect to three different coefficients in the Swiss formula. Finally, the paper offers an estimation of the welfare effects of reducing tariffs and simultaneously replacing lost tariff revenue with revenues from consumption tax. It concludes with some policy implications and caveats.

Introduction

Tariffs not only influence trade, production, consumption patterns and welfare of the countries that impose them, they also affect the welfare of their trading partners. They do so both through the absolute levels of protection they impose and through distortions associated with their structure. In particular, tariffs create a wedge between domestic and world prices that push demand towards domestically produced substitutes. Additionally, an uneven tariff structure distorts production and consumption incentives, further preventing trading partners from capturing gains associated with their comparative advantages. Therefore, non-discriminatory tariff liberalisation, if accompanied by appropriate complementary policies (macroeconomic, social and labour market policies; see OECD, 2003), is generally expected to result in improved allocation of resources and to bring benefits to countries implementing the reform as well as to their commercial partners.

Developing countries that currently maintain higher and more dispersed tariffs are particularly well positioned to benefit from non-discriminatory tariff reform.[1] Such reform, where necessary, should be accompanied by reform of the tax system. Empirical estimates from recent studies indicate that the potential gains from dismantling remaining tariffs are significant and that developing countries stand to capture the largest gains relative to their GDP.[2] Improved allocation of resources, enhanced competition, wider product variety and benefits of scale economies associated with tariff reform

1 See Chapter 1 in this volume for a discussion of the post-Uruguay Round structure of tariff protection by region.

2 Lippoldt and Kowalski (2003) provide an overview of existing estimates of welfare gains associated with tariff liberalisation.

improve economic outcomes, and create a better base for implementing development and poverty reduction strategies.

While most developing countries recognise the opportunities associated with improved market access, some have also pointed to potential losses of tariff revenue as a key obstacle to reducing tariffs. While the removal of quantitative restrictions, tariffication of quotas or reduction of non-tariff barriers (NTBs) all have the advantage of preserving or even increasing government revenue[3] without major reform of the tax system (*e.g.* Ebrill *et al.,* 1999), the same cannot be assumed about tariff reduction. In fact, removal of all tariffs inevitably leads to a loss of tariff revenue and is likely to require a compensatory increase in other non-trade taxes. Even in cases of partial tariff reduction, loss of tariff revenue cannot be excluded *a priori* unless the tax base expands sufficiently following liberalisation to compensate.

Recent policy advice regarding the fiscal implications of trade liberalisation stresses the use of income, sales or value-added taxes as compensating measures. Several developing countries have already made significant progress in reducing their reliance on import duties as a source of tax revenue (*e.g.* a reduction of 20 percentage points in Tunisia, 17 in Jordan, 16 in Pakistan, 14 in Mauritius and Congo over the period 1994-2001). Yet in low-income countries the average share of tariff revenues remains at around 18%. According to the United Nations Economic Commission for Africa (UNECA), import duties represented on average 34% of total government revenues in the least developed countries (LDCs) in Africa over 1999-2001 and exceeded 50% in a number of them.

Reliance on import duties as a source of government revenue differs considerably from country to country and so will the adjustments required to replace import duties with other revenues. However, the need to co-ordinate tariff reform with other tax policies is particularly evident in those developing countries where trade taxes continue to account for significant shares of public revenue and GDP (Kowalski, 2005). Recent estimates suggest that, on average, trade tax revenues accounted for around 4% of low- and middle-income countries' GDP in 1995-2000; the equivalent estimate for high-income countries was below 1%. Moreover, less-developed countries are often struggling to sustain their macroeconomic stability (of which fiscal sustainability is an important aspect) and a reduction in revenue may adversely affect poverty reduction,[4] redistribution and development strategies. Potential revenue shortfalls can undermine economic programmes and may lead to a reversal of trade reform itself.[5]

It is worth noting that the costs associated with the design and implementation of appropriate tax reforms are temporary while the gains induced through improved allocation of resources are permanent. Therefore, from an economic point of view, these costs are seen not as an obstacle to liberalisation but rather as a necessary investment to enable long-term gains.

The existing literature thus points to the strong economic case for non-discriminatory tariff reform, accompanied, where necessary, by reform of the tax system. However, it also points to sensitivities associated with the fiscal implications of tariff liberalisation in developing countries which need to be addressed either by the design of appropriate tariff reduction modalities and/or by

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3 For example, additional revenue stemming from tariffication of quotas.

4 Hertel and Winters (2005) indicate that the nature of the national tax instruments used to replace lost tariff revenue constitutes a key determinant of the poverty impacts.

5 UNECA (2003), for example, reports that in some African countries the pace of implementation of more outward-oriented development strategies has been hindered by fiscal considerations associated with heavy reliance on trade taxes.

assistance in implementing a tariff-policy-cum-tax-reform package. Since the impact of tariff liberalisation on revenue depends on the initial structure of tariffs, the liberalisation scenario and the overall impact of liberalisation on production, consumption and trade, it is not clear which developing countries may be affected by a loss of tariff revenue or to what extent.

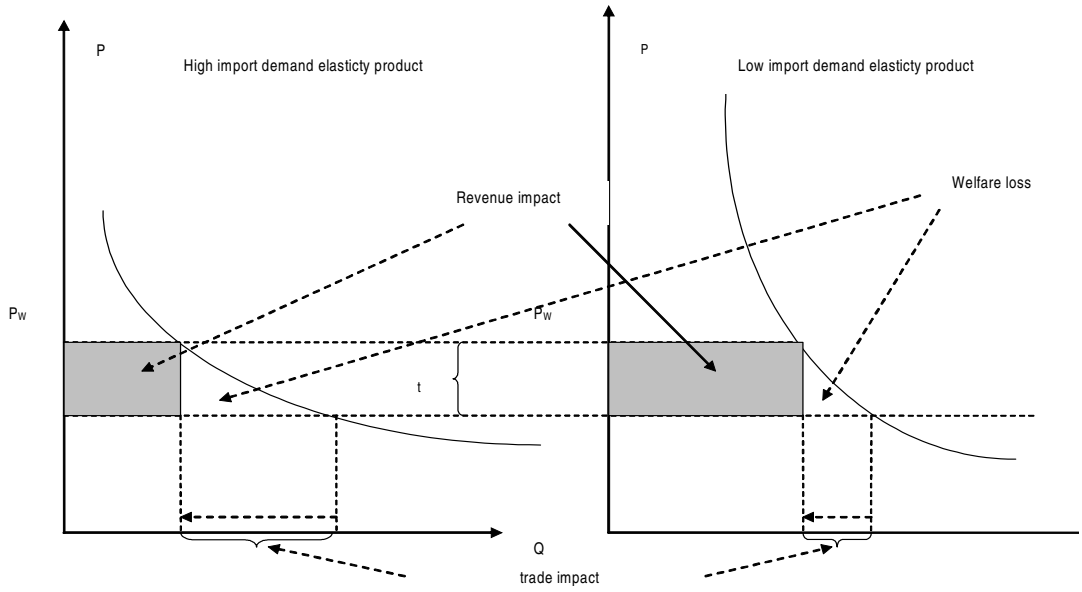
This chapter attempts to add to the existing literature by providing empirical estimates and an analysis of the nature and scope of revenue reduction arising from tariff reductions negotiated under the Doha Development Agenda (DDA). First, special attention is devoted to developing countries' tariff profiles as they affect their level of protection and their fiscal situation. Second, the chapter looks at tax reform policies that could accompany tariff reform and lessen potential revenue losses. The empirical part of the chapter, based on results in Kowalski (2005), presents selected results of simulations of tariff revenue and welfare effects using the Swiss tariff reduction formulas for a sample of 24 developing countries. Cross-country differences in the impact on revenue and sensitivity examined with respect to three different coefficients in the Swiss formula (5, 10 and 15). Then, the welfare effects of reducing tariffs and simultaneously replacing lost tariff revenue with revenues from consumption tax are estimated. Some policy implications and caveats are presented in conclusion.

Protective and fiscal goals of tariff policies

Notwithstanding their welfare implications, tariffs have traditionally been used in developing countries to achieve multiple goals, such as raising public sector revenue, correcting market distortions, providing protection for local industry, improving terms of trade by attempting to influence world market prices and redistributing income (Khattry and Rao, 2002). Whatever the broader goals of such policies, for analytical purposes they can be divided into two broad goals: to raise public revenue (fiscal measure) and to regulate trade by affecting the volume of imported merchandise (protective measure).

The fiscal and protective roles of tariff policy are to some extent competing policy objectives. This is illustrated in Figure 4.1 which shows that the revenue implications of a given *ad valorem* import duty are maximised when its impact on trade flows and welfare is minimised. Technically, these are sectors with low price elasticity of import demand, that is, the tax base (or the value of imports in this case) deteriorates little as a result of a higher import duty. (If price elasticity is high, demand for imports would fall significantly, thereby counterbalancing to a greater or lesser degree the impact of the increase in the tax rate.) If imports are price inelastic, the change in the tariff does not affect imports, and increases in the tariff rate translate fully into higher revenues. In this simple framework, of course, there is no trade-off between the trade and welfare objectives. A given tariff imposed on a product with low elasticity of import demand will result in a smaller welfare loss and a smaller reduction in imports than an equivalent tariff imposed on a price-elastic product (see the welfare loss triangles in Figure 4.1).

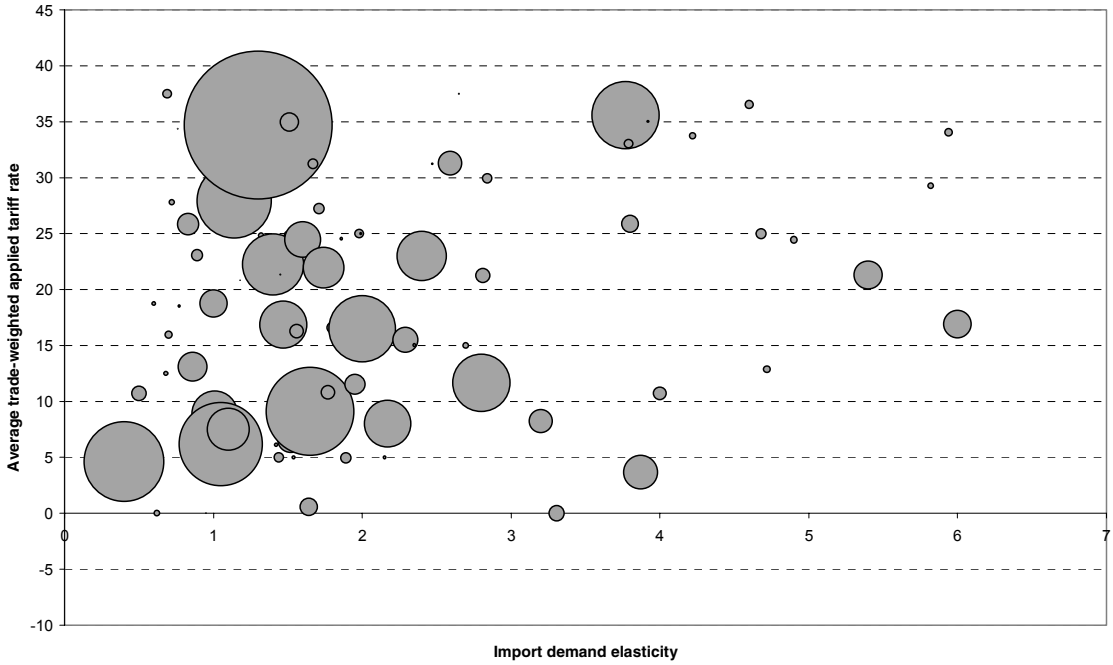
Figure 4.1. Trade restriction and revenue collection as alternative goals of tariff policy



To see how the selected developing countries are pursuing these two objectives of tariff policy, Kowalski (2005) plotted average applied tariffs against the estimated import demand elasticities.[6] To facilitate the discussion, Figure 4.2 presents the example of Bangladesh. In Bangladesh, as in most other countries analysed, price-elastic goods are mostly tariffied at high levels. This implies pursuit of the trade protection objective. There is also considerable dispersion of the tariff rates imposed on price-inelastic goods which is only partially consistent with the objective of revenue collection. Overall, examination of Bangladesh indicates that there is scope for freeing trade without compromising tariff revenue. For example, current high tariff rates on price-elastic goods could be lowered significantly, boosting trade flows (and welfare) and having a minimum impact on revenue. Indeed, the price-elastic products charged high rates have relatively small import values (small size of the bubbles). At the same time, applied tariff rates on price-inelastic products could be raised within the bound limits to compensate for any revenue loss that might occur from lowering rates on price-elastic products. In this way a more uniform tariff profile could increase efficiency and welfare without affecting the level of collected revenue.

6 Kowalski (2005), Annex Figure 1.

Figure 4.2. Bangladesh: average applied tariff rate and import demand elasticity[1]



1. The size of bubbles indicates the shares in the values of imports.
Source: WITS for tariff, trade and elasticity data and OECD calculations.

While the tariff rate-import demand elasticity patterns vary from country to country (Kowalski, 2005), the high dispersion of tariff rates in low elasticity sectors and the prevalence of high tariff rates in high elasticity sectors are quite common in the sample. This suggests that the analysis of Bangladesh can be extended to other countries whose tariff profiles might be rationalised to improve market access, minimise distortions associated with tariff policy and preserve tariff revenue. As noted, this would have to involve decreasing the dispersion of tariff rates on price-inelastic goods and lowering tariff rates on price-elastic goods.

The option discussed above would necessarily have to involve increasing some tariff rates on merchandise with low elasticity of import demand to generate revenue with little impact on trade and welfare. Essentially such a reform would mean a move towards a more uniform tariff. In addition to a mitigated impact on revenue, other advantages of a more uniform tariff schedule include simplicity and reduced opportunity for evasion.[7] Additionally, a strong commitment to uniformity can serve as a defence against pressures for special treatment (Panagariya and Rodrik, 1993). Nevertheless, in spite of these practical arguments, the theoretical case for a uniform tariff is less clear, as there is no guarantee that lowering the highest tariffs and increasing the lowest ones will improve welfare. Whether it does or not is country-specific and depends, in addition to the tariff structure and import demand elasticities, on input-output links within the economy (see *e.g.* Gourjon in IMF, 2003).[8] The latter aspect is not taken into account here.

7 With multiple tariff rates, items can be misclassified into lower tariff bands (Gourjon in IMF, 2003).

8 Existing simulation results suggest that the loss of welfare associated with employing a uniform tariff structure rather than one that raises the same amount of revenue in the most efficient way is likely to be relatively small (Gourjon in IMF, 2003).

Finally, movement towards a uniform rate does not have free trade as its logical endpoint and is against the spirit of the Doha Round. In any case, increasing applied rates where binding overhangs permit it are outside the scope of multilateral negotiations and thus beyond the scope of this chapter. The lesson to be drawn from the above analysis is rather that current tariff structures seem to indicate that tariff reduction would have a relatively moderate impact compared to a situation in which high rates would prevail on products with low elasticity.

Kowalski (2005) indicates that, in contrast to applied rates, bound rates in a number of developing countries (India, Bangladesh, Malawi, Uganda, Zimbabwe, Colombia) tend to be high in a few sectors with low elasticity of import demand. This suggests that by keeping high binding overhangs in such sectors these countries maintain the option of raising the applied tariff rates where they would have a limited impact on trade but could effectively raise additional revenue. Such an option could be used in the wake of a macroeconomic shock that undermined the fiscal or balance of payments stance. The corollary is that a revenue-neutral reduction of bound rates to the level of applied rates might constrain countries' flexibility to adjust to macroeconomic shocks. As explained above, such an option comes at the cost of greater uncertainty about future protection levels. Moreover, tariff policy is considered to be ineffective as a way to pursue balance of payment objectives. Unlinking tariff policy as well as development and implementation of alternative measures have long been at the centre of International Monetary Fund (IMF) and World Bank efforts. The prospect of further reduction of tariffs as a result of the DDA underscores the important role that the two institutions could play in responding to potential balance of payments concerns.

Theory and practice of co-ordination of tariff and tax reforms

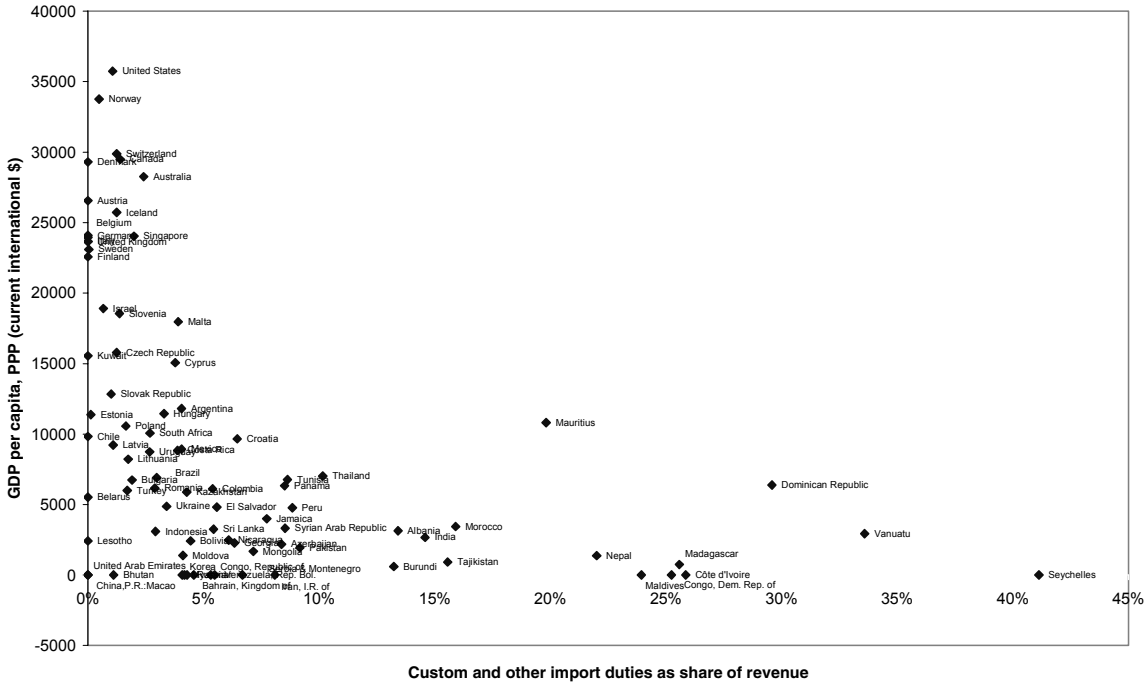
Openness to trade has long been understood to be an important element of good economic policy, and trade liberalisation a necessary step for achieving it. Trade liberalisation enhances efficiency (including allocative efficiency, scale efficiency, technical and x-efficiency[9]) and thus promotes economic development. Some developing countries have, however, expressed concern that when taking steps towards openness, liberalising trade by reducing tariffs will negatively affect government revenue. This chapter therefore addresses these concerns by examining the theoretical arguments and the empirical evidence on the impact on government revenues of past reductions in tariffs.

Welfare gains from tariff reduction are the sum of the gains to consumer and producer surpluses net of revenue loss. Such a definition, however, does not entail a valuation of services that can only be provided by governments by collecting and spending public revenue. Even though, in principle, almost any kind of taxation distorts, governments raise revenues to provide various public services, to ensure macroeconomic stability and to promote outcomes such as poverty reduction and income redistribution. The rationale for tariff cuts is therefore important but integrating recommendations for tariff reform with other objectives of economic policy, including objectives of public finance, is important as well.

The need to co-ordinate tariff reform with other tax policies is particularly evident in developing countries where trade taxes continue to account for significant shares of public revenue and GDP (compare Figure 4.3 and Table 4.A.1). Recent estimates suggest that, on average, trade tax revenues accounted for around 4% of low- and middle-income countries' GDP in 1995-2000 while the equivalent estimate for high-income countries was below 1% (Keen and Baunsgaard, 2004).

9 X-efficiency is the effectiveness with which a given set of inputs is used to produce outputs.

Figure 4.3. Reliance on import duties and the level of development[1]



1. Customs and import duties and revenue refer to central government only. The reference period is the latest available year in the period 1998-2003.

Source: OECD calculations based on IMF Government Finance Statistics and World Development Indicators.

High shares of import duties in tax revenue imply that, if tariffs were completely abolished, many low-income countries would have to extensively revamp their tax systems in order to replace on average around 18% (and in some cases more than 50%) of their revenue with revenue from sources other than import duties. In African LDCs, import duties represented about 34% of total government revenue over the period 1999-2001 and exceeded 50% in a number of them (UNECA, 2003).[10] In industrial countries, where the share of import duties typically does not exceed 2% of tax revenue, abolition of tariffs would not pose a major fiscal adjustment problem.

Recent policy advice concerning the fiscal implications of trade liberalisation stresses the use of other taxes as a compensating measure (IMF in WTO, 2003a; the United States in WTO, 2003b). A shift away from trade taxes towards other forms of taxation such as income, sales or value added taxes has been taking place for some time in many countries. In fact, the need to offset revenue losses from trade liberalisation by strengthening domestic taxation has in many cases been a key consideration in the adoption of the VAT (IMF, 2003). Several developing countries have made significant progress in reducing their reliance on import duties as a source of tax revenue (*e.g.* by 20 percentage points in Tunisia, 17 in Jordan, 16 in Pakistan, 14 in Mauritius and Congo over the period 1994-2001).[11]

10 It is worth noting that para. 9 of Annex B of the July Framework Agreement states that "the least developed country participants shall not be required to apply the formula nor participate in the sectoral approach".

11 As a share of total tax revenue.

The recommendation to shift away from trade taxes towards domestic consumption and income taxes reflects the consensual view that trade taxes are a relatively inefficient way of raising revenue. As Whalley (2002) explains, trade taxes distort both consumption and production decisions and address a relatively narrow base. Since at the aggregate level net trade must close the gap between domestic production and consumption, taxes applied to domestic production or consumption or both would have the advantage of being more broad-based than trade taxes. It is therefore theoretically possible to switch from trade taxes to consumption or income taxes such that domestic production, consumption and trade are less distorted, the allocation of resources and welfare are improved and revenue is unchanged or even increased (see *e.g.* Keen and Lighthart, 2002).

This has formed the basis of the policy advice of the IMF and the World Bank, which have, for some time now, been advocating and supporting a move towards a more broad-based tax system in developing countries (see WTO, 2003b). A communication from the IMF (WTO, 2003a**),** prepared as a result of consultations between the WTO and the IMF, argued that "there is in principle no great difficulty in devising a policy mix that replaces tariffs by indirect taxes in such a way as to preserve the revenue without jeopardising other economic and social objectives". The same communication also points to the fact that many countries already have functioning VAT systems in place and are well placed to replace import duties with VAT revenues. Nevertheless, even in such cases the system may need strengthening to ensure effective collection at higher rates.

In terms of a shift away from trade to other forms of taxation, indirect taxes are generally preferred to direct forms of taxation. Indirect taxes, which shift the overall tax burden from factors of production (labour and capital) to consumption, are believed to be associated with superior employment, saving[12] and investment incentives and to affect economic development prospects positively. Indirect taxes are also perceived as more effective in correcting market failures (such as for environmental degradation). In many countries, such taxes are changed more easily than direct taxes and are therefore considered a more flexible way of raising revenue. Finally, indirect taxes, which are taxes on spending, are less costly to collect and administer. An argument against indirect taxation is that it tends to be regressive: a uniform tax rate collected on consumption of a particular good discriminates against those with lower incomes who spend a higher proportion of their income on their tax obligation. Direct taxes tend to be expressed as a percentage of income with progressive bands so that the proportion of the income paid on taxes increases with income.

It is important when designing and implementing a revenue replacement strategy not to nullify the benefits associated with tariff liberalisation. Multilateral tariff negotiations are concerned about customs duties – taxes levied on imports but not on domestic production – that give domestic producers a price advantage. Other taxes such as sales taxes, excise or VAT taxes should in principle apply equally to domestically produced and imported products. The recommended practice is to equalise the burdens associated with the sales/VAT tax across imports and domestic production so as to transfer any remaining protection function to the customs duty. Some rules of thumb with respect to the VAT include a uniform rate applied equally to domestic production and imports across all products but agriculture (to minimise the impact on the poor),[13] a zero rate on exports (Rajarm, 1992) and an appropriate definition of the tax base that minimises exemptions.

Under the VAT systems of OECD countries importers are entitled to deduct the tax incurred at importation from the tax they charge to their customers in the same way as they deduct the tax on goods bought on the domestic market. Hence, even if the tax rate on imported goods is higher, goods

12 One way of avoiding consumption taxes is to reduce consumption.

13 Rajarm (1992) indicates that non-marketed food consumed by the poor is a particularly relevant category.

would still be tax-free for business; this implies neutrality between imported and domestically produced goods. Discriminatory VAT taxation of imported products can arise if the importer is not entitled to recover VAT or if the higher rate on imports is sustained throughout the supply chain all the way to the final consumer. The latter situation would breach a fundamental principle of VAT and conflict with WTO rules. Cross-country assessment of the extent of protectionism built into the domestic tax system is difficult owing to the lack of comparable data on the tax burdens associated with import duties and domestic taxes.[14] This information is nevertheless critical to ensuring that a reformed consumption tax system observes the principle of neutrality.

The relative costliness of various forms of taxation also plays an important role in designing and implementing a tax replacement policy. These costs and the relation between them are likely to vary among countries. It is often claimed that in less developed countries, the administrative costs of raising revenue through trade taxes are low relative to other forms of taxation. This argument may have some validity, but what should matter is the overall costliness, including efficiency, compliance and administration costs, of the particular form of taxation. While the compliance and administration costs of import duties collected at the border may be lower relative to other forms of taxation, the efficiency costs may be quite high and thus make the overall cost of import duties relatively high. Furthermore, significant shares of other indirect taxes (*e.g.* VAT) are also collected at the border and also enjoy the advantage of releasing goods only upon payment of the tax. This may be preferable to relying on accounting systems of domestic traders, especially in countries with a high incidence of unreported activity and underdeveloped tax administrations.

The empirical evidence on tariff and tax reforms points to both successful and failed attempts at co-ordinating tariff and domestic tax reforms. However, neither should past successes be regarded as proof that replacing tariff revenues is unproblematic, nor should failures be taken as a confirmation that such reforms are impossible. The evidence is clearly mixed. This calls for a forward-looking approach to addressing the adjustment costs that may be associated with tariff cuts agreed in the DDA negotiations. Such an approach should involve both determining early on which countries may be particularly vulnerable and integrating revenue concerns into special and differential treatment (SDT) provisions, whether in the form of extended implementation periods or co-ordinated financial assistance for disadvantaged developing countries to help them overcome financial, technical or capacity constraints associated with a tariff-cum-tax reform.

In terms of the positive dimension of SDT, the costs associated with the design and implementation of appropriate tax reforms are temporary while the gains achieved through improved allocation of resources are permanent. Therefore, from an economic point of view, these costs are not an obstacle to liberalisation but a necessary investment to enable the realisation of long-term gains. As the World Bank has pointed out, "many countries will not be able to take advantage of new opportunities arising out of the Doha Agenda unless the international community helps with technical assistance and capacity building, with policy advice and – importantly – much needed finance to put in place the infrastructure, transport logistics, and trade-related public institutions necessary to take advantage of those opportunities"[15]. In this context, paragraph 27 of the draft Cancun Ministerial

14 According to Keen and Baunsgaard (2005) the data on revenues in general, and trade taxes in particular, are of poor quality. The IMF's Government Finance Statistics – the only comprehensive source of data on government finance that includes non-OECD countries – have numerous data gaps and suffer from a problem of inclusion of VAT and other sales taxes collected at the border as trade tax revenue. This problem is reported to be most severe in African countries.

15 Shengman Zhang, Managing Director of the World Bank, Address to the WTO General Council Plenary Session, 10 September 2003.

(24 August 2003) welcomed support from the Executive Heads of the IMF and the World Bank. The two institutions have expressed their commitment to work with the WTO to address problems that some developing countries may have in adjusting to trade liberalisation agreed in the Doha Round.

Empirical estimates of revenue effects of tariff reduction

The reminder of this chapter presents selected results from a quantitative examination of the impact of changes in their bound tariffs on developing countries' government revenue, trade flows and welfare (Kowalski, 2005).[16] While the revenue impacts of tariff cuts may be estimated in a variety of ways, the following discussion presents estimates of the revenue, trade and welfare changes associated with three Swiss formula scenarios for tariff reduction using a static, perfect competition version of the GTAP model (see Hertel, 1997 for a description of the model structure) and Version 6 of the GTAP database.[17, 18]

The discussion concentrates on the examples of Argentina, Bangladesh, Brazil, Chile, Colombia, India, Indonesia, Malawi, Malaysia, Morocco, Mozambique, Madagascar, Peru, Philippines, Sri Lanka, Tanzania, Thailand, Uganda, Uruguay, Venezuela, Zambia and Zimbabwe in order to illustrate the revenue, trade and welfare implications of reducing tariffs.[19] Although the basic modalities of tariff negotiations in the DDA are not known at the time of writing, the Swiss formula is used with three different coefficients (5, 10 and 15) to illustrate the potential impact on government revenue of changes in tariffs. The focus on the Swiss formula reflects the commitment by WTO members in the July Framework to a non-linear formula and the agreement reached at the Hong Kong Ministerial in December 2005. The Swiss formula has a number of desirable features for tariff negotiations, including simplicity and effectiveness in reducing tariff peaks. It implies that high tariffs are reduced by a higher percentage than low ones and that all resulting tariffs fall below a certain threshold.[20]

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16 Kowalski (2005) discusses simple and complex methodological approaches that can be used to evaluate welfare and revenue impacts of tariff reduction and, focusing on the Swiss tariff reduction formula, applies them to a sample of 24 developing countries. Based on the simulation results, the study discusses cross-country differences and provides sensitivity analysis by changing the Swiss formula coefficient. The results obtained using a linear tariff reduction formula are also presented and discussed.

17 The data set used in general equilibrium simulations is a preliminary release of the GTAP Version 6 database (6.02) benchmarked to 2001. At the time of writing the final Version 6 had not yet been released. The data set covers a total of 86 geographic areas comprised of single or multi-economy groupings and 57 sectors. As described in the main body of the chapter, these geographic areas and sectors are aggregated to facilitate analysis of the results. For more information on the GTAP resources see www.gtap.org .

18 The measure of change in welfare is the equivalent variation in income. Equivalent variation in income is the money metric equivalent of the utility change brought about by the price change. At a less abstract level, welfare gains from trade liberalisation can be broken down into two components: *i)* the change in efficiency with which countries utilise their resources, and, *ii)* the change in its terms of trade (Hertel and Martin, 1999). For tariff revenue, any change in equivalent variation in fact already reflects the welfare valuation of a given tariff revenue loss or gain and as such, with the usual caveats, is the measure used to assess the economic efficiency of any contemplated change in policy.

19 In the original exercise countries are aggregated into 36 regional groupings. Each of the countries in the sample used is a distinct region. Industry categories are aggregated into ten sectors.

20 A coefficient of 15, for example, implies that all resulting tariff rates fall below the 15% threshold.

Conceptually, the effect of a given tariff reduction on tariff revenue depends on the initial structure of tariffs, the depth of the cut, and on elasticities of import demand and supply that determine the change in import values resulting from liberalisation.[21] Hence, the overall effect of a tariff change will depend on the country's initial conditions, which are given, and the modality according to which tariffs are cut, agreed in the negotiations. In the exercise a conditional applied tariff rate procedure is used. The trade policy changes defined with respect to bound rates are translated into conditional applied rates. For each line, the applied rate is only reduced if the tariff binding falls below the initial applied threshold. The resulting applied rates are thus conditioned on the pre-shock level of unused protection (*i.e.* the difference between the bound and applied rates). Table 4.A.2 presents average trade-weighted applied and bound tariff rates in the selected countries. Overall, the variation in the size of binding overhangs shown implies that an across-the-board reduction in average bound tariffs will not necessarily lead to a proportional reduction in the corresponding applied rates.

Table 4.A.3 provides a summary of the overall welfare results of a simulation of multilateral tariff liberalisation according to the three different coefficients in the Swiss formula. The overall annual static welfare gains range from USD 30 billion in the case of a coefficient of 15 to approximately USD 44 billion in the case of a coefficient of 5. Developing country regions capture around 45% of these gains. In terms of the absolute welfare gains, the biggest beneficiaries among the 24 developing countries in the sample are China, Argentina, India and Thailand, each with annual static welfare gains above USD 1.8 billion. In terms of the percentage welfare increase relative to base, the biggest gainers are Thailand, Vietnam, Malaysia and Sri Lanka, all of which experience more than a 1% per capita annual increase in welfare (Table 4.A.4).

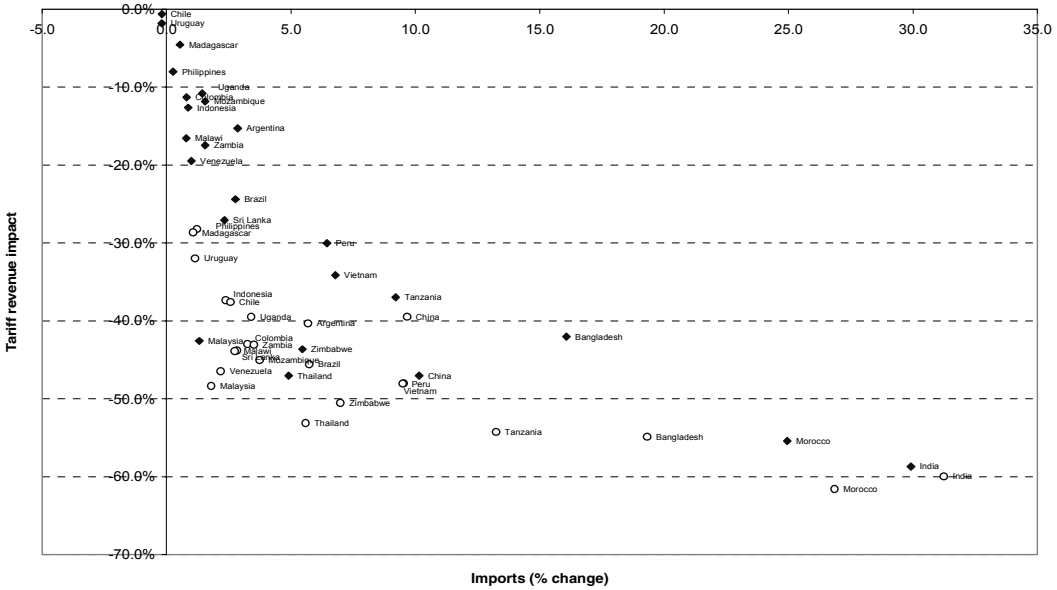
The simulation also indicates that countries such as Chile, Colombia, Tanzania or Uganda may experience welfare losses. In these cases the negative welfare outcomes are a result of unfavourable terms-of-trade effects which outweigh the gains from better allocation of resources. The multilateral lowering of tariffs may result in increases in world prices of some traded goods and decreases in prices of others. Depending on the composition of their trade, some countries gain from these changes and some lose. In a model covering many regions and commodities, understanding the reasons for the observed changes in terms of trade can be difficult. Colombia for example experiences a relative reduction in the prices of its exports in all ten sectors, with the deepest decrease reaching 2.7% in motor vehicles and parts. The negative welfare outcome in Chile has its source in a considerable increase in the prices of commodities it imports, particularly of primary agriculture, by 4.22%. Tanzania faces a similar problem: prices of its exports fall with large drops in its main export sectors: primary and processed agriculture and other manufacturing. Uganda, too, experiences welfare losses associated with changes in terms of trade that have their source in the declining prices of Uganda's main exports: primary and processed agriculture.

Cross-country differences: Swiss formula with a coefficient of 10

Figures 4.4 and 4.5 provide a summary in graphic form of general equilibrium revenue, trade and welfare impacts obtained for the Swiss formula with the coefficient of 10. The empty dots indicate the results using applied rates, and diamonds those for bound rates. As with the partial equilibrium simulation, revenue impacts are widely dispersed, ranging from below 10% in Chile, Uruguay, Madagascar, the Philippines and Uganda to above 50% in Morocco and India. There is also a strong negative correlation between the trade and revenue effects, *i.e.* countries that are most affected in terms of revenue also experience the most significant trade creation and welfare gains.

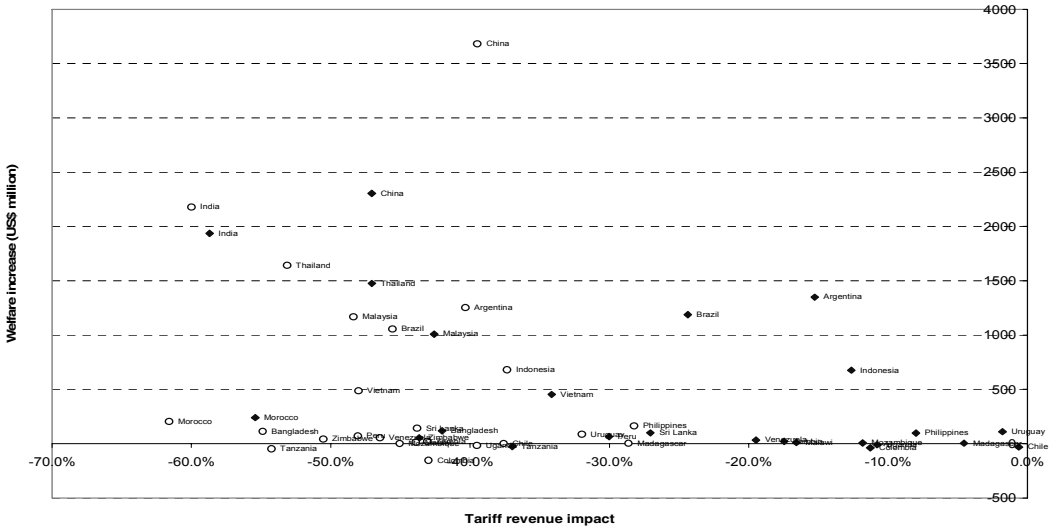
21 See the technical discussion in Kowalski (2005).

Figure 4.4. General equilibrium simulation trade and revenue impacts of Swiss formula 10 (bound and applied rates)



♦ Swiss formula affecting directly applied rates.
○Swiss formula affecting bound rates.
Source : GTAP simulations.

Figure 4.5. General equilibrium simulation: welfare and revenue impacts of Swiss formula 10 (bound and applied rates)



♦ Swiss formula affecting directly applied rate.
○ Swiss formula affecting bound rates.
Source: GTAP simulations.

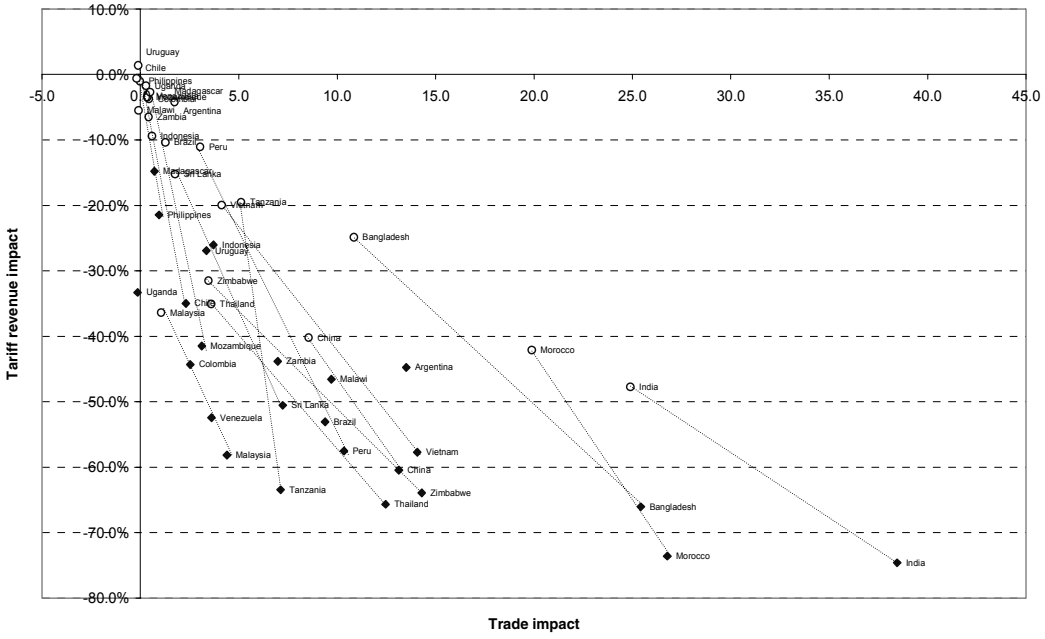
The cross-country dispersion of average trade-weighted elasticity is much lower than the dispersion of initial applied tariff rates or tariff bindings. As a result, the cross-country variation in

revenue impacts is driven more by differences in initial tariff profiles than by differing import structures. This point is illustrated in Kowalski (2005) which plots revenue impacts against the trade-weighted import demand elasticity, average trade-weighted initial applied tariffs and the level of binding overhang. Percentage revenue impacts are negatively correlated with the initial level of applied tariffs. This suggests that for the assumed import demand elasticity and initial tariff rates, the Swiss formula type of tariff reduction is likely to result in deeper percentage reductions in revenue in countries with higher initial tariffs.

Changing the Swiss formula coefficient

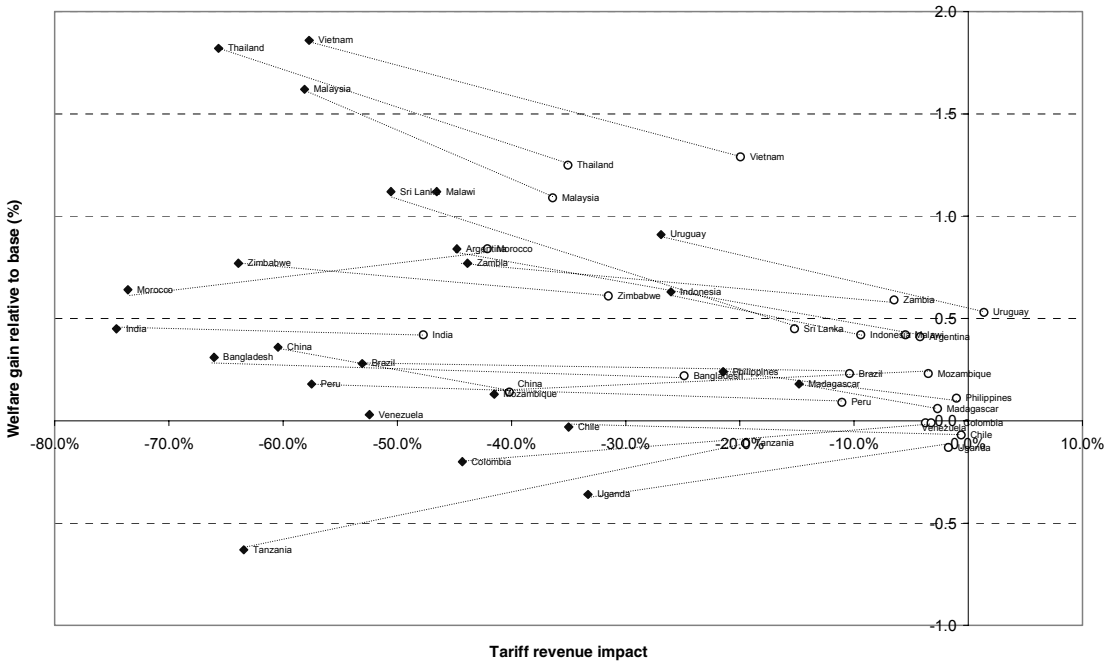
Figures 4.6 and 4.7 show that for most countries changing the coefficient in the Swiss formula implies substantial differences in the percentage impacts on revenue, while differences in the impact on trade creation and welfare are smaller. For Colombia, Morocco, Mozambique, Tanzania and Uganda, a move from the Swiss formula coefficient of 15 to 5 would imply both deeper revenue losses and smaller welfare gains. For all the other countries, a more ambitious tariff cut brings higher welfare gains but may also result in a higher percentage of foregone revenue. For some countries, additional welfare gains associated with a more ambitious Swiss formula coefficient are more "expensive" in the sense that they lose a high percentage of revenue but gain a relatively small percentage of additional welfare. This is the case for Bangladesh, Peru and Brazil. For Bangladesh, for example, an additional 0.09 percentage point of welfare may "cost" as much as 41 percentage points of foregone tariff revenue.

Figure 4.6. General equilibrium simulation: trade and revenue impacts for Swiss formula 5 and 15



♦ Swiss formula with coefficient of 5.
○ Swiss formula with coefficient of 15.
Source : GTAP simulation.

Figure 4.7. General equilibrium simulation: welfare and revenue impacts for Swiss formula 5 and 15



♦ Swiss formula with coefficient of 5.
○ Swiss formula with coefficient of 15.
Source : GTAP simulation.

While this kind of comparison runs the risk of "comparing apples with oranges", it shows the magnitude of revenue and welfare impacts that may be associated with certain options. It will be ultimately up to individual countries to decide how much they value a prospective welfare gain stemming from allocative efficiency against the short-term costs of the compensatory fiscal adjustments necessary to replace the foregone tariff revenue with other taxes.

Interpreting the simulation results

When interpreting the simulation results it is important to recall that reducing tariffs brings welfare gains, net of any losses in tariff revenues, and that these gains are the ultimate motivation for tariff reform. The estimated percentage impacts on tariff revenue may, however, be indicative of the extent of the necessary fiscal adjustment. The latter will depend on both the percentage impact on tariff revenue and the share of tariff revenues in total government revenue and GDP.

To facilitate interpretation of the simulation results, Table 4.A.5 presents the inferred percentage impacts on total government revenue and estimated tariff revenue changes as a percentage of GDP. These estimates are based on simulation results presented in Table 4.A.4 and shares of import duties in total government revenues and GDP presented in Table 4.A.1. The coverage of the IMF Government Finance Statistics data enables such calculations for 12 out of the 24 developing economies considered in this chapter.

The share of customs duties in total government revenue ranges from 3% in Indonesia, Brazil and Uruguay to 26% in Madagascar. The share of customs duties in GDP is typically in the range of 1-2% of GDP, except for Madagascar and Morocco where the shares are 3% and 5%, respectively.

The estimated percentage impacts of tariff cuts according to the Swiss formula with a coefficient of 15 range from a 1% gain in Uruguay to a 48% reduction in India. The combined impact on total government revenue ranges from close to 0% in Uruguay to -7% in India.

Nine out of the 12 countries for which such a calculation can be performed are not significantly affected; the negative impact on tariff revenue is in the range of 0% to 0.2% of GDP and the percentage impact on total government revenue is 0%-1% in the case of the Swiss formula with a coefficient of 15. Morocco, India and Thailand stand out as likely to be disproportionately affected by the investigated tariff cut scenario. The Swiss formula with a coefficient of 15 is estimated to generate reductions of tariff revenue that account for 2%, 0.9% and 0.6%, respectively, of their GDP. The associated reduction in total government revenue is estimated at 6.7%, 7.2% and 3.5%, respectively.

The results suggest that in most cases the potential reductions in tariff revenue are manageable, especially given the net efficiency gains expected to result from liberalisation. In selected countries, however, the required fiscal adjustments may be more extensive.

Tariff liberalisation with an accompanying consumption tax policy

Since the ultimate objective of multilateral tariff reduction is their complete removal, recent policy advice has stressed the use of other taxes as a compensating measure. As discussed above, most countries, including the poorest ones, have for some time been moving away from trade taxes towards other forms of taxation such as income, sales or value-added taxes. The tendency to shift away from trade taxes towards domestic consumption and income taxes reflects the fact that trade taxes are a relatively inefficient form of raising revenue. Trade taxes distort both consumption and production but concern a relatively narrow base. Since at the aggregate level trade must equal the difference between domestic production and consumption, taxes applied to either production or consumption would have the advantage of being relatively broad-based compared to trade taxes that only apply to the difference between domestic production and consumption.

In the great majority of countries in the sample, imports account for less than 25% of private consumption. In the Philippines, Singapore and Malaysia the shares are 27%, 48% and 78%, respectively.[22] They indicate, at least theoretically, that private consumption provides a much wider tax base and that it is possible to switch from import duties to consumption tax in such a way that trade is less distorted and allocation of resources and welfare are improved while at the same time government revenue is preserved.

The following is a discussion of the results of a simulation of the welfare effects of reducing tariffs according to the three adopted Swiss formulas and simultaneously replacing tariff revenue with revenues from a consumption tax. The GTAP model offers the possibility of swapping the consumption tax variable which is assumed to be exogenous in the original closure[23] of the model with the ratio of tax revenue to national income. Such a closure of the model mimics a situation in which, in addition to implementing tax reform, the authorities in each country raise the tax rate on private consumption to the extent necessary to keep the ratio of tax revenue to national income unchanged. This is here referred to as revenue-neutral tariff reduction.

22 This information is based on Version 6 of GTAP database.

23 Closure is a selection of variables which are determined outside the model (exogenous), such as the tariff rate and variables determined by the model (endogenous) such as consumption or welfare.

In the GTAP model, government spending is not linked to government balance. Instead, government spending depends on regional income. Hence, a loss of tax revenue may be consistent with an increase in government consumption if the policy change results in an increase in regional income. This feature of the model is considered one of its shortcomings. It can however be argued that this feature is as problematic for the analysis of tariff revenue implications as it is for any other application of the model. Not accounting explicitly for a budget constraint may certainly affect a range of estimates. The experiment of a revenue-neutral tariff reduction, as described above, partly solves this problem. While even in this experiment government consumption is likely to increase with regional income, a constraint is introduced on the replacement of tariff revenue which should partially correct the estimate of welfare. Such an approach lowers the estimates of changes in welfare obtained from the simulation without a tax replacement policy.[24] The differences in estimates of welfare between the non-replacement and replacement case are country-specific and depend on the relative size of the tax base associated with the consumption tax and import duty as well as the relative magnitude of initial distortions associated with the two taxes. Hence, a revenue replacement policy can be expected to result in varying degrees of correction of initial welfare estimates.[25]

Figure 4.8 summarises the per capita welfare results of the two methods of reducing tariffs according to the Swiss formula with a coefficient of 10. The introduction of a tax replacement scenario does not change the sign of the welfare estimates. However, as a result of varying imports-to-consumption ratios as well as initial distortions associated with tariff and consumption tax structures (see above) the welfare implications of the tax replacement scenario vary by country. On a per capita basis, considerable corrections are expected, for example in Morocco and Malaysia. Morocco has high initial tariffs and a relatively high imports-to-consumption ratio and will have to raise consumption tax relatively more than other countries. As a result, the replacement of tariff revenue with a consumption tax could reduce the initially estimated per capita welfare gain by around 27%. In Malaysia, despite its relatively low initial tariff level (5%) the very high imports-to-consumption ratio would imply a reduction of the initial welfare estimate by around 26%. The results are also affected by the quality of the initial tax data. The database includes initial tax rates for Morocco but not for Malaysia. Hence, the estimate of the welfare cost of the revenue replacement policy in Morocco will take into account the initial distortions associated with the consumption tax while the estimate for Malaysia will not.

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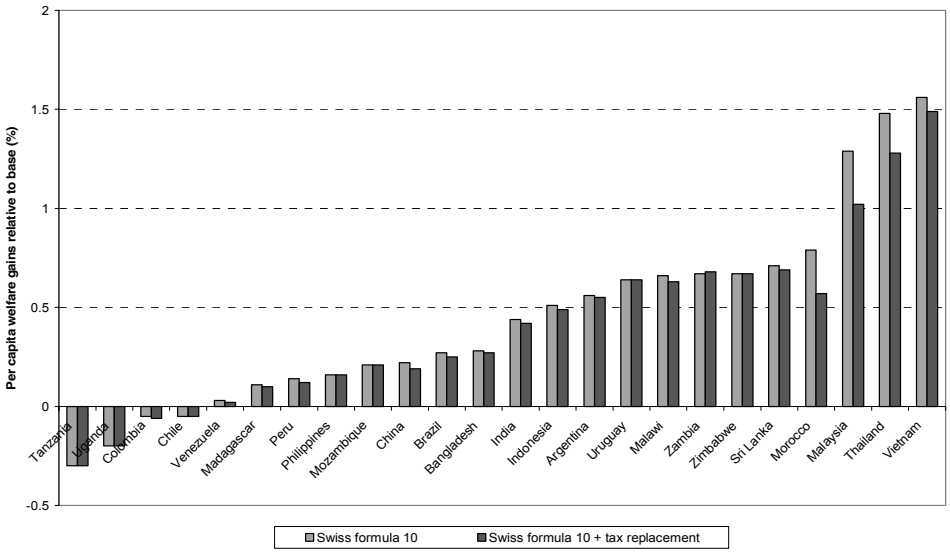
24 In fact, an increase in any tax in the model introduces an additional distortion and results in a decrease in welfare.

25 Another major limitation of the GTAP database is the incompleteness of the government accounts and the absence of tax data even in many places where the database structure makes provision for it. The GTAP is currently working on incorporating more accurate tax data that would allow more satisfactory simulations of policies with tax replacement (Hertel and Walmsley, 2004). Currently, the representation of consumption tax in the GTAP database is at best patchy. The simulation of revenue replacement for countries with initial tax rates set at zero effectively implies introducing a uniform consumption tax. For countries for which data are available, the simulation of revenue replacement implies a uniform percentage increase in the power of the consumption tax across sectors, with the consequence that initial distortions associated with this tax (*e.g.* one sector being taxed more heavily than others) affect the results of the simulation.

Figure 4.8. Comparison of the welfare gains relative to base between the base Swiss formula 10 scenario and a Swiss formula 10 scenario with a tariff revenue replacement



Source: GTAP simulation.

Bearing in mind the qualifications associated with the quality of the data, the results suggest that, if a tax replacement policy can indeed be introduced there is scope for obtaining welfare gains from tariff liberalisation without compromising government revenue. For most countries in the sample, an accompanying tax replacement policy only partially reduces the welfare gains associated with better allocation of resources arising from tariff reform. The extent to which these gains are reduced is country-specific. Nevertheless, since consumption provides a wider tax base, it should in principle be possible to switch from trade taxes to a consumption or income tax in such a way that trade is less distorted, allocation of resources and welfare are improved and revenue is unchanged

Conclusions

The literature points to the strong economic case for non-discriminatory tariff reform which should be accompanied, if necessary, by reform of the tax system. Developing countries that currently tend to maintain higher and more dispersed tariff barriers are particularly well positioned to benefit from tariff reform but they are also more vulnerable to an associated interim tariff revenue loss. The sensitivities associated with the fiscal implications of tariff liberalisation in developing countries need to be addressed by an appropriate design of tariff reduction modalities and/or by providing assistance in the implementation of a tariff-policy-cum-tax-reform package.

Since the impact of tariff liberalisation on revenue depends on the initial structure of tariffs, the design of the liberalisation scenario and the overall impact of liberalisation on production, consumption and trade in the concerned economy, it is not evident which developing countries may be affected by a tariff revenue loss and to what extent. This chapter's main objective is to shed some empirical light on the nature and scope of this problem with a view to facilitating the Doha Round of negotiations.

First, the fact that in several developing countries many tariffs have not been bound or have been bound at rates that are significantly higher than applied rates highlights the need to seek ambitious commitments to tariff liberalisation in the context of the Doha Round of negotiations in

order to secure meaningful welfare gains for participants. At the same time, large binding overhangs imply that unused protection can be significantly reduced, thereby contributing to greater certainty about future levels of tariff protection without implying any losses to government tariff revenue.

Second, many developing countries' applied tariff schedules are characterised by high dispersion of tariff rates in sectors with low elasticity of import demand and high tariff rates in sectors with high elasticity of import demand . Such a structure of applied rates may in fact lessen the negative impacts of tariff reduction on revenue, in contrast to a situation in which high rates are applied on products with low elasticity .

The results of simulations of tariff reduction according to the Swiss formula indicate considerable cross-country differences in impacts on trade, welfare and revenue. These differences are largely driven by differences in initial levels of applied tariffs and by differences between bound and applied rates (binding overhangs). In particular, countries with higher initial tariffs and lower binding overhangs experience a greater percentage revenue loss but also larger gains in trade creation and welfare. Cross-country variations in revenue impacts do not seem to be driven by differences in countries' aggregate responsiveness to changes in trade prices calculated on the basis of available trade elasticities. The link between initial tariff levels and the proportional degree of revenue reduction (high-tariff countries experience a deeper percentage reduction in tariff revenue but also larger trade creation and welfare gains) can be associated with properties of the Swiss formula for tariff cuts and the assumed trade elasticities.

As far as sensitivity to the Swiss formula coefficient is concerned, for the majority of countries in the sample a more ambitious tariff cut is likely to bring higher welfare gains but may also result in a higher percentage of foregone revenue. Additional welfare gains associated with a more ambitious Swiss formula coefficient are more "expensive" for some countries than for others in the sense that they lose a relatively high percentage of revenue but gain a relatively small percentage of additional welfare. While such a comparison runs the risk of "comparing apples with oranges" it shows the magnitude of the impacts on revenue and welfare that may be associated with certain options.

The required fiscal adjustment will depend on the percentage impact on tariff revenue and the share of tariff revenues in total government revenue and GDP. Estimates for 12 countries in the sample indicate that in nine cases potential reductions in tariff revenue are relatively small and the required fiscal adjustment is manageable, especially given the net efficiency gains expected to result from liberalisation. In some cases, however, the required fiscal adjustment may be more extensive.

The results of the simulation in which tariffs are reduced according to the Swiss formula and tariff revenue is simultaneously replaced with a consumption tax indicate that there is significant scope for obtaining positive welfare gains from a joint package of tariff and tax reform without compromising public revenue. For many countries an accompanying tax replacement policy would only partially reduce welfare gains arising from improvements in allocation of resources associated with tariff reform. The extent to which such gains are reduced is country-specific. In particular, it depends on the initial reliance on tariff revenues, the relative size of the consumption and import tax bases, and the relative size of initial distortions associated with import and consumption taxes. Provided that an appropriate tax replacement policy can be designed and implemented, the costs of such an operation are temporary while the gains from the improved allocation of resources are permanent. Therefore, from an economic point of view, these costs should not be seen as an obstacle to tariff reform but rather as an investment necessary to enable the realisation of long-term gains. Countries that are currently unable to finance such a reform should be assisted by the international community.

ANNEX TABLES

Table 4.A.1. Reliance on customs duties and international trade taxes in selected economies

	Reference year	Taxes on international trade and transactions as % of taxes	Taxes on international trade and transactions as % of revenue	Customs and other import duties as % of taxes	Customs and other import duties as % of revenue	Customs and other import duties as % of GDP	Revenue as % of GDP	Taxes as % of GDP	Taxes on international trade and transactions as % of GDP
Albania	1998	25%	14%	23%	13%	..	..	..	..
Argentina	2001	6%	4%	6%	4%	0.6%	13.8%	9.3%	0.6%
Azerbaijan	1999	12%	8%	12%	8%	..	..	..	..
Bahrain, Kingdom of	2002	36%	5%	36%	5%	1.6%	35.5%	4.5%	1.6%
Belarus	2002	14%	8%	0%	0%	0.0%	26.6%	14.2%	2.0%
Bhutan	2003	4%	1%	3%	1%	0.3%	35.9%	9.1%	0.3%
Bolivia	2001	7%	4%	7%	4%	0.9%	19.7%	12.0%	0.9%
Brazil	1998	6%	3%	6%	3%	0.7%	24.2%	12.2%	0.7%
Bulgaria	2001	4%	2%	4%	2%	0.7%	34.3%	17.5%	0.7%
Burundi	1999	23%	17%	18%	13%	2.4%	18.3%	13.6%	3.2%
Chile	2002	6%	4%	..	..	..	21.4%	16.6%	0.9%
China, P.R.:Macao	2003	0%	0%	0%	0%	0.0%	24.1%	20.9%	0.0%
Colombia	2000	7%	5%	7%	5%	1.0%	18.5%	13.4%	1.0%
Congo, Dem. Rep. of	2002	36%	27%	33%	25%	1.3%	8.9%	3.9%	1.4%
Congo, Republic of	2002	23%	6%	21%	5%	1.7%	32.3%	8.4%	1.9%
Costa Rica	2002	8%	5%	6%	4%	0.8%	21.5%	13.2%	1.0%
Côte d'Ivoire	2001	48%	41%	30%	26%	4.5%	17.5%	14.9%	7.1%
Croatia	2001	10%	6%	10%	6%	2.6%	39.5%	24.4%	2.6%
Cyprus	1998	6%	4%	6%	4%	1.2%	31.3%	20.3%	1.2%
Dominican Republic	2001	34%	31%	33%	30%	5.1%	17.3%	15.6%	5.3%
El Salvador	2001	9%	6%	9%	6%	0.1%	2.1%	1.4%	0.1%
Georgia	2002	9%	6%	9%	6%	..	..	..	..
India	2002	19%	15%	19%	15%	1.8%	12.5%	9.5%	1.8%
Indonesia	2001	5%	3%	5%	3%	0.6%	21.2%	13.2%	0.7%
Iran, I.R. of	2002	34%	8%	34%	8%	2.3%	29.0%	6.9%	2.3%
Israel	1999	1%	1%	1%	1%	0.3%	43.2%	28.8%	0.3%
Jamaica	2002	10%	8%	10%	8%	2.7%	34.4%	27.0%	2.7%

Table 4.A.1. Reliance on customs duties and international trade taxes in selected economies (continued)

	Reference year	Taxes on international trade and transactions as % of taxes	Taxes on international trade and transactions as % of revenue	Customs and other import duties as % of taxes	Customs and other import duties as % of revenue	Customs and other import duties as % of GDP	Revenue as % of GDP	Taxes as % of GDP	Taxes on international trade and transactions as % of GDP
Kazakhstan	2002	8%	7%	5%	4%	0.6%	14.8%	12.4%	1.0%
Lesotho	2003	49%	39%	0%	..%	42.0%	42.0%	36.5%	16.5%
Madagascar	2002	45%	36%	32%	26%	2.5%	9.6%	7.7%	3.5%
Maldives	2003	62%	24%	62%	24%	..	..	..	..
Mauritius	2003	25%	20%	25%	20%	4.1%	20.9%	16.6%	4.1%
Moldova	2001	10%	5%	8%	4%	1.0%	23.6%	12.2%	1.2%
Mongolia	2001	13%	7%	13%	7%	2.3%	32.5%	18.3%	2.4%
Morocco	1999	20%	16%	20%	16%	4.7%	29.6%	23.5%	4.7%
Myanmar	2000	7%	4%	7%	4%	0.2%	5.6%	2.8%	0.2%
Nepal	2003	34%	23%	32%	22%	3.0%	13.5%	9.4%	3.2%
Nicaragua	2002	11%	6%	11%	6%	1.5%	23.8%	13.6%	1.5%
Pakistan	2003	13%	9%	13%	9%	1.7%	18.9%	13.1%	1.7%
Panama	2001	24%	9%	24%	9%	2.2%	25.8%	9.3%	2.2%
Peru	2001	12%	9%	12%	9%	1.4%	16.2%	12.3%	1.4%
Romania	2001	7%	3%	7%	3%	0.8%	26.8%	11.7%	0.8%
Russia	2001	24%	14%	7%	4%	..	..	..	..
Serbia & Montenegro	2002	11%	7%	11%	7%	..	..	..	..
Singapore	2002	3%	2%	3%	2%	0.4%	22.2%	13.3%	0.4%
South Africa	2002	3%	3%	3%	3%	..	..	..	..
Syrian Arab Republic	1999	14%	10%	12%	9%	2.0%	23.9%	17.4%	2.4%
Tajikistan	2001	22%	16%	21%	16%	..	..	..	..
Thailand	2002	13%	10%	12%	10%	1.8%	17.3%	14.3%	1.8%
Tunisia	2002	12%	9%	12%	9%	2.6%	30.3%	21.5%	2.6%
Turkey	1998	2%	2%	2%	2%	0.4%	23.7%	20.2%	0.4%
Ukraine	2002	9%	4%	7%	3%	1.1%	31.3%	14.3%	1.3%
Uruguay	2001	4%	3%	4%	3%	0.7%	26.5%	17.5%	0.7%
Vanuatu	1999	41%	34%	41%	34%	..	..	..	..
Venezuela, Rep. Bol.	2002	11%	5%	11%	5%	1.2%	22.2%	10.7%	1.2%

Note: Indicators, customs and import duties data and revenue refer to central government only, the reference period is the latest available year in period 1998-2003.
Source: OECD based on IMF Government Finance Statistics and International Finance Statistics.

Table 4.A.2. General equilibrium simulation

Summary of initial profiles of selected developing countries

Region	Trade-weighted tariff		Trade weighted import demand elasticity
	Applied	Bound	
Argentina	7.3	32.2	3.1
Bangladesh	27.4	158.3	3.7
Brazil	8.9	34.3	3.3
Chile	6.6	25.1	3.3
China	9.2	6.9	3.6
Colombia	8.2	57.3	3.6
India	31.1	46.2	3.5
Indonesia	4.6	38.2	3.7
Madagascar	3.8	26.3	3.2
Malawi	10.5	105.9	2.8
Malaysia	5.0	6.7	3.5
Morocco	29.9	48.9	3.4
Mozambique	8.9	99.9	3.3
Peru	12.4	32.4	3.4
Philippines	2.8	11.1	3.5
Sri Lanka	7.3	20.4	3.5
Tanzania	14.8	84.2	3.1
Thailand	15.8	19.0	3.4
Uganda	6.1	66.5	2.9
Uruguay	5.5	32.0	3.0
Venezuela	6.7	33.7	4.1
Vietnam	17.8	43.5	3.5
Zambia	9.3	42.7	3.4
Zimbabwe	30.8	75.9	3.0

Source: GTAP database for applied rates, WITS for bound rates, and GTAP for import demand elasticity

Table 4.A.3. General equilibrium simulation

Summary of welfare change estimates for all regions (equivalent variation, USD millions)

Region	Tariff cut scenario		
	Swiss 5	Swiss 10	Swiss 15
Oceania	3218	2790	2553
China	3753.4	2305.6	1509.1
North and East Asia	13923	11858	10596
Indonesia	842	676	560
Malaysia	1262	1008	850
Philippines	153	99	68
Singapore	878	678	566
Thailand	1810	1476	1247
Vietnam	542	454	376
Rest of Southeast Asia	17	27	26
Bangladesh	131	120	94
India	1982	1937	1832
Sri Lanka	158	100	63
Rest of World	1432	1191	987
North America	1162	1038	915
Colombia	-153	-38	-4
Peru	86	66	43
Venezuela	38	32	-9
Rest of Latin America	130	90	71
Argentina	2050	1349	994
Brazil	1264	1188	1037
Chile	-17	-31	-44
Uruguay	158	110	93
European Union	5547	3972	3261
Rest of Europe	863	456	373
Turkey	491	300	211
Rest of Middle East and North Africa	715	600	391
Morocco	197	241	257
Rest of Sub-Saharan Africa	1325	1226	1163
Zambia	25	22	19
Zimbabwe	61	53	48

Source: GTAP simulation.

Table 4.A.4. General equilibrium simulation: comparison of welfare and revenue changes following tariff liberalisation according to Swiss formula with coefficients of 5, 10 and 15

	Welfare gains USD million			Per capita welfare gains relative to base %			Revenue Impact %		
	Swiss5	Swiss10	Swiss15	Swiss5	Swiss10	Swiss15	Swiss5	Swiss10	Swiss15
Argentina	2049.9	1349.3	994.0	0.84	0.56	0.41	-44.8	-15.3	-4.2
Bangladesh	131.4	119.8	94.2	0.31	0.28	0.22	-66.0	-42.0	-24.9
Brazil	1264.0	1188.0	1037.0	0.28	0.27	0.23	-53.1	-24.4	-10.4
Chile	-17.0	-30.6	-44.4	-0.03	-0.05	-0.07	-35.0	-0.6	-0.6
China	3753.4	2305.6	1509.1	0.36	0.22	0.14	-60.5	-47.1	-40.2
Colombia	-152.9	-37.5	-4.0	-0.2	-0.05	-0.01	-44.3	-11.3	-3.7
India	1982.1	1936.5	1832.1	0.45	0.44	0.42	-74.6	-58.7	-47.7
Indonesia	842.15	676.25	559.86	0.63	0.51	0.42	-26.0	-12.6	-9.4
Madagascar	7.4	4.5	2.6	0.18	0.11	0.06	-14.8	-4.5	-2.7
Malawi	17.5	10.2	6.5	1.12	0.66	0.42	-46.6	-16.6	-5.5
Malaysia	1262.48	1007.88	849.59	1.62	1.29	1.09	-58.1	-42.6	-36.4
Morocco	196.8	240.7	257.3	0.64	0.79	0.84	-73.6	-55.4	-42.1
Mozambique	4.2	6.8	7.6	0.13	0.21	0.23	-41.5	-11.8	-3.5
Peru	85.9	65.6	42.8	0.18	0.14	0.09	-57.5	-30.0	-11.1
Philippines	152.8	99.0	67.7	0.24	0.16	0.11	-21.4	-8.0	-1.0
Sri Lanka	158.2	100.1	63.4	1.12	0.71	0.45	-50.5	-27.1	-15.2
Tanzania	-55.0	-26.7	-9.8	-0.63	-0.30	-0.11	-63.5	-37.0	-19.5
Thailand	1810.1	1475.8	1247.2	1.82	1.48	1.25	-65.6	-47.0	-35.1
Uganda	-19.2	-10.5	-7.0	-0.36	-0.2	-0.13	-33.3	-10.8	-1.7
Uruguay	158.1	110.3	92.9	0.91	0.64	0.53	-26.9	-1.8	1.4
Venezuela	38.2	32.0	-8.8	0.03	0.03	-0.01	-52.4	-19.5	-3.2
Vietnam	542.4	453.6	376.2	1.86	1.56	1.29	-57.7	-34.1	-19.9
Zambia	25.3	21.8	19.3	0.77	0.67	0.59	-43.8	-17.5	-6.5
Zimbabwe	61.4	52.8	48.3	0.77	0.67	0.61	-63.9	-43.6	-31.5
World	44000	35378.0	30146.0						

Source: GTAP model simulations using GTAP and WITS data.

Table 4.A.5. Estimating the magnitude of the required fiscal adjustment

	Customs and other import duties		Simulated percentage impact on tariff revenue (%)			Estimated impact on revenue %			Estimated impact on tariff revenue as a % of GDP		
	% of revenue	% of GDP	Swiss5	Swiss10	Swiss15	Swiss5	Swiss10	Swiss15	Swiss5	Swiss10	Swiss15
Argentina	4%	1%	-45%	-15%	-4%	-1.8%	-0.6%	-0.2%	-0.3%	-0.1%	0.0%
Brazil	3%	1%	-53%	-24%	-10%	-1.6%	-0.7%	-0.3%	-0.4%	-0.2%	-0.1%
Chile	4%	1%	-35%	-1%	-1%	-1.4%	0.0%	0.0%	-0.3%	0.0%	0.0%
Colombia	5%	1%	-44%	-11%	-4%	-2.2%	-0.6%	-0.2%	-0.4%	-0.1%	0.0%
India	15%	2%	-75%	-59%	-48%	-11.2%	-8.8%	-7.2%	-1.3%	-1.1%	-0.9%
Indonesia	3%	1%	-26%	-13%	-9%	-0.8%	-0.4%	-0.3%	-0.2%	-0.1%	-0.1%
Madagascar	26%	3%	-15%	-5%	-3%	-3.9%	-1.2%	-0.7%	-0.4%	-0.1%	-0.1%
Morocco	16%	5%	-74%	-55%	-42%	-11.8%	-8.9%	-6.7%	-3.5%	-2.6%	-2.0%
Peru	9%	1%	-58%	-30%	-11%	-5.2%	-2.7%	-1.0%	-0.8%	-0.4%	-0.2%
Thailand	10%	2%	-66%	-47%	-35%	-6.6%	-4.7%	-35.0%	-1.2%	-0.8%	-0.6%
Uruguay	3%	1%	-27%	-2%	1%	-0.8%	-0.1%	0.0%	-0.2%	0.0%	0.0%
Venezuela	5%	1%	52%	-19%	-3%	-2.6%	-1.0%	-1.0%	-0.6%	-0.2%	0.0%

Source: GTAP simulations and IMF International Financial Statistics data.

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Special Focus: The Costs and Benefits of Trade Facilitation

Evdokia Möisé, OECD Trade Directorate

The term "trade facilitation" covers the various steps that can be taken to smooth the flow of trade. It has been widely used to cover all sorts of non-tariff barriers, including product testing and impediments to labour mobility. The WTO defines it as "the simplification and harmonisation of international trade procedures" covering the "activities, practices and formalities involved in collecting, presenting, communicating and processing data required for the movement of goods in international trade". The Doha Round negotiations on trade facilitation cover freedom of transit, fees and formalities related to importing and exporting, and transparency of trade regulations. These relate essentially to border procedures such as customs and port procedures and transport formalities.

Why trade facilitation matters: International trade has grown rapidly in recent years, thanks to the progressive reduction of tariffs and quotas through successive rounds of multilateral trade liberalisation. More trade means that more goods cross borders and have to comply with customs formalities. This has often put a strain on national administrations which try to cope with the increased traffic without extra resources. Businesses suffer both direct border-related costs, such as the expense of supplying information and documents to the relevant authority, and indirect costs, such as those arising from waiting time or procedural delays, lost business opportunities and lack of predictability in regulations. Inefficient border procedures cost governments in terms of lost revenue, smuggling and difficulties for implementing trade policy, for instance because they are unable to collect accurate statistics. The increased complexity of trade adds further costs. Globalisation and international competition encourage multinationals to source and manufacture components and final products in a variety of locations. Preferential trade agreements add complex rules of origin to the mix.

Benefits: Essentially, everyone stands to gain from making trade easier. Governments gain because efficient border procedures allow them to process more goods and control fraud better, thereby increasing government revenue. Businesses gain because they deliver goods more quickly to customers and are thus more competitive. Consumers gain because they do not pay the costs of lengthy border delays.

Studies indicate that even modest reductions in trade transaction costs, such as lengthy border procedures, translate into significantly increased trade. This is true for rich and poor countries alike, but the gains are relatively higher for developing countries. This is because their current systems are relatively inefficient and because trade in agro-food and trade by small and medium-sized enterprises are most severely affected by inefficient procedures but are very important for their economies.

In many developing countries, clearance times for exports and imports strongly affect the competitiveness of their national industry. Indian companies suffer an estimated 37% cost disadvantage compared to Shanghai for shipping clothing from Mumbai to the United States owing to delays and inefficiencies in Indian ports, while Fiji holds its own against low-cost competitors because of its ability to provide quick delivery of high-quality garments.

Trade facilitation also leads to more efficient and reliable tax collection, an important consideration for developing country governments that depend on trade taxes to finance their public administrations. Côte d'Ivoire, Lesotho and Madagascar, for example, all rely on trade taxes for more than a third of government revenue. Indeed, the prospect of increased revenue is a strong incentive for reform.

Costs: If the benefits are so evident, why are some countries reticent to commit to trade facilitation in multilateral negotiations? One reason is that improving an inefficient customs system may place heavy demands on limited resources, particularly in developing countries. However, even modest improvements in countries with the least efficient systems will bring considerable relative gains.

A particular cause for concern is the difficulty of knowing how much effective trade facilitation would cost, or how much reform is needed before governments start to reap the benefits in terms of increased revenue and trade. Governments generally undertake trade facilitation as part of a wider reform effort, often driven by the transition to a market economy or accession to a regional grouping or trade agreement. As a result funds are often not specifically allocated to trade facilitation *per se*, whence the difficulty of assessing costs.

Experience with both successful and failed reforms suggests that to ensure ownership and eventual sustainability, reform of trade facilitation must be tailored closely to a country's circumstances and needs. Sufficient attention needs to be paid to involving both customs and trade in the design process and to sensitise both to the longer-term gains to be achieved by the measures planned. A holistic approach to customs reform can yield more sustainable results than a piecemeal approach. Coherent implementation is critical, as some measures may need to be up and running before others can be introduced and be effective.

WTO involvement: A specific WTO undertaking on trade facilitation would renew the political impetus to make border controls more efficient and would strengthen the coherence of efforts to tackle this issue. The need to enhance efficiency in order to deal with an increasingly complex international trading environment has been an important driving force behind national customs reforms in recent years. However, such reforms have frequently not sufficed to remove outdated but deeply entrenched institutional behaviour and cumbersome procedures. To succeed, a trade facilitation agenda needs wide political support and the sustained commitment of those involved in formulating and implementing trade policy. Trade facilitation rules in the framework of the WTO could offer this missing impetus at the multilateral level and provide an external discipline to ensure continuing domestic political commitment and ward off temptations to backtrack.

Source: OECD (2006), *Overcoming Border Bottlenecks: The Costs and Benefits of Trade Facilitation*, Paris.

Chapter 5

SOUTH-SOUTH GOODS AND SERVICES TRADE

Nora Dihel, Przemyslaw Kowalski and Ben Shepherd

This chapter contributes to the debate on the development potential of South-South trade in goods and services. It uses descriptive statistics and gravity methodology to help understand past trends in world goods and services trade. The analysis of goods trade indicates that South-South trade barriers are still much higher than those for other types of trade and that South-South trade is severely constrained by distance-related trade costs. Econometric modelling also suggests that reducing South-South tariff barriers can have a major impact on trade flows whereas an equivalent reduction in North-North or North-South tariff barriers would have less impact. The analysis of services is a first attempt to identify key features governing the South-South dimension of services. Services trade between developing countries is predominantly regional and may reflect an increasing tendency to incorporate disciplines to liberalise services trade in regional trade agreements. It is estimated that cross-border South-South exports represent around 10% of world exports. While developing countries' exports to developed countries seem to be more important for most non-OECD regions, the opposite is true for developing Asian countries. The results suggest that there is further scope for increasing developing country services exports in general and for services trade between developing countries in particular.

Introduction

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

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

[1] The definition of "South" is not a stable one. This chapter uses the World Bank's classification of low- and middle-income countries with per capita gross national income not exceeding USD 9 075 in 2003 (see Table 5.A.1).

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

Still, at the time of writing, the DDA negotiations (*e.g.* in the Negotiating Group for Non-agricultural Market Access – NAMA) are very much aligned along the North-South divide. The North, with its generally lower trade barriers, urges ambitious commitments on the part of the South. At the same time, the South continues to seek derogations from WTO rules and commitments on the grounds of their development needs (see Chapter 8). The reasoning is that their liberalisation may disproportionately burden these countries with additional short-term costs. It is also argued that, despite already low levels of protection in the North, the market shares of these countries and the associated potential for technology spillovers suggest that further liberalisation by the North would generate substantial gains in the South even without significant liberalisation by the South. Does this situation reflect a missed opportunity for development through expanded South-South trade or a coherent position given the potentially minimal gains from such trade?

Economic theory does not give a clear answer, as different assumptions provide rationales both for gains from North-South and for South-South integration. The balance of gains is ultimately an empirical matter. Perhaps surprisingly, notwithstanding the statistics on the expansion of markets in the South and shares of South-South goods trade – the evidence on South-South services trade is negligible – the literature offers very little in terms of analysis of underlying causes. As a result some of the most complex questions remain unanswered. They include: To what extent has the apparent surge in South-South trade been driven by macroeconomic growth, lowering of trade barriers, the evolving role of trade costs, and cultural and other factors? Is the impact of trade costs and trade policy barriers on North-South trade different from those on South-South trade? If so, why? What are the potential gains from unrealised South-South trade and how do they compare with North-South trade?

Existing theoretical analyses and policy discussions on the development potential of South-South co-operation have focused almost exclusively on the potential for promoting South-South trade in goods, even though in many developing countries services already account for about 50% of GDP and employment and contribute close to 15% of total exports. Among the most important reasons for this emphasis in the literature are the theoretical challenges relating to the applicability of goods trade theories to services trade, lack of data on services trade among developing countries, and difficulties in identifying and quantifying services barriers. However, discussions on South-South trade in services have recently begun to take place as a way of exploring new and dynamic ways of addressing developing countries' concerns.

This chapter contributes to the debate on the development potential of South-South trade in both goods and services. It is based on two recent OECD studies (Kowalski and Shepherd, 2006; Dihel, 2006) which use statistics and gravity methodology to help understand past trends in world goods and services trade with special focus on South-South trade.

South-South trade in the literature

Theory

Inquiries into the development potential of trade between low- and middle-income countries have to be seen as a sub-theme of research on the causes and effects of international trade. In recent

years, this theme has re-emerged in the context of the economic effects of the proliferation of regional trade agreements (RTAs), on the one hand, and, on the other, the potential benefits that developing countries might obtain from the Doha round of multilateral trade negotiations.

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

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

At a more practical level, field research reveals that many developing country products are more diverse and complementary than normally assumed. These countries spend large amounts on importing goods from the North even though many of these products are available in other developing countries, often in the same region, on competitive conditions of price and quality (Agatiello, 2004). Indeed, the current structure of tariff barriers (see Tables 5.A.1 and 5.A.2 for a broad picture) suggests that, notwithstanding the progress achieved through unilateral, preferential or multilateral liberalisation, there is great potential for reforming developing countries' trade policies, even those regarding tariffs alone. Additionally, as compared to North-South trade, trade costs seem to be much higher for trade between developing countries. This suggests that, under certain conditions, there is significant potential for expanding South-South trade and for capturing associated welfare gains. The high growth rates in developing countries, which are likely to persist, add to the importance of South-South trade, although the prominent shares of developed economies in world trade indicate that developed countries' trade policies still play a central role.

What is special about services trade?

At first sight, the conceptual distinction between goods and services may seem relatively straightforward. Services are intangible, invisible and perishable, they cannot be stored or transported, and they may require direct interaction between consumer and producer. This last aspect of many services transactions creates the need for factor mobility. These characteristics-related definitions of services and the classic definition proposed by Hill (1977) have gradually led to a better understanding of the nature of services and services transactions. The fact that trade in services consists of transactions which can occur without the movement of factors of production or of the receiver and transactions which necessitate the movement of factors of production and/or of receivers is reflected in the four-mode typology of international service transactions that was adopted in the General

Agreement on Trade in Services (GATS) as a basis for liberalising trade in services and constitutes the generally recognised framework for the analysis of services.[2]

In spite of the ongoing debates concerning the applicability of goods theories to services trade, there is now widespread acceptance that the two main explanations for trade between countries apply to services trade as well as to goods trade. In a perfectly competitive environment, comparative advantage explains the pattern of services trade, while specialisation arising from increasing returns to scale and agglomeration effects explain the direction of trade in imperfect competition. Therefore, the characteristics that differentiate services from goods do not change the underlying economic rationale for trade and the applicability of the previous analysis on the development potential of South-South trade to international services transactions.

Still, some additional elements need to be considered in certain cases. For example, the factor mobility required to supply trade in some services introduces dimensions relating to the reasons for and implications of such movements for both home and host countries that are not automatically addressed in theories aiming to explain goods trade. In order to bridge this gap, recent theoretical work combines trade theories with factor mobility theories. For example, recent work on the integration of the theory of the multinational corporation (MNC) and foreign direct investment (FDI) into the theory of international trade are extremely relevant for trade in services via commercial presence. Therefore, discussion of the development potential of South-South services trade needs to connect trade models that capture increasing returns to scale and imperfect competition with frameworks that explain the reasons for MNCs to do business abroad (in general the advantages proposed by Dunning, *i.e.* ownership advantage, location advantage and internationalisation advantage) (Markusen *et al.,* 1996; Markusen, 2000).

The special characteristics of services – their heterogeneity as well as the prevalence of regulatory interventions to avoid market failure or to achieve non-economic social benefits – determine the nature of restrictions on services trade and the relative welfare gains that may be associated with liberalisation of South-South services trade. Restrictions on international services transactions typically take the form of non-tariff barriers and are designed to limit the access of foreign services, and particularly the access of suppliers or consumers, to the domestic market. Moreover, in addition to the presumably larger spectrum of barriers for services than for goods, services are characterised by a high level of regulation. Barriers to services trade rarely take the form of *ad valorem* taxes and consistent measurement is extremely difficult (OECD 2003a; OECD 2003b). Given the more restrictive initial barriers to trade in services than to trade in goods, the importance of services in an economy, and their significant role as intermediate inputs in all sectors, the potential for reforming South-South services trade and the associated gains from liberalisation are expected to be greater than those from South-South goods trade.

South-South goods trade

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

[2] The four modes include: cross-border supply of a service from one jurisdiction to another (mode 1); consumption abroad (mode 2); commercial presence (mode 3); movement of natural persons (mode 4).

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

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

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

The two methods most commonly used in related quantitative research and which have as their objective to establish causality are the computable general equilibrium (CGE) and the gravity model approaches.[3] The former is based on economic theory and employs detailed information on the structures of selected economies as well as policy instruments and integrates them in a multi-country, multi-sector, market-clearing framework with a sophisticated representation of demand and supply relations. This approach is used for *ex ante* predictions of the future effects of a set of economic policies and enables a rich analysis of various trade liberalisation scenarios at both aggregate and sectoral levels. In addition, in contrast to the gravity approach, CGE analysis enables a direct assessment of welfare effects of trade reforms. Each result can be traced back to theoretical assumptions and the structural characteristics of analysed economies and as such is an implication of theory rather than an empirical verification.

The gravity approach which underlies the analysis of goods trade in this chapter is also to some extent an implication of theoretical assumptions (Anderson and van Wincoop, 2003, 2004). Nevertheless, in contrast to the CGE approach, it uses historical data to validate statistical significance and estimate the magnitude of the hypothesised causal relationships between trade and the various potential determinants predicted by the theory, including the effects of implemented trade policies.

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

[3] Note also the related *Special Focus* section in this volume, which draws on and expands upon this discussion.

While Kowalski and Shepherd (2006) appears to be the first application of gravity methodology to South-South trade, the approach has recently been employed to assess trade potential and its impediments in selected low- and middle-income countries and regions (Kowalski and Shepherd, 2006, has a survey of the relevant literature). By and large, the literature does not offer a comprehensive analysis of the factors behind the observed growth of South-South trade, nor does it offer a thorough assessment of the potential benefits of future trade policy reforms from multilateral, regional or unilateral liberalisation. In particular, it is uncertain to what extent the observed upsurge in South-South trade was driven by these economies' macroeconomic growth and to what extent it was driven by trade policy changes. The first part of this chapter reports the results of Kowalski and Shepherd (2006), which attempts to fill this gap by using a large number of gravity models, with around 400 regressions, to examine the bilateral trade flows of approximately 180 countries over the period 1985-2002, covering all income groups.

Stylised facts on South-South trade

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

- Absolute levels of South-South trade over the period 1985-2002.
- South-South trade as a percentage of total trade over the period 1985-2002.
- Comparative growth rate of South-South trade over the period 1985-2002.
- Comparative commodity composition of South-South trade over the period 1985-2002.

To get an idea of what the data say about the relative evolution of South-South trade, the analysis starts from an aggregate level and a breakdown of total world trade by North-North, South-South or North-South.[4]

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

However, Table 5.A.4 reveals considerable heterogeneity over the nearly two decades considered. First, in the period 1985-90, South-South trade grew much more slowly than either of the other two flows. Yet, the pattern changed dramatically over the period 1990-95, with South-South trade growing at over 20% a year on average, compared with 15.25% for North-South trade and 5.75% for North-North trade. In the following period, South-South trade continued to grow more quickly than either North-North or North-South trade, even expanding comfortably in the period 2000-02 when North-North trade contracted mildly. The same is true when South-South trade is divided into more refined income groups. The fact that the three growth patterns are to some extent out of phase suggests that external factors affecting the other two groups of countries are unlikely to be the principal factors behind the development of South-South trade.

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

Table 5.A.5 shows that between 1985 and 2002, South-South trade has become relatively more important as a share of total trade involving the South, rising from less than 10% to around 14%. Yet, North-South trade still accounts for the bulk of total goods trade involving the South. Even more refined data presented in Kowalski and Shepherd (2006) suggest that discussions of South-South trade mostly concern trade involving upper-middle- and lower-middle-income countries while low-income countries play a lesser role. This indicates that while the overall growth rate of South-South trade has been impressive over the last two decades, it has been quite heterogeneous across income groups, with South-South trade involving low-income countries generally growing more slowly than South-South trade involving upper-middle- and lower-middle-income countries.

More detailed results presented in Kowalski and Shepherd (2006) indicate that aggregate figures mask considerable heterogeneity across commodity groups in South-South trade. The breakdown of world trade flows by commodity is based on the 1-digit UN Standard International Trade Classification (SITC) (Revision 1).[5] For some commodities (*e.g.* Beverages and tobacco, Chemicals) the share of South-South trade increased from around 2% in 1985 to around 6% in 1990, largely in line with total trade. Nevertheless, in certain sectors the share of South-South trade was already higher at the beginning of the investigated period and continued to increase. For instance, the shares of South-South trade in Food and live animals increased from 5% at the beginning of the period to above 10% in 2002. Animal and vegetable oils and fats were characterised by exceptionally high shares of South-South trade, which rose from 15% in 1985 to 34% in 2002. The smallest shares of South-South trade were observed in Machinery and transport equipment (increasing from 0.8% in 1985 to 3.6% in 2002) and Miscellaneous manufactured articles (increasing from 0.7% in 1985 to 2.8% in 2002).

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

Finally, as pointed out with reference to Table 5.A.1, South-South trade is generally subject to much higher barriers than North-South or North-North trade. Concretely, the barriers facing South-South trade are almost three times higher than those facing North-North trade. Table 5.A.2 nuances this analysis by showing that tariff rates are far from homogenous across the South. Speaking approximately, there is an inverse relationship between importer income level and average protection level. There is also a tendency – albeit a weaker one – for protection levels to increase as the exporter's income level decreases, although low-income exporters constitute an exception, as they generally face lower protection levels than other Southern exporters.

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

Explaining the stylised facts on South-South goods trade using the gravity methodology

Methodology

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

The gravity approach is the one most commonly used for *ex post* analysis of such questions. The basic idea behind a gravity model of trade is that the value of one country's exports to another country is directly proportional to the economic size of the two countries – since this determines supply and demand – and inversely proportional to the distance between them – since trade costs probably increase with distance. The term "gravity model" reflects the fact that this idea bears some similarities to the Newtonian law of gravity, in which the force of attraction between two objects is inversely proportional to the square of the distance between them, but directly proportional to the mass of each.[6]

The approach adopted in Kowalski and Shepherd (2006) closely follows that of Anderson and Van Wincoop (2003, 2004). The basic specification used here explains exports using bilateral distance and a series of dummy variables designed to capture the impact of GDP and prices as well as particular cultural or historical links, such as a common language or a colonial past. This set of explanatory variables, while not exhaustive, is well supported by the existing gravity literature.[7] First, a separate model is estimated for each year in the sample (1985-2002). The sample is then split up into different groups according to trading countries' classification as South or North based on World Bank income groups, and the process is repeated. This approach makes it possible to gauge the evolution of each estimated coefficient in the trade equation over time, so as to see whether, for example, the elasticity of trade with respect to distance decreased from 1985 to 2002. Moreover, one can also investigate whether, for example, the elasticity of South-South trade with respect to distance is greater than the same elasticity for North-North trade.

Finally, additional models are estimated for 2001 which add detailed bilateral tariff information (including information on tariff preferences) to the explanatory variables previously used.[8] The estimation, even for a single year, makes it possible to see whether, for example, the elasticity of

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

7 For a full description of methodology, variables and sources, see Kowalski and Shepherd (2006).

8 The tariff information comes from the ITC-CEPII MAcMap database (Bouët *et al*., 2004), which unfortunately is only available for one year; historical comparisons are therefore impossible. But the richness of the database more than compensates for this limitation: it includes applied tariffs, some non-tariff measures and, most importantly, it takes account of the complex web of bilateral and multilateral preferences that now govern world trade.

exports with respect to partner trade policy is the same for North-North as for South-South trade, and whether it is the same for exports of manufactured goods and agricultural products.

The approach is applied to both aggregate and sectoral export data at the SITC 1-digit level to see whether there are significant differences in the determinants of South-South trade at the sector level.

Discussion of results

Overall, the econometric methods employed in Kowalski and Shepherd (2006) process an enormous amount of data. Aggregate trade flows across all exporters, partners and years involve over 230 000 lines of data. When trade flows are disaggregated at the sectoral level, the number rises to nearly 1.5 million lines.

The assessment of trends in bilateral goods trade in the period 1985-2002 suggests that recent growth in South-South goods trade does not appear to have been brought about by the "death of distance",[9] as the impact of distance-related trade costs has not noticeably diminished over the period. Such costs continue to have a much more negative effect on South-South than on North-North trade: whereas a 10% increase in distance tends to reduce North-North trade by about 10%, the comparable figure for South-South trade is 17% (keeping all other factors unchanged). In both cases, the figures for 2002 are scarcely different from those for 1985.

There is evidence that the importance of a common language for South-South trade increased markedly in the early 1990s, but remained approximately constant for other trade flows. Hence, ethno-cultural links may have been one factor in the observed growth of South-South trade around that time.

While it has not been possible to conduct a comparative assessment of the impact of trade policy over time, the evidence currently available suggests that policy barriers are a much more important determinant of South-South trade than of other trade flows, in the sense that the elasticity of South-South trade is greater (in absolute value) with respect to trade policy than it is for other flows. On average, a 10% tariff cut is associated with a 1.6% increase in exports. This translates into an additional USD 5.7 billion in export earnings a year (based on 2002 data). Interestingly, the data indicate that an equivalent reduction in North-North or North-South tariff barriers does not result in an equally significant impact on trade flows. This suggests a considerable scope for trade policy to boost trade between (and potentially the welfare of) low- and lower-middle-income countries.

The sectoral specifications of the gravity model used show that there is considerable heterogeneity in tariff impacts across commodities and country groupings even though it is clear that South-South trade is much more sensitive to tariff-related costs than either North-North or North-South trade.

With the exception of Manufactured goods classified chiefly by material, where a 1% decrease in tariffs is associated with 0.10% increase in trade, North-North trade is estimated not to be significantly affected by tariffs. The tariff policy coefficients estimated for exports from North to South are negative and statistically significant for Food and live animals; Mineral fuels, lubricants and related materials; Chemicals; and Manufactured goods classified chiefly by material. Exports from South to North are

[9] The "death of distance" summarises the large, and fundamental, fall in the cost of moving people, objects and ideas around the globe in the 1980s and 1990s (*e.g.* Disdier and Head, 2004).

impeded by tariffs on Beverages and tobacco; Crude materials, inedible, except fuels; and Animal and vegetable oils and fats.

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

South-South services trade – stylised facts

Data and measurement issues

There are virtually no systematic analyses of trends in the structure of services trade among developing countries because of the numerous difficulties related to measurement of trade in services. Chief among them are the special characteristics of services and the fact that the four-part typology of international service transactions adopted in the GATS[10] as a basis for liberalising trade in services constitutes the generally recognised framework for the analysis of services:

- First, the current practice of gathering data on international services transactions is not consistent with the four-type classification of trade in services, as it does not recognise that a large part of services trade takes place in ways that are different from goods trade.
- Second, lack of partner country data for services trade between developing countries hinders quantitative analysis of South-South services trade.

Therefore, to shed some light on the nature and scale of South-South services trade, it is necessary to identify and analyse all possible sources of information and apply exploratory techniques to estimate the magnitude of services trade between developing countries.

The new *Manual on Statistics of International Trade in Services*, developed jointly by the International Monetary Fund (IMF), the OECD, Eurostat, the World Trade Organization (WTO), the United Nations and the United Nations Conference on Trade and Development (UNCTAD) provides a detailed analysis of measurement issues related to services trade. It also proposes a conceptual

10 The four-part typology of international services transactions adopted in the GATS encompasses: (1) *Cross border supply* of a service from one jurisdiction to another (mode 1). This mode of delivery is analogous to international trade in goods, in that a product crosses a frontier. The consumer does not move physically nor does the supplier establish itself abroad; instead they interact through postal or telecommunication networks. (2) *Consumption abroad* (mode 2) requires the movement of consumers to the supplier's country of residence. Tourism or students travelling abroad are good examples of this mode, involving the movement of (mobile) services consumers to (immobile) tourist or education facilities in another country. (3) *Commercial presence* (mode 3), in which case a service supplier establishes a foreign based corporation, joint venture, partnership, or other establishment in the consumer's country of residence, to supply services to persons in the host country (4) *Movement of natural persons* (mode 4), which involves an individual, functioning alone or in the employ of a service provider, temporarily travelling abroad to deliver a service in the consumer's country of residence. In general, individuals who are seeking access to the employment market of another country on a permanent basis or for citizenship or residency purposes are not included in this category.

framework for the further development of statistics on international trade in services, introducing modes of supply for the first time in the statistical context. While this framework constitutes a significant improvement, implementation is likely to take some time.

A more detailed discussion of various sources of services trade data is provided in recent OECD work concerned specifically with South-South trade in services (Dihel, 2006). Box 5.1 summarises this discussion, indicating the various sources of information that need to be consulted to collect information according to the various modes of services supply. The proposed allocation by modes of supply in Box 5.1 is based on the *Manual on Statistics of International Trade in Services*, which indicates that the main source of information for services trade data is given by balance of payments (BOP) statistics compiled on the basis of the fifth edition of the International Monetary Fund's Balance of Payments Manual (BPM 5). However, given the limited direct information on the GATS mode of supply in BOP statistics and other data sources, it should only be considered as an approximate estimate and treated with caution.

In addition to difficulties related to the measurement of services trade in general, any analysis of the South-South dimension of trade in services requires bilateral trade data. Unfortunately, there is a dearth of disaggregated and internationally comparable statistics on the direction of international services trade in general and on trade between developing countries in particular. While OECD countries have begun to collect information on services trade by partner countries, few developing countries report such information. Currently, the following sources of partner country data contain information that is useful in studying South-South trade in services:

- OECD database on trade in services by partner country (balance of payment statistics).
- UNCTAD database on FDI statistics.
- World Tourism Organisation statistics on number of visitors.
- International Air Transport Association (IATA) statistics provides some information on international passenger and freight trade flows by region.
- Migration statistics (imperfect proxies for trade in services via mode 4).

Based on these sources of information, used in Dihel (2006), essential features of the South-South dimension of services trade via the various modes of supply are briefly described in the next section.

Box 5.1. Statistical coverage of modes of supply

Mode	Statistical coverage
Mode 1 Cross border supply	BPM5: transport (most of), communications services, insurance services, financial services, royalties and licence fees Part of: Computer and information services; Other business services; Personal, cultural, and recreational services Sectoral statistics: telecommunications, air transport
Mode 2 Consumption abroad	BPM5: travel (excluding goods bought by travellers); repairs to carriers in foreign ports (goods) Part of: Transport (support and auxiliary services to carriers in foreign ports) Sectoral statistics: tourism
Mode 3 Commercial presence	Foreign Affiliates Trade in Services (FATS) statistics BPM5: part of: Construction services FDI statistics

Box 5.1. Statistical coverage of modes of supply (continued)	
Mode 4 Presence of natural persons	BPM5: part of: computer and information services; Other business services; Personal, cultural and recreational services; and Construction services FATS (supplementary information): foreign employment in foreign affiliates BPM5 (supplementary information): labour-related flows Other sources: International Labour Organisation (ILO) International Standard Classification of Occupations (ISCO 88) International Classification of Status in Employment (ICSE -93): classifications according to status of employment Immigration statistics Tourism statistics (business visitors) Statistics on number of work permits issued
Source: Adapted from the Manual on Statistics of International Trade in Services Statistics.	

South-South services trade – analysis of flows

Cross-border trade

Table 5.A.6 presents the estimated patterns of world and South-South cross-border (total) services trade in 2002 (based on reported BOP data on exports of services available to OECD countries and regions and mirror statistics).[11] It shows that South-South exports represent around 10% of world exports, while South-North exports seem to have a larger share of approximately 13% of total exports in both years. In terms of South-South and South-North differentiation, exports from Asian developing countries to other developing countries represent around 8% of world exports, accounting for more than half of their total exports (Table 5.A.7). In contrast, for developing countries in all other regions, exports to developed countries appear to be more important: for non-OECD European countries, they represented over 70% of total exports in 2002 and for developing countries in Africa and America over 80% of total exports. Intra-regional exports have the highest share in developing countries' total South-South exports.[12]

IATA's International Air Transport Statistics provide some information on international passenger and freight tonne flows by regions. The data in Tables 5.A.8 and 5.A.9 show that except for flows between Asia and other developing regions, exchanges of international passengers and freight tonne flows between developing countries are at extremely low levels, very often under 1% of reported passenger flows or total freight tonne flows. (The IATA data represent 90% of total passenger flows and 87% of scheduled freight tonnes carried.)

Consumption abroad

11 For the purpose of these estimations, "South" includes all non-OECD countries. The term "mirror statistics" refers cases where export data are not directly available for a given country and the corresponding partner countries' import figures are used instead.

12 As described in detail in OECD (2004), the table is primarily based on reported data on exports of services by partner country available to the OECD (75% of world exports). The use of mirror statistics as estimates brings the coverage to about 92% of world exports. It is worth noting however that mirror statistics may not always reflect the export that would be declared by the reporting country and may lead to some data inconsistencies. Information was complemented as necessary using the 1995 estimated shares from the services bilateral export matrix used for OECD's international macroeconomic model Interlink.

Table 5.A.10, compiled from World Tourism Organisation data, presents visitor arrivals by region in 2002 on a partner country basis for 208 countries. South-South exchanges represent approximately 20% of total visitors, South-North arrivals 9%, North-South arrivals 14% and North-North arrivals 57% of total visitor flows. Around 70% of visitors in non-OECD or developing countries come from other developing countries. Growth rates of these intra-regional flows between 1999 and 2002 (2003) suggest that South-South exchanges were the most dynamic with growth rates of 6.2%.

Commercial presence

Information on non-OECD countries' FDI in services or FATS flows on a partner country basis is scarce. Using data from sources such as the World Bank, the IMF, the OECD and UNCTAD, Aykut and Ratha (2004) estimate South-South FDI flows in the 1990s indirectly (Table 5.A.11).[13] They posit that by 2010, more than one-third of FDI in developing countries will originate in other developing countries, with India, China, Brazil and South Africa among the main sources. They also indicate that South-South FDI is driven by similar "push" and "pull" factors as well as similar structural, cyclical and policy factors. They note, however, that these figures should be interpreted with great care given the quality of data, the round-tripping problems (as in the case of China) and the impossibility of clearly distinguishing between North-South flows routed through locations in the South (*e.g.* Mexican affiliate of a United States company investing in Brazil) and genuine South-South flows.

Movement of natural persons for services provisions

Building on existing migration statistics, Parsons *et al.* (2005) constructed a database on the international bilateral migration stock for 226 countries. The database represents a first attempt to provide a general overview of current migration trends in terms of the overall magnitude of migrant stocks and regional migration patterns. Primary data sources are national population censuses, and migration statistics from the United Nations, the Economic Commission for Latin America and the Caribbean (ECLAC), Eurostat, the OECD, the Migration Policy Institute, the ILO and the Middle East Central Asia Databook constitute secondary sources. Dihel (2006) gives information on the proportion of all world migrants recorded bilaterally across selected sub-continental regions, on the percentages of immigrants hosted by other sub-continental regions, and on the percentages of emigrants sent from these states. However, the figures should be interpreted with care in the context of mode 4 trade in services given that migration stocks represent very imperfect proxies for trade in services via the temporary movement of natural persons.

Developing countries' participation in world services trade

This chapter and Dihel (2006) are the first attempts to rigorously identify the share of South-South services trade in world trade according to the four modes of supply. As opposed to goods trade, for which the evolution of trade is more easily documented, the empirical evidence presented here should be seen as a starting point for future analysis and should be treated with caution in light of the quality of the data and the potential underreporting. It can be further refined as more data become available. New information can also make it possible to analyse trends. However, the most important conclusion to emerge is that services trade between developing countries takes place predominantly at the regional level for all modes of supply.

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13 South is here defined as a group of 31 developing countries for which reasonably detailed FDI data are available. FDI data cover not only services, but also agriculture and manufacturing. Notwithstanding these limitations, these general indications on FDI flows among developing countries could be used for further sectoral and/or country-specific disaggregations.

Where then does South-South services trade stand in world services trade? It is rather difficult to find benchmarks against which to compare the figures derived here. However, given the dynamism of developing countries in world services trade, there appears to be a certain potential for developing South-South services trade.

As far as cross-border trade is concerned, the role of developing countries in international trade in services has increased on both the export and import sides. As a group, low- and middle-income countries' share in world services trade rose from 16% in 1990 to 23.5% in 2002. Their dynamism is reflected in an increase in their participation in all segments of services exports. Their exports now account for 23% of world exports of transport services, 30% of world exports of travel services and 20% of world exports of other commercial services.

As far as consumption abroad is concerned, travel and tourism appear to be the most dynamic sectors for most developing countries and the top currency earner for 40 developing countries. From a regional perspective, between 1990 and 2000, exports from low- and middle-income Asia, Central and Eastern Europe, and Latin America and the Caribbean grew at higher average annual rates than world services exports.

Commercial presence through FDI in services has expanded, with the world's inward stock of FDI in services quadrupling between 1990 and 2002, and the share of services in world FDI stock rising from 25% in the 1970s to about 60% in 2002. Developed countries remain the main source of outward FDI, but the developing countries' share has grown, from 1% in 1990 to 10% of global outward FDI services stock in 2002. On the inward side, developing countries' FDI has increased (to 25% of inward FDI stock in services), although developed countries remain the main recipients. In 2002, services accounted for about 55% of the total stock of inward FDI in developing countries and some 85% of the inward FDI stock of developing countries (UNCTAD, 2004b).

Finally, there are at present no reliable global figures on the size of mode 4 trade. Very rough estimates suggest that mode 4, valued at USD 30 billion in 1997, is the smallest of all modes of services supply defined in the GATS. This is likely to be a significant underestimate, however. Developing countries seem to be important exporters of services via mode 4 and there seems to be scope for further expansion of South-South mode 4 trade.

Is there further potential for South-South services trade?

Notwithstanding the limitations on data on trade in services, exploratory empirical analyses can be undertaken to identify services sectors with a potential for increased South-South trade. First of all, the extent to which international trade in various services sectors are intra-industry (simultaneous import and export of essentially the same services) or inter-industry can help understand the underlying forces that generate trade in the selected services sectors. For that purpose, the most widely used measure of intra-industry trade, the Grubel-Lloyd (GL) index, was employed.[14] A GL index that approaches zero implies low levels of intra-industry trade while a GL index that approaches 1 suggests high levels of intra-industry trade. Calculations were undertaken for all of the countries for which data were available in the IMF BOP database.

Computation of the index indicates wide diversity across sectors and countries. The results suggest that for all analysed sectors – transport, travel, insurance, other business services, construction

[14] The GL index is defined as: $GLij = 1 - \left| (Xij - Mij) / (Xij + Mij) \right|$
where Xij is exports of a service i by country j and Mij is imports of a service i by country j.

services – both intra-industry and inter-industry trade are important. While insurance services are in most cases a wholly intra-industry phenomenon, in other sectors two-way trade is common. The findings suggest that theories of both inter-industry and intra-industry trade may be complementary in explaining the observed trade flows.

To further investigate inter-industry trade, the so-called revealed comparative advantage (RCA) indices can be computed and compared. The most common RCA index was developed by Balassa (1965).[15] Calculation of RCA indices for all developing countries for which data were available reveals a relatively uniform pattern of specialisation in services: in general, developing countries seem to be relatively specialised in (low-skill) labour-intensive services (such as construction services) and (in some cases) natural-endowment-intensive services (such as transport or travel services). Recent evidence indicates that some developing countries are in the process of developing a comparative advantage in more sophisticated sectors, such as "Other business services". This is especially true for a number of more advanced developing countries such as China, India, Malaysia, Thailand, Mexico, Egypt and Brazil (Table 5.A.12).

These results have to be interpreted in light of the general evolution of developing countries' services trade. Given the dynamic growth in the share of low- and middle-income countries in world services trade and their increased participation in all segments of services exports, it can be expected that technological progress, together with business practices, will allow developing countries to develop modern services and acquire a competitive advantage in more advanced services sectors (Marchetti, 2004). Given the growing concentration of trade in some developing countries – in 2003, 12 more advanced developing countries were among the world's leading exporters of services and accounted for 71% of services exports of all developing countries, compared to 66% in 1998 – it is to be expected that intra-developing country services exports will be concentrated among these more advanced developing economies and, in a next stage, between them and poorer developing countries. While the results are subject to the stated caveats, these findings could mean that such developing countries may become aware of their comparative advantage in certain services and of the potential of South-South and North-South trade and may give their support to greater services trade liberalisation.

Reality check: Does previous qualitative evidence confirm our statistical findings?

Given that current statistical concepts and methodologies do not enable an in-depth analysis of South-South services trade, additional examples of successful exports of services between developing countries may contribute to a greater awareness of the extent of developing countries' current participation in trade in services and of the potential that exists to expand that participation. They might also provide a useful reality check on the quantitative results discussed above. An OECD study, "Services Trade Liberalisation: Identifying Opportunities and Gains"(OECD, 2003), identifies numerous examples of developing countries' exports to other developing and developed countries in sectors such as audiovisual and cultural services; business services; computer and related services; construction services; distribution services; financial services; health services; higher education and

[15] RCA indices of a service are defined as the ratio of exports of a "service" category to a country's total service exports, divided by the ratio of world exports of this "service" to total world service exports. The value of this index may range from zero to a very large number. If the index is greater than 1 this implies that the country is relatively specialised in the service concerned and has a comparative advantage in such exports compared with the world average. A value less than 1 indicates a comparative disadvantage. An RCA index is in many ways a crude measure of comparative advantage. For example, it does not take into consideration the presence of trade barriers; and, since it is based on BOP data, it does not give any indication of a country's comparative advantage in supplying services through commercial presence or the movement of individual service suppliers

training services; port and related services, and shipping services; professional services; telecommunication services; and tourism and related services. The examples provided in that study confirm the findings presented here and provide additional information on the determinants and potential of South-South services trade, in particular:

- The 2003 study also found that developing countries generally seem particularly successful in certain labour-intensive sectors (such as construction services) and natural-endowment-intensive services (such as port and shipping services as well as tourism).
- Also, the present findings reinforce those of the previous study that some developing countries are starting to develop a comparative advantage in highly skilled labour-intensive services and more sophisticated business services.
- Supplementing the statistical analyses, the 2003 study indicates that in sectors such as banking, insurance, or health services, developing countries were able to exploit market niche effects.
- In terms of modal issues, the 2003 study and additional empirical evidence suggest that in the context of the rapid expansion of FDI in services and the faster growth of South-South FDI flows as compared to North-South flows, South-South services flows via commercial presence seem to have an important potential for development, especially in poor countries. More advanced developing countries like China, Brazil, South Africa and India have become important source of FDI for poor countries. Regional trade agreements also contribute to growth in South-South FDI as well as to increased growth and capital liberalisation. This means that developing countries are more financially linked than one would think. A number of case studies indicate that transnational corporations (TNCs) from the South seem to invest in developing countries at lower levels of development because of their comparative advantage (UNCTAD, 2005; OECD, 2003).
- In terms of mode 4, the 2003 study points out that while permanent migration is mainly a South-North phenomenon triggered by wage differentials and the expectation of better living standards, temporary flows are mainly the result of bilateral agreements between governments wishing to encourage co-operation. Demographic complementarities between developing countries could be a good reason to utilise some countries' human resources without having to consider long-term immigration[16].

The importance of regional trade in the context of trade between developing countries is also highlighted by anecdotal evidence in the 2003 study. This also reinforces the results of the statistical analysis. An additional interesting finding concerning the pattern for the development of services trade is the development of a global domestic export capacity from imported services.

Conclusions

South-South trade in goods expanded rapidly, but unevenly, over the period 1985-2002. The first part of the chapter reports the results of econometric analysis by Kowalski and Shepherd (2006),

[16] For example, Asher and Sen (2005) demonstrate that there are important complementarities between India, on the one hand, and Singapore and China, on the other. India is entering a phase of demographic expansion over the next three to four decades, while the share of working-age population in China and Singapore will begin to decline around 2015. Following the model of businesses in OECD countries that experienced rapid ageing earlier, Singapore and China could substantially enhance their competitiveness by partnering with India in a variety of knowledge-intensive service activities. Therefore, contrary to the general belief, mode 4 is not only a developed versus developing country issue.

involving over 400 regressions and nearly 1.5 million lines of data, to examine this important, yet not well understood, phenomenon. The puzzling nature of the expansion of South-South trade stems from the following:

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

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

The second part of the chapter reports on the results of an attempt to identify the key features governing the South-South dimension of services trade via the various modes of supply. The most important conclusion is that services trade between developing countries takes place predominantly at the regional level for all modes of supply; this may be due to the increasing tendency to incorporate disciplines to liberalise services trade within regional trade agreements. In terms of the magnitude of South-South services trade via different modes of supply, the estimates based on BOP statistics suggest that South-South exports via modes 1 and 2 represent around 10% of world exports. While developing countries' exports to developed countries seem to be more important for the majority of non-OECD regions, the opposite is true for Asian developing countries: their exports to developing regions represent more than half of their total exports. Except for Asia, air transport exchanges between developing countries seem to be negligible. In terms of mode 3, indirect estimates suggest that more than one-third of FDI in developing countries will originate in other developing countries. Around 19% of total FDI stocks from developing countries come from other developing countries.

These results also suggest that there is scope for increasing developing country services exports in general and services trade between developing countries in particular. In the first stage, differences in short-term comparative advantage are expected to provide the main rationale for services trade between more advanced and less advanced countries. However, in the medium-long term, it is technological knowledge that will determine comparative advantage and enable the development of more advanced services trade. There are already clear examples of developing countries exploiting market niche opportunities and developing firm-specific intangible assets, and there is a realistic potential for increased trade in know-how-intensive services between developing countries in the short to medium term.

ANNEX TABLES

Table 5.A.1. Simple average tariff rates, 2001, by exporter and importer groups

Importer / Exporter	North	South
North	4.3819	9.8733
South	4.9597	11.0653

Source: Kowalski and Shepherd (2006), calculated from MAcMap data.

Table 5.A.2. Simple average tariff rates, 2001, by exporter and importer income groups

Percentages

Importer / Exporter	High	Upper middle	Lower middle	Low
High	4.3819	8.3864	9.7195	11.7312
Upper middle	5.9429	8.5162	11.8285	13.7275
Lower middle	5.5675	9.4899	11.0647	14.2759
Low	3.627	8.7221	10.0112	13.3798

Source: Kowalski and Shepherd (2006) Note: Calculated from MAcMap data

Table 5.A.3. Breakdown of total world trade, by aggregate income group, 1985-2002

USD millions and %

	North-North		North-South		South-South	
	USD millions	%	USD millions	%	USD millions	%
1985	1 030 622.65	67.13	456 673.20	29.75	47 961.08	3.12
1986	1 178 530.53	71.62	426 028.31	25.89	40 910.30	2.49
1987	1 403 160.36	73.18	470 175.90	24.52	43 977.26	2.29
1989	1 639 259.97	73.40	544 295.70	24.37	49 710.53	2.23
1988	1 765 727.66	72.26	618 307.25	25.30	59 541.40	2.44
1990	2 010 638.03	72.12	713 047.55	25.58	64 150.04	2.30
1991	2 041 777.84	70.47	7880 72.21	27.20	67 370.75	2.33
1992	2 015 718.29	67.49	876 171.93	29.34	94 730.73	3.17
1993	2 024 834.86	63.88	1 035 814.36	32.68	108 982.92	3.44
1994	2 265 137.98	63.10	1 193 385.13	33.25	130 985.21	3.65
1995	2 657 577.01	62.02	1 449 030.83	33.82	178 466.23	4.16
1996	2 750 173.64	59.94	1 593 665.71	34.73	244 630.84	5.33
1997	2 765 668.31	57.90	1 735 381.46	36.33	275 306.90	5.76
1998	2 777 798.41	58.49	1 708 404.55	35.97	263 248.52	5.54
1999	3 166 493.66	60.17	1 837 534.77	34.91	258 931.53	4.92
2000	3 424 812.85	57.79	2 169 624.36	36.61	331 435.77	5.59
2001	3 251 804.04	56.52	2 150 747.03	37.38	350 739.36	6.10
2002	3 277 613.28	56.00	2 220 746.06	37.94	354 682.72	6.06

Source: Kowalski and Shepherd (2006).

Table 5.A.4. Average annualised growth rates of trade, breakdown by aggregate income group, 1985-2002

Percentages

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

Source: Kowalski and Shepherd (2006).

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

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

Source: Kowalski and Shepherd (2006).

Table 5.A.6. Estimated pattern of world and OECD trade in services, 2002

% of total world exports

2002	World	Total OECD	NAFTA	OECD Asia and Oceania	EU	OECD Europe other	Total non OECD	Africa	America non OECD	Asia and Oceania non OECD	Europe non OECD
World	100.0	73.8	19.6	9.0	40.5	4.7	24.9	2.3	4.0	16.2	2.4
Total OECD	76.3	61.1	15.4	5.9	35.3	4.4	14.0	1.6	3.3	7.4	1.7
NAFTA	20.9	15.1	4.7	3.0	6.7	0.7	5.6	0.4	2.3	2.6	0.3
OECD Asia and Oceania	*7.2*	*4.7*	*2.3*	*1.0*	*1.3*	*0.1*	*2.5*	*0.1*	*0.2*	*2.1*	*0.1*
EU total	*42.7*	*36.4*	*7.5*	*1.7*	*23.8*	*3.4*	*5.2*	*1.1*	*0.8*	*2.5*	*0.9*
OECD Europe other	*5.5*	*4.9*	*0.9*	*0.1*	*3.5*	*0.2*	*0.7*	*0.0*	*0.0*	*0.2*	*0.4*
Total non OECD	23.6	12.7	4.2	3.1	5.1	0.3	10.9	0.8	0.7	8.8	0.7
Africa	*2.1*	*1.5*	*0.2*	*0.2*	*1.1*	*0.0*	*0.6*	*0.4*	*0.0*	*0.2*	*0.0*
America non OECD	*3.4*	*2.9*	*1.7*	*0.4*	*0.7*	*0.0*	*0.6*	*0.0*	*0.4*	*0.1*	*0.0*
Asia and Oceania non OECD	*15.4*	*6.6*	*2.0*	*2.4*	*2.1*	*0.1*	*8.7*	*0.3*	*0.2*	*8.0*	0.2
Europe non OECD	*2.7*	*1.7*	*0.2*	*0.1*	*1.2*	*0.2*	*1.0*	*0.0*	*0.0*	*0.5*	*0.5*

Notes: NA refers to estimates that could not be deducted taking into account the available data. Total World doesn't add up to 100% because of discrepancies in the original table! The 2002 table 1b was constructed with more information than was available in 2001 for table 1a*]. Due to data quality and inconsistency problems a comparison of the two tables for 2001 and 2002 may be in part an indication of the degree of robustness of the estimates as well as real changes.
Source: Derived from source: OECD (2003) & (2004), Statistics on International Trade in Services.

Table 5.A.7. Estimated pattern of world and OECD trade in services, millions USD and percentage, 2002

2002	World	Total OECD	NAFTA	OECD Asia and Oceania	EU	OECD Europe other	Total non OECD	Africa	America non OECD	Asia and Oceania non OECD	Europe non OECD
World	1 641 291	73.8%	19.6%	9.0%	40.5%	4.7%	24.9%	2.3%	4.0%	16.2%	2.4%
Total OECD	1 251 939	80.0%	20.2%	7.7%	46.3%	5.8%	18.3%	2.1%	4.3%	9.7%	2.2%
NAFTA	342 775	72.5%	22.3%	14.6%	32.0%	3.5%	26.6%	1.7%	11.0%	12.7%	1.3%
OECD Asia and Oceania	118 316	65.0%	31.4%	14.1%	18.0%	1.4%	35.0%	1.6%	3.1%	29.6%	0.7%
EU total	700 318	85.2%	17.7%	3.9%	55.8%	7.9%	12.3%	2.6%	1.8%	5.8%	2.2%
OECD Europe other	90 531	88.2%	17.2%	2.7%	63.9%	4.3%	11.8%	0.4%	0.7%	2.8%	7.9%
Total non OECD	387 533	53.8%	17.7%	13.1%	21.7%	1.3%	46.2%	3.2%	2.8%	37.2%	3.0%
Africa	34 048	70.8%	8.3%	9.2%	52.7%	0.5%	29.2%	18.5%	0.6%	9.0%	1.1%
America non OECD	56 486	83.2%	50.8%	11.6%	20.4%	0.3%	16.8%	0.2%	12.4%	3.9%	0.2%
Asia and Oceania non OECD	252 000	43.3%	13.3%	15.8%	13.6%	0.6%	56.7%	2.2%	1.2%	52.2%	1.3%
Europe non OECD	44 998	63.0%	8.2%	2.9%	45.1%	6.9%	37.0%	1.3%	1.2%	16.7%	17.8%

Source: OECD (2004), Statistics on International Trade in Services.

Table 5.A.8. International scheduled passenger flows by region as percentage of total, 2000

Thousands of passengers (2000)

	North America	Central America	South America	Europe	Middle East	Africa	Asia	South West Pacific
North America	0.03	0.05	0.02	0.11	0.00	0.00	0.05	0.01
Central America		0.01	0.00	0.01			0.00	
South America			0.01	0.01		0.00	0.00	0.00
Europe	0.37				0.02		0.05	0.01
Middle East					0.01		0.02	
Africa				0.04	0.01	0.01	0.00	0.00
Asia	0.09							0.03
South West Pacific	0.00							

Source: IATA (2004).

Table 5.A.9. International scheduled freight tonnes flows by region

Percentage of total

	North America	Central America	South America	Europe	Middle East	Africa	Asia	South West Pacific
North America	2.05%	2.18%	2.63%	17.88%	0.55%	0.12%	14.61%	0.66%
Central America		0.14%	0.14%	0.91%			0.06%	
South America			0.70%	2.07%		0.11%	0.05%	0.03%
Europe				9.15%	3.77%		16.36%	0.71%
Middle East					0.78%		2.06%	
Africa				3.89%	0.57%		0.38%	0.06%
Asia							13.61%	2.85%
South West Pacific								0.43%

Source: IATA (2004).

Table 5.A.10. Visitor arrivals by region

Percentages

Regions exporting (Reporter)	OECD Total	NAFTA	OECD Asia and Oceania	EU	OECD Europe other	Non OECD total	America non OECD	Asia and Oceania non OECD	MENA	Europe non OECD	Africa	Total
OECD total	80.6%	15.5%	2.3%	54.5%	8.4%	19.4%	3.8%	7.0%	1.4%	5.2%	2.1%	100.0%
NAFTA	79.2%	59.0%	2.2%	16.0%	2.0%	20.8%	12.1%	6.1%	1.0%	0.8%	0.8%	100.0%
OECD Asia and Oceania	49.9%	14.6%	17.0%	15.6%	2.7%	50.1%	0.7%	46.9%	0.8%	1.0%	0.8%	100.0%
EU	85.3%	3.1%	0.7%	72.0%	9.5%	14.7%	1.9%	3.0%	1.5%	5.6%	2.7%	100.0%
OECD Europe other	74.8%	3.4%	0.5%	49.8%	21.1%	25.2%	1.6%	1.8%	1.9%	17.4%	2.5%	100.0%
Non OECD Total	29.9%	3.5%	3.1%	11.9%	11.4%	70.1%	6.7%	22.9%	11.3%	20.3%	8.9%	100.0%
Non OECD nec	17.6%	0.3%	2.4%	13.3%	1.5%	82.4%	12.2%	18.3%	6.0%	23.8%	22.2%	100.0%
America non OECD	40.5%	20.4%	0.5%	18.7%	0.9%	59.5%	55.9%	2.0%	0.5%	0.5%	0.7%	100.0%
Asia and Oceania non OECD	21.4%	3.2%	8.7%	7.5%	2.0%	78.6%	0.2%	66.5%	8.2%	2.7%	0.9%	100.0%
MENA	15.3%	2.5%	0.4%	7.4%	5.0%	84.7%	0.4%	3.7%	69.8%	3.1%	7.7%	100.0%
Europe non OECD	44.3%	0.4%	0.5%	14.5%	29.0%	55.7%	0.3%	3.1%	1.9%	49.9%	0.5%	100.0%
Africa	16.7%	1.7%	0.7%	12.9%	1.4%	83.3%	0.3%	3.2%	10.1%	0.4%	69.3%	100.0%
TOTAL	65.5%	12.0%	2.5%	41.8%	9.2%	34.5%	4.7%	11.7%	4.3%	9.7%	4.1%	100.0%

Notes: OECD Europe Other may include non-OECD countries recorded under a general category "ALL C/E EUR" or "ALL EUROPE". "Non-OECD nec refers to "OTH.WORLD" and "N RESID ABRO". Covers 206 countries.
Source: World Tourism Organisation (2004).

Table 5.A.11. Estimation of South-South FDI flows, 1994-2000

USD billions

	1994	1995	1996	1997	1998	1999	2000
South-South flows	4.6	15.3	25	57.4	56.6	49.7	53.9
Share of total South -South FDI flows	6	16.2	22.3	38.7	36.8	31	36.4

Source: Aykut and Ratha (2003).

Table 5.A.12. Revealed comparative advantage, selected countries

	Transport			Travel			Insurance and financial services			Computer, information, communications and other commercial services		
	1990	2002	% change	1990	2002	% change	1990	2002	% change	1990	2002	% change
Argentina	1.77	0.58	-67.13	1.05	0.94	-10.75	0.00	0.01	-	0.22	0.30	40.85
Brazil	0.86	0.54	-37.10	0.72	0.50	-30.37	0.28	0.54	95.86	0.38	0.91	139.73
Chile	1.58	2.29	45.19	0.89	0.57	-36.09	0.73	0.27	-63.61	0.69	0.54	-21.36
China	0.89	0.37	-58.82	0.44	0.97	121.75	0.28	0.05	-82.89	0.24	0.48	96.45
Costa Rica	1.05	0.81	-22.76	2.39	2.82	18.01	0.37	0.20	-45.66	1.54	0.81	-47.69
Dominican Republic	0.42	0.21	-50.89	3.79	5.80	52.89	0.06	0.00	-100.00	1.41	0.26	-81.19
Egypt	6.52	4.87	-25.34	2.26	4.81	112.56	0.49	0.51	4.51	2.34	2.44	4.53
India	0.95	0.81	-15.26	1.17	0.71	-39.81	0.47	0.32	-32.26	1.35	3.40	152.39
Indonesia	0.06	0.39	604.35	1.30	1.44	10.31	0.00	0.00	0.00	0.15	0.04	-74.51
Jamaica	1.84	2.89	56.93	6.00	6.98	16.37	0.54	0.80	47.49	0.25	1.22	380.71
Malaysia	0.81	0.62	-23.26	0.86	1.14	31.77	0.01	0.12	1160.84	0.41	0.57	38.39
Mexico	0.42	0.16	-62.74	1.96	0.88	-54.95	0.59	0.44	-24.55	0.15	0.10	-35.26
Philippines	0.50	0.38	-24.68	0.72	0.76	6.06	0.11	0.11	-3.54	3.04	0.20	-93.35
Singapore	0.76	1.74	127.97	1.21	0.49	-59.61	0.12	0.30	163.01	1.36	1.13	-16.71
South Africa	0.59	0.71	18.96	1.16	1.38	18.62	1.12	0.44	-60.71	0.23	0.16	-30.03
Thailand	1.01	0.91	-9.96	2.51	1.62	-35.18	0.04	0.07	89.82	0.33	0.64	92.26

Source: Marchetti (2004).

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Special Focus: Trade, Investment and Development

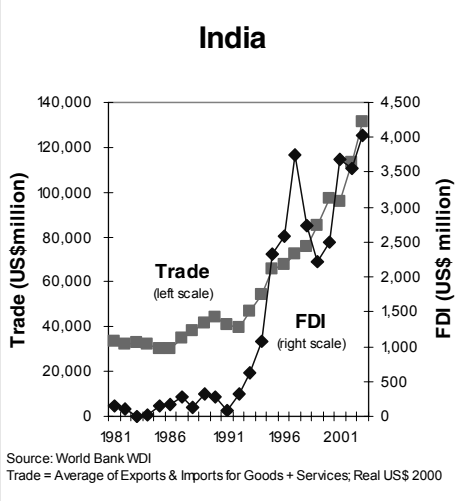
Sébastien Miroudot, OECD Trade Directorate

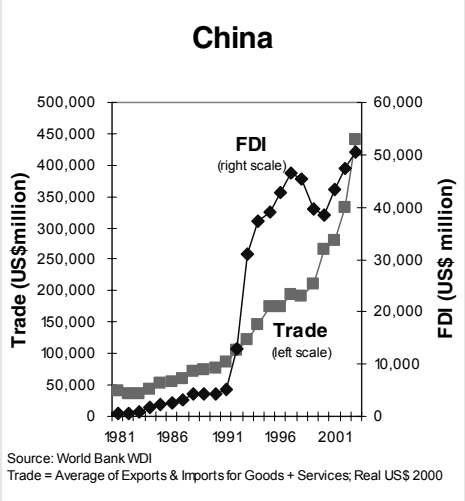
Trade policy is one of the main determinants of investment decisions by domestic and foreign firms. Trade liberalisation can not only encourage investment but also maximise its contribution to development, in particular by encouraging technology transfer and other linkages that induce growth.

The relationship between trade and investment

The relationship between international trade, domestic investment and foreign direct investment (FDI) is complex (OECD, 2005a). Trade can either substitute for or complement FDI. Market-seeking firms can serve foreign markets through export sales or through foreign subsidiaries. The latter effectively substitute FDI for trade. In turn, affiliates of foreign firms create new trade flows with their parent companies or foreign suppliers and may also export to third countries or back to the home country, thereby increasing trade. Trade can also draw attention to resources and markets and highlight opportunities for foreign investors. Hence, greater trade correlates with greater FDI flows, as exemplified by India and China (Figure 1).

Figure 1. The virtuous cycle between trade and FDI: India and China





Foreign investment, which is generally a small share of a country's total investment, can either substitute for, or complement, domestic investment. For a given project, domestic investment may be non-competitive with FDI, but it can also complement FDI, as in the case of joint ventures, or leverage FDI, as in the case of domestic debt. When domestic investment and FDI are complementary, economic activity tends to increase and induce more trade for a given amount of investment. Moreover, to the extent that investment (domestic or FDI) positively affects a host's economic growth, it can also have a trade-enhancing effect.

FDI (and to a lesser extent domestic investment) can induce imports in the short term. An investing firm building a new plant, for instance, may require capital items that are either only available or cheaper from foreign sources. A benefit of trade liberalisation is that it allows domestic

and foreign investors to access the most efficient inputs produced abroad and enhance the host country's international competitiveness.

Increasing intra-firm trade between developed and developing countries highlights the trend towards more trade-intensive foreign investment (World Bank, 2003). This reflects the new multinational enterprise (MNE) strategies of outsourcing and globalised production, with a network of subsidiaries in various countries creating a "global value chain" (UNCTAD, 2002), and mirrors a change in the determinants of FDI. Although market-seeking or resource-seeking investments still account for most FDI between developed and developing countries (*i.e.* investment seeking access to new markets or resources), efficiency-seeking motives, which take advantage of cost differences and scale economies and rationalise production, have increased over the past decade.

Spillovers and linkages: the growth impact of trade and investment

There is more and more evidence that trade liberalisation has a positive impact on growth (Wacziarg and Welch, 2003; Lee *et al*., 2004). Several channels of transmission between trade and growth involve interaction between foreign and domestic firms in the host economy and thus imply FDI. While domestic investment is the key to economic growth and development, FDI linked with trade can be a catalyst for innovation, improved productivity and sustained growth through linkages between a foreign firm and its suppliers (upstream or backward vertical linkages), its customers (downstream or forward vertical linkages), or its competitors (horizontal linkages) (see OECD, 2002, and Saggi, 2004, for a review of the available empirical evidence). Sectors with a high level of foreign involvement generally have higher productivity and faster productivity growth.

Backward linkages are considered the strongest and most consistent positive spillover (OECD, 2002; Javorcik, 2004). They can be defined as contracts between the foreign affiliates of a MNE and local suppliers of products or services used directly or indirectly by the foreign affiliate. Recognition of the importance of introducing new technologies and management skills through backward linkages has refined development thinking. Backward linkages may also include movements of people, demonstration effects and increased competition when MNEs encourage local capacity building.

The role of the services sector in the process should be emphasised (OECD, 2006). Key services, such as business services, telecommunications, financial services, higher education and training, and logistics services, can facilitate the transfer of knowledge between foreign and domestic firms. There is also evidence of a positive relationship between FDI in manufacturing and trade in services (OECD, 2005b).

Maximising the benefits of trade and investment for development

Countries with outward-oriented strategies and liberal policies in dynamic export sectors have tended to perform well in terms of growth. A new activity launched with the help of foreign investors is often subsequently dominated by domestic firms. Examples include India's software industry and business services sector, Chinese Taipei's electronics and semiconductor industry and Mauritius' textile industry. However, spillovers from trade and investment do not occur automatically. Some studies find that FDI has a negative impact on domestic firms (*e.g.* Djankov and Hoekman, 2000, on Czech manufacturing). In some cases FDI may be more market- or resource-seeking than efficiency-seeking, and there may be fewer interactions between foreign affiliates and domestic firms. Domestic firms may also lack the ability to absorb the technologies of foreign firms. Indeed, several studies point to the fact that without sufficient absorptive capacity – for example, enough human capital – a country will fail to increase its productivity through FDI (*e.g.* Xu, 2000).

To attract foreign investors, policy makers in developing countries need to create a healthy investment environment. They should aim to reduce costs associated with customs procedures, regulations and administration. It is also important to reduce policy uncertainty and encourage regional trade integration to create larger markets and enhance dynamic gains from trade. Experience shows that promotion of spillovers and linkages is best achieved when investors are free to source inputs competitively and to develop the sectors of their choice. Strategies aimed at "picking winners and losers" through trade policy have generally failed as they create anti-import or anti-export biases. With sufficient time, liberalising trade policies can be an incentive for investment (both domestic and FDI) and a catalyst for its positive effects on growth. Liberalising trade is not a panacea, but in conjunction with other policies, it is an integral part of attracting investment and utilising it effectively for growth.

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Chapter 6

SERVICES AS OUTPUTS AND INTERMEDIATE INPUTS: THE IMPACT OF LIBERALISATION[1]

Nora Dihel, OECD Trade Directorate, with
Philippa Dee, Australian National University

The aim of this chapter is to (1) determine the magnitude of services barriers and (2) examine the flow-on effects of such barriers to the economy as a whole by (i) highlighting the costs imposed by inefficient services inputs to both services and non-services sectors and (ii) analysing whether and how the benefits of services trade reform are passed on to other sectors in the economy. The analysis covers telecommunication, banking, distribution, electricity, professional services, and air and maritime transport in selected developing and transition economies. Given that tax equivalents for services barriers are estimated by statistical means, and are therefore inherently uncertain, care has to be taken to ensure that policy conclusions are relatively general. Notwithstanding these limitations, the exercise could be important from a practical point of view as it shows that in a number of agricultural and manufacturing sectors the sign of protection is reversed (i.e. it goes from positive protection into effective taxation) if existing services barriers are taken into account. The chapter shows that removing the restrictions on services trade would tend to improve the productivity of the services sector and deepen the services intensity of an economy. The economy-wide gains from services trade reform would come almost entirely from unilateral action.

Introduction

This chapter aims to determine the magnitude of services barriers and examine the flow-on effects of such barriers to the economy as a whole by highlighting the costs imposed by inefficient services inputs on both services and non-services sectors and analysing whether and how the benefits of services trade reform are passed on to other sectors of the economy.

To assess whether the transmission mechanisms are country-specific or more general, the analysis covers a range of countries with different levels of development. Two of the countries are in Asia (Malaysia, Thailand), two in Latin America (Brazil, Chile) and two in Africa (Morocco, Zambia). The examination also covers the Russian Federation and three countries in south-eastern Europe (Bulgaria, Croatia and Romania). The services sectors analysed are air passenger transport, banking, distribution services, electricity generation, maritime transport, professional services (engineering) and telecommunications.

Measuring the direct effects of services barriers

The first task is to obtain a quantitative representation of the extent of services trade barriers in the seven services sectors in these economies. Contrary to goods trade, this does not simply involve looking up a tariff schedule. Services trade barriers are typically behind-the-border, non-price,

[1] This chapter was prepared on the basis of Dee (2005), Dihel (2005), OECD (2004) and OECD (2005).

regulatory barriers that may either protect incumbent service firms from new competition, be it from domestic entrants or foreigners, or discriminate explicitly against foreign operators.

Methodology

In order to quantify the flow-on effects of such barriers to the economy as a whole, it is necessary first to identify the direct, first-round impact that these barriers may have on prices, costs or some other measure of performance in the affected sector. This becomes the services sector equivalent of the "tariff rate" in goods trade.[2]

There are two key steps:

- The first step is to quantify the extent of current barriers to services trade. Because the relevant trade barriers are primarily regulatory, this is by no means straightforward. The general approach is to convert qualitative information about regulatory restrictions into a quantitative index, using *a priori* judgements about the relative restrictiveness of different barriers.
- The second step is to develop an econometric model and use it to estimate the effect of the services trade restrictiveness index on some measure of economic performance (typically price, cost, price-cost margin, quantity or productivity), while controlling for all the other factors that might affect performance in that industry. The appropriate control variables will obviously vary from one sector to another.

One advantage of the methodology is that it produces estimates of the effects of trade barriers that are explicitly linked to characterisations of the restrictions themselves, rather than being generated as an "unexplained residual".

Qualifications and comments

The methodology for measuring the direct effects of services trade restrictions relies solely or primarily on cross-country variation in policy settings and the resulting cross-country variation in sectoral performance. When quantifying the price or cost impact for a particular country, it is assumed that the country conforms to the sample average responsiveness of performance to policy settings. In reality, country-specific factors are likely to play an important role.

Ideally, the econometric models of sectoral performance used to quantify direct effects should be both developed and estimated at the structural level; that is, supply- and demand-side influences should be separately identified and estimated. In practice, some models are developed structurally but then estimated in reduced form. Other models are both developed and estimated in reduced form. This means that it is not always possible to identify supply- and demand-side influences separately, so it is not always clear that the price or cost wedge that is being estimated in fact corresponds to a vertical shift in the supply or demand curve. On this score, at least, the direct effects may be underestimated.

The restrictiveness indices are in many ways crude measures of services policy, which is typically multidimensional. There may also be multiple dimensions of economic performance that are not always captured. Further, there can be tradeoffs between these performance dimensions.

2 A detailed description of the methodology is available in OECD (2005).

These caveats mean that the empirical results presented in this chapter should be examined with caution. Care has been taken to ensure that any policy conclusions are relatively general.

Summarising the direct effects of services trade barriers

The direct price or cost impacts of the trade barriers in seven services sectors in the selected countries are summarised in Tables 6.A.1 to 6.A.10. The tables give a quantitative estimate of the direct impact. They note whether the impact is rent-creating (because the restrictions inflate mark-ups) or cost-escalating (because the restrictions add to marginal costs). As noted, this distinction matters for how the trade or regulatory restrictions are modelled and for their subsequent economic effects. If the barriers are rent-creating, the tables also note whether the rents are seen as accruing to output (when commercial presence is an important mode of service delivery) and/or to exports (when cross-border trade is an important mode). Finally, the tables note when the restrictions affect domestic and foreign providers differently.

From a strictly numerical perspective, policy priorities in many countries would appear to lie with banking, telecommunications, international air passenger transport and sometimes professional services. However, policy priorities cannot be decided on a numerical basis alone. The relatively tight restrictions in banking, telecommunications and foreign professional services tend to raise prices above costs. By contrast, restrictions on distribution services and electricity supply raise costs. Liberalising the latter restrictions can yield a larger gain for the economy as a whole. In addition, liberalising those sectors with a denser network of downstream users might be expected to provide bigger flow-on effects to the rest of the economy and therefore have a greater overall impact.

Measuring flow-on effects

To explore these effects, this chapter employs the effective rate of protection to determine the possible flow-on effects to downstream using industries of barriers to services trade and a general equilibrium approach to quantify the economy-wide effects of eliminating the barriers to services trade in the sectors analysed.

The impact of services barriers on effective rates of protection in agriculture and manufacturing

Given the important role of services as intermediate inputs in the production of most industries, an inefficient services sector can be costly for the economy as a whole. For example, even if a country were to engage in a reform programme that would reduce goods tariffs to zero, distortions would persist if services barriers remained unchanged. Therefore, this section seeks to determine how protection of services affects the effective rate of protection (ERP) in agriculture and manufacturing using the previously presented estimates of services barriers. Such an approach provides an illustration of the potential economy-wide costs of services barriers to downstream using industries.

As noted in Hoekman and Primo Braga (1997), as nations move to reduce tariffs and other barriers to trade substantially, effective rates of protection may decline and in some cases become negative for manufacturing industries as they lose protection on their goods but continue to face input prices that are higher than they would be if services markets were contestable. Ignoring the services barriers in these calculations translates into distorted measures of a country's protection structure. In other words, the calculation of ERPs needs to take services barriers into account in order to obtain an accurate illustration of the economy's total protective structure. Such an approach will also highlight the potential costs imposed by inefficient services inputs on both services and non-services sectors.

Effective rates of protection are measures of the protection provided to an industry by the entire

structure of tariffs, taking into account the effects of tariffs on inputs as well as on outputs. The ERP gives the percentage increase in value added per unit in an economic activity that is made possible by the tariff structure relative to the situation in the absence of tariffs. This gives insight into the supply-side impact of the protection structure.

Methodology

This chapter examines the difference between ERPs that are calculated without considering services barriers with those that take them into account. The difference could be interpreted as an indication of the additional cost imposed by inefficient domestic services regulations.

The data requirements for this quantitative exercise are information on the service intensity of production (given by the share of services in the production of industries) and tariff rates on all outputs and inputs. Information on the services intensity of production as well as protection data for agriculture and manufacturing were obtained from the most recent version of the well-established GTAP database.[3] With respect to services barriers, the most recent tax equivalents for barriers in telecommunication, financial, distribution, electricity, professional services, and air and maritime transport for the seven developing countries were employed.[4] In addition, new tax equivalents calculated in the framework of the South-eastern Europe programme for telecommunication, financial services, distribution and professional services were used.[5]

This chapter uses the ERP formula presented in Elbehri and McDougal (1998) in the context of the input-output framework. ERP is defined as the ratio of the difference between the assisted and unassisted value added over the unassisted value added:

$$ERP = (AVA - UVA)/UVA$$

Where $AVA = AVOUT - AVINP$

AVOUT = assisted or protected value of outputs

AVINP = assisted or protected value of inputs

$UVA = UVOUT - UVINP$

UVOUT = unassisted or unprotected value of outputs

UVINP = unassisted or unprotected value of inputs

To compute the ERPs, a simulation of the model was undertaken to eliminate the wedge between world and domestic prices. The assisted values are taken from the pre-simulation database, and the unassisted values from the post-simulation database. The experiments concern exclusively import and export tariff elimination, abstracting from particular features like the existence of tariff rate quotas, or domestic support.

In a next step, several adjustments are carried out to analyse the differences in impacts of calculating the ERP without considering services (ERP 1) compared to the services-inefficiencies-

3 GTAP database Version 6.5 pre-released in November 2004. This version of the GTAP database contains data for the global economy in 2001, includes an improved treatment of bilateral services trade and features 78 regions/countries and 57 sectors. A detailed description of the GTAP database is available at www.gtap.org.

4 The methodology for estimating these tax equivalents as well as the tax equivalents are presented in detail in OECD (2005).

5 The methodology for estimating these tax equivalents as well as the tax equivalents are presented in detail in OECD (2003).

adjusted ERP (ERP 2). The services tax equivalents for the selected regions were incorporated into the GTAP database, while maintaining its internal consistency and minimising the impact of the tariff change on the value of commodity and financial flows. The updated database containing the services tax estimates forms the basis for the subsequent experiment that eliminates the wedge between world and domestic prices. For the calculation of the services-inefficiencies-adjusted ERP, the new unassisted values are taken from this post-simulation database, while the assisted values from the initial pre-simulation database are kept unchanged.

Results

The results reveal moderate differences between the two ERPs for agriculture and manufacturing. However, if account is taken of services barriers (ERP 2), ERP falls in almost all sectors in all countries. For some agricultural sectors, such as

- Cereals in Russia;
- Vegetables, fruits and seeds in Croatia, Romania, Russia, Thailand and Zambia;
- Oils seeds, plants and straw in Bulgaria and Chile;
- Meat in Romania, Russia and Zambia;
- Vegetable oils and fats in Brazil;
- Sugar in Bulgaria, Croatia, Morocco and Romania;
- Beverages and tobacco and Food products in Romania and Zambia;
- Food products not elsewhere classified in Romania and Zambia;

and some manufacturing sectors such as

- Forestry and wood products in Brazil and Zambia;
- Paper products and publishing in Romania;
- Chemical, rubber, plastic products in Bulgaria and Romania;
- Mineral products not elsewhere classified in Brazil and Thailand;
- Base metals and metals in Zambia;
- Motor vehicles in Bulgaria and Brazil;
- Transport equipment in Croatia;
- Manufactures not elsewhere classified in Croatia, Morocco and Romania

the ERP becomes negative suggesting that the protection of both non-services and services inputs results in the effective taxation of these industries. These results are summarised in Tables 6.A.11 and 6.A.12.

Qualifications and comments

The magnitude of the taxing effect of services on non-services sectors is lower than expected. It depends on the services intensity of each sector, as well as the levels and ways of incorporating services barriers into the database.

It is worth noting that barriers related to a substantial part of services inputs – other services sectors that include construction, transport (other than air and maritime), insurance, gas distribution, water, recreation and other services – which account in some cases for over 15% in agriculture and 20% in manufacturing have not been included in the analysis given the lack of such estimates for these other services sectors.

With respect to the estimates of services barriers, it is interesting to observe that the tax equivalents of services barriers are relatively low. In some cases, the tax equivalents are probably underestimated leading to an underestimation of the taxing effect of services barriers on other sectors. This highlights once again the need to invest in collecting adequate and correct information on services barriers and to develop and improve existing methodologies for assessing their restrictiveness in order to obtain realistic estimates.

Notwithstanding these caveats, which translate into an underestimation of the taxing effect of services barriers on non-services sectors, this exercise may be important from a practical point of view, given that in a number of agricultural and manufacturing sectors the sign of protection is reversed (*i.e.* it goes from positive protection to effective taxation). However, in order to obtain more realistic insight into the potential costs of services barriers on downstream using industries, it is necessary to consider correct services tax equivalents and include the estimates for the other services sectors as they become available. In addition, input-output linkages and forecasting models might supplement the ERP calculations and general equilibrium analyses to determine how liberalisation will affect the output of the non-services sectors and resource allocation across industries.

Measuring the welfare effects of services liberalisation

To explore these issues, the computable general equilibrium (CGE) model is used to examine the flow-on effects of eliminating the barriers to services trade in the seven services sectors in the selected countries.

Methodology

There are two basic requirements for this exercise:

- to have a model with sufficient detail to capture the way that services are traded, including via commercial presence; and
- to have a model with sufficient detail to capture the way that services trade barriers differ from one sector to the next, not just in terms of size, but also in terms of immediate economic incidence.

The CGE model used for the current evaluation is essentially the same as FTAP, a model incorporating services delivered via foreign direct investment (FDI) that was developed by Dee and Hanslow (2001). It differs from GTAP (Hertel, 1997), the model from which it was derived, in three important respects.

First, because services trade negotiations now cover services delivered via commercial presence, the modelling framework includes FDI as a mode of services trade delivery, and covers separately the production and trading activity of foreign multinationals. In other words, the conventional multi-country model has been broken down by ownership as well as location.

Second, by virtue of foreign ownership, at least some of the profits of foreign multinationals are

repatriated back to the home country. Thus the profit streams in the conventional multi-country model have to be reallocated from the host to the home country, after provision is made for them to be taxed in either the home or host country. This reallocation leads to a distinction between gross domestic product (GDP), the income generated in a region, and gross national product (GNP), the income received by residents of a region. The latter forms the basis of (but is not identical to) the welfare measure in FTAP.

Finally, not all profits of foreign multinationals need be repatriated to the home country. Some may be reinvested in the host country. To account for this, and to allow for the effect that services trade reform may have on domestic and foreign direct investment more generally, the model makes provision for savings and capital accumulation. Some services trade barriers are aimed directly at limiting foreign equity participation. It is therefore important to capture how services trade reform will affect not just foreign ownership shares, but also the total amount of productivity capacity available to an economy.

The FTAP model also differs from GTAP in other respects. In particular, it allows for firm-level product differentiation. This is important since services tend to be highly specialised, as they are tailored to the needs of individual customers.

The form of services trade barriers varies widely from one sector to the next. In terms of direct effects, they can be divided into two broad types: those that create a mark-up of price over cost, and can thus be called "rent-creating"; and those that raise the real resource cost of doing business, and can thus be called "cost-escalating".

Liberalising measures that are rent-creating tend to generate a relatively large transfer from producers to consumers and a relatively small net gain to the economy as a whole. By contrast, liberalising measures that are cost-escalating free real resources for use elsewhere in the economy, generating a relatively large net gain all around. Thus liberalising measures that are cost-escalating will tend to have a greater effect than liberalising measures that are rent-creating.

The econometric work that estimates direct costs provides some evidence for whether the trade restrictions in a particular sector are rent-creating or cost-escalating. The CGE model allows each type of effect to be modelled differently. Rent-creating barriers are modelled using "tax equivalent" shifters (falling on output and/or exports, depending on the relative importance of delivery via commercial presence or cross-border trade). The cost-escalating barriers are modelled using productivity shifters.

Qualifications and comments

The empirical basis for setting the parameters for models of commercial presence and firm-level product differentiation is still fairly crude. First, the necessary data on the cost and sales structures of foreign affiliates are not readily available outside of the OECD area. Models such as FTAP have to rely on incomplete FDI data, supplemented either by incomplete data on the activities of foreign affiliates (such as from the US International Trade Commission), or by crude assumptions (such as that the costs and sales structures of foreign affiliates are the same as those of domestically owned firms).

Second, the relevant level of product differentiation is well below that available for econometric analysis of the corresponding behavioural parameters. Values for behavioural parameters therefore need to be chosen using synthetic methods, rather than from direct econometric estimation.

However, what matters more than the size of the underlying trade flows is the size of the trade barriers, and whether they are modelled as being rent-creating or cost-escalating. The empirical basis for making this distinction is still fairly weak in many industries. More empirical estimation of direct effects is required, using a broader range of sectoral performance measures, to provide stronger evidence. So while the modelling results demonstrate the importance of the distinction, the details of the results should not be interpreted too strictly.

The results are comparative static, showing only the impact of trade reform. During the ten-year adjustment period, many other changes will affect each economy, but they are not taken into account in the analysis. The model results should therefore be seen as providing an indication, at some point in time ten years after reform, of how different each economy would be, compared with the alternative situation at the same point in time, had the reform not taken place.

The model structure takes into account, not only input-output linkages (through its input-output database), but also primary factor constraints. In the model simulations, the quantities of skilled and unskilled labour, land and natural resources are all assumed to be the same in the liberalised as in the non-liberalised environment. The quantity of capital may differ, depending on what reform does to rates of return and the willingness of both domestic and foreign investors to invest in each economy.

Overall welfare effects of unilateral action

The measured tax equivalents of the barriers to trade in services are lower than the average tariff rates on some agricultural and manufacturing industries. This does not mean, however, that services trade reform should be a lower priority than unilateral or multilateral liberalisation of agriculture or manufacturing.

On the contrary, Tables 6.A.13 to 6.A.19 show that, with the single exception of Morocco, the gains to each region from unilateral services trade reform are projected to far exceed those from unilateral reform in agriculture or manufacturing (the first column of each table). For Morocco, the gains from services trade reform are projected to be about equal to those from eliminating agricultural protection.

The tables also show the sources of the greater gains from removing barriers to services trade. Not only does removing rent-escalating barriers normally yield a gain in allocative efficiency, removing cost-escalating barriers yields a significant productivity gain (in addition to that available from greater variety). And, as expected, the gains from productivity improvements exceed the gains from better allocative efficiency by a significant margin.[6]

Further, services trade reform often yields a terms-of-trade gain rather than a terms-of-trade loss. This is a secondary effect, since services trade reform has its first-round effect primarily on domestic prices and costs. But the resulting increase in demand for imports by other regions can sometimes give regions a significant indirect terms-of-trade gain.

Most economies are projected to have a positive endowment effect from unilateral services trade reform. Somewhat surprisingly, for those that do, about half also have a very small positive

6 The projected small allocative efficiency losses from services trade reform in Russia and Zambia are a "second best" result arising primarily from pre-existing taxes on intermediate inputs in these regions in the model's database. The result argues for services trade reform to be accompanied by tax reform, to replace the taxation of intermediate inputs with more efficient forms of taxation.

welfare contribution from international rent and interest payments. Here there are two offsetting effects. As with other types of reform, higher capital stocks may have required greater foreign borrowing, with a resultant increase in debt service payments to foreigners. But the profits repatriated overseas by foreign multinationals operating within a region no longer contain a super-normal rent component, so some economies gain in relative terms.

Overall, therefore, unilateral removal of services trade barriers generates positive movements in more of the contributors to welfare than does unilateral liberalisation of agricultural or manufacturing protection. Removing barriers to services trade would seem to be a much higher priority than removing barriers to agriculture or manufacturing. However, this conclusion does not yet take into account the possible adjustment costs associated with the different types of reform.

A case for multilateral action?

Tables 6.A.13 to 6.A.19 also show the relative importance of pursuing trade reform on a unilateral or multilateral basis. As pointed out theoretically by Bagwell and Staiger (1999), there are important gains from reciprocity in tariff reform. Pursuing tariff liberalisation on a multilateral rather than a unilateral basis helps to neutralise the terms-of-trade losses associated with unilateral reform, thereby ensuring "gains all around".[7]

The tables demonstrate, however, that the case for reciprocity in services is less strong. In fact, some regions are projected to lose slightly when all other regions liberalise their services trade, generally as a result of a small terms-of-trade loss. Malaysia's multinationals also lose the super-normal rents they were earning overseas. But the real message from the second and third columns of these tables is that the important gains from services trade reform come from unilateral action. This is not to deny that there might be important political economy benefits from proceeding multilaterally. But countries should not feel obliged to wait for progress in multilateral forums.

Other negotiating priorities in services

The results also suggest that the gains from removing non-discriminatory barriers to market access are at least 75% of the total gains from services trade reform, while the gains from removing derogations from national treatment are at most 25% of total gains among the countries considered. Part of the reason is that some of the greatest barriers are market access barriers, but part of the reason also is that removing national treatment barriers alone can produce second-best economic welfare losses in some sectors.

Thus, the gains from removing non-discriminatory market access restrictions dominate, especially in the less trade-oriented economies. This is an important finding, since trade negotiators trained in the field of goods trade typically put highest priority on derogations from national treatment.

Sectoral priorities in services

Among the seven services sectors examined, the policy priorities would appear to be in distribution and the professions, both because these sectors are large, and because there is at least some evidence that the trade barriers in these sectors are cost-escalating, at least in part. Reform of the professions may also appear to be a priority because the barriers in that sector were seen as affecting

7 Bagwell and Staiger (1999) show this result theoretically, and independently of the particular functional forms or parameter values adopted in any given CGE model.

both commercial presence and cross-border trade. These conclusions follow from Tables 6.A.20 and 6.A.21, which show the percentage contribution of each sector to the overall gain from removing services trade barriers, relative to the percentage contribution of each sector to the total value added generated in the seven sectors.

Reform in air passenger transport and electricity generation could also yield significant welfare gains, not because these sectors are large, but because the barriers tend to be cost-escalating.

The projected gains from services trade reform in banking and telecommunications were small, partly because these sectors are small, relative to professional and distribution services, and partly because the barriers are primarily rent-creating, yielding only rectangle gains. The gains from removing barriers in sea transport are generally small, partly because the sector is small, and partly because the barriers are small.

Adjustment costs

A positive overall welfare gain from reform of services trade means that, if the gainers were to compensate the losers, there would be a clear Pareto improvement: no economic agent would be made worse off, and at least one would be made better off. In these circumstances, one would expect a consensus in favour of reform.

However, political processes do not always operate to ensure that the gainers compensate the losers, and even if such compensation takes place, it may occur only at a considerable political cost. Therefore it is important, not just to identify sources of overall welfare gains, but also to identify where losses occur and to identify strategies to minimise the losses to particular groups while maximising the gains overall.

Adjustment costs from output changes

Table 6.A.22 shows the implications for sectoral output of domestically owned firms in each country of total unilateral removal of barriers to services trade, while Table 6.A.23 shows the typical implications for sectoral output of foreign-owned firms.

The tables show that in one sense, the political economy of services trade reform is distinctly different from that of tariff reform: when tariffs are removed, the liberalised sector is smaller than otherwise; when services trade barriers are removed, the liberalised sector may often be larger. This modelling result is a function of two things: the relative importance of non-discriminatory barriers to market access relative to derogations from national treatment, and the relative unimportance of heavily impeded cross-border trade, the reform of which might have been a factor in moving activity offshore.

The modelling results also suggest that when a services sector expands, it may often do so because of the relative expansion of both domestically owned firms and foreign multinationals. This is in spite of the presence of trade barriers in some services sectors that discriminate heavily against foreign multinationals relative to domestically owned firms and in spite of the provision in the model for consumers and users to shift demand towards foreign multinationals as the margin of discrimination is removed. Nevertheless, non-discriminatory trade barriers also penalise domestically owned firms, and under a total reform scenario, many are projected to gain.

The single most important feature accounting for the direction of movement of downstream using industries is the presence of economy-wide resource constraints. The downstream using industries benefit from cheaper services, but lose out to the services sector itself in the competition for

skilled and unskilled labour. The availability of more capital owing to greater capital accumulation can alleviate this constraint to some extent, but not entirely. The overall outcome is similar to that found in Dee *et al*. (2003). It is the non-services sectors that lose in relative terms from the removal of barriers to services trade.[8]

The resulting adjustment costs would depend primarily on whether the relative moves in output translated into absolute expansions or contractions over time. This could only be determined in a full forecasting model that took account, not just of changes in industry assistance, but also of all the other factors likely to affect economic performance over the ten-year adjustment period.

Nevertheless, comparing the model's cumulative deviations from control with the underlying rates of economic growth experienced in each economy over recent years can give a rough indication. The comparison suggests that, with an underlying economic growth rate of 1% a year, the worst-affected industries would simply grow more slowly than otherwise, rather than contracting in absolute terms, as a result of the removal of barriers to services trade. The adjustment costs are likely to be significantly smaller in an industry that is growing more slowly over time, rather than contracting.

Adjustment costs from changes in primary factor usage

The employment effects are mostly a magnified version of the output effects, as a fixed (relative to what would have occurred otherwise) quantity of skilled and unskilled labour is reallocated from losing to gaining industries (Tables 6.A.24 to 6.A.26). The capital results are less dramatic than the labour results, as overall capital accumulation moderates the relative contraction in some industries.

There is one noticeable exception to this pattern. In electricity generation, where the domestic regulatory regime has likely had the effect of escalating resource use above what it otherwise would be, services trade reform would mean that resources are freed for use elsewhere. The downside cost is a significant reallocation (in relative terms) of skilled and unskilled labour.

But again, the results suggest that at least some of these adjustment pressures could be absorbed by maintaining healthy rates of overall economic growth. With annual growth rates of 3.4%, the adjustment pressures would translate into a slower rate of employment growth in the affected sectors, rather than an absolute contraction in employment. The adjustment costs are likely to be significantly smaller accordingly.

Conclusion

An assessment of policy priorities can only sensibly be made with knowledge of the economic impact of current barriers to trade in services. Thus the results in this chapter are limited to those sectors for which current policy information and background research are available. The insights obtained argue for continued background research into other sectors. In addition, it is important to highlight the fact that: *i)* tax equivalents for services barriers are estimated by statistical means, and are therefore inherently uncertain; and *ii)* it is rather difficult at this stage to differentiate clearly between cost-increasing and rent-creating barriers. As a result, rather than drawing detailed policy conclusions based on point estimates and the nature of barriers, a more flexible, qualitative interpretation of the quantitative results appears preferable, combined with an indicative rank ordering of countries.[9] A

8 Further analysis could address, at a later stage, the effects of increased services efficiency on non-services sectors.

9 For a detailed analysis of the robustness of tax equivalent estimates, see OECD (2006).

similar approach is recommended for the two empirical exercises that employ these tax equivalents as inputs.

In terms of the potential cost of services barriers for downstream using industries, notwithstanding the caveats associated with the quantification of services barriers, it is important to highlight that in a number of agricultural and manufacturing sectors the sign of protection is reversed (*i.e.* it goes from positive protection to effective taxation) if services barriers are taken into account, suggesting that the protection of both non-services and services inputs results in effective taxation of these industries.

In terms of the economy-wide effects of services liberalisation, while the modelling results should be interpreted with caution (in light of the above-mentioned limitations), some interesting conclusions emerge.

First, this chapter has shown that loosening the regulatory regimes in services in an appropriate manner would not necessarily reduce the size of the services sector, either its domestically or its foreign-owned component. Instead, removing restrictions on services trade would tend to improve the productivity of the services sector and contribute significantly to deepening an economy's services intensity.

Second, the chapter has also shown that the gains from services trade reform would come almost entirely from unilateral action. The relevant measures are behind the border. Countries have relatively little to gain from reform of services trade elsewhere in the world, and should not feel obliged to wait for progress in multilateral forums.

Finally, there would be some adjustment pressures, particularly downward pressure on employment levels in the services sectors undergoing the highest rates of productivity improvement. But the results in this chapter suggest that at least some of these adjustment pressures could be absorbed by maintaining healthy rates of overall economic growth. With annual growth rates of 3.4%, the adjustment pressures would translate into a slower rate of employment growth in the affected sectors, rather than an absolute contraction in employment. The adjustment costs are likely to be significantly smaller accordingly.

ANNEX TABLES

Table 6.A.1. Direct price impacts of Malaysia's trade and regulatory restrictions in services (%)

Sector and policy measure	*Direct price impact*			
	Via mark-ups on			*Via costs*
	output	Exports from	Exports to	
International air passenger transport (domestic and foreign providers)[a]		9		9
Banking — domestic providers	15			
— foreign providers	35			
Distribution services — domestic providers				4
— foreign providers				8
Electricity supply — domestic and foreign providers				17
Maritime — domestic and foreign providers				1
Professional services – domestic providers[b]				5
– foreign providers[b]	12		12	
Telecommunications — domestic providers[c]	1.1			
— foreign providers[c]	5.6			

[a] In the absence of definitive research, the 50/50 split between price and cost impacts is arbitrary.

[b] Lower bound estimate based on findings for engineering services.

[c] A simple average of price impacts for fixed line and cellular services.

Source: See text.

Table 6.A.2. Direct price impacts of Thailand's trade and regulatory restrictions in services

Sector and policy measure	*Direct price impact*			
	Via mark-ups on			*Via costs*
	Output	exports from	exports to	
International air passenger transport (domestic and foreign providers)[a]		8		8
Banking — domestic providers	0			
— foreign providers	11			
Distribution services — domestic providers				2
— foreign providers				6
Electricity supply — domestic and foreign providers				11
Maritime — domestic and foreign providers				4
Professional services – domestic providers[b]				2
– foreign providers[b]	4		4	
Telecommunications — domestic providers[c]	7.6			
— foreign providers[c]	19.2			

a In the absence of definitive research, the 50/50 split between price and cost impacts is arbitrary.

b Lower bound estimate based on findings for engineering services.

c A simple average of price impacts for fixed line and cellular services.

Source: See text.

Table 6.A.3. Direct price impacts of Brazil's trade and regulatory restrictions in services (%)

Sector and policy measure	*Direct price impact*			
	Via mark-ups on			*Via costs*
	Output	exports from	exports to	
International air passenger transport (domestic and foreign providers)[a]		8		8
Banking — domestic providers	1			
— foreign providers	18			
Distribution services — domestic providers				2
— foreign providers				2
Electricity supply — domestic and foreign providers				16
Maritime — domestic and foreign providers				9
Professional services – domestic providers[b]				2
– foreign providers[b]	9		9	
Telecommunications — domestic providers[c]	1.7			
— foreign providers[c]	4.1			

a In the absence of definitive research, the 50/50 split between price and cost impacts is arbitrary.
b Lower bound estimate based on findings for engineering services.
c A simple average of price impacts for fixed line and cellular services.
Source: See text.

Table 6.A.4. Direct price impacts of Chile's trade and regulatory restrictions in services (%)

Sector and policy measure	*Direct price impact*			
	Via mark-ups on			*Via costs*
	Output	Exports from	Exports to	
International air passenger transport (domestic and foreign providers)[a]		6.5		6.5
Banking — domestic providers	5			
— foreign providers	8			
Distribution services — domestic providers				2
— foreign providers				1
Electricity supply — domestic and foreign providers				0
Maritime — domestic and foreign providers				0.3
Professional services – domestic providers[b]				0
– foreign providers[b]	9		9	
Telecommunications — domestic providers[c]	0.2			
— foreign providers[c]	0.2			

a In the absence of definitive research, the 50/50 split between price and cost impacts is arbitrary.
b Lower bound estimate based on findings for engineering services.
c A simple average of price impacts for fixed line and cellular services.
Source: See text.

Table 6.A.5. Direct price impacts of Russia's trade and regulatory restrictions in services (%)

Sector and policy measure	*Direct price impact*			
	Via mark-ups on			*Via costs*
	Output	exports from	exports to	
International air passenger transport (domestic and foreign providers)[a]		8		8
Banking — domestic providers	6			
— foreign providers	7			
Distribution services — domestic providers				0
— foreign providers				4
Electricity supply — domestic and foreign providers				17
Maritime — domestic and foreign providers				11
Professional services – domestic providers[b]				0
– foreign providers[b]	3		3	
Telecommunications — domestic providers[c]	2.3			
— foreign providers[c]	7.1			

a In the absence of definitive research, the 50/50 split between price and cost impacts is arbitrary.
b Lower bound estimate based on findings for engineering services.
c A simple average of price impacts for fixed line and cellular services.
Source: See text.

Table 6.A.6. Direct price impacts of Morocco's trade and regulatory restrictions in services (%)

Sector and policy measure	*Direct price impact*			
	Via mark-ups on			*Via costs*
	Output	Exports from	Exports to	
International air passenger transport (domestic and foreign providers)[a]		6		6
Banking — domestic providers	9			
— foreign providers	22			
Distribution services — domestic providers				0
— foreign providers				0
Electricity supply — domestic and foreign providers				11
Maritime — domestic and foreign providers				0
Professional services – domestic providers[b]				0
– foreign providers[b]	2		2	
Telecommunications — domestic providers[c]	8.8			
— foreign providers[c]	21.3			

a In the absence of definitive research, the 50/50 split between price and cost impacts is arbitrary.
b Lower bound estimate based on findings for engineering services.
c A simple average of price impacts for fixed line and cellular services.
Source: See text.

Table 6.A.7. Direct price impacts of Zambia's trade and regulatory restrictions in services (%)

Sector and policy measure	*Direct price impact*			
	Via mark-ups on			*Via costs*
	Output	exports from	exports to	
International air passenger transport (domestic and foreign providers)[a]			7	7
Banking — domestic providers	4			
— foreign providers	4			
Distribution services — domestic providers				0
— foreign providers				1
Electricity supply — domestic and foreign providers				38
Maritime — domestic and foreign providers				0
Professional services – domestic providers[b]				0
– foreign providers[b]	1		1	
Telecommunications — domestic providers[c]	7.1			
— foreign providers[c]	7.1			

a In the absence of definitive research, the 50/50 split between price and cost impacts is arbitrary.
b Lower bound estimate based on findings for engineering services.
c A simple average of price impacts for fixed line and cellular services.
Source: See text.

Table 6.A.8. Direct price impacts of Bulgaria's trade and regulatory restrictions in services (%)

Sector and policy measure	*Direct price impact*			
	Via mark-ups on			*Via costs*
	Output	exports from	exports to	
International air passenger transport (domestic and foreign providers)[a]		9.5*		9.5*
Banking — domestic providers	2.42			
— foreign providers	0.52			
Distribution services — domestic providers				13.8
— foreign providers				4.8
Electricity supply — domestic and foreign providers				13.6*
Maritime — domestic and foreign providers				5.8*
Professional services – domestic providers[b]				0
– foreign providers[b]	2		2	
Telecommunications — domestic providers[c]	4			
— foreign providers[c]	9.3			

a In the absence of definitive research, the 50/50 split between price and cost impacts is arbitrary.
b Lower bound estimate based on findings for engineering services.
c A simple average of price impacts for fixed line and cellular services.
Source: See text.

Table 6.A.9. Direct price impacts of Croatia's trade and regulatory restrictions in services (%)

Sector and policy measure	*Direct price impact*			
	Via mark-ups on			*Via costs*
	Output	exports from	exports to	
International air passenger transport (domestic and foreign providers)[a]		9.5*		9.5*
Banking — domestic providers	2.42			
— foreign providers	0.02			
Distribution services — domestic providers				2.6
— foreign providers				0.9
Electricity supply — domestic and foreign providers				13.6*
Maritime — domestic and foreign providers				5.8*
Professional services – domestic providers[b]				1.8
– foreign providers[b]	6		6	
Telecommunications — domestic providers[c]	12.7*			
— foreign providers[c]	30.6*			

a In the absence of definitive research, the 50/50 split between price and cost impacts is arbitrary.
b Lower bound estimate based on findings for engineering services.
c A simple average of price impacts for fixed line and cellular services.
Source: See text.

Table 6.A.10. Direct price impacts of Romania's trade and regulatory restrictions in services (%)

Sector and policy measure	*Direct price impact*			
	Via mark-ups on			*Via costs*
	Output	exports from	exports to	
International air passenger transport (domestic and foreign providers)[a]		9.5*		9.5*
Banking — domestic providers	2.94			
— foreign providers	5.69			
Distribution services — domestic providers				12.2
— foreign providers				4.8
Electricity supply — domestic and foreign providers				13.6*
Maritime — domestic and foreign providers				5.8*
Professional services – domestic providers[b]				1.8
– foreign providers[b]	6		6	
Telecommunications — domestic providers[c]	5.8			
— foreign providers[c]	12.2			

a In the absence of definitive research, the 50/50 split between price and cost impacts is arbitrary.
b Lower bound estimate based on findings for engineering services.
c A simple average of price impacts for fixed line and cellular services.
Source: See text.

Note for tables 6.A.1a to 6.A.10: The tables summarise the direct price or cost impacts of the trade barriers in seven services sectors in the selected countries. All tax equivalents for services barriers in Malaysia, Thailand, Brazil, Chile, Russia, Morocco and Zambia are from OECD (2005). For Bulgaria, Croatia and Romania most tax equivalents for services barriers in telecommunications, banking, distribution and professional services are from OECD (2003). Where these sectoral estimates were unavailable, they were taken from OECD (2005), namely the estimates for the rest of the world in these sectors (marked with * in the tables). Similarly, tax equivalents for electricity and transport in these countries are from OECD (2005) (the estimates for the rest of the world in these sectors). The tax equivalents for telecommunication are calculated as simple averages of tax equivalents for fixed and cellular services.

Table 6.A.11. Impact of services barriers (SB) on effective rates of protection (ERP) in agriculture

Effective rates of protection (ERP) results

	Brazil		Bulgaria		Chile		Croatia		Morocco		Romania		Russia		Thailand		Zambia	
	ERP1	ERP2	ERP1	ERP2	ERP1	ERP2	ERP1	ERP2	ERP1	ERP2	ERP1	ERP2	ERP1	ERP2	ERP1	ERP2	ERP1	ERP2
Cereals	(-)	(-)	(-)	(-)	(+)	(+)	(-)	(-)	(+)	(+)	(-)	(-)	**(+)**	**(-)**	(-)	(-)	(-)	(-)
Vegetables, fruits and seeds	(-)	(-)	(-)	(-)	(-)	(-)	**(+)**	**(-)**	(-)	(-)	**(+)**	**(-)**	**(+)**	**(-)**	**(+)**	**(-)**	**(+)**	**(-)**
Oil seeds plants and straw	(-)	(-)	**(+)**	**(-)**	**(+)**	**(-)**	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(-)	(-)	(-)	(-)
Meat	(-)	(-)	(-)	(-)	(-)	(-)	(+)	(+)	(+)	(+)	**(+)**	**(-)**	**(+)**	**(-)**	(-)	(-)	**(+)**	**(-)**
Vegetable oils and fats	**(+)**	**(-)**	(-)	(-)	(+)	(+)	(+)	(+)	(-)	(-)	(-)	(-)	(+)	(+)	(-)	(-)	(+)	(+)
Sugar	(-)	(-)	**(+)**	**(-)**	(-)	(-)	**(+)**	**(-)**	**(+)**	**(-)**	**(+)**	**(-)**	(+)	(+)	(-)	(-)	(-)	(-)
Beverages and tobacco	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	**(+)**	**(-)**	(+)	(+)	(-)	(-)	**(+)**	**(-)**
Food products nec	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	**(+)**	**(-)**	(+)	(+)	(-)	(-)	**(+)**	**(-)**

nec: Not elsewhere classified.

ERP 1 is calculated without considering services barriers while ERP 2 takes into account services barriers; (+) reflects a protected sector, (-) reflects a taxed sector.

Table 6.A.12. Impact of service barriers (SB) on effective rates of protection (ERP) in manufacturing

Effective rates of protection (ERP) results

	Brazil		Bulgaria		Croatia		Morocco		Romania		Thailand		Zambia	
	ERP1	ERP2	ERP1	ERP2	ERP1	ERP2	ERP1	ERP2	ERP1	ERP2	ERP1	ERP2	ERP1	ERP2
Forestry and wood products	**(+)**	**(-)**	(-)	(-)	(-)	(-)	(+)	(+)	(-)	(-)	(+)	(+)	**(+)**	**(-)**
Paper products and publishing	(+)	(+)	(-)	(-)	(-)	(-)	(+)	(+)	**(+)**	**(-)**	(-)	(+)	(+)	(+)
Chemical, rubber and plastic products	(+)	(+)	**(+)**	**(-)**	(-)	(-)	(-)	(-)	**(+)**	**(-)**	(-)	(-)	(+)	(+)
Mineral products nec	**(+)**	**(-)**	(-)	(-)	(-)	(-)	(+)	(+)	(-)	(-)	**(+)**	**(-)**	(-)	(+)
Base metals and metals	(+)	(+)	(-)	(-)	(-)	(-)	(+)	(+)	(-)	(-)	(-)	(-)	**(+)**	**(-)**
Motor vehicles	**(+)**	**(-)**	**(+)**	**(-)**	(+)	(+)	(+)	(+)	(-)	(-)	(-)	(-)	(+)	(+)
Transport equipment	(+)	(+)	(-)	(-)	**(+)**	**(-)**	(-)	(-)	(-)	(-)	(-)	(-)	(+)	(+)
Manufacturing nec	(+)	(+)	(-)	(-)	**(+)**	**(-)**	**(+)**	**(-)**	**(+)**	**(-)**	(+)	(+)	(-)	(-)

nec: Not elsewhere classified

ERP1 is calculated without considering services barriers while ERP 2 takes into account services barriers; (+) reflects a protected sector, (-) reflects a taxed sector.

Table 6.A.13. Malaysia's welfare implications of trade reform in services and goods

Equivalent variation in USD million per year

	Malaysia liberalises	All other regions liberalise	Malaysia and all other regions liberalise [a]
Services reform			
Equivalent variation	3 528	-704	2 824
Contribution from:			
Allocative efficiency effects	400	-88	312
Terms of trade	730	-343	387
Endowment effects	185	39	224
Productivity gains	2 195	-19	2176
Internat. Interest and rent	18	-294	-275
Agricultural liberalisation			
Equivalent variation	-106	885	779
Contribution from:			
Allocative efficiency effects	266	86	352
Terms of trade	-315	658	343
Endowment effects	-14	28	14
Productivity gains	-2	-17	-19
Internat. Interest and rent	-42	131	89
Manufacturing liberalisation			
Equivalent variation	-658	762	104
Contribution from:			
Allocative efficiency effects	211	17	228
Terms of trade	-686	147	-540
Endowment effects	199	5	204
Productivity gains	109	-30	79
Internat. Interest and rent	-490	622	133

[a] Individual items may not add to row total because of interaction effects, where the presence of reform in one region may affect the gains from reform in another.

Source: FTAP2 model results.

Table 6.A.14. Welfare implications of trade reform in services and goods

Equivalent variation in USD million per year

	Thailand liberalises	*All other regions liberalise*	*Thailand and all other regions liberalise*[a]
Services reform			
Equivalent variation	2 563	474	3 037
Contribution from:			
Allocative efficiency effects	109	67	176
Terms of trade	57	-224	-167
Endowment effects	148	-21	127
Productivity gains	2 836	-23	2 813
Internat. Interest and rent	-587	675	87
Agricultural liberalisation			
Equivalent variation	-29	2 180	2 152
Contribution from:			
Allocative efficiency effects	643	565	1 208
Terms of trade	-589	1 773	1 183
Endowment effects	-31	81	50
Productivity gains	7	-24	-18
Internat. Interest and rent	-57	-215	-272
Manufacturing liberalisation			
Equivalent variation	-596	1 483	887
Contribution from:			
Allocative efficiency effects	1 056	210	1 266
Terms of trade	-1 678	903	-775
Endowment effects	282	97	379
Productivity gains	115	36	150
Internat. Interest and rent	-370	237	-133

[a] Individual items may not add to row total because of interaction effects, where the presence of reform in one region may affect the gains from reform in another.
Source: FTAP2 model results.

Table 6.A.15. Brazil's welfare implications of trade reform in services and goods

Equivalent variation in USD million per year

	Brazil liberalises	*All other regions liberalise*	*Brazil and all other regions liberalise*[a]
Services reform			
Equivalent variation	9 535	3 726	13 261
Contribution from:			
Allocative efficiency effects	1 238	43	1 281
Terms of trade	371	1 057	1 428
Endowment effects	381	97	477
Productivity gains	8 093	-213	7 880
Internat. Interest and rent	-547	2 742	2 195
Agricultural liberalisation			
Equivalent variation	178	1 123	1 302
Contribution from:			
Allocative efficiency effects	431	913	1 344
Terms of trade	-436	1 433	996
Endowment effects	-58	257	199
Productivity gains	27	-54	-27
Internat. Interest and rent	214	-1 424	-1 210
Manufacturing liberalisation			
Equivalent variation	4 718	4 000	8 718
Contribution from:			
Allocative efficiency effects	4 236	1 575	5 811
Terms of trade	-2 860	1 429	-1 431
Endowment effects	651	351	1 002
Productivity gains	-152	126	-27
Internat. Interest and rent	2 844	519	3 363

[a] Individual items may not add to row total because of interaction effects, where the presence of reform in one region may affect the gains from reform in another.

Source: FTAP2 model results.

Table 6.A.16. Chile's welfare implications of trade reform in services and goods

Equivalent variation in USD million per year

	Chile liberalises	*All other regions liberalise*	*Chile and all other regions* liberalise[a]
Services reform			
Equivalent variation	630	259	889
Contribution from:			
Allocative efficiency effects	79	2	80
Terms of trade	58	30	88
Endowment effects	19	7	26
Productivity gains	435	-7	428
Internat. Interest and rent	39	228	267
Agricultural liberalisation			
Equivalent variation	-46	435	388
Contribution from:			
Allocative efficiency effects	57	82	139
Terms of trade	-119	367	247
Endowment effects	-2	10	8
Productivity gains	4	7	12
Internat. Interest and rent	14	-32	-18
Manufacturing liberalisation			
Equivalent variation	-342	393	51
Contribution from:			
Allocative efficiency effects	35	24	59
Terms of trade	-378	144	-234
Endowment effects	34	25	59
Productivity gains	12	-2	11
Internat. Interest and rent	-44	202	157

[a] Individual items may not add to row total because of interaction effects, where the presence of reform in one region may affect the gains from reform in another.
Source: FTAP2 model results.

Table 6.A.17. Russia's welfare implications of trade reform in services and goods

Equivalent variation in USD million per year

	Russia liberalises	*All other regions liberalise*	*Russia and all other regions liberalise* [a]
Services reform			
Equivalent variation	8 021	-689	7 332
Contribution from:			
Allocative efficiency effects	-110	-573	-683
Terms of trade	-757	-714	-1 471
Endowment effects	339	-41	298
Productivity gains	9 737	-455	9 281
Internat. Interest and rent	-1 188	1 095	-92
Agricultural liberalisation			
Equivalent variation	1 042	-351	691
Contribution from:			
Allocative efficiency effects	1 379	25	1 404
Terms of trade	-611	-80	-691
Endowment effects	-27	12	-15
Productivity gains	-15	26	11
Internat. Interest and rent	316	-334	-18
Manufacturing liberalisation			
Equivalent variation	129	598	727
Contribution from:			
Allocative efficiency effects	1 182	-93	1 089
Terms of trade	-1 679	286	-1 394
Endowment effects	146	49	195
Productivity gains	-179	-78	-257
Internat. Interest and rent	660	434	1 094

[a] Individual items may not add to row total because of interaction effects, where the presence of reform in one region may affect the gains from reform in another.

Source: FTAP2 model results.

Table 6.A.18. Morocco's welfare implications of trade reform in services and goods

Equivalent variation in USD million per year

	Morocco liberalises	*All other regions liberalise*	*Morocco and all other regions liberalise*[a]
Services reform			
Equivalent variation	251	138	389
Contribution from:			
Allocative efficiency effects	42	20	63
Terms of trade	2	36	38
Endowment effects	11	2	14
Productivity gains	180	-2	177
Internat. Interest and rent	15	82	97
Agricultural liberalisation			
Equivalent variation	205	707	913
Contribution from:			
Allocative efficiency effects	489	345	835
Terms of trade	-294	409	116
Endowment effects	-12	16	3
Productivity gains	28	-43	-14
Internat. Interest and rent	-7	-20	-27
Manufacturing liberalisation			
Equivalent variation	-23	869	847
Contribution from:			
Allocative efficiency effects	280	302	582
Terms of trade	-337	497	159
Endowment effects	29	34	63
Productivity gains	-14	49	35
Internat. Interest and rent	19	-12	7

[a] Individual items may not add to row total because of interaction effects, where the presence of reform in one region may affect the gains from reform in another.
Source: FTAP2 model results.

Table 6.A.19. Zambia's welfare implications of trade reform in services and goods

Equivalent variation in USD million per year

	Zambia liberalises	*All other regions liberalise*	*Zambia and all other regions liberalise*[a]
Services reform			
Equivalent variation	204	-34	170
Contribution from:			
Allocative efficiency effects	-4	18	13
Terms of trade	-4	-38	-42
Endowment effects	-8	5	-3
Productivity gains	207	-18	189
Internat. Interest and rent	13	-1	12
Agricultural liberalisation			
Equivalent variation	4	7	10
Contribution from:			
Allocative efficiency effects	8	-9	-1
Terms of trade	-4	20	16
Endowment effects	0	-1	-1
Productivity gains	2	-3	-2
Internat. Interest and rent	-2	-1	-3
Manufacturing liberalisation			
Equivalent variation	-21	48	27
Contribution from:			
Allocative efficiency effects	6	8	14
Terms of trade	-21	27	6
Endowment effects	-2	-1	-3
Productivity gains	-1	1	0
Internat. Interest and rent	-3	13	10

[a] Individual items may not add to row total because of interaction effects, where the presence of reform in one region may affect the gains from reform in another.
Source: FTAP2 model results.

Table 6.A.20. Sectoral contribution to gains from services trade reform, %

	Malaysia	Thailand	Brazil	Chile	Russia	Morocco	Zambia	OECD
Air transport	17.5	13.9	8.0	27.3	10.4	21.1	3.2	4.7
Financial services nec	7.3	-0.1	3.4	8.2	0.2	16.2	2.7	0.1
Trade	22.5	44.7	32.0	55.9	1.0	0.0	0.2	39.4
Electricity	12.0	22.8	30.7	0.0	79.4	55.3	93.1	24.2
Sea transport	0.5	3.7	3.0	0.5	6.5	0.0	0.0	2.0
Business services nec	40.0	14.6	22.4	7.9	1.8	2.6	0.2	29.6
Communications	0.1	0.3	0.4	0.2	0.7	4.8	0.5	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: FTAP2 model results.

Table 6.A.21. Sectoral contribution to value added, %

	Malaysia	Thailand	Brazil	Chile	Russia	Morocco	Zambia	OECD
Air transport	2.9	3.1	1.2	2.2	9.0	3.6	3.7	1.4
Financial services nec	14.9	18.2	18.1	11.1	6.8	6.8	13.2	13.0
Trade	46.8	51.0	41.2	47.0	36.3	57.7	40.0	41.6
Electricity	4.1	6.2	3.1	8.4	2.0	11.9	25.1	4.2
Sea transport	3.1	1.9	0.5	1.6	5.9	4.6	1.8	0.9
Business services nec	22.8	14.4	27.8	21.3	25.6	12.0	10.9	32.9
Communications	5.4	5.2	8.1	8.4	14.4	3.5	5.2	6.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: FTAP2 database results.

Table 6.A.22. Effect of unilateral services trade reform on output of domestically owned firms

Percentage deviation from control

	Malaysia	Thailand	Brazil	Chile	Russia	Morocco	Zambia	OECD
Agriculture and food	-0.5	-0.5	-0.1	-0.3	-1.8	-0.5	-0.6	0.3
Other primary	-0.4	-0.2	0.1	-0.2	-0.7	0.0	-1.3	-0.3
Manufacturing	-2.5	-0.3	0.1	-0.6	-0.6	-0.1	-4.8	0.4
Electricity	1.8	2.4	7.5	-0.2	6.0	0.9	48.7	4.7
Gas and water	-7.3	-3.3	1.2	0.1	-2.5	0.0	-1.0	-0.2
Construction	2.2	0.4	0.1	0.4	0.3	0.1	-2.3	0.4
Trade	2.2	0.5	1.8	2.1	-3.3	0.0	-0.7	2.4
Transport nec	-2.2	-0.8	0.8	0.5	-1.9	-0.5	-4.5	0.2
Sea transport	7.2	8.5	23.4	1.0	24.3	-1.0	-10.5	3.8
Air transport	117.4	24.7	28.0	26.0	39.7	38.3	1.1	7.4
Communication	0.2	2.3	0.1	-0.1	-1.9	8.0	2.4	1.6
Financial services nec	-11.0	-0.3	-3.6	-0.3	2.9	-10.8	-1.4	0.6
Insurance	3.7	-1.2	-0.1	-0.4	-2.3	0.0	-6.3	0.7
Business services nec	11.3	4.6	-0.1	-2.4	-2.1	-1.2	-7.6	1.1
Other services	0.7	0.7	0.6	0.3	0.7	0.2	3.5	0.6

Source: FTAP2 model results.

Table 6.A.23. Effect of unilateral services trade reform on output of typical foreign-owned firms

Percentage deviation from control

	Malaysia	Thailand	Brazil	Chile	Russia	Morocco	Zambia	OECD
Agriculture and food	-0.5	-0.4	0.0	-0.2	-1.9	-0.5	1.4	0.3
Other primary	0.0	-0.2	0.1	-0.1	-0.8	0.0	0.2	-0.3
Manufacturing	-2.6	-0.2	0.2	-0.5	-0.6	-0.1	-2.6	0.4
Electricity	0.0	0.0	7.5	-0.1	5.7	0.0	0.0	4.7
Gas and water	0.0	0.0	0.0	0.0	-2.7	0.0	0.0	-0.1
Construction	0.0	0.6	0.0	0.5	0.3	0.2	-0.4	0.5
Trade	27.2	7.1	1.9	0.1	37.8	0.1	0.0	3.6
Transport nec	0.0	-0.6	0.9	0.7	-1.9	-0.5	-2.4	0.3
Sea transport	0.0	8.8	23.7	1.1	24.5	-1.0	-9.0	3.8
Air transport	0.0	25.7	28.5	27.0	40.3	39.0	3.2	7.6
Communication	8.2	9.2	1.9	0.0	8.3	34.8	4.9	9.3
Financial services nec	49.7	9.5	18.6	4.6	11.0	28.1	1.1	7.2
Insurance	0.0	-1.1	0.0	-0.3	-2.3	-0.8	-4.0	0.8
Business services nec	23.8	8.0	3.5	7.1	2.3	3.2	-3.7	3.8
Other services	0.0	0.8	0.7	0.4	0.7	0.3	5.8	0.6

Source: FTAP2 model results.

Table 6.A.24. Effect of services trade reform on usage of unskilled labour

Percentage deviation from control

	Malaysia	Thailand	Brazil	Chile	Russia	Morocco	Zambia	OECD
Agriculture and food	-1.4	-1.2	-0.4	-0.5	-2.9	-0.8	0.0	0.3
Other primary	-1.3	-0.8	0.0	-0.4	-2.3	-0.1	-1.2	-0.7
Manufacturing	-4.3	-1.0	0.1	-1.3	-1.1	-0.2	-8.1	0.5
Electricity	-39.8	-30.1	-10.8	-0.9	-28.3	-22.3	46.6	-20.8
Gas and water	-17.9	-8.6	1.3	0.1	-7.8	-0.7	2.1	-0.5
Construction	2.7	1.0	-0.1	0.6	0.2	0.2	-1.8	0.5
Trade	-0.2	-2.2	-0.8	-0.4	-1.0	0.1	1.4	-0.4
Transport nec	-2.9	-2.0	1.1	1.1	-2.7	-0.6	-4.6	0.2
Sea transport	12.0	19.6	27.9	2.3	16.0	-1.8	-13.8	0.2
Air transport	227.2	79.7	41.2	78.1	41.9	56.9	-6.8	2.3
Communication	2.5	14.2	0.7	-0.2	1.5	39.7	6.0	2.7
Financial services nec	5.4	-0.2	-0.6	2.4	4.2	3.8	1.4	0.7
Insurance	4.7	-1.6	-0.2	-0.4	-2.3	-0.7	-10.1	0.8
Business services nec	12.7	4.7	-5.1	-3.7	-5.2	-0.6	-12.7	-3.4
Other services	1.2	1.4	0.7	0.4	0.8	0.5	6.3	0.7

Source: FTAP2 model results.

Table 6.A.25. Effect of services trade reform on usage of skilled labour

Percentage deviation from control

	Malaysia	Thailand	Brazil	Chile	Russia	Morocco	Zambia	OECD
Agriculture and food	-2.0	-1.6	-0.4	-0.5	-3.1	-1.0	-1.1	0.3
Other primary	-1.5	-0.9	0.0	-0.4	-2.3	-0.2	-1.6	-0.7
Manufacturing	-5.4	-1.8	0.1	-1.3	-1.4	-0.5	-10.2	0.5
Electricity	-40.5	-30.7	-10.8	-0.9	-28.6	-22.6	43.2	-20.7
Gas and water	-18.9	-9.4	1.4	0.1	-8.1	-1.1	-0.2	-0.4
Construction	1.3	0.0	-0.1	0.6	-0.2	-0.2	-4.2	0.5
Trade	-1.8	-3.3	-0.7	-0.4	-1.5	-0.4	-1.6	-0.4
Transport nec	-4.4	-3.1	1.1	1.1	-3.2	-1.1	-7.5	0.3
Sea transport	10.3	18.2	28.0	2.2	15.4	-2.3	-16.4	0.2
Air transport	222.1	77.6	41.2	78.0	41.2	56.2	-9.6	2.4
Communication	1.3	13.2	0.7	-0.3	1.1	39.2	3.6	2.8
Financial services nec	4.2	-1.1	-0.6	2.4	3.8	3.4	-0.9	0.7
Insurance	3.5	-2.5	-0.1	-0.5	-2.7	-1.1	-12.1	0.9
Business services nec	11.3	3.8	-5.0	-3.7	-5.6	-0.9	-14.7	-3.3
Other services	0.0	0.5	0.7	0.4	0.4	0.1	3.9	0.7

Source: FTAP2 model results.

Table 6.A.26. Effect of services trade reform on usage of capital

Percentage deviation from control

	Malaysia	Thailand	Brazil	Chile	Russia	Morocco	Zambia	OECD
Agriculture and food	0.4	0.0	0.1	0.0	0.0	0.0	-1.2	0.2
Other primary	-0.1	-0.1	0.1	-0.1	-0.5	0.0	-1.4	-0.2
Manufacturing	0.2	0.1	0.2	-0.1	0.4	0.1	-1.7	0.2
Electricity	-3.8	-2.3	-0.7	0.0	-2.3	-1.6	2.0	-1.8
Gas and water	-1.2	-0.5	0.3	0.0	-0.2	0.0	-1.4	0.1
Construction	1.0	0.3	0.2	0.1	0.5	0.1	-0.8	0.2
Trade	0.8	0.1	0.1	0.0	0.5	0.1	-1.3	0.2
Transport nec	0.5	0.0	0.2	0.1	0.3	0.1	-1.0	0.2
Sea transport	1.7	1.3	1.6	0.2	1.7	0.0	-1.6	0.2
Air transport	13.8	4.0	2.3	4.1	3.4	3.3	-1.1	0.4
Communication	1.1	1.2	0.2	0.1	0.7	3.1	-0.8	0.4
Financial services nec	1.4	0.1	0.1	0.3	0.9	0.5	0.0	0.2
Insurance	1.3	0.0	0.1	0.0	0.3	0.1	-2.2	0.3
Business services nec	2.0	0.5	-0.2	-0.2	0.0	0.1	-2.4	-0.1
Other services	0.9	0.3	0.2	0.1	0.6	0.1	-1.1	0.2

Source: FTAP2 model results.

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Special Focus: Intellectual Property Rights and Developing Countries

Douglas Lippoldt, OECD Trade Directorate

The past 15 years have witnessed a substantial strengthening of the system of international treaties that governs intellectual property rights (IPR) in conjunction with national laws. Key developments include the advent of the World Trade Organisation's Agreement on Trade-related Intellectual Property Rights, increased adherence to the international IPR agreements administered by the World Intellectual Property Organisation, and inclusion of intellectual property provisions in a number of regional trade agreements. In moving to implement the commitments associated with ratification of these agreements, developing countries have generally needed to reinforce their IPR systems. Many of these countries had previously relied on poorly adapted or ineffective systems and extended only relatively weak IPR protection.

Why should developing countries protect these rights? Unlike a material resource, intellectual property (*e.g.* a patent) can be made available simultaneously and repeatedly on a non-exclusive basis to multiple users, generally at low marginal cost. This presents a challenge to innovators or subsequent rights holders who wish to appropriate an economic benefit from ownership of the underlying innovation. While some intellectual property can be easily protected (*e.g.* products that are difficult to reverse engineer, copy or imitate), much is vulnerable to abuse. If IPRs are hard to enforce in a particular market, foreign rights holders may be discouraged from making their intellectual property available via trade (including licensing) or direct investment. Weak IPR enforcement means rights holders may have difficulty appropriating returns from the use of their intellectual property or risk abuse of their intellectual property by a competitor. Both transfer of technology and domestic investment in innovation may suffer as a result. Successful efforts to enhance protection of IPRs can be essential for developing countries because access to improved technology is a fundamental condition of economic development.

What does the evidence show?

Current economic theory does not provide definitive insights on the economic implications of strengthening IPRs. Therefore, economists have turned to empirical research in order to assess actual applications of IPR policy.[1] Two recent OECD studies help to shed some light on the subject.

Park and Lippoldt (2003) considered the relation of changes in the strength of patent rights[2] to trade and foreign direct investment (FDI) in the 1990s, primarily in developing countries. Overall, they found a positive relationship between the strength of patent rights and inward trade or FDI. Given the correlation of the indicator for patent strength with indicators for trademarks and copyrights, it is possible that similar relationships exist for these other types of IPRs. With respect to trade, they found a moderate relationship between the strength of patent rights and import flows generally, particularly in textiles, pharmaceuticals and industrial chemicals. For computers and office equipment, patent rights appeared to be important primarily in markets where there was a threat of imitation. The estimates for the LDCs were generally not statistically significant.

For FDI, the study found a fairly strong and positive relation with the strength of patent rights. A 1% increase in the patent rights indicator was associated with a 0.5% increase in the stock of FDI. As patent rights become stronger, there appears to be a positive but diminishing association with increased FDI; the effect is largest for the LDCs (where initial IPR conditions tended to be weakest). Patent protection

1 For overviews of recent IPR literature, see Park and Lippoldt (2005) and Fink and Maskus (2005).

2 They took into account such elements as membership in relevant international treaties, restrictions on IPRs, available means of enforcement, duration of protection and sectoral coverage of patent rights.

tended to be relatively important for FDI in such sectors as computer services, finance, chemicals, petroleum and pharmaceuticals (perhaps owing to the threat of imitation). Despite the significant role of IPRs, other factors, such as market scale, sometimes play a determining role and may attract investment or imports in spite of the shortcomings in an IPR regime.[3]

In a further study, Park and Lippoldt (2005) examined the relation between international licensing and the strengthening of IPR in developing countries. Licensing enables licensees to obtain technology and expertise, thereby saving research and development expense; licensors derive fees and royalties and may be able to capitalise on the licensee's local reputation and knowledge. The authors found general support for the proposition that strengthening IPRs has had a net positive effect on technology transfer via licensing. Taking into account other explanatory factors (*e.g.* gross productivity, corruption, tariff rates and country risk), patent rights and effective enforcement of statutes in particular are positively associated with licensing.[4] Patent rights were found to be influential in services, electrical and electronics, and transport industries, but not in the machinery and wholesale trade industries. The effectiveness of enforcement is especially important in chemicals, electrical and electronics, and services.

Conclusion

The recent strengthening of IPRs in developing countries has tended to have a positive influence on FDI and licensing and a moderate influence on merchandise trade. These effects vary across sectors and countries, depending on such factors as the risk of imitation and the importance of other factors to rights holders (such as the scale of the market in question). The reform of IPR regimes may also influence the pace of technological progress, a fundamental condition of economic development. To the extent that technology is embodied in traded goods and services (including licences) and FDI, developing countries may be able to accelerate technology transfer by enhancing their IPR regimes. This can also help to stimulate domestic innovation. For developing economies, a general policy implication of the OECD studies is that IPR reform should be part of a broad strategy for promoting economic development. To reap the full benefits of IPR reform and ensure the capacity to absorb technology inflows, developing countries must also move to develop a coherent policy framework that provides complementary conditions such as appropriate regulation, an environment conducive to enterprise, essential physical infrastructure (*e.g.* for communications), and human capital development, among other elements.

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3 In a study by A. T. Kearney (2003) business representatives were identified their top FDI concerns. Theft of intellectual property was cited by 17% of the respondents and ranked 12th.

4 Copyrights and trademark rights influence licensing, but are weak once patent protection is accounted for.

Chapter 7

AGRICULTURAL POLICY REFORM, FACTOR RETURNS AND HOUSEHOLD WELFARE

Joe Dewbre and Jonathan Brooks[1]
OECD Agriculture Directorate

Governments of most developed and many developing countries impose tariffs on imports in order to boost domestic market prices of agricultural commodities. In some OECD countries governments may top up the financial benefits of this market price support through other means, e.g. direct budgetary payments, favourable tax treatment, and subsidised credit. These interventions typically lead to lower world market prices and farm incomes in countries in which governments offer farmers little in the way of agricultural trade protection and support. Widespread agricultural policy reform would undoubtedly improve global economic welfare but would also produce a complex pattern of economic winners and losers. Using a combination of global, national and household level analysis this chapter examines such distributional implications, focusing especially on differences in policy effects among countries and between different sectoral and household constituencies within countries.

Introduction

Reducing agricultural trade protection and trade-distorting domestic support would improve net economic welfare both globally and in countries implementing such reforms. Agricultural exporting countries would also benefit when world agricultural commodity prices increase in the process. Of course, those same price increases can lead to overall net losses for countries that rely heavily on agriculture and food imports. In all countries, some sectors and households will gain and others will lose.

This chapter summarises findings from a study (OECD, 2006) of the potential market and welfare changes that might accompany an imaginary halving of all merchandise tariffs and agricultural export subsidies worldwide and of agricultural domestic support in OECD countries. The analysis begins by asking which countries would gain and which would lose from reform, and within each country how different sectoral and household constituencies would be affected. In answering these questions, the study highlights the relative importance of different kinds of trade and domestic policy instruments and of reforms undertaken at home compared with reforms implemented by trading partners. Household level analysis then adds a degree of refinement by considering how different types of agricultural and non-agricultural households will be affected by reform, and what factors determine their ability to share in the benefits or to accommodate the losses.

[1] The authors wish to thank Hsin Huang for the GTAPEM policy simulation analysis and Carmel Cahill for her helpful comments on an earlier draft. This paper synthesises findings from a more comprehensive analysis – *Global, National and Household Effects of Agricultural and Trade Policy Reform* (OECD, 2006). That larger study benefited from input from a large number of OECD colleagues including especially: Stefan Tangermann, Ken Ash, Carmel Cahill and Pete Liapis.

National and sectoral impacts of policy reforms were analysed using a global general equilibrium model. Household-level policy effects were evaluated using a variety of different micro-level models in five country case studies: Brazil, Italy, Malawi, Mexico and the United States. The case studies differ in their construction, reflecting the different structures of the economies as well as data availability. They nevertheless share two core characteristics. First, they embed micro-level (household) information in a macro (region or economy-wide) behavioural model. Second, they contain groups of "representative households" that collectively represent the totality of household types in the economy. The key elements in tracing out the distributional impacts of reform are household responses to policy change, products and factor market interactions, and economy-wide linkages.

Extent and composition of agricultural support and trade protection

A starting point for examining the effects of reform is the existing level and types of support given farmers. The OECD monitors and evaluates trends in both the overall level and the composition of agricultural support in its member countries using the producer support estimate (PSE) and various subsidiary indicators (OECD, 2004, and previous issues). The PSE sums up the monetary value of government interventions that result in financial transfers from consumers and taxpayers to support agricultural producers. When expressed as a percentage of total farm receipts, the PSE allows economically meaningful comparisons of the extent of support across both countries and commodities.

In constructing PSEs, the various policy measures that governments use in channelling financial support to farmers are categorised according to a system of classification that begins by distinguishing between market price support and budgetary payments. Each of these two broad categories is then further broken down according to the way the associated policy is implemented.

Market price support

Market price support is the most important cause of farm trade surpluses and depressed world prices of agricultural commodities. There are two connected reasons for this. First, a given monetary amount of market price support has a greater impact on production and trade than most types of direct financial support governments provide farmers OECD (2001). Second, for most countries and commodities, market price support dominates other kinds of support, accounting for upwards of two-thirds of the OECD-wide percentage PSE in recent years.

Government intervention aimed at supporting market prices of tradable farm commodities almost always require trade interventions: import tariffs or quantity limits to staunch the flow of imports and, in some cases, export subsidies to encourage foreign buyers to purchase surplus production. The higher domestic prices caused by trade interventions simultaneously discourage domestic consumption and encourage domestic production. Thus, compared to direct budgetary support that directly affects only the supply side of the market, *e.g.* a payment per unit of output produced or area planted, market price support provokes a greater change in the volume of trade for a given monetary amount of support provided.

Figure 7.1 traces the evolution of OECD agricultural support as measured by the %PSE and the %MPS. The %PSE indicates the percentage share of total farm receipts that comes from the combined total of market support and government payments to farmers. For example, in recent years, the OECD average %PSE has hovered in a very narrow range around 30%, implying that just under one-third of total OECD-wide farm receipts result from transfers associated with agricultural policies. The %MPS refers to the share of farm receipts attributable to just those interventions aimed at boosting the prices farmers get on the domestic market above what they would get if they had to sell the product on world

markets. As Figure 7.1 shows, the trends of both the %PSE and the %MPS have declined somewhat in the last 15 or so years, with the %MPS falling at a faster rate than the %PSE.

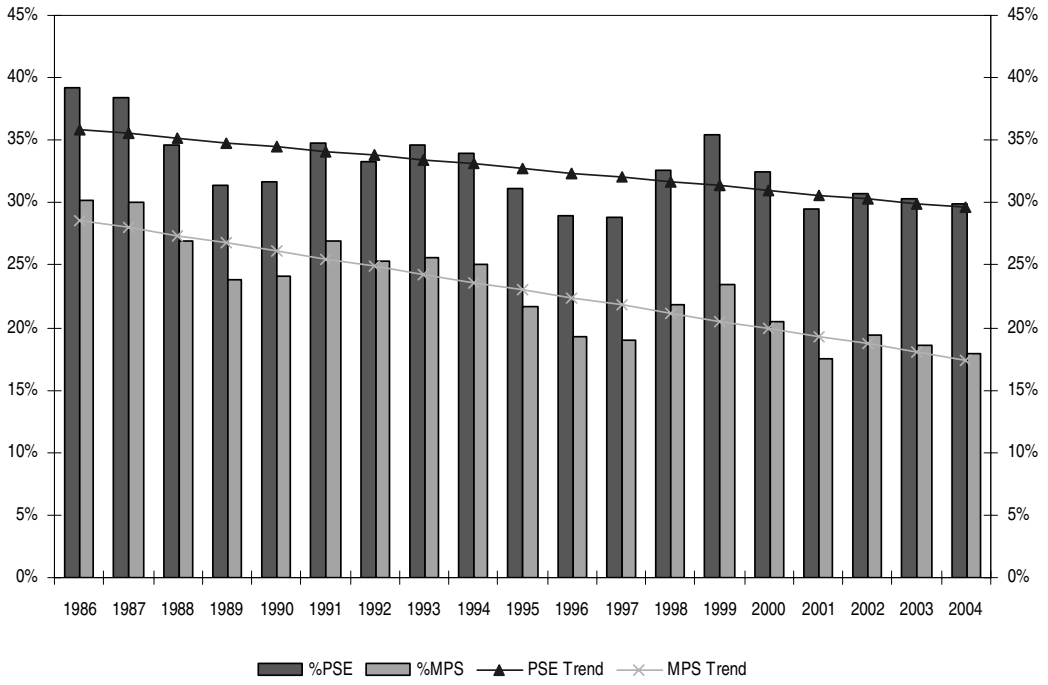
Market price support usually requires, but is not exclusively the consequence of, trade policy instruments that directly influence domestic prices, *i.e.* tariffs applied to the price of imported substitutes for protected commodities or export subsidies given to encourage purchases by foreign buyers. In many countries, the transactions costs of trade, phytosanitary restrictions and other kinds of non-tariff measures may add to the protective effects of tariffs and/or export subsidies in creating the gap between domestic and world market prices. The present analysis focuses however exclusively on the potential market and welfare effects attributable to that part of market price support caused by trade interventions directly affecting prices.

Budgetary payments

The data in Figure 7.1 show a growing share of budgetary payments in the total PSE (from less than 25% in 1986 to just over 40% in 2004). The system used to classify support measures for the PSE distinguishes quite a large number of categories and sub-categories of budgetary payments. However, for present purposes the most important distinctions are captured by focusing on just four broad groupings of payments based respectively on: *i)* land; *ii)* animal numbers; *iii)* output; and *iv)* other payments.

Figure 7.1. Evolution of producer support estimate (%PSE) and market price support (%MPS)

1986-2004



Source: OECD, PSE/CSE database, 2005.

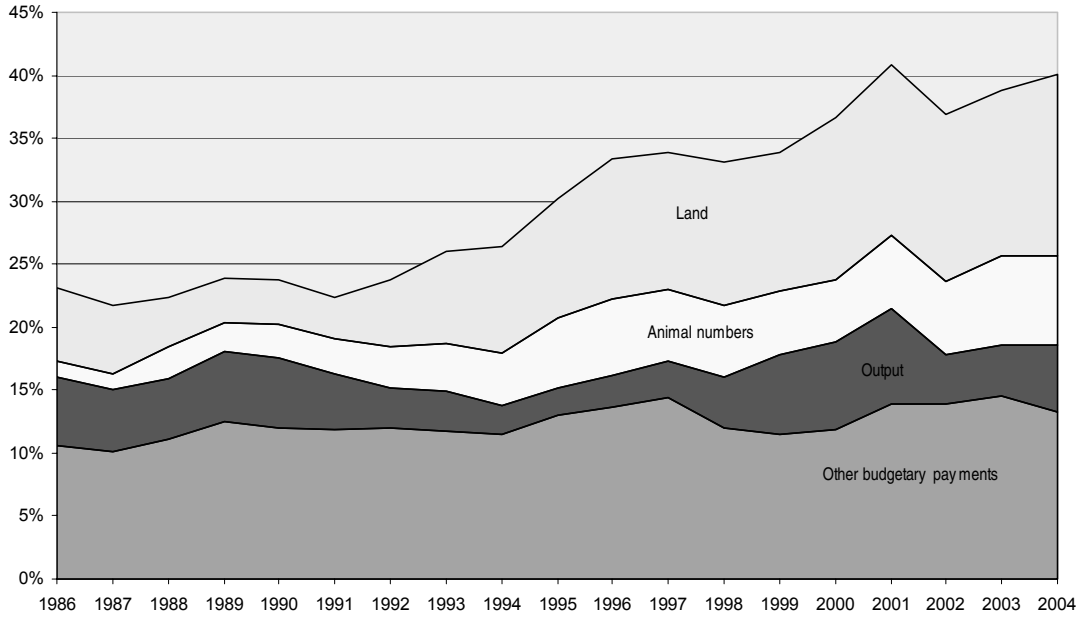
Land payments here include both payments made per hectare of current plantings as well as those made under the various programmes of payments based on historical entitlements. Payments

based on animal numbers are dominated by headage payments made to livestock producers in the EU and other European countries. Payments based on output include the US crop loan deficiency payments and those made under similar programmes in other OECD countries. The "other" category includes payments based on variable and fixed input use as well as the headage payments made to livestock producers. Figure 7.2 plots the evolution of the PSE shares for each of these three types of support over the period 1986 to 2004.

Factor market and welfare impacts at global, regional and national level

The GTAPEM model was used to gauge the economic costs and benefits of policy reform for selected sectors in national and regional economies. A complete description of the model and its associated data can be found in OECD (2006). The GTAPEM simulation experiment combined 50% reductions in all rates of agricultural budgetary payments and trade protection (tariffs and export subsidies) with a 50% reduction in rates of import protection applying to non-agriculture. In making these cuts, no consideration was given to whether countries may have "room to manoeuvre" either with respect to binding overhangs in tariffs, export subsidies or domestic support.

Figure 7.2. Contribution of land, output and other budgetary payments to the total %PSE, 1986-2004



Source: OECD calculations.

The choice of *country* coverage for GTAPEM was dictated to some degree by the need for information to feed into the five individual case study countries on which the analysis of household level impacts was to be based (Brazil, Italy, Malawi, Mexico and the United States). It was also considered important to include a variety of larger OECD and non-OECD countries. So, in addition to the case study countries the final list included the following OECD countries and regions: Australia/New Zealand (as one region), Canada, EU15 (also as one region), Japan and Turkey. Individual non-OECD countries or regions treated individually were: China, India, Indonesia, Russia, Thailand, South Africa, Sub-Saharan Africa (all countries except South Africa treated as one region).

Because the main focus of the analysis is on assessing agricultural trade and domestic policy reforms, *commodity* coverage in GTAPEM is biased heavily toward individual agricultural commodities. All of non-agriculture is represented in just three aggregated sectors: *i)* textiles and clothing, *ii)* other manufacturing and *iii)* services. Finally, *factor* coverage focuses on distinctions between agricultural factors: land, skilled and unskilled labour and capital, and their non-agricultural counterparts.

The policy reforms yield simulated changes in virtually every producer, consumer, import, export and factor price in every country and region in the model. Here, the focus is mainly on the implications for factor markets. As Hertel and Reimer (2004) note, there is increasing recognition of the overriding importance in trade policy analysis of factor market effects – in particular the impacts of trade reform on earnings and employment That is to say, the biggest impacts are a consequence of changes in factor allocations and supply-side adjustments, not changes in demand. Consumption effects are dampened by the combination of low pass-through of farm price effects into retail food prices and by typically low elasticities of demand for food.

Returns to land

The economic return a landowner earns per unit area of land used in farming[2] – the implicit rental rate – can usefully be viewed here as the sum of two payments: a factor payment reflecting what land would earn with production valued at producer prices and a budgetary payment based on area. Government interventions that boost producer prices – trade protection or payments per unit of output – automatically increase factor payments, including those to land. Area payments may be made instead of or perhaps in addition to price support. In classifying support for the PSE area, payments that require planting a particular crop are distinguished from those that only require that the land be retained in agriculture. Here, all types of area payments are assumed to be made on a commodity-specific basis and subject to a planting requirement.

When trade protection and domestic support are reduced, landowners may experience declines in returns to land owing both to the induced reductions in the total value of production to be distributed among the factors and to the imposed reductions in area payments. Correspondingly, landowners in countries where government provides no or relatively little price support and area payments may experience increased returns to land from reform-induced increases in world market prices.

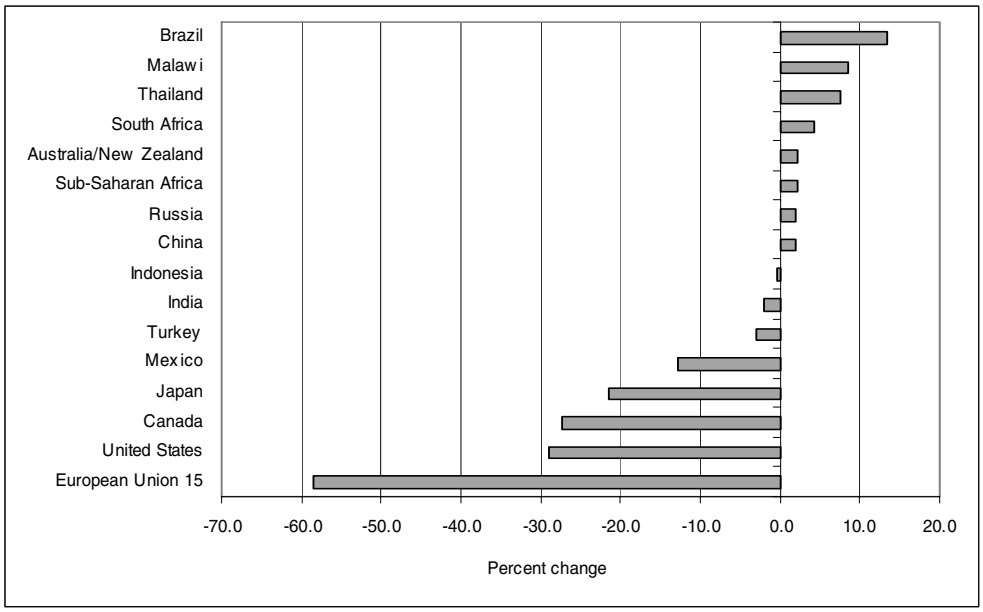
Figure 7.3 shows the estimated pass-through effect of the policy reform shock on the implicit rental rate of land. The magnitude of these effects is substantially greater than corresponding effects on unit wage rates or returns to capital (shown in Figure 7.4). This is especially so for the OECD countries that currently provide high levels of support and trade protection for agriculture. Reform-induced reductions in monetary returns to land; capital and labour used in farm production must be accommodated via a combination of reductions, on the one hand in factor prices and rents and on the other in factor use.

Which type of adjustment – price or quantity – turns out to be the most important depends on the ease with which factors can be shifted among alternative uses in agriculture and between agriculture and non-agricultural uses. Most of the human and physical capital used in farming is highly

[2] The terms land rents or land rental rates are used here and throughout the remainder of the chapter to refer to the economic returns to land without regard to whether land is in reality farmed by the landowner or by someone else.

sector-specific and cannot readily be converted to non-farm uses in the short to medium run. In the longer term though, the number of people employed in the sector and the stock of physical capital will be adjusted in line with changes in relative rates of return in agriculture as compared to other sectors of the economy.

Figure 7.3. Simulated impacts on land rental rates



Source: GTAPEM simulation results.

Results shown in Figure 7.3 indicate the percentage increase or decrease in the annual flow of land rents earned by a landowner. The model does not calculate the implications of changes in this rental flow for the price of land as an asset. The capitalisation of the economic benefits of farm support into asset prices, for land especially, constitutes an enduring topic of applied economic analysis. (See Gardner, 1987, for an extended discussion and additional references.) Additional empirical study is necessary before drawing definitive conclusions about the asset value implications of the particular kinds of area payments studied here. However, one general finding emerges from the large number of past studies devoted to the topic. It is that a given percentage change in the annual rental rate would be fully reflected in the selling price of land only under quite restrictive assumptions about expectations (including about future government policy) and the functioning of land markets (Burfisher and Hopkins, 2003).

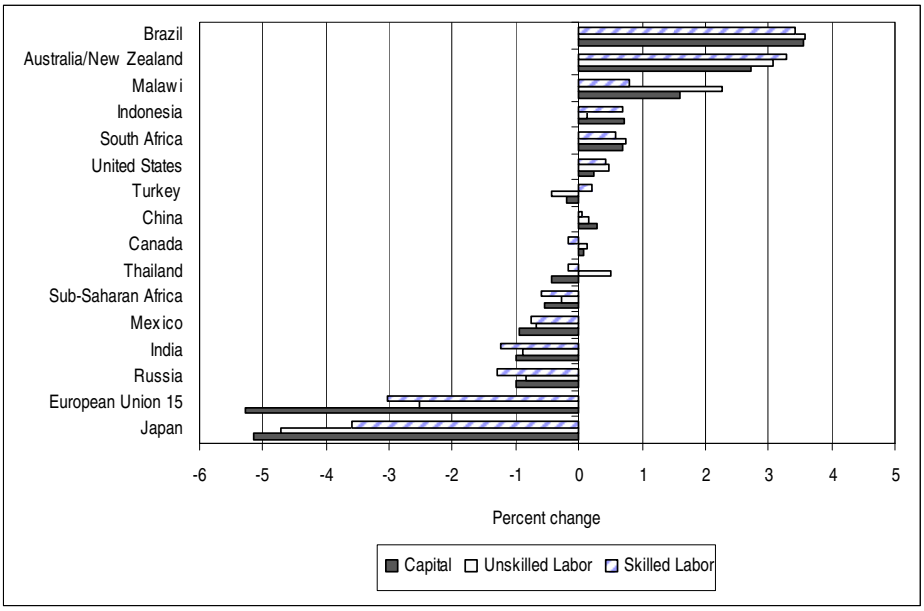
Findings reported in Figure 7.3 are nevertheless generally consistent with the widely held view that much of the benefits of government interventions in agriculture show up in higher rental rates and higher selling prices of land. This applies especially in the present case as a significant share of domestic support to agriculture in the United States, the EU, Mexico, Canada comes in the form of direct payments per unit area of land. Reducing these payments directly reduces the (subsidy-inclusive) factor payments to land. Since the quantity of land in agricultural use does not change very much with changes in economic returns, virtually all of the adjustment must come through the unit-returns side of the factor payment equation. If area payments were made with no requirement to plant, the pass-through of reform-induced changes to land rental rates could be even greater than shown in the figure.

Labour and capital

Figure 7.4 shows the change in real unit returns to agricultural labour and to capital used in agriculture and outside agriculture. These changes are substantially smaller than those for land shown in Figure 7.3. The reason of course is that, unlike in the case of land, quantities of agricultural labour and capital also adjust with changes in relative sector returns. Indeed, the country pattern and magnitude of the factor quantity changes are more or less identical to those for unit returns (and so are omitted here to simplify the presentation). As expected, when support is reduced, in most countries offering high support and protection to agriculture, the factor returns in the sector evolve unfavourably relative to the returns that can be gained in non-agricultural activities.

Figure 7.4 compares differences in the percentage changes in unit factor returns in agriculture and non-agriculture uses. Hence what they indicate is not whether unit returns to labour and capital used in agriculture go up or down in an absolute sense but the magnitude of such changes relative to corresponding unit returns in non-agriculture.

Figure 7.4. Simulated impacts on relative per unit returns to labour and capital used in agriculture



Source: GTAPEM simulation results.

The region experiencing the second greatest increase in relative returns to agriculture – Australia/New Zealand – and the region experiencing the greatest decrease in such returns – Japan – are both OECD countries. Among non-OECD countries, Brazil and Malawi also see unit returns to labour and capital employed in agriculture rising significantly more than the corresponding rise in returns to labour and capital employed in non-agriculture. The reverse is true for India and Russia.

Agriculture value added

Agricultural value added, also known as agricultural GDP, is defined as the real value of output produced minus the costs of goods and services purchased as farm inputs. It is often used as an indicator of the economic performance of the agricultural sector because it combines the net economic

returns to farmland, labour and capital invested in farms. Simulated changes thus reflect the combined or net effects of estimated impacts on all factor prices and quantities. A closely related and perhaps more familiar indicator is farm sector income. Agriculture GDP differs from farm sector income because it includes the value added by hired farm workers and by people who own farm land or who supply capital to farming but do not farm. In fact, averaging across countries, about half the land farmed in OECD countries is rented. Nevertheless, directional changes in agricultural value added should provide a good indication of directional changes in farm sector income.

Another, perhaps more important, distinction to bear in mind is that neither changes in agricultural GDP nor changes in farm sector returns will provide a good indicator of the potential effects of reductions in support on farm household incomes. Farm households will not bear the full brunt of the reductions in factor returns, as other people, *e.g*. absentee landlords, will share part of the burden. Moreover, in those countries where farm sector income is shown to go down, farm households will adjust their on-farm and off-farm activities in ways that minimise the negative impacts on farm household income. Indeed, there may be cases where reform-induced increases in returns to their labour and capital employed off the farm more than offset reduced farm incomes. The next section explores some of these questions in greater depth, looking at the many sources of effects on farm household incomes across a broad range of representative farm household types.

Table 7.A.1 shows the estimated impacts of reform on agricultural value added in different countries and regions, broken down by broad category of support measure: land payments, other budgetary payments and trade measures (tariffs and export subsidies combined). Unsurprisingly, agricultural value added falls most in most of the countries that provide the highest levels of support and protection. In OECD countries, only the combined Australia/New Zealand region and Turkey show increases. There is a mix of increases and decreases in agricultural GDP among the non-OECD group. Brazil, Malawi and Thailand all show gains of more than 3% but India, Sub-Saharan Africa and Russia are estimated to suffer some loss in economic returns to agriculture as a result of widespread policy reform.

Reductions in land-based payments account for a large share of the loss in agricultural GDP in most countries experiencing losses. On the other hand, in those countries expected to experience gains in agriculture GDP, hardly any of the gains come from reducing land payments. Even in the case of Australia/New Zealand, where agricultural GDP increases overall, the effect of reducing land subsidies is negative (but outweighed by gains from reducing other kinds of budgetary payments and trade policy). For trade measures though, the opposite holds. In countries where agricultural GDP increases, most of the gains are attributable to the effects of reducing tariffs and export subsidies and such reductions contribute little to the income losses in countries that experience them.

Economic welfare

Table 7.A.2 gives the breakdown of estimated global welfare gains by policy instrument and by broad country group implementing the policy change. Comparisons of the table's columns show how much of the estimated global welfare gain from widespread agriculture and trade reform can be attributed to reforms in OECD and non-OECD countries respectively. Comparisons of the rows show how much of the change in global welfare is attributable to each category of policy.

In general terms, those benefiting economically from policy reform may do so because the prices they pay as consumers decline and/or because the money income they earn increases. The measure of welfare change used in Table 7.A.2 and subsequent tables to sum up the net economic benefit of these price and money income changes is equivalent variation (EV). Technically, the EV is

the minimum amount of money an individual would be willing to accept in exchange for the economic benefits accompanying a given package of policy changes. Symmetrically, for those who lose, the EV indicates the maximum an individual would be willing to pay to avoid the economic pain imposed by a given package of policy changes (Varian, 1992).

The EV results reported in Table 7.A.2 reveal an estimated global welfare gain in 2001 totalling USD 44.3 billion or 0.14% of world GDP. The policy changes implemented by OECD countries would contribute the lion's share (67%) of the global gain. But reductions of import tariffs by non-OECD countries also make a significant contribution. Agricultural policy reforms in OECD countries would yield a gain of USD 23 billion or 78% of the total potential contribution from all OECD reforms.

Within agriculture, over 75% of the estimated welfare gains come from reducing import protection. In other recent studies aimed at measuring the welfare effects of reducing agricultural support and protection (Hertel and Keeney, 2005; Anderson *et al*., 2005; Tokarick, 2005), the dominance of benefits from improved market access was found to be even greater than that obtained here. Among the various categories of subsidy payments considered, the greatest simulated gains in welfare come from reducing those given to capital. In the PSE this category includes capital grants, interest concessions and headage payments to livestock producers.

Although they constituted nearly 15% of the OECD-wide total PSE in the 2001 base year, the estimated welfare impact of reducing land-related payments (all the various kinds of area payments tracked for the PSE taken together) is relatively quite small. It amounts to only 3% of the estimated total global welfare gains resulting from policy changes in the OECD area.[3] As the results reported in Table 7.A.1 show, almost all of the loss in farm income, in most of the countries experiencing farm income losses due to policy reforms, was caused by the reduction in land payments. The importance of export subsidies has declined in recent years, and this is reflected in their very limited contribution to the global welfare result.

Reducing import tariffs applied to industrial products boosts estimated global welfare gains by USD 18 billion, a figure that accounts for over 40% of the total gains. While almost all of the welfare gain from reducing agricultural support and protection comes from OECD-area reforms, most of the gains from reducing non-agricultural tariffs come from reforms implemented in the non-OECD region. This holds even though agricultural tariffs are higher than tariffs on industrial goods in developing countries and even though agriculture is relatively more important in the economies of developing than of developed countries.

Table 7.A.3 documents potential welfare impacts of policy reform for the OECD and the non-OECD region and for selected countries. Comparisons of the table's rows reveal how much of the global welfare change goes to each of the various OECD and non-OECD countries and regions. Comparisons of the table's columns give an idea of whether it is agriculture support and protection or the protection afforded other sectors which is most important. The first two columns show total impacts in USD millions and as a percentage of national GDP, respectively. The dollar figures correspond largely to the size of the country or region so that the percentages actually give a better

3 The estimated global welfare gain from reducing area payments is obtained assuming a planting requirement. Under an alternative assumption that there is no planting requirement, the estimated welfare gain derived from reducing them would be zero. Welfare costs are of course incurred when making any kind of budgetary payment owing for example to deadweight costs of taxation. These costs are ignored in this analysis.

indication of the impacts of reforms. They reveal that developing countries seem likely to experience a somewhat greater economic boost from policy reforms than developed countries.

However, Australia/New Zealand and the "Rest of OECD" show increases in percentage of GDP terms that are considerably higher than the average for non-OECD countries. Among developing countries, Brazil, China and India all show above-average gains in both dollar and percentage terms. In the table only Sub-Saharan Africa is shown to lose from the multi-sector, multilateral reforms. However, in regional aggregates such as the "Rest of world" group some individual countries undoubtedly lose, even when the outcome for the overall region is positive.

The third column of Table 7.A.3 shows the distribution of welfare changes deriving from OECD agriculture-only reforms. These figures add together the estimated welfare impacts for all the various categories of agricultural trade protection and budgetary payments. A breakdown of this aggregate result by policy category reveals that, with very few exceptions, the gains for individual non-OECD countries derive almost entirely from reductions in agricultural tariffs, a finding highlighted in discussing Table 7.A.2.

In line with results reported by Tokarick (2005), most of the estimated benefits coming from reform of OECD agricultural policies (over 90%) go to the OECD countries themselves. Moreover, more than half of the estimated total benefits of USD 2 billion for the entire non-OECD region accrues to a single country, Brazil. Indeed, as might be expected for countries that are net importers of OECD agricultural products, some would lose welfare from reform that is confined to reductions in OECD agriculture protection and support.

Most individual non-OECD countries singled out in the GTAPEM analysis are shown to gain. However, apart from Brazil, the welfare changes attributed to OECD agricultural policy reforms are, whether positive or negative, relatively small. In contrast to the result obtained from multi-sectoral reform, Sub-Saharan Africa is shown to gain slightly when OECD agriculture trade protection and support is reduced.

The question of whether individual developing countries or regions, especially net importing developing countries, stand to gain or lose from OECD agricultural policy reform has recently been the subject of intense debate. Bhagwati (2005) labels as "dangerous nonsense" the idea that agricultural subsidies in OECD countries are keeping the developing world poor. Panagariya (2004) concludes that "there are compelling reasons to reject the view that developed-country subsidies and protection hurt the poorest countries". Generally speaking, developing-country farmers would benefit from reduction of OECD agricultural trade protection and support, although some could lose through erosion of the benefits of preferential access. On the other hand, the same increases in world market prices that benefit developing-country farmers also increase costs for developing-country consumers.

Whether there are net gains or losses for any particular country depends on its net trade position in those commodities whose prices change with policy reform as well as the magnitude and direction of those price changes. It is impossible to provide a general answer this question by relying solely on economic theory and knowledge of a country's status as a net importer or net exporter. The commodity mix of production, consumption and trade varies greatly from one country to another. Most countries export some kinds of agricultural and food products and import other kinds. Because agricultural policy reform would generate a complex pattern of world price changes for different commodities and countries it could well happen that a country that is a net importer in aggregate terms, both before and after widespread policy reform, could still gain overall if the world market

price increases on the products it exports more than offset the price increases it has to pay as an importer (Tangermann, 2005).

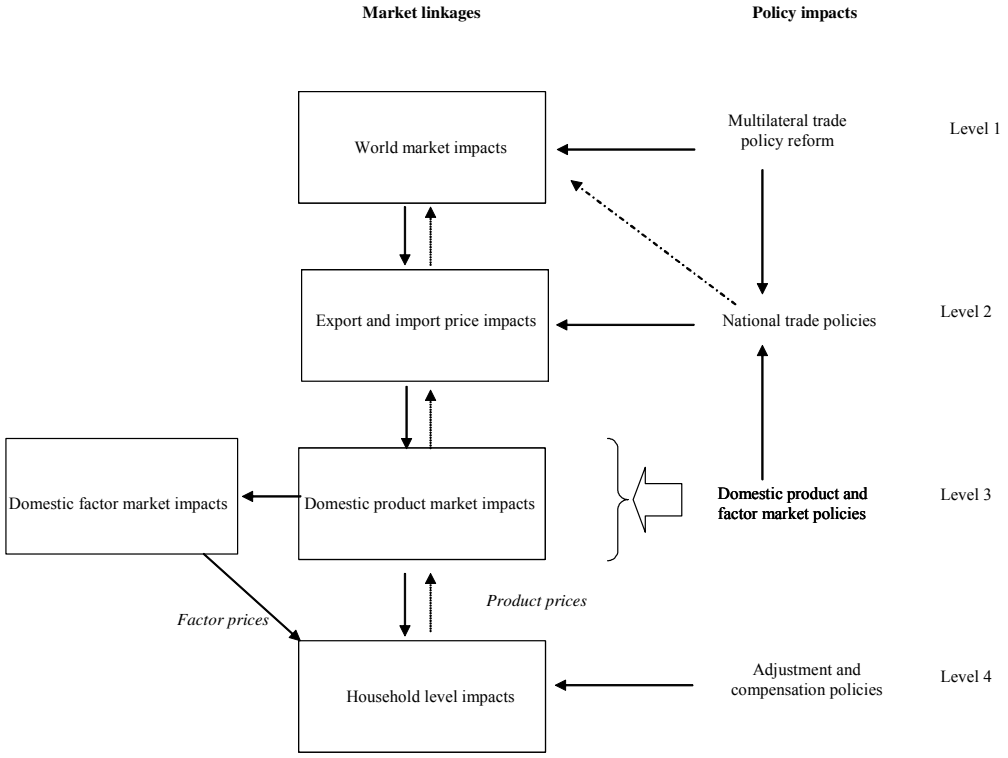
Household-level impacts

The country case studies for Brazil, Italy, Malawi, Mexico and the United States measure the distributional effects of agricultural and trade policy reforms undertaken at the national and multilateral level. The overall objective of these studies is to learn more about the ways in which policy reforms affect different types of households in a diverse group of developed and developing countries. The aim is not simply to generate one-off results, or to extrapolate from a small set of applications, but rather to explore the degree of within-country divergence associated with the aggregate impacts described above, demonstrate the kinds of policy insights that can be obtained, and suggest ways in which such insights can assist in the design of appropriate policy responses for those adversely affected by policy reforms.

Analysing policy incidence

What kinds of policy effects need to be measured? The ultimate interest of the case studies lies in what multilateral and national policy reforms imply for the level and distribution of household incomes. The household forms the essential building block of the analysis, being the basic institution governing decisions on production, consumption and labour allocation, and corresponding to the level at which relevant data are collected. An instructive way of viewing the various ways in which reforms and other policy measures can affect households is provided in Figure 7.5.

Figure 7.5. A simplified schema of market, household and policy linkages



Source: Authors.

Under this schema, market-based impacts (levels 1, 2 and 3) feed down to the household level (level 4). First, multilateral trade reform has a global effect on international markets, as resources are reallocated in response to the existing pattern of comparative advantage (level 1). Second, these changes on world markets, together with own-country policy changes, are associated with changes in the prices paid by importers and received by exporters in individual countries (level 2). Third, changes in prices paid and received at the border lead to changes on local domestic markets (level 3). Fourth, changes in these prices affect the incomes and expenditures of households, with consequent effects on the incidence of poverty (level 4). As the right-hand column shows, policies can have a direct impact at each stage. Not all policies are independent. For example, both multilateral rules and domestic policies can affect national trade policies. In the case of a large country, national trade policies may have a measurable effect on world markets (dotted arrow). Alternative schemas with a similar orientation are contained in McCulloch *et al.* (2001) and Diaz Bonilla *et al.* (2003).

Of course, this representation of trade reform impacts is an oversimplification. In the first place, causality can run both ways. For example, structural changes at the household level can affect local markets, while changes in local markets can affect the relative prices of tradable and non-tradable goods, which, in large countries, can alter conditions on world markets. Second, there are general equilibrium impacts at each stage. For example, households may receive income from agricultural production in the form of wages or profit, which they then spend on a variety of agricultural and non-agricultural goods according to the structure of their demands. The overall pattern of demand will in turn have a bearing on the structure of production. Similarly, tariffs may affect government revenues, which can be spent in a variety of ways. Finally, there is a range of dynamic impacts, including the complex linkages between trade, economic growth and poverty. These dynamic effects are potentially important, because they may counteract the static impacts and possibly overwhelm them in the long run. A basic dilemma confronted by these studies is how to build tractable models that address this complexity.

The GTAPEM policy simulations of the market and welfare effects of reform discussed above provide results that essentially links levels 1 to 3 across countries. The case studies focus in greater detail on what happens at the national level, *i.e.* at levels 3 and 4. They take changes on global markets, in the form of shocks to export and import prices, as exogenous. In principle, disaggregated national models, with household-level detail, could be nested in a global model, so that the connections are all made seamlessly. In practice, however, national models can provide more detail at levels 3 and 4, and a pragmatic approach (adopted in the case studies) is to link the global and national models less formally (but checking for consistency in terms of the predicted impacts on domestic markets).

Characteristics of case study models

Each model is constructed to take account of the economic characteristics of the country, data availability, specific policy questions that need to be addressed and related judgements on the appropriate methodology. The studies nevertheless share two core characteristics. First, they contain groups of "representative households" that collectively represent all of the household types in the economy. Second, they embed those households in a macro (region or economy wide) behavioural model. Policy and/or non policy shocks are applied to these models in order to trace the effects of reform on different types of households.

The detailed categorisation of households differs in each study. However, there is a broad distinction between commercial and non-commercial farm households (with one or more sub-

categories in each case). The former tend to behave more like firms, consuming little of their own output and supplying few of their own inputs. This group tends to be better integrated with formal markets. The non-commercial category is quite different in developing and developed countries. In poorer countries, it corresponds to subsistence or semi-subsistence households, which both produce and consume food and may sell their own labour or hire some from outside. In richer countries, the non-commercial category typically equates to "lifestyle" or retirement farm households, which are characterised by high levels of off-farm income. Non-commercial farm households allocate their time between farm and off-farm work or leisure, and allocate their income from those activities between consumption of home production (notably food) and external purchases.

Two further broad categories of household are agricultural wage earners and urban (consumer) households. These groups may be particularly important in developing countries, where there tend to be more landless workers and the urban population spends a substantial share of its income on food. Note that the stylised categories referred to above are merely broad groupings. In each study, households are further subdivided, according to either structural characteristics that determine behavioural differences (*e.g.* commodity specialisation) or socio-economic variables, which provide a useful way of viewing the results (*e.g.* income level, gender of head of household). The specific typologies in each case are as follows:

- ***Brazil*** has ten household types, comprising four categories of family farm (non-commercial) household, ordered by economic size; one category of "commercial" farm households; one category of wage-earning agricultural employees; and four categories of urban household, ordered by income quartile. These ten groupings account for all household types in the economy and are embedded within a CGE model.
- ***Italy*** also comprises ten household types. There are three types of non-commercial farm household (limited resource, retired and residential); and four types of commercial farm household (professional farmers with low sales; professional farmers with large sales, large family farms and very large family farms). In addition, there are three categories of urban household, ordered by income, and a separately specified group of rural non-farm households. The CGE analysis is complemented by a micro analysis of farm household behaviour, for which all agricultural households are grouped into two broad types: professional and non-professional.
- ***Malawi*** households are differentiated first with respect to three agro-ecological zones and second with regard to socio-economic characteristics within each zone. The latter characteristics include off-farm employment income, remittances, value of assets, retained maize stocks, holding size, access to credit and gender of household head. These data were used to define seven household types: larger farmers, medium-sized farmers with assets, borrowers, poor households headed by men, poor households headed by women, employees and remittance earners. The model allows each household type to behave differently, depending on the resource constraints that it faces.
- ***Mexico*** has the following household types: commercial farms on large landholdings, which behave more like firms than like households; net-surplus producing family farms on medium and small holdings, typical of small owner-operated farms of medium productivity; subsistence and infra-subsistence household farms, typical of small-scale, low-productivity agriculture, frequently operating under marginal conditions and incomplete markets; and landless rural households. For each household type, four separate farm household models are considered for each of Mexico's five census regions (*i.e.* 20 models in total), and these household models are embedded in a separate CGE for each region.

- The ***United States*** has seven representative types of farm household and two types of non-farm household (low-income and high-income) within a CGE. In addition, the macro results for each household type are linked to a micro-simulation model, so that the impacts on the overall group can be distributed across individual households. The effects on an individual household depend on its adjustment capacity, which is linked to two variables: the probability of working off-farm and managerial adjustment capacity. The former is estimated econometrically on the basis of household characteristics such as age, education and race; the latter is linked to financial performance.

The case study models differ in terms of the scope of coverage of economy-wide interactions, the amount of household-specific behavioural detail considered and the underlying assumptions made about the structure and functioning of markets. The Malawi and Mexico studies each contain farm household models that account for market failures and the resulting interdependence of households' decisions on production, consumption and labour supply. The Malawi farm household model takes account of seasonal constraints, varied activities among households and heterogeneity of resource endowments. By allowing for different maize prices in the harvest and post-harvest periods, the model allows for some embedded risk. Farm households are nested in a model of the rural economy, whereby households interact with each other and with "external" markets for output (maize and tobacco) and wage labour. The model of the rural economy is in turn loosely nested in a CGE.

For each of Mexico's five regions (Northwest, Northeast, West-Centre, Centre and South-Southeast), there are four farm households nested within a rural CGE. The household models are estimated separately, to capture the fact that the same household category is somewhat different from one region to another. The CGE model determines the (net) marketed surplus of tradable commodities as the difference between supply and demand. Prices for "village" tradables are exogenous, determined by markets outside the village or by policy. Prices of village non-tradables (land and hired labour) are endogenous, with local supply equal to demand, and individual household price takers. For households that do not participate in local markets, prices are unobserved shadow prices, and the marketed surplus is zero.

The studies of Brazil, Italy and the United States each embed the representative household groups into a national CGE. The CGE models all follow a standard form in which households groups respond to reforms by varying their consumption decisions, while production responses are determined at the market level and passed through to the household via changes in factor incomes. A benefit of this approach is that each study provides substantial sectoral detail. For Brazil there are 30 activities, of which nine are in primary agriculture and 15 are in agribusiness, and 40 products, of which 17 are agricultural and 19 of the remaining 23 are agribusiness or strongly agriculture-related. For Italy, there are 41 sectors, of which 23 are in agriculture, nine in agribusiness, seven in industry and two in services. Unlike the study on Brazil, each sector produces a unique output.

For the United States the model contains 59 sectors, of which ten are farm sectors and 12 food processing. Trade and transport are treated explicitly, so that household consumer behaviour responds to retail prices, while producer decisions respond to producer prices. The study links the macro results for each household type to a micro-simulation model, so that the impacts on the overall group can be distributed across individual households. The effects on an individual household depend on its adjustment capacity, which is linked to two variables: the probability of working off-farm, and managerial adjustment capacity. The former is estimated econometrically on the basis of household characteristics such as age, education and race; the latter is linked to financial performance.

Case study results

This section describes the policy shocks applied in each case study, summarises the household-level impacts for each country and draws the main findings across the five studies. Where possible, an effort is made to link the aggregate national effects obtained from simulations with the GTAPEM model and described above to the disaggregated (household-level) effects obtained using national models. The specific scenarios are as follows:

- ***Brazil*** reduces its own tariffs by 50% and faces a vector of price changes (to export and import prices) obtained from the GTAPEM simulation.
- ***Italy*** implements the same scenario. In addition, a CAP reform scenario is considered, under which area and headage payments are replaced with a system of decoupled payments.
- For ***Malawi***, the GTAPEM simulation suggests price increases of less than 5% for the main cash crop (tobacco). A range of changes to tobacco and maize prices are simulated, along with a non-policy shock in the form of increased openness of the rural economy to purchases of tradable goods and services.
- ***Mexico*** takes the changes to food (maize) prices, cash crop prices and urban wages that GTAPEM predicts would result from a 50% liberalisation scenario. In addition, a series of stylised policy and market shocks are applied to demonstrate the value of the modelling approach. These include price shocks (to maize and cash crops), migration experiments (urban wage increases and peso devaluation), and government transfers (PROCAMPO and PROGRESA payments).
- The ***United States*** study considers the effects of a scenario featuring full global trade reform comprising complete elimination of border protection and domestic support that is deemed to be trade-distorting but excluding payments not linked to production of specific crops.

Selected numerical results highlighting findings from these case studies are presented and discussed below. More detail and a fuller discussion can be found in OECD (2006).

Brazil

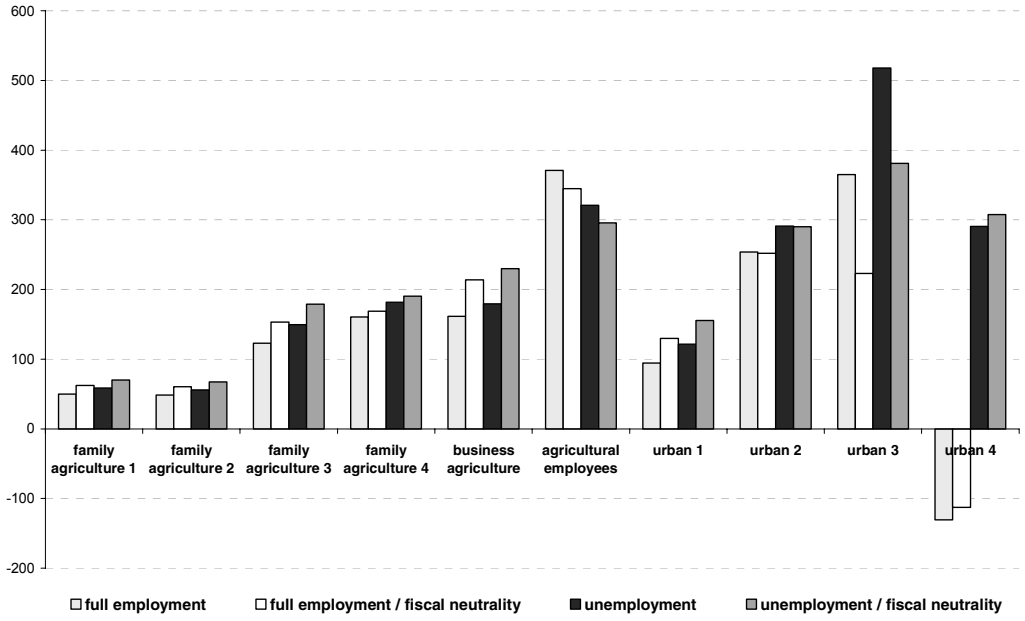
The aggregate welfare gains from reform vary from USD 1.5 billion with full employment to USD 2.2 billion under the more realistic assumption of unemployed unskilled labour. (These two estimates bridge Brazil's estimated national welfare gain of USD 1.73 billion obtained in the GTAPEM simulation.) These impacts are ultimately distributed across households, via changes in factor returns. Figure 7.6 shows the changes in welfare for each household group under alternative closure rules. The following patterns emerge:

- In general, the welfare gains are widespread across household types. With the poorer categories of both urban and rural household better off, the incidence of poverty falls.
- Inequality among agricultural producer households increases, with larger (and richer) family farm households gaining more than smaller ones. This is because larger farms tend to be more specialised in export products, for which price increases are relatively large.
- At the same time, the total gains to agricultural employees are more than for any other type of agricultural household. The benefits to this group derive from the increased demand for farm labour from commercial farm households. Because agricultural employees are relatively poor, this impact counteracts the increase in inequality among agricultural producers.

- Urban households also gain, and their benefits generally increase with income level. For these households, the benefits attributable to increased redistributed profits and wage earnings from the agro-food sector outweigh the costs of food price increases. An exception is the richest quartile, whose gains are less than those of the second richest group, and in fact loses when there is full employment (because they pay more for goods that use unskilled labour).
- The tax burden, while assumed to remain constant globally is shared among the household types differently following reform. Higher tax costs fall disproportionately by the third urban quartile. This reflects a relatively flat income tax structure for the richest 50% of urban households and greater cost of living increases for the second richest group.

Figure 7.6. Distributional effects of global policy reform in Brazil

EV in total household welfare (USD million)



Source: Simulation results.

Given that the above categories contain different numbers of households and persons, further insight can be obtained from annual changes in welfare per "person" (Figure 7.7). These estimates confirm that, for agricultural households, welfare gains increase with income, and that benefits are generally greater for agricultural households than for urban households.[4]

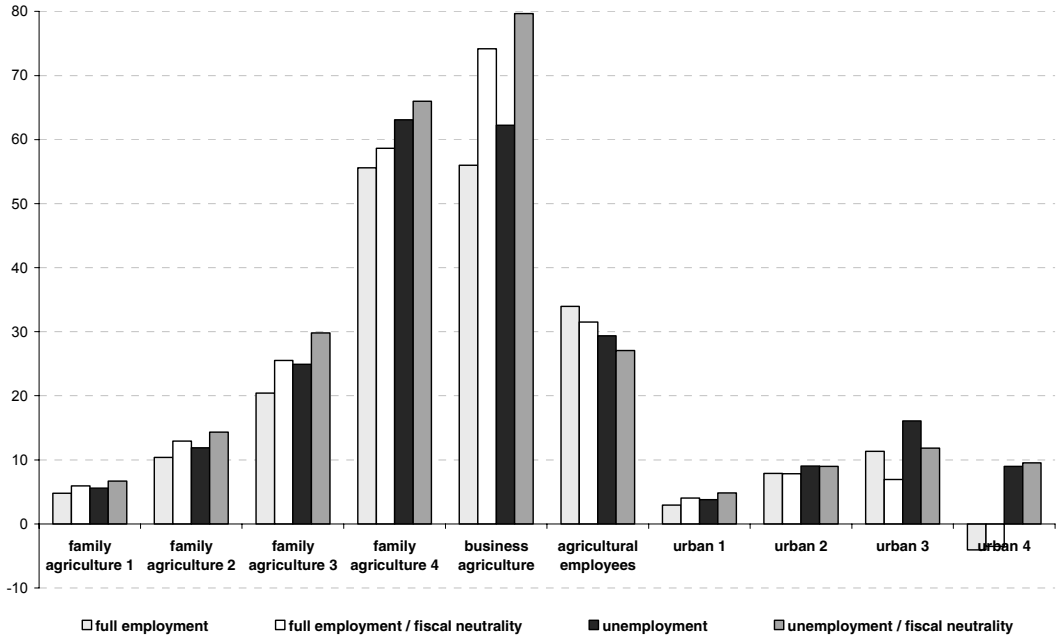
Overall, real incomes are expected to rise by between 2% and 4% for agricultural producers, by around 3% for agricultural employees, and by about 1% for urban households. These income gains lead to a modest decline in the incidence of poverty. Because commercial farmers gain more than smallholders, inequality among producers is expected to increase. But the wider gains to agricultural

4 The number of members per household tends to decline as income increases. Hence the tendency for richer individuals to gain more than poorer ones (in both rural and urban categories) is more pronounced than the tendency for richer households to benefit more than poorer ones.

employees and urban households (who account for about 80% of the population) imply that the overall impact on income inequality is likely to be broadly neutral.

Figure 7.7. Distributional effects of global policy reform in Brazil

EV per person (USD)



Source: Simulation results.

Malawi

The vast majority of Malawian households are poor. Commercial producers of the dominant cash crop, tobacco, who are less poor, gain from higher prices. GTAPEM suggests price increases of less than 5% for tobacco from a 50% global reform scenario, which will raise tobacco farmers' incomes by less than 1%. The resulting increase in tobacco farmers' demand for labour benefits poor non-commercial households that cannot grow tobacco, but lowers the incomes of poor farm households that hire labour. In contrast, the domestic price of maize, the main staple, may be only weakly linked to international market prices. Moreover, the effects of maize price increases/decreases are very context-specific, depending on the range over which price increases occur, whether the household has a net surplus or deficit, and the relationship between maize prices, wages and fertiliser prices.

The effects of policy reforms in Malawi depend fundamentally on the extent of the interactions that are considered and the original values for which the model is calibrated. Under the simplest farm household model (with no outside market interactions), all households lose from increases in maize prices from a very low base if all households are net buyers of maize. At higher prices, however, some households gain and some lose from price increases, depending on whether they are, or have the scope to become, net sellers. Poorer households lose because cash and land constraints prevent them from moving to a profitable net surplus. In this case, higher maize prices can actually induce a perverse supply response. This occurs because an increase in the maize price raises expenditures for food,

which tightens the cash constraint and reduces households' ability to buy inputs with which to grow maize, and, for the poorest households, requires them to allocate labour from maize production to wage employment which delivers immediate (if lower) income. Similarly, increases in wages can cause these households to supply less labour to the market. In the case of tobacco, the benefits of higher prices accrue to larger smallholder farms, owners of more assets, borrowers, non-agricultural wage earners and remittance earners. The poorest households do not benefit, as they do not grow the crop because they lack the means to buy inputs.

But even a relatively limited extension of the basic household model to accommodate wage changes can fundamentally alter (and in some cases even reverse) estimates of how the poor will be affected by policy reform. In response to small increases in maize prices, wages fall, but with larger maize price increases, wages rise. The extent of the response depends on changes in on-farm labour use, total labour supply and the demand for non-tradable goods and services (and hence for non-farm labour used in their production). Very low maize prices lead to larger areas planted in tobacco, which requires more farm labour than maize. As maize prices rise, real incomes fall (increasing total labour supply, and decreasing demand for non-tradable goods and services), and farm labour is also released by the transfer of land from tobacco to maize. With larger maize price rises, less poor households find it worthwhile to become surplus maize producers, so their incomes begin to rise again (reducing their family labour supply and increasing demand for labour to produce non-tradables). They also begin to adopt more intensive maize technologies, which demand more on-farm labour. This tightening of the labour market leads to increased wages, which may offset some of the losses to the poorest households, which lose from higher maize prices.

Mexico

Feeding in results from the GTAPEM reform scenario – declining prices for cash crops and livestock, and lower urban wages – the estimated real incomes of all agricultural households fall, but the declines are greatest for producers with more than 5 hectares (ha) of land (-0.4%). There are similar, but much smaller impacts for landless households and smaller producers with less than 5 ha (-0.1%). Larger farmers lose more for two principal reasons: first, they tend to consume a smaller share of their own output, so declining output prices have a bigger impact on net cash income; second, larger-scale producers rent land out to smaller farmers and lose out from declining land rents. The results are summarised in Table 7.A.4. It is important to note that these are average impacts and could mask significant regional differences. Some of these differences are explored by stylised policy experiments, including those simulating the effects of changes in maize and cash crop prices.

The maize price shock compares the implications of reducing maize price supports by 10% in Central Mexico, where most households do not produce a marketed maize surplus, with the Northwest, where maize is dominated by commercial producers operating on irrigated land. In both regions, the production of maize by commercial households contracts sharply in response to the price decrease. This leads to a significant drop in maize output in the Northwest. The contraction in commercial maize production decreases the demand for land and labour, causing rents and wages to decline and reducing the incomes of subsistence households. This in turn reduces subsistence households' demand for maize and with it the shadow price of maize. In the Northwest this effect causes production to fall. But land and labour are also inputs, and lower rents and wages stimulate production. In Central Mexico this effect dominates, with subsistence production of maize rising in response to a price fall, as well as the production of other goods that benefit from cheaper inputs, including livestock. These changes are reflected in diverse effects on income distribution. Commercial households lose or gain according to their net surplus or deficit. Net sellers in the Northwest therefore

lose significantly. Non-commercial households are worse off in the Northwest, but are largely unaffected in Central Mexico.

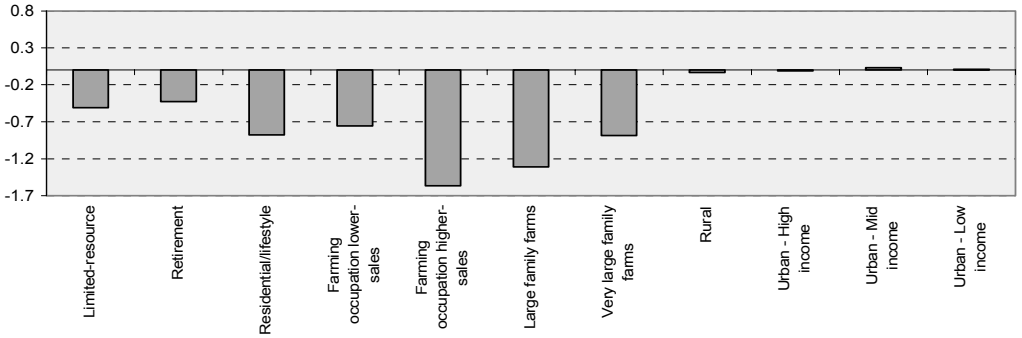
The effects of a 10% increase in the price of cash crops are compared between Central Mexico and the Northeast region. On the relatively low productivity farms of Central Mexico, cash crop production increases moderately – by between 3% and 4% – for most producers, whether large or small. As a consequence, incomes rise across the board. In the Northeast, however, cash crop production increases sharply for large farmers and landless households. This drives up wages and, even more so, land rents. In the two smaller groups of producers, cash crop production falls as land is bid away by more efficient producers. As a result, incomes of larger farm households rise by nearly 5%, while those of smaller farm households are virtually unchanged.

Italy

Figure 7.8 shows the distributional effects for Italy obtained when findings from GTAPEM simulations of the effects of global agriculture and trade policy reforms are fed into the disaggregated CGE model for Italy. While all categories of farms post losses, the medium-to-larger family farms lose relatively more than the small, limited resource and retirement farms. The higher losses for the larger farm categories stem from simulated falls in land rental rates due to support reductions under the GTAPEM global reform scenario. All categories of urban households gain from the reduced tax burden that comes with reductions in budgetary payments that are part of the GTAPEM policy reform scenario. Moreover, though not shown here, national welfare improves in net terms under this scenario (Magnani and Perali, 2005).

Figure 7.8. Household distributional effects from global policy reform

Welfare change as % of base income



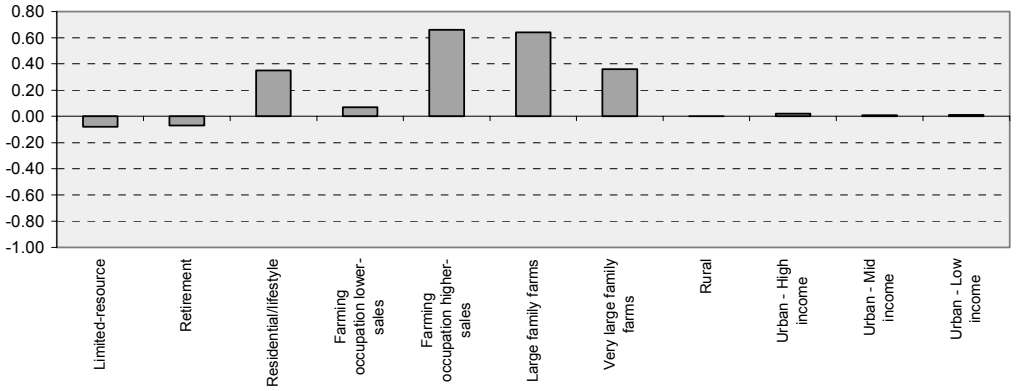
Source: OECD calculations based on Magnani and Perali (2005).

The findings from a policy simulation experiment aimed at measuring the distributional impacts in Italy of the recent switch to the single farm payment under EU farm policy are featured in Figure 7.9. This policy change favours middle-to-large size and residential lifestyle farms over limited resource, retirement and small farms. Larger households receive substantial benefits especially from income support through the lump sum transfer. The gains to the larger and more commercially oriented farms flow mainly through the significantly positive effects of the policy change on land rental rates (agricultural land rents in Italy are shown in the analysis to rise by nearly 20% with the switch to the single farm payment). The negative impacts on retirement and limited resource farms stem largely from simulated reductions in returns to farm labour and agricultural capital following the

policy change. Urban households are little affected by the policy switch since neither simulated consumer prices nor the tax bill changes much under the single farm payment scenario.

Figure 7.9. Household distributional effects of switch to single farm payment

Welfare change as % of base income



Source: OECD calculations based on Magnani and Perali (2005).

United States

This study finds that the global trade policy reform will affect the incomes of the seven US farm household types differently, depending on their reliance on support and their production mix as well as the role of farm and non-farm activities in households' income and asset portfolio. Table 7.A.5 describes the incidence of payment loss across the seven farm household types, while Table 7.A.6 shows what happens to farm household incomes once the higher simulated world market prices and induced resource adjustments occur. Very large farms receive more payments than other types of farms, and as the numbers in Table 7.A.5 show, this stylised reform would result in an average loss of payments for this farm type of roughly USD 6 000, compared to an average loss of USD 50 on retirement farms. However, relative to the value of production, the payment reduction is largest for residential and farm occupation types.

The changes in farm household income reported in Table 7.A.6 take into account the households' compensating adjustments to the policy reform. The net effect of a stylised trade reform on incomes is composed of changes in farm and off-farm wages, returns to assets, farm programme payments, and taxes that would have been paid to fund these payments, as well as the impact of price changes on the cost of household food purchases. Overall, US farm household income increases by nearly USD 500 million due to global reform, with net gains for every representative farm type. Incomes rise across all household groups because the loss of subsidies is outweighed by the benefits arising from stronger international prices, notably higher wages and improved returns to assets.

The greatest income gains accrue to residential and lifestyle farms. These are the farms with the most part-time spousal employment. They therefore have the greatest capacity for labour substitution in the macro model, and the largest on-farm labour supply response. They also tend to specialise in beef production, for which market prices rise. Despite overall net gains for each representative farm type, some net losses are likely to be experienced at the individual farm level. The seven farm types are too aggregated to reflect the specialisation that characterises most farms, and that can be expected

to result in gains (losses) for individual farms that specialise in commodities whose prices increase (decrease) following global reform.

Within each household group, households with higher adjustment capacity earn a greater share of the group's overall benefits. Adjustment capacity is predicted to depend on two factors: the probability of finding off-farm employment and managerial skills. The former is estimated on the basis of household characteristics such as age, education, household size, the level of off-farm investments, and spouses' off-farm employment, while the latter is approximated on the basis of the cost of production relative to the value of output. Non-commercial farm households are in general found to have superior adjustment capacity.

Conclusions and policy inferences

Trade protection and direct budgetary payments increase significantly what OECD farmers would otherwise earn from selling their output at world market prices. Trade and domestic agricultural policy tends to favour farmers over other economic agents in society in both developed and developing countries (though not nearly so much in the latter). However, both the level and particularly the degree of trade-distortiveness of farm support in OECD countries have diminished over the past 15 years.

Likewise, while agricultural tariffs are higher for both developed and developing countries than those for industrial goods, the gap has narrowed with the implementation of the Uruguay Round agreements. These developments should not reduce the priority accorded further reform efforts, as the potential gains remain significant for many OECD and a few non-OECD countries and positive for the overwhelming majority of all countries and regions covered by this analysis.

Of special interest to policy makers in OECD and non-OECD countries alike is the potential harm done by OECD farm subsidies to developing countries and especially to poor farmers in developing countries. Although there is some controversy surrounding the magnitude of these effects, most economic studies find that developing countries as a group would gain in aggregate terms from reform of OECD-area agricultural policy. Less controversially, most studies show that developing country farmers stand to gain from such reform.

The estimated welfare benefits from global agriculture and trade policy reform presented here are at the lower end of the range of estimates obtained in similar studies, partly because the analysis is based on more recent data but also because other studies factor in benefits from policy reform that might come, for example, through induced improvements in productivity or complementary reductions in transactions costs.

Results obtained here show that when grouped as one region, non-OECD countries gain overall from the hypothetical halving of OECD farm support, but not nearly so much as OECD countries themselves gain from such reform. Likewise, agricultural value added for the non-OECD region increases. These gains are concentrated in a comparatively small number of middle-income agriculture-exporting countries. In fact, findings show much larger potential gains for the non-OECD region from reductions in the trade protection that OECD countries afford their producers of textiles and other industrial products than from reduction in OECD agricultural support.

Welfare gains from agricultural trade and domestic policy reform are dominated by the effects of tariff cuts. The results show relatively little net welfare gain from reducing other forms of support, especially types of support such as land-based budgetary payments whose main effects are to boost the selling prices of land. Such findings suggest that a package of reforms that emphasises first of all cuts

in trade measures might yield a substantial share of potential reductions in trade distortions while minimising negative impacts on farm returns in countries implementing the reforms. Indeed, the findings point to possibilities for achieving a high proportion of the economic benefits of reform by shifting the policy mix from more to less distorting forms of support so long as the remaining support levels are not so high or so enduring as to stifle necessary resource adjustments within and outside the sector.

Policy reform would lead to increases in agriculture value added and farm incomes in relatively less protected OECD and non-OECD countries but falls in countries whose farmers now benefit from relatively high support levels. The policy implications must however be carefully considered. In some cases, the fact that farm sector incomes decline with reforms may not be a cause for policy concern. This would be true, for example, when the affected households are able to adjust to farm income losses thanks to offsetting income gains induced by non-agricultural policy reforms. Another potentially important policy consideration in this context relates to the fact that some of those who lose because returns to land fall with reform may not farm at all. In other cases, pressures on farm incomes may be only a transitory policy issue if economic growth is stimulated by trade and domestic policy reforms.

The case study findings provide some insight into the effects of policy reform on poverty and the inequality of income distribution. In general, the welfare gains are widespread across household types, while welfare losses tend to fall more heavily on protected commercial farmers. In Brazil, poorer categories of both urban and rural household are better off with reforms, and the incidence of absolute poverty falls. Inequality among agricultural producer households increases, with larger (and richer) family farm households gaining more than smaller ones. At the same time, the total gains to agricultural employees that come with increased demand for farm labour from commercial farm households are greater than for any other type of agricultural household, counteracting the increase in inequality among agricultural producers.

Within any given population of farm households there will be winners and losers depending on their output and factor mix and their off-farm earning possibilities. Indeed, even where policy responses may be justified, as for example in the design of appropriate compensation or adjustment policy for those negatively affected, the policy answer may be more properly in the domain of broader social and development policy than in the domain of agricultural policy. Measures to improve adjustment capacity include public investments in areas such as education and training, research and extension, and health (notably in poor countries). Such policies may be targeted regionally or at the household level. Models like those used in the case studies can pick up variations in adjustment capacity and thus in the relative need for adjustment assistance.

In both developed and developing countries, the immediate effects of reforms on commercial farmers tend to be greater than those on non-commercial farm households. If a commodity sector stands to gain on aggregate from multilateral reform, owing say to higher export prices, then commercial producers in that sector will reap the majority of those gains. Similarly, if the sector stands to lose, because lower domestic protection is insufficiently offset by higher world prices, then commercial farmers will incur the majority of the losses. This observation typically holds not just in absolute terms, but also relative to existing income. Non-commercial farms tend to have higher off-farm income, which dampens the effect of price changes on total income, and in developing countries they also consume a significant share of what they produce, which has a similar effect. In some cases, non-commercial (subsistence) producers may consume more than they produce, in which case the effect of reform is reversed. One caveat is that non-commercial farm households in richer

countries may have more flexible skills which enable them to transfer labour into and out of agricultural production more easily.

The ultimate impacts of reforms will depend less on their immediate effects than on what happens once markets and households have had time to adjust. Such adjustments can fundamentally alter the distributional impacts of reform. For example, non-commercial households are likely to face higher transactions costs than commercial households. If transactions costs restrict non-commercial households from engaging with markets, they may not benefit at all from commodity price increases. They may still benefit indirectly from higher off-farm wages, as commercial producers hire more labour, but they could also lose from higher land rents. In the studies of both Malawi and Mexico there are winners and losers within the category of non-commercial (and in both cases poor) farm households. On balance, transactions costs tend to reinforce the tendency for commercial households to benefit most from price increases and lose most from price declines. Policies aimed at reducing transactions costs, especially those facing poorer households, are possibly a highly cost-effective means of ensuring the widest possible distribution of benefits from policy reform for developing countries.

The case studies demonstrate the inherent difficulty of achieving aggregate efficiency gains without making some households worse off in terms of the immediate effect of policy change, though adjustment and compensation policies can change that outcome significantly. In OECD countries with high support, uncompensated reforms will inevitably reduce the incomes of protected farm households. In many developing countries, it is probably impossible to change price policies and accompanying border measures without making some poor households even poorer.

Households that have greater adjustment flexibility are in a better position to exploit new market opportunities or to cushion the effects of exposure to increased competition. In the United States, non-commercial – "residential" and "lifestyle" – farms tend to be more flexible in varying their proportions of farm and off-farm income and in changing their production levels. However, such insights may not generalise across countries, and adjustment flexibility is in any case likely to vary considerably within structurally similar farm household groups, on the basis of factors such as age, education, management skills and health. In short, it is very difficult to provide comprehensive yet precise information on what reform implies for the incomes of specific households once individual adjustments, with collective implications for markets, are accounted for.

ANNEX TABLES

Table 7.A.1. Changes in agriculture value added due to support reductions by policy category

% change from base

	All Support	Land payments	Other Payments*	OECD Agricultural Trade Policy**
OECD				
Australia/New Zealand	2.3	-0.3	0.6	2.0
Canada	-4.3	-5.4	1.0	0.1
European Union 15	-8.9	-6.3	-0.8	-1.8
Japan	-4.2	-0.4	0.0	-3.9
Mexico	-2.2	-1.3	-0.2	-0.7
Turkey	-0.5	-0.1	0.1	-0.5
United States	-3.7	-3.3	-0.7	0.4
rest OECD	-6.6	-1.7	-0.4	-4.5
non-OECD				
Brazil	5.2	-0.3	1.2	4.3
China	1.3	0.0	0.5	0.7
India	0.4	0.0	0.1	0.2
Indonesia	0.8	-0.1	0.7	0.2
Malawi	4.5	-0.8	1.7	3.6
Russia	1.0	0.2	0.4	0.5
Thailand	2.8	-0.1	0.9	2.0
South Africa	1.8	0.0	0.6	1.2
rest SS Africa	1.1	-0.2	0.7	0.7
rest of World	1.9	0.0	0.9	0.9

*Other payments = capital payments + intermediate input payments + output payments
**Import tariffs and export subsidies
Source: GTAPEM simulation results.

Table 7.A.2. Breakdown of global welfare gains by support category and region implementing the policy change

USD millions

	OECD	non-OECD	Total
Import tariffs agriculture	17546	3128	20674
Capital payment	3928	-	3928
Land payment	875	-	875
Export payment	660	-3	657
Intermediate input payment	181	-	181
Output payments	-97	-	-97
Subtotal Agriculture	23093	3124	26217
Import tariffs non-agriculture	6694	11357	18051
Total	29787	14481	44268

Elements do not equal the total exactly owing to errors in approximation.
Agriculture includes primary and processed food.
Source: GTAPEM simulation results.

Table 7.A.3. Breakdown of welfare effects by broad policy category, region and country implementing the reforms

EV in USD millions

	Total Welfare	% of GDP	OECD Agriculture	non-OECD Agriculture	OECD non-Agriculture	non-OECD non-Agriculture
World	44268	0	23361	3124	6694	11357
OECD	33459	0	21407	1871	-248	10680
Non-OECD	10809	0	1954	1253	6943	677
OECD						
Australia/New Zealand	1006	0	885	97	50	8
Canada	269	0	747	29	-376	-130
European Union 15	10791	0	7005	702	-1521	4775
Japan	10007	0	5746	-21	2091	2195
Mexico	452	0	38	-30	463	-15
Turkey	631	0	158	92	48	334
United States	2995	0	3071	714	-2218	1457
rest of OECD	7308	1	3758	288	1214	2054
non-OECD						
Brazil	1730	0	1178	94	367	96
China	3739	0	-73	-199	3373	635
India	1723	0	72	544	378	735
Indonesia	484	0	-35	80	308	128
Malawi	24	1	19	-1	1	6
Russia	8	0	-133	166	55	-83
Thailand	1204	1	190	225	237	551
South Africa	253	0	69	25	23	137
rest of SS. Africa	-240	0	61	65	-136	-220
rest of World	1884	0	607	253	2335	-1309

Agriculture includes primary and processed food.
Source: GTAPEM simulation results.

Table 7.A.4. Percentage effects of price shocks resulting from multilateral trade reform

Variable	Landless households	Households <2 ha	Households 2-5 ha	Households >5ha
Production				
Maize	0.15	0.20	0.24	1.22
Cash crops	-1.14	-0.28	-0.28	-0.30
Livestock	-0.14	0.01	-0.13	-0.14
Non-agricultural	0.63	0.48	0.13	0.44
Factors				
Wages, urban	-0.20			
Wages, rural	-0.26			
Land rents	-1.01			
Prices				
Maize	-0.60	-0.57	-0.52	-0.40
Cash crops	-0.80	-0.80	-0.80	-0.80
Livestock	-0.70	-0.70	-0.70	-0.70
Incomes				
Nominal	-0.16	-0.24	-0.22	-0.33
Real	-0.13	-0.15	-0.13	-0.40
Migration				
Domestic	0.002			
International	0.03			

Exogenous changes, taken from GTAPEM simulations, are in bold.
Source: Taylor and Yúnez-Naude (2004).

Table 7.A.5. Payment loss by US farm type from a stylised trade policy reform

Farm type	Number of farms	Total payment loss by farm type	Average payment loss per farm	Average loss in cents per dollar of production
	Thousands	USD millions	USD	US cents
Limited resource	127	9	69	0.57
Retirement	298	14	46	0.83
Residential/lifestyle	931	75	81	1.00
Farm occupation/low sales	480	161	336	1.17
Farm occupation/high sales	175	343	1 955	1.20
Large	77	309	4 000	0.45
Very large	58	341	5 833	0.79
All	2 147	1 252	583	0.79

Source: Burfisher *et al*. (2005).

Table 7.A.6. Changes in US farm household impacts from a stylised global agricultural policy reform

USD millions

	Programme payments	Farm labour Income	Returns to farm assets	Off-farm labour income	Other non-farm income	Tax expenditure	Total household Income
Limited resources	-9	6	9	-1	0	-1	4
Retirement	-14	46	17	-5	3	-6	41
Residential/lifestyle	-75	148	96	-21	3	-10	141
Farm occupation low	-161	87	179	-11	3	-10	87
Farm occupation high	-343	59	376	-8	0	-6	78
Large	-309	42	338	-6	0	-4	61
Very large	-341	84	338	-9	0	-4	68
All farms	-1 252	471	1 353	-58	10	-40	484

Source: Agricultural Resource Management Survey (1999) and ERS-USDA CGE model.

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Chapter 8

ASSESSING SPECIAL AND DIFFERENTIAL TREATMENT AND AID FOR TRADE AS COMPLEMENTS TO MULTILATERAL TRADE LIBERALISATION

Martina Garcia, OECD Trade Directorate, and
Frans Lammersen, OECD Development Co-operation Directorate

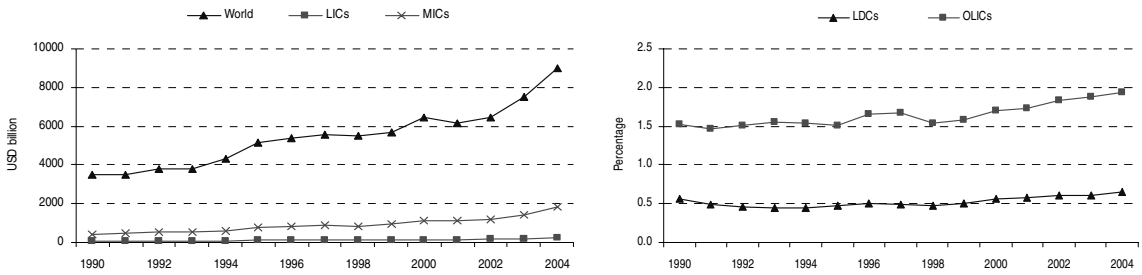
This chapter assesses the role of Special and Differential Treatment and Aid-for-Trade in increasing the benefits to developing countries from trade reform and WTO Agreements. First, the paper provides an overview of the specific challenges faced by developing countries in adjusting to and in capturing the gains from trade liberalisation. Special and Differential Treatment enables developing countries to modulate the speed and depth of WTO commitments, and can be instrumental in helping developing countries to meet some of the adjustment challenges brought by own trade reform. However, it does not offer easy solutions to address preference erosion or domestic supply-side constraints. Aid-for-trade, on the other hand, is specifically aimed at helping developing countries to increase their trade capacity. In the last decade, between a fifth and a fourth of official development assistance has been dedicated for use in improving developing countries' productive and export capacity. The projected scaling up of aid provides ample room to increase development assistance further, but it is essential that aid effectiveness be improved if additional resources are to deliver the desired results.

Introduction

A vast amount of evidence, including the research presented in this volume, indicates that multilateral trade liberalisation offers developing countries substantial potential benefits. International trade, when coupled with domestic reform and stable macroeconomic policies, plays a key role in fostering sustainable economic development, employment opportunities and poverty reduction.[1] A number of developing countries have indeed achieved impressive economic growth rates and substantial reductions in poverty. At the same time, many face serious difficulties in adjusting to trade liberalisation and capturing the benefits of more open trade. Governments, institutions and enterprises often lack the capacity, in terms of information, policies, procedures, institutions and/or infrastructure, to compete effectively in global markets and take full advantage of the opportunities provided by international trade. This is particularly true for the least developed countries (LDCs) whose share in world exports of goods and services have fluctuated around 0.5% during the last ten years. This is often described as the marginalisation of LDCs in global trade (Figure 8.1).

1 For a comprehensive review of "flanking" policies to trade liberalisation, see OECD (2005).

Figure 8.1. Values and shares of merchandise exports by income group, 1990-2004



LICs = LDCs and other low income countries. MICs = lower- and upper-middle-income countries.
Source: UNCTAD Handbook of Statistics database.

The process of building internationally competitive economies takes time. It also requires country-specific, comprehensive strategies to promote dynamic growth while minimising the short-term economic and social costs of adjustment. With respect to external opening, concerns are expressed not about the direction of policy change but its pace, given the time needed for firms, workers and institutions to adapt. Over the last decade, unpredictable short-run adjustment pressures have often come from factors other than trade liberalisation, such as movements in commodity prices and major shifts in exchange rates. Rapid technological progress has also become an increasingly important source of adjustment pressures. Trade liberalisation can indeed lead to adjustment difficulties and weaken social cohesion, especially during episodes of weak overall growth. Carefully designed social and labour market policies that provide adequate income security, while facilitating the redeployment of displaced workers to expanding firms and sectors, can produce important equity and efficiency gains.

Implementing a coherent development strategy is therefore a challenging task, and it is in this context that current discussions on special and differential treatment (SDT) and aid for trade should be seen. By enabling developing countries to modulate the speed and depth of their WTO commitments, SDT can help developing countries meet the transition and adjustment challenges of further trade reform. Aid for trade – support for trade-related technical assistance, capacity building, infrastructure and addressing supply-side constraints – can greatly help developing countries improve their capacity to benefit from WTO agreements, including market access gains.

This chapter discusses the contribution that SDT and aid for trade can provide to developing countries, and particularly LDCs, that face these adjustment difficulties and constraints. The first section provides an overview of the main adjustment challenges facing developing countries. The second addresses the scope for SDT to enable countries to improve their cost-benefit balance in implementing WTO agreements. The final section focuses on the evolution of the aid for trade agenda and explains what the development community has learned in the way of ensuring that aid for trade is effectively delivered and results in improved trade performance.

Key trade reform challenges in developing countries

Trade liberalisation prompts changes in relative prices which in turn trigger structural adjustment. This adjustment takes place as more productive firms – especially export-oriented firms or their suppliers – expand their output while less productive enterprises in sectors that face greater import competition contract and adjust. As trade patterns change, some workers lose their jobs and must seek reemployment in expanding sectors. Governments are called upon to step in and provide

assistance to the unemployed. Of course, workers do not produce while they seek reemployment and/or retrain, and capital may also lie idle for a time. Davidson and Matusz (2003), in a study based largely on developed economies, estimated that it takes 2.5 years to return to previous output levels and that adjustment costs are negligible compared with the benefits of reform. They also found that adjustment takes longer in more rigid economies but that the benefits induced by liberalisation are accordingly larger.

In many developing countries, adjustment is constrained by rigidities in the economy and in export patterns (*e.g.* dependence on few export commodities and markets), and is particularly costly for affected workers who lack effective social safety nets. In some countries, supply-side constraints and changing rules governing the conduct of international trade (*e.g.* as a result of new or changing sanitary and phytosanitary [SPS] or technical barriers to trade [TBT] regulations) constrain the expansion of exports in response to improved access to foreign markets; in others, preference erosion means that both traditional export and import-competing sectors need to adjust and contract at the same time. Meanwhile, in some countries, tariff reductions lead to a loss of revenue just when the need to expand social spending peaks and fiscal reform to replace the lost revenue is harder to implement. The costs of implementing new WTO agreements can also be disproportionately high in developing countries whose previous practices and regulations differ substantially from the agreed standards. This does not mean that earlier chapters' findings on the welfare gains from trade liberalisation are wrong, but those models estimate the gains and costs of a new economic equilibrium defined by lower tariffs with respect to a more trade-restrictive global economy. However, adjustment to changing conditions, whether due to trade or purely domestic causes, entails a process in which the costs of adjustment are weighed against expected future benefits, and it is well known that risk aversion increases inversely with income levels.

Preference erosion: when both exports and import-competing sectors need to contract

As Chapter 3 has pointed out, most developed countries offer non-reciprocal preferential market access, *i.e.* access at below MFN rates, to a number of developing and least developed countries. The value of the schemes is determined by the difference between the MFN rate and the preferential rate. Average tariff walls erected by OECD countries are far lower today than they were a generation ago, and this has eroded the preference margins that might otherwise be extended to developing countries. Whereas the average industrial product imported into an OECD country faced a tariff of about 8-10% when the Generalised System of Preferences (GSP) was first proposed, the tariff fell to around 6% by the time the programme entered into effect and was just 2-4% at the start of this decade.

These are averages, however, and mask distinctions between different OECD importers, developing country exporters and various product sectors. A recent paper by Low *et al*. (2005) demonstrates that differences across importers, exporters and sectors can be substantial. The share of a country's non-agricultural exports that receive preferential treatment in the main OECD markets varies from 2% for Botswana to 98% for Haiti. On average, 61% of LDCs' exports and only 16% of developing countries' exports receive preferential treatment.

In the long term, as Chapter 3 indicates, only a few countries would be severely affected by preference erosion. Indeed, for most preference recipients, improved market access in other markets, higher prices of agricultural commodities, as well as their limited use of preferential market access would compensate for any loss due to preference erosion. Recent World Bank studies[2] confirm this finding. Estimates on the value of trade preferences are strikingly low. The EU's Everything but Arms

2 See summary in Brenton and Ikezuki (2005).

(EBA) and Africa, Caribbean and Pacific (ACP) schemes represent 4% of total exports and are considered the most valuable preferential schemes. In only five countries does the value of exports receiving preferences exceed 10% of their total exports. This is due to the proliferation of low preference margins and strict rules of origin which both force countries to design their sourcing strategies according to legal requirements and not economic factors and impose additional red tape.

However, preference erosion levels the field among exporters and increases competition in the most rewarding export markets for LDCs and other preference recipients. In the agricultural sector, MFN liberalisation would also entail price reductions in key export markets, such as the EU, where tariffs keep internal prices higher than world prices. Price reductions accompanied by increased competition would result in a reduction in profitability and market share. For net agricultural and food importers, their terms of trade[3] would also be affected by the expected increase in world agricultural and food prices due to the reduction of developed countries' tariffs and export and domestic subsidies. Valdes and McCalla (1999) estimated that out of 148 developing countries, 105 were net food importers and 85 net agricultural importers. Among LDCs, which tend to be considerably more vulnerable to preference erosion, 45 out of 48 were net food importers and 33 net agricultural importers.

Moreover, as Evenett (2005) explains, most models used to estimate the costs of preference erosion assume minimum marginal costs and do not take into account the possibility of rapid losses in market shares to third countries. This may lead to further increases in production costs and the sector's collapse before the benefits of improved market access in other sectors can be fully captured.

Supply-side constraints and the length of adjustment

A successful adjustment requires the absorption of human and capital resources freed from less productive, import-competing and contracting activities into more productive, export-oriented and expanding sectors. Low-income countries face two types of adjustment challenges: the transmission of changes in relative prices and thus incentives for adjustment, and the rigidities in their economies that hamper adjustment.

First, changes in relative prices induced by trade liberalisation are not always efficiently transmitted to domestic markets and may fail to change producers' and consumers' behaviour. For example, market segmentation – a recurrent problem in developing countries – means that prices may not change in remote, often rural, areas. This could mean, for example, that an increase in agricultural raw materials may be transmitted to urban and border areas, thereby affecting consumers, but not to rural, interior areas, thus failing to stimulate supply. Arndt *et al*. (2000) estimated that the producer-consumer margin for cassava, a key staple, reaches 300% in Mozambique where domestic marketing costs are particularly high. Moreover, tariffs in foreign markets are not always the key binding constraint on export capacity; high trade costs, technical and phytosanitary standards, and entry barriers in markets dominated by global retailers frequently dwarf tariff barriers in small economies that are unable to develop economies of scale. For example, UNCTAD (1999) estimated total freight costs at close to 20% of the total export value for landlocked Africa compared to less than 5% in developed economies. Second, their economies suffer from rigidities that hinder the transfer of resources from one sector to another and increase both the cost and pace of adjustment. Limited access to financial services, monopolistic distribution structures and barriers to entry and exit of firms all

[3] Terms of trade is defined as the relative price of a country's exports compared to its imports. A deterioration in the terms of trade means that the relative price of imports compared to exports increases. Thus, the country would need to increase exports to maintain its import capacity.

hamper the expansion of new sectors and lengthen the time that resources such as labour and capital lie idle.

There is a strong relationship between income level and the pervasiveness of government-induced adjustment barriers. According to the World Bank's "Doing Business 2006" ranking of 155 countries on key business regulations and reforms, only ten out of the 50 countries classified as low-income countries are in the upper half. The overall ranking is based on a set of regulatory indicators related to business start-up, operation, trade, payment of taxes and closure which measure the time and cost associated with various government requirements. For example, an entrepreneur in Mozambique must undergo 14 separate procedures over 153 days to register a new business. In Sierra Leone if all business taxes were paid they would consume 164% of a company's gross profits. In Syria, it takes 63 days, 18 documents and 47 signatures from the time imported goods arrive in ports until they reach the factory gate. In Sub-Saharan Africa, creditors (including tax authorities and employees) can expect to recover around 16% of the liability incurred by the closing business compared with an average 74% recovery rate in OECD countries.

MFN liberalisation is therefore necessary but not sufficient to provide incentives to create new economic activities or expand existing ones. The extent and magnitude of the economy's rigidities mean that for some developing countries, trade reform entails a non-negligible risk of a medium-term decline in output. Policy reforms and reforms of business regulation in particular are essential for increasing flexibility but may be particularly difficult to implement during an economic slowdown.

Safety nets and tariff revenue losses

A key policy instrument for reducing adjustment costs for individuals facing temporary loss of earnings is an efficient safety net that aims at preserving their capital stock – housing, seeds, car – and facilitating training and/or relocation. Low-income countries face a triple challenge when trying to reduce the costs to individuals: their population's needs are greater, their resources are lower and tariff reductions can lead to a non-negligible loss in government revenue.

- First, large sections of their population are extremely poor. Table 8.A.1 reports the percentage of population living under USD 1 and USD 2 per day in selected WTO members. Independent of the positive long-term effects of trade liberalisation on the poor, people at such income levels are extremely vulnerable to transitory falls in income. Unemployment, even for a short time, in poor families can lead to removal of children from school, sale of assets, decline in health and nutrition, and ultimately a long-term reduction in their productivity potential.
- Second, low- and middle-income countries dedicate a much smaller percentage of GDP to social spending. The right-hand panel in Table 8.1 shows social spending as a percentage of GDP in such countries compared with developed economies. Universal social protection systems – such as unemployment benefits – are weak or non-existent in most developing countries. Social security and welfare spending in Sub-Saharan Africa account for 1.44% of GDP compared with 10.3% in Central and Eastern Europe and 13.5% in Western Europe. Moreover, in Africa, traditional coping mechanisms such as strong family and community networks are being fast eroded by global pandemics, including HIV/AIDS, tuberculosis and malaria, which further reduce the resilience of the poor.
- Third, their weak financial capacity to enhance social protection will be further eroded for governments that depend on tariff revenue. For some of the smaller and more trade-dependent countries, taxes on international trade account for more than a third of all revenue.

Proposals to reduce tariffs therefore appear, from the perspective of some developing countries, to be exogenous tax cuts. As Chapter 4 demonstrates, the impact on revenue of cutting tariffs depends on many factors, including the size of the cuts to applied tariffs and the effect of the cuts on trade flows.

The costs of policy reform: implementation and restricted choice

The Uruguay Round agreements entailed unprecedented obligations for developing countries. Not only did they have to reduce trade barriers, they agreed to undertake significant reform of their trade procedures (*e.g.* import licensing procedures, customs valuation) and many areas of regulation for their basic business environment (*e.g.* technical, sanitary and phytosanitary standards, intellectual property law). The Single Undertaking meant that many also had to implement previous agreements such as the Agreement on Subsidies and Countervailing Measures (ASCM) or the Technical Barriers to Trade Agreement.

Effective implementation requires substantial investments in infrastructure and human resources. It also requires institutional changes and the establishment of systems of checks and balances. Most estimates of implementation costs are based on technical assistance projects and as such are likely to be biased by donors' priorities. Some of the most widely quoted figures come from Finger and Schuler (2000), who extrapolated from a few World Bank projects on customs reform, trade-related intellectual property (the TRIPS Agreement) and SPS measures to arrive at an estimated cost of USD 150 million per country for implementing just these three projects. This is likely to be at the high end of estimates. For example, Finger and Schuler used as a proxy the World Bank's customs reform project in Tanzania which cost around USD 10 million between 1996 and 2000.[4] However, Sauvé (2005) estimated the cost of reforming Cambodia's customs at only USD 4 million. Clearly, the costs depend on the size of the economy but also on the depth of the reform, making it practically impossible to propose a meaningful average cost per country.

For the more advanced countries whose systems are compatible with international norms, the WTO often sets no more than an obligation to apply their domestic regulations fairly at the border. This includes not discriminating among transactions involving different countries and not unnecessarily impeding international transactions. Countries that have applied their own standards have the additional obligation to apply the internationally sanctioned standards in their domestic economies (Finger and Schuler, 2000).

Not only has the implementation of WTO agreements required the investment of scarce resources, in some cases it has also implied abandoning a set of economic policy instruments, to be replaced by more efficient but also expensive, sophisticated and often uncertain policies. A typical example of this type of trade-off between policy instruments involves developing countries' wish to maintain much higher bound than applied tariffs as an alternative to contingency protection legislation, such as anti-dumping. It is relatively more difficult for some developing countries to apply contingency protection legislation efficiently, particularly when the risk of litigation cannot be discarded.

4 The other proxies used by Finger and Schuler are the USD 80 million spent in Argentina to achieve higher levels of plant and animal sanitation and gain acceptance for its meat, vegetables and fruits in industrial country markets, and the USD 30 million Mexico spent to upgrade intellectual property laws and enforcement. They identified some 16 elements in customs reform, each of which might cost more than USD 2.5 million to implement.

For industrial policy,[5] or the use of targeted subsidies whether for domestic, export-oriented production or foreign-owned capital, developing countries' strong reluctance to use the WTO as a constraint in order to avoid bad economic policy and fight vested interests can seem paradoxical. However, if an active industrial policy often creates general welfare losses by supporting inefficient sectors, withdrawing subsidies can entail significant adjustment costs. Thus, a risk-averse government will be tempted to postpone the withdrawal of targeted subsidies and forsake the benefits of reform until it feels confident that there is sufficient economic growth to absorb the freed-up labour. Concerns about costs and lack of certainty can also explain the reluctance in many developing countries' governments to abandon the policy of sectoral subsidies. Non-specific subsidies such as R&D tax exemptions or regional aid tend to be complex to administer or to depend on other administrative features, such as an established corporate tax system or well-functioning regional administrations. Their effect and final outcome are difficult to predict and quantify. From this perspective, specific subsidies may seem cheaper and easier to implement and their loss an undesirable restriction on national sovereignty.

What can special and differential treatment deliver?

Provisions for special and differential treatment are at the centre of the WTO's strategy to integrate developing countries into the multilateral trading system. These provisions comprise a mixture of preferential access to developed countries' markets and longer implementations/exemptions from certain rules. More specifically, the SDT provisions that emerged from the Uruguay Round agreements include: *i)* provisions aimed at increasing developing countries' trade opportunities; *ii)* provisions that call upon WTO members to safeguard the interests of developing countries; *iii)* flexibility of commitments; *iv)* transitional time periods; and *v)* technical assistance to help developing countries build the infrastructure for WTO work, handle disputes and implement technical standards.

The concept of special and differential treatment has developed over several generations. In its more passive and protectionist form, it merely posits that countries at lower levels of economic development should not be obliged to open their markets at the same pace as more advanced competitors. This version of SDT dates back at least to the late 18th century, when Alexander Hamilton (1791) devised the "infant industry" argument for protection. More active and affirmative forms of SDT, especially preferential and non-reciprocal access to industrialised countries' markets, first emerged with the establishment of the multilateral trading system. In 1979, the framework agreement, commonly known as the Enabling Clause, provided specific legal cover for the GSP, for SDT under the Tokyo Round codes, for regional arrangements among developing countries, and for special treatment in favour of LDCs. In addition, the Enabling Clause restated the principle of non-reciprocity whereby developing countries are not expected to make commitments that are inconsistent with their individual development, financial and trade needs. Indeed, the most important aspect of SDT in earlier decades was arguably not affirmative measures such as GATT Part IV (on trade and development), the Enabling Clause and the GSP, but instead the passive form of SDT implied in respect of code reciprocity: developing countries were under no obligation to adopt the agreements produced in the Kennedy and Tokyo rounds.

By the 1980s there was growing dissatisfaction with SDT. The extension of special privileges was increasingly seen as an excuse for countries to remain outside the mainstream of trade liberalisation, and SDT was perceived to contribute to a growing free-rider problem in the GATT. As described by Gibbs (2000), some developing countries "began to perceive that the positive

5 For a debate on the case for industrial policy, see Rodrik (2004) and Pack and Saggi (2004).

discrimination received under S&D treatment had become outweighed by increasing negative discrimination against their trade", and they turned towards "defend[ing] the integrity of the unconditional MFN clause, obtaining MFN tariff reductions, and strengthening the disciplines of GATT".

Special and differential treatment and the Uruguay Round

The Uruguay Round resulted in a significant increase in developing countries' obligations. This came about as a consequence of the system's expansion as new countries acceded and as it took on new issues and negotiated new agreements. When the Uruguay Round was launched in 1986, 61 developing countries were contracting parties to the GATT; they were 95 when the WTO came into being in 1995. During that period, the multilateral trade regime made the transition from a focus principally on tariffs, quotas and other border measures to one addressing a much broader scope of issues at and behind the border. Finally, the concept of "single undertaking" in the context of the Uruguay Round meant that agreement commitments were automatically a package for all members.

This meant first that a number of developing countries assumed significant additional obligations, particularly as a result of the generalised application of the agreements on non-tariff measures which were previously accepted on a voluntary basis, and also because of the introduction of new agreements. Second, the new forms of SDT tended to provide for modifications of the rules, rather than outright exemptions, the so-called modulation of commitments.

The Uruguay Round agreements thus presented developing countries with a significant implementation challenge. Some viewed this challenge as a matter of degree, in which difficulties stemmed from the scale of the costs of implementation, the shortfall in adequately skilled trade policy officials and practitioners, and the length of time needed to prepare and enact new laws and regulations. These were seen as problems that could be handled through appropriate levels and types of assistance or transitional periods. In the view of others, however, the commitments that developing countries had entered into in the Uruguay Round were simply too onerous, unsupportive of development, and not in the national interest, at least when seen in relation to the potential near-term gains from trade liberalisation. As a consequence, under the Doha Development Agenda (DDA), some WTO developing country members are seeking to modify their past obligations and to reform SDT to make their commitments more manageable and their non-reciprocal privileges more effective.

Special and Differential Treatment in the Doha Development Agenda

Prior to the DDA, implementation difficulties associated with the Uruguay Round led many developing countries to insist that, as part of the price for launching a round, some adjustments should be made on the implementation of agreements reached in the Uruguay Round. Ministers settled some of these issues by agreeing in the "Decision on Implementation-Related Issues and Concerns" to adopt around 50 decisions clarifying the obligations of developing countries with respect to such matters as agriculture, subsidies, textiles and clothing, technical barriers to trade, trade-related investment measures, and rules of origin. Even so, many other implementation issues of concern to developing countries remained unsettled. For these issues, ministers agreed in Doha on a two-track approach.

One track consisted of the regular negotiations, which were to be conducted on the basis of a standard round, while the Committee on Trade and Development in Special Session (CTDSS) appeared to be on a separate track that could produce an "early harvest" of improvements on existing SDT provisions in WTO agreements. In particular, the CTDSS was mandated to identify which of the SDT provisions are mandatory, and to consider the legal and practical implications of making mandatory those that are currently non-binding. Ministers also directed that "all special and

differential treatment provisions shall be reviewed with a view to strengthening them and making them more precise, effective and operational".

Negotiations on SDT provisions to be inserted into future agreements have been fully integrated into the core DDA negotiations. For example, in agriculture, SDT has become an intrinsic part of the discussions on how to cut domestic subsidies and tariffs, with a rule of thumb requiring developing countries to accept two-thirds of the negotiated cuts gathering increased consensus. In NAMA, it appears that the most important issue may be whether SDT should be integrated into the tariff formula reduction, defined by extra flexibility or both. LDCs have been exempted from taking up commitments on tariff reductions and will only be required to increase the coverage of bound tariffs. While the DDA outcome remains highly uncertain, SDT seems likely, at the very least, to be more integrated into the spirit and letter of potential DDA agreements than in the Uruguay Round.

Negotiations on improving existing SDT provisions started in earnest in spring 2002 with 56 developing countries introducing or associating themselves with a total of 88 proposals to amend existing provisions. Key demands are non-reciprocity in market access commitments and counterbalancing preference erosion, linking technical assistance to the implementation of agreements, reducing the cost of WTO obligations such as notifications, and increasing the "automaticity" of exemptions and requests for additional transitional time, and avoiding the negotiating and legal costs of existing procedures. Moreover, 12 proposals are specifically aimed at binding existing SDT provisions, *i.e.* making them legally enforceable.

During the Cancun Ministerial (2003), sufficient consensus – albeit considerably watered down – was reached on 28 proposals to be included in the Draft Ministerial Declaration. Had the Ministerial succeeded, these would have provided an early harvest on SDT as mandated in the Doha Declaration. The conference instead ended without consensus, and negotiations on the 88 agreement-specific proposals became acrimonious and stalled. The stand-off was only resolved in March 2005 when the CTDSS decided to focus on the proposals made by the LDC group. These were integrated into a development package for possible adoption during the Hong Kong Ministerial with the aim of cementing the development credentials of the round, with respect to the treatment of this group of very poor countries.

The Hong Kong Ministerial (December 2005)

The Sixth Ministerial Session held in Hong Kong on 13-18 December 2005 adopted five LDC proposals. These are contained in Annex F of the Ministerial Declaration (WT/MIN(05)/W/3/Rev.2 and labelled as proposals 23, 36, 38, 84 and 88 according to the nomenclature of JOB(03)161. Negotiations on proposal 36, which included a request for full duty-free, quota-free access for exports from LDCs, were the most difficult. Some were concerned about the impact of granting free access to countries such as Bangladesh and Cambodia for textiles, an area in which they can be considered competitive; others were concerned about sensitive products such as sugar and rice. Although LDCs were extremely reluctant at the beginning of the negotiations to settle for anything less than 100% coverage, some African countries currently benefiting from preferential access to the US textile market under the AGOA scheme might have seen some benefit in agreeing to a less than comprehensive arrangement that would protect the value of their current preferences. The final agreement requires developed countries to provide duty-free and quota-free market access for at least 97% of products originating from LDCs, defined at the tariff line, by 2008 or no later than the start of the implementation period.

The Hong Kong Ministerial Declaration also includes a call on the CTDSS to complete expeditiously the review of all outstanding agreement-specific proposals and report to the General Council, with clear recommendations for a decision by December 2006. The CTDSS was instructed to resume work on cross-cutting issues, the monitoring mechanism and the incorporation of SDT into the architecture of WTO rules; however no precise deadlines were specified.

Improving special and differential treatment

As stated above, the WTO system provides three main types of SDT:

- Additional obligations for developed countries to increase trading opportunities, *i.e.* enhanced market access for developing countries' exports, and to safeguard the trade interests of developing countries for example in dispute settlement cases or when introducing non-tariff barriers and anti-dumping duties.
- Additional flexibility for developing countries in the form of longer time periods, derogations or exemptions for implementing WTO agreements, implying the modulation of commitments and greater freedom to use restrictive trade policies than are otherwise subject to WTO disciplines or exemptions from rules requiring the adoption of common regulatory or administrative disciplines.
- Financial and technical assistance to level the field in participation costs, and help developing countries to implement and benefit from WTO agreements.

Developed countries' obligations: tariffs, standards and contingent protection

Developed countries' obligations focus on minimising market access barriers for developing countries' exports. This is usually done by granting preferential access to certain developing countries. However, many studies, such as Hoekman (2005), suggest that deeper and quicker liberalisation of market access on an MFN basis for products for which developing countries have traditionally enjoyed a comparative advantage, such as agriculture and labour-intensive goods (*e.g.* textiles), would be more efficient. It would avoid the pitfall of promoting preference-dependent export growth while providing the necessary certainty to investors. However, this approach has already been enshrined in negotiations (*e.g.* on services), so far with few results.

Another key issue is whether binding preferential arrangements would provide substantial benefits. On the one hand, non-binding preferential arrangements do not offer investors the certainty they require to make long-term investments in productive capacity in countries where preferential access determines their competitiveness. This is particularly true when preferential access might be cancelled for political reasons or in retaliation for unrelated trade disputes, or when it is based on legislation that has to be updated frequently or is subject to arbitrary graduation schemes. On the other hand, binding language is unlikely to guarantee the value of such preferential arrangements, which depends on both MFN tariffs and eligibility requirements such as rules of origin, and not on the preferential tariff itself. There is also a risk that binding would further entrench preference recipients' reluctance to engage in MFN liberalisation. Other enforcement mechanisms such as quotas for exports from developing countries or LDCs are likely to divert trade and create perverse incentives by encouraging countries to specialise in areas in which they do not have a comparative advantage, except through access to an import quota.

"Safeguarding the interests of developing countries" clauses have also proven difficult to translate into meaningful operational language. They constitute an important element of SDT in the

Dispute Settlement Understanding (DSU) and the Technical Barriers to Trade, Sanitary and Phytosanitary or Anti-Dumping Agreements to name a few. These areas are characterised by their potential for limiting effective market access nearly immediately, independently of whether the withdrawal of access is the result of the introduction of legitimate new standards or the objective of the developed country's action. However, the literature offers few proposals for improving this type of SDT.

According to Jaffee (2005), aid is a better solution that adapting standards. He claims that developing countries faced with rising SPS standards in their export markets can maintain and improve market access and use the introduction of new standards to improve their industries' long-term competitiveness. "Barriers created by food safety standards are usually relative – that is, they favour suppliers that can comply with the standards and tax those that cannot. Suppliers therefore need to weigh the costs and advantages associated with participating in different market segments." From this perspective, SDT has limited potential to alleviate the costs of raising standards. More would be achieved if developed countries focused on providing *ex ante* advice and support and on promoting harmonisation of standards among importers, including the private sector.

Flexibility: non-reciprocity, derogations and exemptions

A key objective of proponents for updating SDT in the CTDSS negotiations is to increase the "automaticity" of exemptions and requests for additional transitional time. Non-reciprocity of commitments has become an absolute must in the negotiations on agriculture, non-agricultural market access and services. From an economic perspective the key question, however, is whether non-reciprocal commitments and exemptions would promote development or not. As the Task Force of the UN Millennium project (2005) argues, "exemption from the rules is not synonymous with encouraging the development of efficient policies; the two key questions of SDT – what SDT to grant and to whom – should be based on a cost-benefit analysis that takes into account the relationship of the issue to trade, the extent of its alignment with broader development priorities, the costs of implementation and the relative costs to others of non-implementation".

As mentioned earlier, developing countries' wish to gain extra flexibility in agreements that limit "bad" policy, such as subsidies, local content requirements or the use of quantitative trade instruments, can seem paradoxical. For Hoekman *et al*. (2004) and Keck and Low (2004), the economic case for using traditional trade instruments to achieve economic development is so weak that WTO agreements limiting their use should not be subject to SDT. The UN Millennium Taskforce, following this approach, argues for example that current SDT in the Agreement on Subsidies and Countervailing Measures, which allows countries with an annual per capita income of less than USD 1 000 to continue subsidising exports should be eliminated. Hoekman *et al*. (2004) suggest dividing WTO agreements into two sets: core agreements for which no exemptions or derogations would apply and others which could revert to multilateralism or at least allow generous exemption mechanisms.

It is however widely considered that some agreements, especially those relating to domestic regulatory disciplines, might impose costs that are disproportionate to the potential benefits. The ability to implement and benefit from WTO disciplines on regulatory matters varies from country to country, depending on their size and income and on factors such as institutional capacity and available human resources. The UN Millennium Taskforce report usefully distinguishes between agreements involving high implementation costs and low development benefits which should be negotiated outside the Single Undertaking and agreements with the potential to deliver long-term benefits which call for a model that balances commitments with assistance and flexibility.

This type of approach is often accompanied, as in the Taskforce report, by proposals to narrow eligibility for SDT to a group of low-income and small countries instead of developing countries. The objective is to establish a classification according to size and income that would better reflect countries with low governmental capacity and not just low average income such as China and India.

An alternative suggested in the literature is to design a system able to closely match SDT tools with needs. This would involve abandoning the "one size fits all" approach and building a much more refined SDT framework that would make developing countries eligible for a subset of SDT tools determined by their developmental characteristics. Some authors propose developing *ex ante* indicators to identify countries that are experiencing particular development problems. For example Stevens (2002) proposes a methodology for defining lack of food security which includes indicators on calorie intake as well as trade balances. This could then be used to select countries eligible for maintaining agricultural amber box subsidies. Paugam and Novel (2005) claim that such differentiation is feasible for every agreement and highlight the precedent in the ASCM. Corrales-Leal (2005) develops a similar approach with his "situational analysis"; he suggests identifying *ex ante* a set of development situations that would warrant access to specific SDT provisions.

Matching development needs with SDT provisions *ex ante* assumes that adjustment processes are predetermined to a certain extent and involve little uncertainty. Prowse (2002) offers an alternative by suggesting an *ex post* mechanism for allocating eligibility rights for SDT. This mechanism would include representatives of international development and financial institutions as well as WTO members and involve an in-depth examination of the development needs of the countries requesting further flexibility. This proposal would ensure well-targeted SDT but would involve very high transaction costs.

None of these approaches is presently favoured in the WTO negotiations. As Page (2005) remarks, negotiations on the flexibility provisions of SDT are marred by a lack of consensus on the effectiveness of SDT tools to manage adjustment, on the size and magnitude of the adjustment burden induced by WTO agreements, and, even more fundamentally, on the impact of trade rules on development. Without a consensus on these issues, eligibility and the type of SDT provisions will be determined by the give and take of negotiations and driven by developing countries' demands for maximum flexibility and by all members' desire to minimise the costs of non-implementation particularly by advanced and medium-sized developing countries.

Technical assistance within the WTO

Of the agreement-specific proposals submitted to the Committee on Trade and Development in Special Session, 14 aim at obtaining substantial financial assistance. These range from calls for linking additional assistance to the implementation of agreements to requests for financial compensation for countries facing significant adjustment. It is clear that many of the specific needs of developing countries cannot be addressed by enhanced market access and/or flexibility alone.

Some areas, such as trade facilitation, require agreement-specific technical assistance closely linked to the outcome of the negotiations and the specific needs of each signatory. Enforceability is a key challenge in such technical assistance provisions. Making trade-related technical assistance provisions mandatory may not always be helpful, particularly when the costs of implementing the legal requirements are relatively modest but the resources needed to maximise the benefit from these agreements are much higher, as in the case of the SPS Agreement.

Technical assistance within the WTO has traditionally focused on reducing the costs of active participation in the WTO for developing countries and LDCs. This may take the form of support for

maintaining a delegation in Geneva; helping countries identify their negotiating priorities and better understand the potential implications of negotiated agreements; providing technical support for the DSU, for the trade reviews, for notification, etc., as well as when necessary help with the costs of the minimum legal requirements for implementing new agreements. However, as WTO Ministers in Doha recognised, trade-related technical assistance should be further expanded in order to ensure that all countries fully realise the benefits of increased openness to trade. The following section focuses on the aid for trade agenda, from its beginnings in the Uruguay Round to the Hong Kong declaration and the prospects for its full implementation.

Aid for trade

The Hong Kong Ministerial Declaration states that aid for trade should aim to help developing countries, particularly LDCs, to build the supply-side capacity and trade-related infrastructure they need to implement and benefit from WTO agreements and to expand their trade. This section looks at the support developed countries are providing developing countries and particularly LDCs to further their integration into the global economy. It sets out the scope of the expanding agenda, from providing trade-related technical assistance, to improving developing countries' participation in the multilateral trading system, to providing assistance aimed at improving the export competitiveness of developing countries' private sector. It then turns to trends in the financial assistance provided by donors in support of the expanding aid-for trade agenda and scenarios for additional aid-for-trade efforts in the context of the scaling-up of overall official development assistance (ODA) up to 2010. Finally, some of the key challenges for delivering an effective aid-for-trade initiative are discussed

A co-ordinated response to the expanding agenda

The Uruguay Round negotiations marked many developing countries' coming of age as full partners in the multilateral trading system. Rising awareness of the additional demands in terms of resources and reforms due to the Single Undertaking led to the 1994 Marrakech Declaration which explicitly acknowledged the need to provide trade-related technical assistance to assist developing countries in implementing the different agreements. Shortly after the signing of the Marrakech Agreement, African trade ministers called on the international community to help strengthen their capacity to formulate trade policy, participate in trade negotiations and implement trade agreements. In response, the WTO, the United Nations Conference on Trade and Development (UNCTAD) and the International Trade Centre (ITC) established the Joint Integrated Technical Assistance Programme (JITAP) to mobilise expertise and support to help African country partners participate in the WTO, integrate the new multilateral trading system and take advantage of new trade opportunities arising from the globalisation of world markets (Blackhurst *et al*., 1999).

In 1997, WTO members adopted an initiative for strengthening the LDCs' trade capacities known as the Integrated Framework for Trade-Related Technical Assistance to the Least Developed Countries (Integrated Framework). It was supported by six major multilateral organizations: the International Monetary Fund (IMF), the ITC, UNCTAD, the United Nations Development Programme (UNDP), the World Bank and the WTO. The Integrated Framework's principle is that co-ordinated, integrated and demand-led responses are critical to the effectiveness of donor support. However, the IF has fallen short in the implementation process at the country level, leading for calls to further enhance its effectiveness and increase its resources.

In fact, developing countries' lack of capacity to implement and benefit from trade reform has become an increasing part of the WTO Doha negotiations. In the run-up to the Sixth WTO Ministerial Conference in Hong Kong and in response to a specific request from the G8 in Gleneagles, the World

Bank and the IMF jointly proposed an aid-for-trade package. This package should comprise traditional instruments such as trade-related technical assistance and supply-side capacity building, including institutional capacity and trade-related infrastructure, but it should also be expanded to provide aid to help developing countries adjust to increased international competition, preference erosion or loss of tariff revenue. In response, at its September 2005 meeting, the Development Committee endorsed the proposal for an enhanced Integrated Framework, stated its support for a strengthened framework for assessing adjustment needs so that international financial institutions (IFIs) and donor assistance mechanisms can be better utilised, and asked the Bank and the IMF to examine further the adequacy of existing mechanisms and better integrate trade-related needs into their support for country programmes.

Shortly afterwards, the Hong Kong Ministerial Declaration agreed that aid for trade should aim to help developing countries, particularly LDCs, to build the supply-side capacity and trade-related infrastructure they need to implement and benefit from WTO agreements and more broadly to expand their trade. Although aid for trade cannot be a substitute for the development benefits that will result from a successful conclusion to the DDA, particularly on market access, it can be a valuable complement to the DDA [WT/MIN(05)/W/3/Rev.2, para. 57]. In addition, the Declaration asked a taskforce to provide recommendations on how to improve the implementation of the IF.

The aid for trade agenda

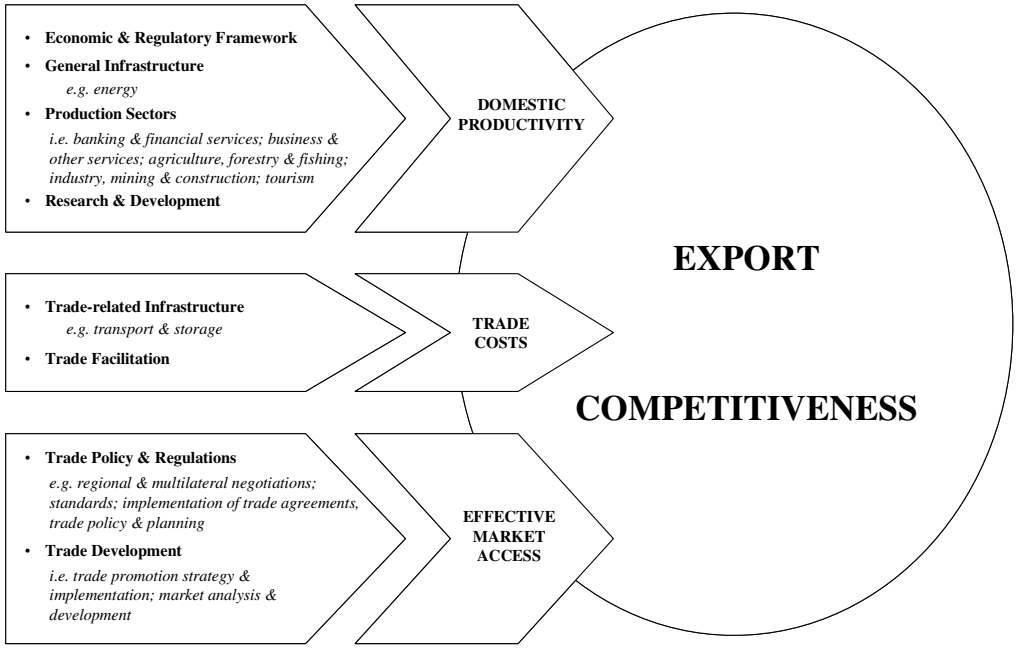
There seems to be an emerging consensus that the aid-for-trade agenda includes the following items:

- Trade-related technical assistance to build capacity to: *i)* formulate a locally owned trade policy; *ii)* participate in trade negotiations; and *iii)* implement trade agreements, *i.e.* the traditional trade-related technical assistance capacity building agenda.
- Assistance to build supply-side capacities, including trade-related infrastructure, to benefit from WTO agreements.

There is less agreement on whether support to address supply-side constraints should also include support to increase the capacity of specific productive activities or remain confined to reducing trading costs. In fact, there is no internationally agreed definition of supply-side constraints. Generally, supply-side constraints refer to impediments to the capacity to produce goods and services competitively and the ability to get them to market at a reasonable cost. This seems to be the premise of the Monterrey Consensus which called upon donors to gradually remove supply-side constraints, by improving trade infrastructure, diversifying export capacity, supporting an increase in the technological content of exports, strengthening institutional development and enhancing overall productivity and competitiveness (UN, 2002). Others refer to this category of support as economic responsiveness to trade opportunities. Both concepts address a wide range of public- and private-sector development needs, from helping governments create a competitive and enabling environment to supporting local enterprises' abilities to identify and produce goods at competitive prices (USAID, 2003).

Nevertheless, export competitiveness is the central concept in the discussion of supply-side constraints or economic responsiveness. Export competitiveness is determined by three main factors: *i)* domestic productivity, which determines the costs of production; *ii)* trade costs, which determine the cost of moving and/or exporting the good and/or service; and *iii)* the effective level of market access which is determined by the extent of unilateral, regional or multilateral trade reforms and the capacity to meet standards and overcome information gaps on export markets (Figure 8.1).

Figure 8.1. Key ODA categories with a direct role in improving export competitiveness[1]



1. Classification according to Credit Reporting System database categories.

The key issue is how to differentiate between an aid-for-trade agenda, on the one hand, and the general economic development agenda, on the other. It is clear that domestic productivity will be crucial in determining developing countries' capacity to benefit from further trade liberalisation. Building supply-side capacity could extend as far as the education, health and environment expenditures that may be crucial to competitiveness. (Some countries have indeed built their export capacity around an educated labour force or environmentally sound tourism.) Clearly, infrastructure is essential for building export capacity. While in theory it would be useful to distinguish trade-related infrastructure as a category, in practice such a distinction is not feasible, both because all infrastructure contributes to productivity and the ability to compete (*e.g.* water for irrigation, sanitation for meeting SPS standards) and because of data and reporting limitations. Finally, not only is export competitiveness the outcome of a broad economic process, but even assistance apparently aimed exclusively at boosting domestic productivity will have an impact on imports and thus the balance of trade. At the same time, there is a risk of re-labelling all growth-promoting development assistance as aid for trade and losing the focus that such an initiative could bring to enhancing developing countries' ability to better benefit from WTO agreements. Consequently, only ODA targeted to building productive capacity has been included in the financial estimates in this chapter. They exclude other support to the economic growth agenda such as economic and development policy and planning, legal and judicial developments and government administration, to name a few. This does not imply that the impact of regulation and policy is negligible. On the contrary, the World Bank/IFC's "Doing Business" annual reports show the critical impact that regulations and bureaucracy can have on businesses' costs. However, including such items in the scope of an aid-for-trade initiative in the context of the DDA could be interpreted as widening the scope of the WTO agenda to include behind-the-border policies as well as raise unnecessary concerns about conditionality and links between domestic policy and trade reforms.

There is even less agreement on whether compensation or assistance with adjustment costs should be part of the agenda. The IMF/World Bank note on aid for trade argued for its inclusion. The same opinion was earlier advocated by Bhagwati (2004), Hoekman and Prowse (2005) and the UN Millennium Project and is widely supported by developing countries and non–governmental organisations (NGOs). However, the issue is not part of the Hong Kong Declaration, and the Development Committee considered that existing assistance mechanisms might suffice if they are better utilised. It is, in fact, extremely difficult to anticipate the magnitude of risks in complex situations, such as those induced by a trade round, which require policy changes in many areas and regions. For example, at the time of the decision on net food-importing countries, developing countries expected an increase in food prices due to agricultural liberalisation in developed countries. However, the gains in agricultural productivity more than compensated for any upward pressure owing to a relatively modest reduction of agricultural support and, on average, food prices did not rise. What is needed is a set of institutions that can be activated, if and when a downside occurs in specific sectors and activities, to help those afflicted to cope (Bhagwati, 2004). The Trade Integration Mechanism launched by the IMF in April 2004 is such an instrument. It is targeted at countries that might experience balance-of-payment shortfalls resulting from multilateral trade liberalisation. It aims at mitigating developing countries' concerns about the impact on their economy of other countries' opening of their markets for goods and services by increasing the predictability and accessibility of the resources available to them.

Including adjustment costs in the WTO negotiations may set a dangerous precedent, particularly if they are interpreted as compensation for the costs of trade liberalisation. One of the most effective ways to realise the potential of trade as a tool for development, including poverty reduction, will be through meaningful market access outcomes in the core areas of the DDA. Such gains will be realised and maximised to the extent that developing countries reduce their own market access barriers. Moreover, these benefits would come from the adjustment process itself. One would expect countries facing more drastic adjustment – because of vulnerability to preference erosion, single commodity exports or losses in tariff revenue – to prioritise trade in their development strategies and request a disproportionate allocation of aid-for-trade assistance. However, responding to their needs does not necessarily require a specific category of assistance. Indeed, the assistance that would most help them improve their trade performance will aim at reducing supply-side constraints and trade costs in order to boost competitiveness and diversify export patterns.

Increasing financial support

This section provides an overview of the ODA of bilateral and multilateral donors to the different categories of the expanding aid-for trade agenda, *i.e.* trade-related technical assistance and capacity building and supply-side constraints (trade-related infrastructure and building productive capacity). A time series for 1994-2004 provides a baseline for donor support to the aid-for-trade agenda according to the Creditor Reporting System (CRS), managed by the OECD's Development Assistance Committee, and the joint WTO and OECD Trade Capacity Building database (TCBDB), created at Doha in 2001 to track and monitor trade-related technical assistance and capacity building (TRTA/CB) commitments.

Since 2001 TRTA/CB activities are classified under two main categories:

- *Trade policy and regulations* covers support for effective participation in multilateral trade negotiations, analysis and implementation of multilateral trade agreements, trade-policy mainstreaming, development of technical standards, trade facilitation, regional trade agreements, and human resource development.

- *Trade development* covers support for business development and activities aimed at improving the business climate, access to trade finance and trade promotion in the productive sectors, at the institutional and enterprise level.

Commitments for trade policy and regulations decreased from USD 935 million in 2003 to USD 812 million in 2004, but the share of support for trade facilitation more than tripled. Commitments for trade development increased by USD 200 million to USD 2.2 billion in 2004. The rise in the volume of aid to trade largely went to e-commerce, trade finance and market development in the industry and agriculture sectors. The level of donor contributions to multilateral trust funds and programmes, *i.e.* the Doha Development Agenda Global Trust Fund (DDA GTF), the Integrated Framework, the JITAP and the ITC trust funds, increased by almost 70% between 2001 and 2003, but remained stable in 2004 at USD 45 million. This represents less than 2% of the overall TRTA/CB budget.

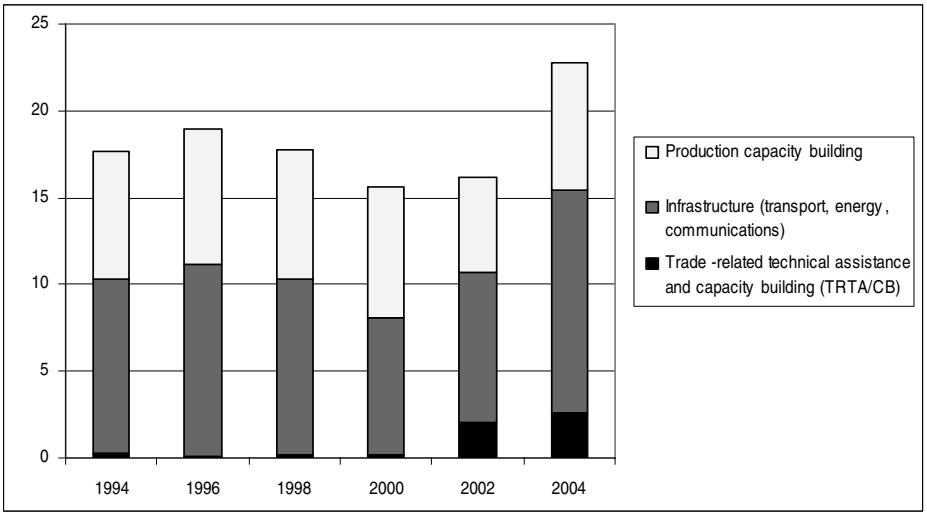
Activities to enhance the infrastructure necessary for trade are included in the CRS database under the heading economic infrastructure and described in the joint WTO/OECD annual reports on TRTA/CB. Economic infrastructure consists of a number of sub-sectors: transport and storage, communication and energy. Water supply and sanitation are classified under the heading social sectors. Therefore, in this chapter, all aid to infrastructure, minus water supply and sanitation, is considered as a proxy for trade-related infrastructure.

Since 1994, the total volume of aid for infrastructure has fluctuated between USD 8 billion and USD 11 billion (Figure 8.2). In 2004, the total volume rose by almost 50% to USD 13 billion, mainly owing to important reconstruction programmes in Afghanistan (transport) and Iraq (energy). In fact, the share of total aid for infrastructure declined from 15.6% in 1997 to 9.8% in 2003. Although the sharp increase in 2004 is not in itself a trend, donors are showing renewed interest in the contribution infrastructure, in particular transport, can make to economic growth and poverty reduction (OECD, 2006).

Support to enhance overall productivity and competitiveness is captured in the CRS under the heading "Productive capacity building". Up to 2000, support to these programmes was relatively stable in the range of 8.2% to 10.7% of total ODA. Since 2001, the share has dropped to 7-9% of total ODA. This decrease resulted from the reclassification of trade development as a part of the TRTA/CB category, following the creation of the joint OECD/WTO database in 2001.

Figure 8.2. Volume of ODA to the broader aid-for-trade agenda

USD billions constant 2003

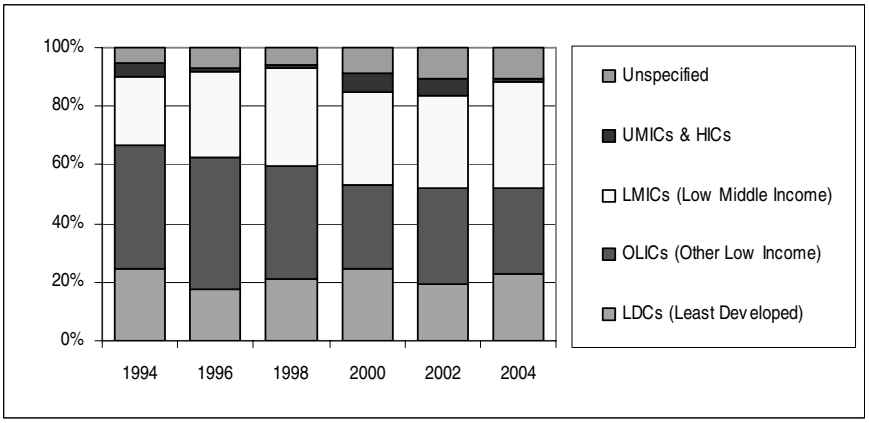


Source: OECD Creditor Reporting System database and WTO/OECD Trade Capacity Building Database.

The breakdown by income groups shows where rising contributions of TRTA/CB, infrastructure and support for building productive capacity are spent. The lower-middle-income group, which includes such major global players as Brazil, China, Egypt and Thailand, is by far the largest beneficiary in volume terms. The non-LDC low-income group has been shrinking proportionally (Figure 8.3).

Figure 8.3. Distribution of aid-for-trade related ODA by income group, 1994-2004

TRTA/CB, Economic infrastructure and Productive capacity building



Notes: UMICs = Upper Middle Income Countries; HICs = High Income Countries.
Source: OECD Creditor Reporting System database and WTO/OECD Trade Capacity Building database.

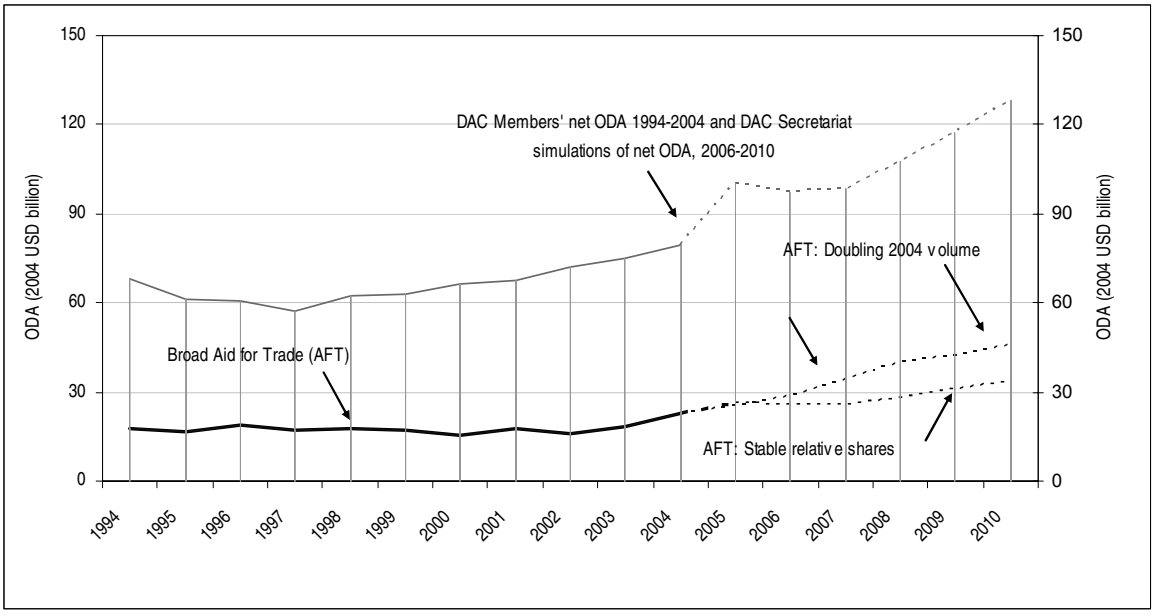
Additionality or scaling up of aid-for-trade

A simulation of commitments prepared by the DAC Secretariat shows that aid is forecast to increase from nearly USD 80 billion in 2004 to USD 130 billion in 2010 (expressed in commitments and 2004 dollars). The USD 50 billion increase is impressive, but needs to be interpreted with caution. It implies that aid will be one of the most rapidly rising outlays of public spending. Given the

budgetary pressures in many donor countries, delivering such increases will be a challenge. Moreover, there will be close scrutiny of the make-up of any additional aid. For example, while the last three years have seen a real increase in aid, much of it has been in the form of debt relief. Important as that is, it does not necessarily result in new money for developing countries. It is reasonable, however, to assume that with greater donor attention to trade, but also to infrastructure and the economic growth agenda in general, ODA for helping developing countries participate more, and more effectively, in international trade could rise significantly to 2010.

On the basis of the traditional, narrow definition of aid for trade (*i.e.* TRTA/CB) the projected scaling up of aid alone – *e.g.* maintaining its share in ODA constant – could bring total spending in 2010 to USD 4.3 billion, an increase of 67% in volume terms. Doubling its volume, as suggested at the G8 meeting at Gleneagles, would increase the share by up to 3.4% of total net ODA and yield an extra USD 5 billion. Including infrastructure in the estimates already raises the stakes considerably. The projected scaling-up of total ODA could bring an additional USD 6.5 billion, and doubling the volume for TRTA/CB and economic infrastructure would absorb up to one-fifth of total net ODA. Results for the broad definition of aid for trade (*i.e.* including TRTA/CB, infrastructure and productive capacity building) are illustrated in Figure 8.4. The scaling-up effect alone could deliver an additional USD 11 billion, a 48% increase over 2004 levels. However, under this definition, aid for trade would capture up to 35% of total ODA, a scenario that may be unrealistic.

Figure 8.4. Scaling-up the broad aid-for-trade agenda, 2005-2010



Improving the effectiveness of aid-for trade programmes

Increasing the capacity of less-advanced developing countries to become more dynamic players in the global economy will clearly require a wide range of support. There is already a substantial amount of ODA aimed at improving their productive and export capacity. The scaling up of aid provides ample room to increase this but without significant improvements in aid efficiency and effectiveness, additional resources might not deliver the desired results.

Narrowing the credibility gap between donors and countries facing significant challenges if they are to fully benefit from WTO agreements requires further clarification of the aid-for-trade agenda. This should include further standardisation of reporting methods among donors and better monitoring of commitments. More importantly, a closer tailoring of aid for trade would ensure better management of programmes so as to achieve the desired results. Given the volume of aid already targeted at trade-related activities, the key value added of the aid-for-trade initiative is the focus on the need to improve the effectiveness of assistance in trade-related technical assistance, capacity building, infrastructure and productive capacity. The revamping of the Integrated Framework, lessons from evaluation exercises of the TRTA/CB, and the Paris Declaration on Aid Effectiveness, together with public spending best practices, offer a framework in which to develop recommendations and guidance for donors and recipients. To improve performance, aid-for-trade programmes and projects face three main challenges:

- First, as for any government intervention project, aid for trade needs to be targeted at correcting market failures in order to increase overall economic efficiency. It is never easy to identify the underlying causes of market dysfunctions and assess whether government remedies will be cost-effective. Undertaking such an exercise in economies characterised by extremely poor or non-functioning markets is particularly challenging.
- Second, aid-for-trade programmes need to overcome the principal-agent problems inherent in all ODA-funded projects. Issues of absorption capacity, corruption, fungibility of financial support, need for local ownership and alignment of priorities are particularly relevant.
- Finally, the vast number of donors, multilateral agencies and recipient countries, the formidable array of activities that might fall under aid for trade and the multiple objectives of most projects, particularly in terms of increasing recipient's institutional capacity and delivering tangible economic outcomes, will stretch the implementation and management capacity of most donors and recipients countries.

Effective government intervention

In general, the economic rationale for government intervention is to improve equity and efficiency. The rationale for aid-for-trade assistance is based on equity concerns at the global level but also on efficiency concerns at the local/country/regional level. Inefficiency occurs mainly when the private returns received by an individual or firm for carrying out a particular action differ from the returns to society as a whole. Market failure is a situation in which, for one reason or another, market mechanisms alone do not achieve economic efficiency. This can occur in the case of public goods, externalities, imperfect information, or market power due to insufficient competition. Correcting market failures is essential to ensure that government intervention creates a "supply-side" or "structural impact" that alters the productive capacity of the economy, for example by improving the working of markets and economic institutions or strengthening capacities.

Identifying market failures, however, is not always straightforward. For example, the lack of access to credit is a well-known supply constraint in many low-income countries. The World Bank's annual "Doing Business" reports use as a proxy for quantifying this problem the availability of credit information registries. If banks cannot access information about the creditworthiness of potential clients, they will rely on social and ethnic networks, thereby constraining the expansion of new businesses that do not benefit from privileged connections. However, Bigsten and Söderbom (2005), in their review of manufacturing enterprise surveys, found that although financing is the top constraint cited by company managers in Africa, companies' investment is unrelated to retained profits and that

the desire for formal credit is relatively modest among medium and large businesses. It is likely that credit (or the lack thereof) has not been a major factor in explaining why investment has been low over the last decade, because few firms in these countries identified strong investment opportunities. In their view, the high levels of economic and political uncertainty, coupled with very thin markets for second-hand fixed capital, are much more important than the lack of formal credit. This is why so many of the financial system reforms implemented in Africa in the 1990s appear to have been ineffective.

Sometimes, what appears at first sight to be a market failure may in fact be a government failure. Indeed, governments, particularly those with weak capacity and low levels of civil society scrutiny may produce very inefficient solutions. In addition, the cost of government intervention should always be considered when designing policy tools. For example, the World Bank/IMF note on aid for trade argues that under-investment in trade-related administration and infrastructure is partly due to the public good characteristics of such investments for other countries. For example, there is no doubt that transport infrastructure is essential to the competitiveness of exports and has significant externalities for neighbouring countries. Limão and Venables (2001) found that a country's infrastructure explains 40% of transport costs for coastal countries, while own and transit country infrastructure explains 60% of transport costs for landlocked countries. They estimate that the median landlocked country faces transport costs about 50% higher than the median coastal country and that, as a result, its trade volume is 60% smaller. However, Evenett (2005) remarks that it may be misleading to think about the rationale for under-investment in a given activity or reform as essentially independent of the level of investment in other areas that affect the ability of developing country firms to take advantage of the opportunities created by multilateral trade liberalisation. He argues that suboptimal outcomes in any component of a nation's trade-related capacity may reduce the returns expected from investing in other components. One could, for example, envisage that the returns expected from investing in a new port are reduced by the existence of a corrupt and inefficient customs service, a typical government failure.

Identifying the binding market or government failures that constrain a nation's trade-related capacity is a challenge that will stretch the capability of most recipient countries. Capacity gaps need to be addressed in a wide range of areas, often simultaneously, and an unusually diverse array of stakeholders needs to be engaged. These efforts need to be embedded, or mainstreamed, in a broader development framework that encompasses a poverty-reduction strategy, sound macroeconomic policy, adjustment mechanisms and policies designed to stimulate private enterprise. The formulation and implementation of sound government intervention strategies require concerted consultation among senior representatives of government, the enterprise sector and civil society. Joined-up government and stakeholder input is crucial for both the design and the delivery of policy. Many developing countries, however, especially the LDCs, lack enterprise associations with the competence to act as advocates for industrial or sectoral interests and suffer from lack of capacity in government departments which do not always fully recognise the trade implications of the matters under their jurisdiction.

The trade diagnostic tool of the Integrated Framework helps LDCs see where intervention can be most useful. Integrating economic growth and trade into national poverty reduction strategies can also help identify the interplay of constraints as well as the most binding ones. However, while these efforts can help the poorest countries build a coherent national trade policy and identify priority areas, they do not provide the detailed analysis necessary to ensure successful intervention. Further mechanisms of technical assistance would therefore be required.

Effective aid delivery

Aid for trade will face the challenges inherent in the delivery of all types of aid. These challenges are closely related to principal-agent problems such as management of the different objectives of donors and recipients, issues of fungibility and absorption capacity.

Views on the impact of increasing aid for trade on absorption capacity are very much determined by assumptions made about the current and expected volumes of aid for trade. There is no doubt that some of the scenarios implying rapid increases of significant volumes of aid could lead to Dutch disease in many countries. Appreciation of the local currency may reduce and in some cases eliminate the gains in competitiveness which the aid has helped to achieve. There may be localised negative impacts, *e.g.* investment in infrastructure could lead to a bubble in construction prices and in non-tradable goods and services. These sectors would attract productive domestic resources at the expense of export sectors.

As the World Bank (1998) highlights, aid is highly fungible, *i.e.* higher aid for a particular sector does not systematically translate into higher overall spending in the sector. Government may instead transfer resources from the sector targeted by foreign assistance to another priority. This is less of a problem – or not a problem at all – if donors and recipients' objectives are similar. On the other hand, aid to a government or the private sector for an activity that it is not considered a priority by the recipient country will most likely lead to its misallocation. Assistance efforts are most effective and avoid distortions in the allocation of resources when they are demand-driven and not determined by donor's priorities. This is the underlying objective of the country ownership principle of the Paris Declaration on Aid Effectiveness.

The issue of fungibility is particularly important. As the World Bank (1998) explains, financing a road project with a 20% return does not say anything about the effectiveness of aid. The project's value added is likely to reside not in the investment itself but in its role as a vehicle for transferring technology, building institutional capacity or reforming sectoral policies. A donor's role is not to influence project selection or directly alter the sectoral composition of spending but to help with reform and capacity building. This corresponds to the principle of alignment in the Paris Declaration: donors should base their overall support on partner countries' national development strategies, institutions and procedures and aim at strengthening the country's public financial management and national procurement systems. However, aid often needs to be delivered in countries suffering from high levels of corruption and government inefficiency. This requires a very finely balanced intervention by donors seeking to strengthen government capacity but also to ensure that the money has an impact on the ground and increases the private sector's trading capacity.

Improving performance

Experience both in developed countries' public sectors and in developing countries over the last half-century of development assistance has shown the importance of the delivery stages of any government intervention. These are particularly important for complex programmes which can involve very high administrative costs. In the last decade, many OECD countries have focused their public-sector reform efforts on improving the delivery of public services and expanded the use of performance and project management tools, such as joined-up government, stakeholder consultations, outcome-based targets and built-in evaluations. The aid community has also developed a vast body of best practices for delivering aid and has elaborated aid effectiveness principles. Programmes and projects aimed at improving trading capacity are likely to be multifaceted, involve different donors,

and represent a mixture of private sector and government actors and may even involve several governments. The effectiveness of their delivery is crucial to their final impact.

A key aid effectiveness principle involves co-ordination among donors and efforts to implement common arrangements, simple procedures, and an effective division of labour and collaboration. Reducing administrative costs, which can be extremely high for programmes involving a large number of relatively small activities, is essential to enable recipient countries' administrations to increase their absorption and technical capacity. At the same time, it is important not to stifle innovation and to allow projects driven by NGOs or directly by donors in relation with the private sector to take place in a way that makes it possible to find what works best.

The main challenge, however, is to implement performance management and use evaluation and monitoring tools effectively. The Aid for Trade evaluation exercise carried out by the government of the Netherlands highlights the lack of explicit targets in most TRTA/CB projects and consequently the lack of effective evaluation and monitoring. To be useful, targets need to be decided beforehand, be measurable *ex ante* and *ex post*, be agreed upon by all actors, and be accompanied by risk management strategies. Outcome-based targets are generally defined as the desired impact on society, and meeting them often depends on a wide range of factors which substantially increase the uncertainty of the project/activity. Performance management methods often imply heavy bureaucratic machinery and can create high administrative costs. Another risk to factor in, particularly when financial support is linked to achievement of targets, is the creation of perverse incentives which lead project managers to become more interested in meeting the narrowly defined target than the objectives of the project.

In aid programmes, an additional difficulty is the nature of the outcomes sought by donors. As the World Bank points out, projects are a cauldron of money and ideas, and given this, the design and evaluation of projects should focus on the contribution of ideas to altering institutions and policies (World Bank, 1998, p. 74). These are not easy factors to measure and always mean a high level of subjective judgement.

In summary, there are no magic recipes for improving aid-for-trade projects. There is little specificity in aid-for-trade assistance that would justify radical changes in best practices for delivering aid. To improve the impact of aid-for-trade assistance, it is necessary to apply the aid effectiveness principles of the Paris Declaration. The foremost objective of specific projects should be to improve recipient countries' institutional capacities in order to ensure that government intervention in those countries is effective and results in improved trade capacity. The Integrated Framework and poverty reduction strategies are essential for developing coherent trade policies and helping identify priority areas for improving capacities, but they need to be supplemented by more tailored technical assistance. Otherwise, there is a significant risk that recipient countries' interventions will not address the binding constraints faced by their private sector and, as a consequence, have no effect on trade performance.

ANNEX TABLE

Table 8.A.1. Poverty and social spending indicators in selected countries

	Survey year	Population below USD 1 a day (%)	Population below USD 2 a day (%)	Social security and Welfare as a percentage of GDP[1]	Transfers to organisations or households (as a percentage of GDP)[1]
Brazil	2001	8.2	22.4	7.5	7.3
China	2001	16.6	46.7	..	..
Egypt	2000	3.1	43.9	4.6	6.1
India	1999-2000	34.7	79.9	..	..
Indonesia	2002	7.5	52.4	1.0	0.9
Jamaica	2000	<2	13.3	1.2	0.3
Mali	1994	72.8	90.6	1.0	1.1
Nicaragua	2001	45.1	79.9	2.7	4.2
South Africa	1995	7.1	23.8	1.7	1.7
Thailand	2000	<2	32.5	0.6	0.6
North America			..	11.2	12.1
Western Europe			..	13.6	14.8

1. Figures represent averages of five-year averages for spending data, 1972-97.
Source: World Bank (2003); Besley *et al*. (2003); World Bank (2004).

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Special Focus: Export Credits and Infrastructure Financing in Developing Countries

Jean Le Cocguic, OECD Trade Directorate

Over the last decades, governments have regularly used export financing instruments to support their exports of capital goods and to contribute to certain development objectives in recipient countries. These instruments are official (government-backed) and are typically used to facilitate the financing of capital-intensive projects which require medium- or long-term repayment terms and may be mixed with aid. Both export and aid credits are subject to the rules of the *Arrangement on Officially Supported Export Credits.*

Instruments for export credits and aid financing

Governments use a number of instruments to foster trade and development goals; these range from official direct credits extended by a state (or quasi-state) agency to the purchaser of exported goods, to official insurance or guarantees provided against repayment risk on a private export loan, to interest rate equalisation mechanisms for, associated or not with, any of the previous instruments Such instruments are increasingly used in the context of multi-sourced projects and co-financing arrangements with multilateral financing institutions. Grant and aid may also be used; aid, whether tied or untied, typically may involve a mixture of official export credits and a grant component, or "soft loan" (a single credit with a very long repayment period, a generous grace period and below-market interest rates).

International disciplines on export credits and aid financing

Export credits: The objective of international disciplines applicable to official export credits is to minimise potential trade-distorting effects while securing a level playing field among the main providers, most of which are in OECD countries.

The WTO rules on subsidies set a general framework for prohibiting certain types of officially supported export credits (*e.g.* loans at below the cost of funds which confer a material advantage, or official guarantees at premium rates that do not cover long-term operating costs and losses). Linked to these prohibitions, and as a complement thereto, the Arrangement (came into effect in 1978 and was acknowledged in the 1979 GATT Subsidy Code and later in the 1995 WTO ASCM; it includes a comprehensive set of financial disciplines that seek to encourage competition on the basis of the quality and price of the goods or services exported rather than the most favourable financial terms and conditions offered by other members.

Aid credits: The Arrangement contains the main rules applicable to these types of credits. They set clear limitations on tied aid financing and impose transparency on untied aid financing. Tied aid should be directed to eligible countries (those whose per capita GNI makes them eligible for 17-year loans from the World Bank) only for financially non-viable projects, *i.e.* those unable to attract private market finance. In addition, the Arrangement sets a minimum "concessionality level" (the subsidy component in an aid credit) in order to ensure a clear distinction between the most generous terms and conditions permitted for an official export credit and those allowed for an aid credit. For untied aid, prior notification, and in some circumstances, *ex post* notifications are required with the aim of ensuring a level playing field and competitive international bidding.

The experience gained from 1992 to 2005 by OECD members in implementing the tied and partially untied aid disciplines of the *Arrangement* was reviewed and codified as "*Ex Ante* Guidance for Tied Aid", to help project planners anticipate at an early stage whether or not a project would be appropriate for such aid.

Comment: These export credit and aid disciplines limit governments' capacity to support export financing of infrastructure projects in order to let the market play its role. The role of governments may of course change with changes in the capacity of private market and in the perception of risk in respect of recipient countries.

Trends in export credits and aid financing

Official export credits and infrastructure projects

Over the last 15 years, medium- and long-term officially supported export credits (*i.e.* with a repayment term of one year or more) provided by OECD member countries were reported as totalling between USD 50 and 60 billion a year. About 30% of these were commitments for long-term credits (*i.e*. a repayment term of five years and over).

Approximately two-thirds of these amounts were for developing countries, about a fifth went to countries in transition, and the remainder to others, including OECD members. Some 90% of all commitments for long-term credits were for transport and storage, energy generation and supply, industry, communications and mineral resources and mining.

Aid credits targeted to financially non-viable sectors in poorer developing countries

As a result of the Arrangement's implementation since 1992 of the rules on tied and partially untied aid, aid flows provided by OECD countries have radically shifted to financially non-viable projects in poorer developing countries in sectors such as health, water treatment plants, schools, and greenfield transport projects.

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ACRONYMS

ACP	African, Caribbean and Pacific countries
AGOA	African Growth and Opportunity Act (US)
ANZCERTA	Australia-New Zealand Closer Economic Relations Trade Agreement
APEC	Asia-Pacific Economic Co-operation
ASEAN	Association of South East Asian Nations
ATC	Agreement on Textiles and Clothing (WTO)
BOP	balance of payments
CBI	Caribbean Basin Initiative (US)
CBTPA	Caribbean Basin Trade Partnership Act (US)
CEPII	Centre d'Etudes prospectives et d'informations internationales
CGE model	computable general equilibrium model
CRS	OECD Credit Reporting System (database)
CTDSS	Committee on Trade and Development in Special Session (WTO)
DAC	Development Assistance Committee (OECD)
DDA	Doha Development Agenda (WTO)
DDA GTF	Doha Development Agenda Global Trust Fund (WTO)
DSU	Dispute Settlement Understanding (WTO)
EBA	Everything But Arms initiative (EU)
ECLAC	Economic Commission for Latin America and the Caribbean (UN)
EFTA	European Free Trade Association
ERP	effective rate of protection
EU	European Union
FDI	foreign direct investment
GATS	General Agreement on Trade in Services (WTO)
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GNP	gross national product
GPT	General Preferential Tariff (Canada)
GSP	Generalised System of Preferences
GSTP	Global System of Trade Preferences among Developing Countries
GTAP	Global Trade Analysis Project
HS	Harmonised System
IATA	International Air Transport Association
IF	Integrated Framework for Trade-Related Technical Assistance to the LDCs
IFI	international financial institutions
ILO	International Labour Organisation

IMF	International Monetary Fund
ISCO 88	International Standard Classification of Occupations
ITC	International Trade Centre
IIT	intra-industry trade
JITAP	Joint Integrated Technical Assistance Programme
LDC	least developed country
LDCT	Least Developed Country Tariff (Canada)
MNC	multinational corporation
MFN	most favoured nation
MTS	multilateral trading system
NAFTA	North American Free Trade Agreement
NAMA	Non-Agricultural Market Access
NGO	non-governmental organisation
NIE	newly industrialising economy
NTB	non-tariff barrier
ODA	official development assistance
PSE	producer support estimate
Quad countries	Canada, European Union, Japan and the United States
RCA	revealed comparative advantage
RTA	regional trade agreement
ROOs	rules of origin
SACU	South Africa Customs Union
SDT	special and differential treatment
SPS Agreement	Sanitary and Phytosanitary Agreement (WTO)
TBT Agreement	Technical Barriers to Trade Agreement (WTO)
TCBDB	Trade Capacity Building Database (WTO/OECD)
TNC	transnational corporation
TRIPS Agreement	Agreement on Trade-Related Aspects of Intellectual Property Rights (WTO)
TRQ	tariff rate quota
TRTA/CB	trade-related technical assistance and capacity building
UNCTAD	United Nations Conference on Trade and Development
UNECA	United Nations Economic Commission for Africa
UR	Uruguay Round
VAT	value added tax
WITS	World Integrated Trade Solution
WTO	World Trade Organization

OECD PUBLICATIONS, 2, rue André-Pascal, 75775 PARIS CEDEX 16
PRINTED IN FRANCE
(22 2006 05 1 P) ISBN 92-64-02560-X – No. 55173 2006

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