

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

POLICY ISSUES IN INTERNATIONAL TRADE AND COMMODITIES
STUDY SERIES No. 30

**SMOKE AND MIRRORS:
MAKING SENSE OF THE WTO INDUSTRIAL
TARIFF NEGOTIATIONS**

by

**Sam Laird
David Vanzetti
Santiago Fernández de Córdoba**

Trade Analysis Branch
Division on International Trade in Goods and Services, and Commodities
UNCTAD



UNITED NATIONS
New York and Geneva, 2006

NOTE

The purpose of this series of studies is to analyse policy issues and to stimulate discussions in the area of international trade and development. This series includes studies by UNCTAD staff, as well as by distinguished researchers from academia. In keeping with the objective of the series, authors are encouraged to express their own views, which do not necessarily reflect the views of the United Nations.

The designations employed and the presentation of the material do not imply the expression of any opinion whatsoever on the part of the United Nations Secretariat concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Material in this publication may be freely quoted or reprinted, but acknowledgement is requested, together with a reference to the document number. It would be appreciated if a copy of the publication containing the quotation or reprint were sent to the UNCTAD secretariat:

Chief
Trade Analysis Branch
Division on International Trade in Goods and Services, and Commodities
United Nations Conference on Trade and Development
Palais des Nations
CH-1211 Geneva

Series Editor:
Khalilur Rahman
Chief, Trade Analysis Branch
DITC/UNCTAD

UNCTAD/ITCD/TAB/31

UNITED NATIONS PUBLICATION
Sales No. E.05.II.D.16
ISBN 92-1-112676-2
ISSN 1607-8291

© Copyright United Nations 2006
All rights reserved

ABSTRACT

Tariffs for industrial products are a key element of the ongoing WTO negotiations. However, rather than clarifying the issues, the framework text agreed on 1 August 2004 leaves considerable uncertainty about the future direction of the talks. According to one view, the negotiations are back at first base, with little progress in evidence since the Fifth WTO Ministerial Conference, held in Cancún. Others see the texts as the basis for an ambitious approach to tariff cutting. The more ambitious proposals imply increased imports, lower tariff revenues, some labour market adjustments and reduced output in some key sectors in some developing regions. Furthermore, the main proposals do not fully resolve problems of tariff escalation and peaks. Proposals that take greater account of the need for special and differential treatment for developing countries seem less threatening and more likely to satisfy the wishes of the growing number of WTO members from developing countries. A successful outcome requires that the main focus be on high tariffs and market entry conditions in respect of products of export interest to developing countries. In addition, some way needs be found to assist some developing countries in coping with the likely adjustment costs of liberalization.

ACKNOWLEDGEMENTS

This study was written by the authors while working at the Trade Analysis Branch of the Trade Division of UNCTAD. Their new contact details are as follows: Sam Laird, Special Adviser to the Secretary-General of UNCTAD, e-mail: sam.laird@unctad.org; David Vanzetti, Australian National University, e-mail: david.vanzetti@anu.edu.au; Santiago Fernández de Córdoba, UNCTAD New York Office, e-mail: cordobas@un.org.

The authors express their appreciation to Fabien Dumesnil for his considerable statistical work on tariffs.

CONTENTS

1.	Introduction.....	1
2.	Adjustment costs.....	5
3.	The state of play in the WTO negotiations.....	10
4.	Existing levels of protection.....	12
5.	The four scenarios.....	16
6.	Changes in tariffs under alternative scenarios.....	18
7.	Simulating alternative scenarios.....	21
8.	The impact of trade liberalization.....	22
9.	Implications and conclusions.....	31
	References and bibliography.....	34
	Appendix.....	37

Figures

1.	Weighted average tariffs for non-agricultural products	14
2.	Binding coverage for non-agricultural products	15

Tables

1.	Collected tariff revenues as percentage of government revenue	7
2.	Marginal costs of tariff and output tax revenue for selected countries.....	9
3.	Tariff peaks as percentage of tariff lines	13
4.	Tariff escalation: Trade-weighted applied tariffs by stage of processing.....	13
5.	Weighted average applied tariffs by group.....	15
6a.	Bound and applied tariffs on non-agricultural products after applying the four scenarios (universe of bound tariff lines varies by scenario).....	18
6b.	Bound and applied tariffs on non-agricultural products after applying the four scenarios (initial universe of bound tariff lines)	19
7.	Bound and applied tariff peaks as percentage of tariff lines after liberalization	20
8.	Tariff escalation: Impact of partial liberalization on trade-weighted applied tariffs	21
9.	Change in export revenue relative to base	23
10.	Change in imports relative to base.....	24
11.	Initial revenues and change relative to base	25
12.	Change in welfare relative to base	26
13.	Change in real unskilled wage rates relative to base	28
14.	Impact of flexible labour force, Simple scenario.....	29
15.	Use of unskilled labour in selected sectors, Simple scenario	30

1. INTRODUCTION

The WTO negotiations on industrial tariffs raise a number of important development-related issues. A major issue is the extent to which they address barriers that face the key exports of developing countries as they try to expand and diversify their production and trade. This problem has been well documented in the past by the IMF, UNCTAD, the World Bank and the WTO, but much remains to be done to tackle high tariffs and tariff escalation, not to mention non-tariff and market entry barriers.

A second issue arising from the WTO negotiations is the extent to which commitments that are being sought from the developing countries contribute to their economic development. While economists generally agree that, at least in the longer term, trade liberalization is beneficial to economic development, there is considerable controversy about the relative importance of openness and institutions. There is also debate about whether certain forms of intervention may be justified on the basis of protection for infant industries or in the presence of externalities,¹ with Rodrik (2001) in particular noting that the developed countries used such intervention at earlier stages of their own industrialization. There is somewhat less debate - and comparatively little knowledge - regarding the process of adjustment, with citations of cases where rapid adjustment seems to have created few problems while in other cases there have been major disruptions.

From Doha to Hong Kong

WTO Ministers meeting in Doha in 2001 seemed to take these issues on board, declaring “international trade can play a major role in the promotion of economic development and the alleviation of poverty”. Ministers also sought “to place...needs and interests [of the developing countries] at the heart of the Work Programme adopted in...[the Doha] Declaration”. In relation to industrial tariffs, they agreed “by modalities to be agreed, to reduce or as appropriate eliminate tariffs, including the reduction or elimination of tariff peaks, high tariffs, and tariff escalation, as well as non-tariff barriers, in particular on products of export interest to developing countries. Product coverage shall be comprehensive and without a priori exclusions” (Doha Ministerial Declaration, para. 16). Full account was to be taken of the special needs and interests of developing and least-developed country participants, “including through less than full reciprocity in reduction commitments, in accordance with the relevant provisions of Article XXVIII bis of GATT 1994”.

The Hong Kong, China, Ministerial Conference in December 2005 confirmed an approach based on the so-called “July Package” adopted by the General Council of WTO in August 2004 (referred to as the “NAMA Framework” in the Hong Kong, China, Ministerial Declaration). In itself the “July Package” in its Annex B of Decision of 1 August 2004 by the WTO General Council (WT/L/579) provides the framework for

¹ Externalities refer to beneficial or harmful effects occurring in production, distribution or consumption of a good or service that are not captured by the buyer or seller. Externalities exist because of high transaction costs or the absence of property rights. This implies that no market exists or that markets function poorly. Smoke from steel production is an example of a negative externality, whereas the building of a road has benefits that are difficult for the owner to capture. The appropriate policy is a tax (or subsidy in the case of positive externalities). However, because of the absence of a market, externalities are difficult to value and the appropriate tax or subsidy is difficult to determine.

future work in the NAMA negotiations that in many respects varies little from the Derbez text presented in Cancún. However, a key modification was the insertion of a new initial paragraph that states that the framework “contains the initial elements for future work on modalities” by the non-agricultural market access (NAMA) negotiating group. The framework also states that additional negotiations are required in order to reach agreement on the specifics of some of these elements, such as the treatment of unbound tariffs, flexibilities for developing countries, participation in the sectoral tariff component and preferences.

For some developing countries, the reference to “initial elements” is taken to mean that the modalities issue is wide open, and that all options are on the table. No doubt others will disagree, and negotiations will continue to be difficult as to the degree of ambition and flexibilities for developing countries.

Given the mandate of the Doha Declaration to reduce or eliminate tariffs, including tariff peaks, high tariffs and tariff escalation, in particular on products of export interest to developing countries, much attention has inevitably focused on harmonizing approaches that cut high rates more than proportionately (to be supplemented by request-and-offer and sectoral negotiations). However, some developing countries see harmonizing approaches as running counter to the Doha requirement of allowing less than full reciprocity for developing countries. Many of these countries feel that they need some policy space to use tariffs for industrial development purposes, to mitigate the impact of liberalization on output and employment in key sectors and to avoid the resort to alternative WTO measures, such as anti-dumping.

While Hong Kong and the July agreement has helped to restore momentum

to the Doha Round negotiations, meeting the varied objectives of participants in the NAMA negotiations will not be easy. Among the key issues to be resolved are the following: (i) a formula has yet to be selected; (ii) consensus on participation in sectoral elimination still eludes the group; and (iii) the provisions for special and differential treatment for developing countries need to be clarified.

On the whole, a formula approach has certain advantages in simplifying negotiating procedures, and reducing the advantages that large countries have in bilateral request-and-offer negotiations. However, beyond the overall level of ambition the question remains as to the precise formula and its parameters. If these details are not worked out on a satisfactory basis, some countries may consider supporting alternative approaches, such as request-and-offer, using the phrase “initial elements” in the first paragraph as the basis for starting afresh.

Certain elements of the framework suggest that the aims are ambitious, but much depends on how these elements and the terms for developing countries are elaborated. The agreement provides for further work by the negotiating group on the reduction of tariffs by means of “a non-linear formula applied on a line by line basis”. All of the pre-Hong Kong proposals on modalities would still be on the negotiating table. Even proposals such as the Indian one could be broadly described as non-linear since the core linear percentage cuts on individual lines are modulated by limiting rates to no more than three times the national average. Discussion has focused on a Swiss-style formula based on each country’s national average, multiplied by another factor (the “B coefficient”) that could be more or less than unity and vary by country group.

One problem regarding this approach is that it is relatively difficult for any country to compute what it has to do and to assess what others are doing — that is, it is difficult

to compute the balance of concessions. This seems unnecessarily burdensome, since from an economic perspective it is possible to tailor non-linear and linear approaches to achieve very similar results for trade, welfare, output, employment and revenues, while a linear approach would be simpler and more transparent.

Beyond the formula component, the new framework also foresees possibilities for more ambitious tariff cuts/elimination for certain sectors, including those of interest for developing countries (so-called sectoral initiatives), where participation now seems to be voluntary.

Another area of ambition in the text is the proposal for increasing the binding coverage in non-agricultural products. Some developing countries have a high proportion of unbound tariffs. In the framework, it is proposed that Members would bind currently unbound rates at “[two] times the MFN applied rate”. (The use of square brackets implies that the precise multiple is to be negotiated.) For countries that have low applied rates, acceptance of this formulation would lock them into a low rate regime.

Some flexibility is provided for countries that currently have a very low binding coverage. Thus, paragraph 6 of the framework states that Members with a binding coverage of less than [35%] would be exempt from making tariff reductions. Instead, they would bind [100%] tariff lines at the average tariffs for all developing countries. However, the text does not state which average would be used under this paragraph. Here the issue is whether this would be the simple or trade-weighted average (as was normally used in earlier GATT negotiations on industrial tariffs). Since the simple average is some 28% and the weighted average 12%, this choice makes a big difference.

LDCs would be exempt from tariff reductions. However, this does not imply that LDCs will have a free round, as they and some others are likely to be negatively affected by the erosion of preferences.

A range of proposals

A large number of proposals have been made in the WTO negotiating Group on Non-agricultural Products, of which six proposals had a formula as a core element. These proposals and their overall economic impact have already been examined in Laird, Fernández de Córdoba and Vanzetti (2003), who estimate that the potential static global annual welfare gains in the current WTO NAMA negotiations are around \$30–\$40 billion, with perhaps a third of these potential gains accruing to developing countries.²

However, our current analysis, which looks in some detail at estimated sectoral changes, shows that the generally modest overall results conceal important changes in trade and output in individual sectors. Some countries will achieve important gains in some key sectors, but in other countries some sectors face important adjustments. Moreover, the estimated tariff revenue losses could have a strong negative impact on government revenues in a number of countries. Finally, while preferences are included in the modified database and would be eroded as a result of MFN liberalization, our estimates do not produce any negative effects on trade for any of the developing regions in the model, although sub-Saharan Africa shows a very small decline in welfare according to some scenarios. Of course, the results in some specific countries within our regional groups could be different and there may also be some variations in specific sectors.

² Other studies, which introduce assumptions of imperfect competition and encompass services, generate much larger results (Brown, Deardorff and Stern, 2001). In the present study we also include services and agriculture, as explained below, but we retain the more conservative assumptions of perfect competition and constant returns to scale.

This paper elaborates on our recent analysis (Laird, Fernández de Córdoba and Vanzetti, 2003) by looking in some detail at the main implications for trade flows, tariff revenues, welfare and sectoral output for various countries and regions under proposals currently being considered in the WTO.

In order to assess the potential impact of the various proposals under consideration in the WTO, we have selected four scenarios that do not entirely correspond to specific proposals, but rather have been chosen to highlight the spread of policy options. These four scenarios we call “free trade” (full tariff liberalization in the non-agricultural sector), Hard and Soft WTO and “simple mix”. The free trade proposal was presented in December 2002 by the United States in the WTO Working Group on Non-Agriculture Market Access as the second phase of a two-stage implementation process. The second and third scenarios are specific variations of the proposals included in the Framework for Establishing Modalities in Market Access for Non-Agricultural Products (Annex B of the draft Cancún Declaration, a text by the Chairman of the WTO General Council, not agreed by WTO Members), which in turn draws on the draft text by the Chairman of the NAMA Group. This Framework text places the emphasis on a non-linear formula approach to tariff-cutting, to be supplemented by sectoral tariff elimination for products of export interest to developing countries and possibly also by zero-for-zero, sectoral elimination and request-and-offer negotiations. However, the Framework text lacks specific numbers, and here we have analysed some possible variations in the key coefficient (B) in the NAMA Chairman’s Draft, including the possibility of different coefficients (and hence different depth of cuts) for different groups of countries. In essence, the Soft scenario introduces important elements of special and differential treatment that are not present in the Hard scenario. The last scenario analysed, “simple mix”, draws from a linear cut formula with a capping for tariff peaks and escalation, and

also has elements of special and differential treatment similar to those in the Soft scenario, except for the formula component. We have also taken account of proposals for sectoral elimination on a non-voluntary or voluntary (opt-out) basis, exceptions for sensitive products, proposals to extend binding coverage, and proposals to address tariff peaks. This spread of scenarios is intended to give an indication of the development dimensions associated with the kind of ideas that are driving the negotiations, and is intended to help countries determine where their interests lie. At the time of writing, all proposals remain on the table.

The paper is structured as follows. The next section looks at the definition of adjustment costs and the fiscal implications of tariff reform. In section 3 the state of play regarding the WTO trade negotiations is explained and the various proposals on the table are described. Subsequently, the existing level of protection for world trade is analysed. Section 4 also includes some estimates of the implications of the various scenarios for tariff peaks, tariff escalation and binding coverage. In section 5 the four modelling scenarios of trade liberalization are defined in some detail, and their implications for existing bound and applied tariffs are shown in section 6. In section 7 the general equilibrium model is described and the results of the simulations of four scenarios are presented and discussed. The paper concludes with a discussion of the implications of the analysis. Potential gains from bringing the unemployed into the labour force are shown to have an impact far greater than the efficiency gains that result from an improved allocation of resources. Many developing countries might face difficulties in implementing the more ambitious tariff reductions proposed in this round of negotiations. This is something that needs further consideration in order to develop appropriate support measures to facilitate the implementation of the final agreement and to minimize the burden of adjustment.

2. ADJUSTMENT COSTS

Most trade negotiators recognize the desirability of reducing tariffs in the long term, but claim the cost of adjustment following reform is a major impediment. Furthermore, these costs, it is claimed, are likely to be greater in developing countries. This issue is examined in this section.

In trying to assess the significance of such adjustment costs, particularly in developing countries, there is little documented evidence about the scale and nature of these costs or the adjustment process of local economies in the aftermath of trade liberalization.

For informed policy-making, Governments need a better understanding of the costs to their economies following changes in their tariffs. If these are significant, it will be important to put measures in place to help developing countries cope with the real economic adjustment of further reforms so that they can indeed reap the gains from trade. If such assistance is not forthcoming, developing countries may seek to moderate the degree of liberalization and to implement agreed changes at a more moderate pace.

Adjustment costs may be defined as the cost of moving resources from one sector to another, occurring in the period immediately after changes in policies. Changes in relative prices, or regulations, make some firms or sectors uncompetitive, and this leads to a decline in output and, inevitably, use of inputs. In most sectors, labour is the major input, either directly or indirectly through its embodiment in intermediate inputs — that is, output from other sectors. The problems in moving labour from one sector to another involve (i) job search and relocation costs; (ii) retraining to provide the necessary skills; and (iii) temporary loss of income. These

costs are mainly a function of the length of unemployment, which may be longer or shorter depending on the capacity of the local economy to adapt to trade liberalization and the ability of the workers to find a new job. Clearly, adjustment costs are likely to vary considerably across countries. It is generally accepted, although evidence is indicative rather than conclusive, that adjustment costs are higher where intra-industry trade is relatively low because in these circumstances labour cannot merely switch within firms or industries (Azhar and Elliott, 2001). Moving capital from one sector to another is more problematic, and it is inevitable that some or all assets will be revalued downwards or written off altogether. It may also be easier to shift capital equipment from one unprofitable line of production to another in the same sector rather than between sectors.

Estimates of these costs of adjustment vary tremendously. Studies by Magee (1972) and Baldwin, Mutti and Richardson (1980) quoted in a WTO review of adjustment costs suggest that they amount to less than 4 per cent of the benefits from trade in the long run and benefits may exceed costs even in the short run (Bacchetta and Jansen, 2003, p. 16). Other estimates, by Melo and Tarr (1990) concerning the heavily protected US textiles, clothing, steel and motor vehicles sectors, suggest that costs would amount to 1.5 per cent of the gains from liberalization even during the adjustment period. The basis for these estimates is the earnings losses of the displaced workers and the duration of unemployment.³ More recently, a study of the United States–Canada FTA suggests that 15 per cent of the losses in employment in particular sectors in Canada can be attributed to tariff changes (Trefler, 2001).

Unfortunately, empirical evidence from developing countries is scarce, although

³ Magee assumed a duration of unemployment of 16 weeks, 60 per cent higher than the nationwide average. However, other studies found much higher levels, closer to 40 weeks.

there is plenty of anecdotal evidence about unemployment following liberalization. The most commonly reported case is of the Mozambique cashew-processing industry (Welch, McMillan and Rodrik, 2002). Reforms initiated by the World Bank in the 1990s led to the unemployment of 85 per cent of the 10,000 process workers. Net gains to farmers were estimated to be small, merely a few dollars per year, and these were offset by the increased cost of unemployment in urban areas. While this decline in employment in one sector is dramatic, what is not documented is the fate of these workers and the impact of reforms on other sectors of the economy.

In contrast to the Mozambique example, a World Bank study found that in eight out of nine developing countries undergoing trade reforms employment in the manufacturing sector was higher one year after the initial reforms were implemented (Papageorgiou, Choksi and Michaely, 1990). Harrison and Revenga (1995) observed increasing employment following liberalization in Costa Rica, Peru and Uruguay.

Perhaps the most comprehensive analysis of developing country labour markets following trade liberalization and other forms of globalization has been undertaken by Rama (2003). He surveys over 100 papers and draws a number of conclusions. First, wages increase more in economies that integrate with the global economy, although they may fall in the short run. Openness tends to increase the returns to skilled labour and women, thus increasing inequality but narrowing the gender gap. Both of these effects have social consequences. Second, unemployment tends to be higher following liberalization, but in the long run is no higher in open economies. Third, the major threats to labour come from a financial crisis rather than competition from abroad. If these observations are correct, the policy implications for developing countries stress

improving education and macroeconomic stability while integrating into the world economy. Some labour market policies, such as income support and unemployment insurance, have proved beneficial in some countries.

The question arises how best to mitigate these adverse effects. One obvious approach is to phase in policy changes so that labour and capital have more time to adjust. Paying compensation to potential losers may be useful in reducing resistance to reform. Social policies should be established to mitigate these adjustment costs that emerge from the trade liberalization process. Funding education, health and physical infrastructure such as ports, roads and telecommunications will make potential export sectors more productive and better able to compete on the international market. There is no single best approach to these issues and each country needs to understand its local political and economic environment to find the most appropriate policies.

Finally, given the general acceptance, with the usual caveats, of the proposition that there are gains to be made from trade liberalization, it needs to be considered that the decision not to move forward also represents a cost – an opportunity forgone – to be set against the transitional adjustment costs. In other words, existing intervention is not free. Let us note merely that such intervention is essentially justified because it is believed that it can bring about benefits through “kick-starting” industrialization (infant industry/economy, economies of scale, etc., arguments), offsetting declining terms of trade for commodities, and so forth, increasing export earnings, lifting the savings rate, and so on. On the other hand, it is now more frequently considered that such policies may have had a negative impact on the agricultural sector and the rural poor. Moreover, tariffs on raw materials from the minerals, fisheries, agriculture and forestry sectors, or on intermediate goods such as steel

or textiles, tend to raise the cost of manufactured products, making them hard to sell overseas, and these effects of such tariffs can only be partly offset by temporary admission or duty-drawback schemes. Thus, to the extent that imports are used in the production of export goods, tariffs are a tax on exports. It is recognition of these potential long-term gains that is driving the reform process in the developing countries and, no doubt, such policies would be pursued more vigorously if institutions and supporting programmes were in place to facilitate the adjustment process.

Fiscal imbalance

Many developing countries are concerned that trade liberalization will have a significant adverse impact on government revenues because tariff revenues represent substantial contribution to public revenue. Many developing countries would have to raise taxes on income, value added, capital gains, property, labour and consumption or raise non-tax revenues to compensate. Broad-based taxes, if applied equally across all sectors, would promote a more efficient allocation of scarce domestic resources (in the absence of externalities which may include

various social goals). However, such a move may be costly and the implementation of such a shift often entails the upgrading of the revenue service. Indeed, one of the main reasons for the use of tariffs is the relative ease of collection as goods cross national frontiers. How important are tariff revenues? How important are the distortions caused by this dependence? We look at those questions in this section, and, in a later section, we estimate the revenue losses from particular liberalization scenarios.

World Bank data indicate that the contribution of tariff revenues to total government revenues ranges greatly from virtually nothing in the European Union to over 76 per cent in Guinea (table A1). Less extreme examples are Cameroon and India, where tariff revenues represent some 28 and 18 per cent of government revenues, respectively. Ten countries collect more than half their revenues from tariffs and 43 countries collect more than a quarter. In OECD countries, tariff revenues represent on average 1 per cent or less.

With tariff reforms, the average level of revenue from tariffs worldwide has been declining. Table 1 shows a decline in tariff

Table 1. Collected tariff revenues as percentage of government revenue

	1975	1980	1985	1990	1995	Latest year
	%	%	%	%	%	%
Region						
All countries	22.4	22.5	22.0	21.0	18.9	16.2
EU	3.2	1.8	1.2	0.5	0.1	0
Japan	2.6	2.4	1.7	1.3	1.3	1.3
USA	1.5	1.4	1.6	1.6	1.4	1.0
Other developed countries	9.2	6.9	5.8	4.0	1.6	1.3
China	n.a.	n.a.	n.a.	13.8	8.8	9.5
India	16.4	22.0	26.7	28.8	24.4	18.5
Indonesia	10.3	7.2	3.2	6.4	4.0	3.1
Other developing countries	24.4	23.5	21.0	20.4	17.9	14.2
LDCs	35.9	36.2	37.4	35.0	33.8	32.0

Source: World Bank (2003).

Note: Latest year is 2001 for most countries.

revenue collected (that is, taking account of preferences) as a share of the value of imports over all regions in the last 25 years, but this is most pronounced in the OECD area. For other regions, there was virtually no change up to 1980, and then all regions show a decline as the pace of liberalization gathers.

Eliminating tariffs altogether implies that tariff revenues would be reduced to zero. To compensate, many developing countries would have to raise taxes on income, profits, capital gains, property, labour and consumption or through non-tax revenues. As we note above, broad-based taxes may be less distortionary (excluding externalities), but they are not as simple to collect as tariff revenues. Moreover, in some small countries, where most goods are imported, imposing, say, a sales or consumption tax (including an excise tax, such as many countries apply to petroleum, tobacco and alcohol) may well in practice operate largely against imports. In this case, the essential difference is that the new, domestic tax would not be subject to WTO negotiations, while revenues would be unchanged and come from the same source.⁴

The main issue here is the cost of raising taxes through tariffs versus alternative measures. Theoretical evidence suggests that reducing trade taxes and replacing them with a consumption tax is generally welfare-enhancing (Keen and Lightart, 1999). This is because trade taxes discriminate between traded and non-traded goods, whereas as consumption taxes applying to domestically produced and imported goods are usually considered to be less distortionary. However, switching the source of tax, even if revenue-neutral, would have distributional effects in favour of consumers of imported goods. Like

tariff reform, tax reform more broadly has adjustment costs (such as retraining of officials, new computer equipment and programming after the preparation and passage of new tax laws) and the costs of merely collecting a broad-based tax may be higher than a border tax. These effects are in addition to the distortionary effects.

Estimates using the Global Trade Analysis Project (GTAP)⁵ database and UNCTAD tariff data tend to confirm the desirability of switching from trade taxes, although the data say nothing about the cost of making the switch. The data indicate that in 27 out of 34 countries the distortionary costs of tariff revenues, at the margin, exceed the cost of output tax revenue and thus a switch from one source of revenue to another would be beneficial (table 2). A marginal cost of funds of \$1.10 means that raising the last dollar of revenue is associated with a net cost of \$0.10. Governments have \$1 to spend, but taxpayers are \$1.10 worse off. For example, in China and the Republic of Korea the cost of raising \$1 in tariff revenue was estimated at \$1.56 and \$1.49, respectively, whereas \$1 in output tax costs \$1.27 and \$1.13, respectively. On the other hand, in Japan the cost of raising \$1 of tariff revenue is only \$1.12 compared with \$1.44 for output taxes, thus reversing the implications. In general, higher taxes are related to the higher cost of raising revenue. High-taxation countries with low tariffs such as Denmark and Sweden tend to be in the top section of table 2, where the costs of raising output, income or consumption taxes exceed the cost of tariff revenue. Developing countries with high tariffs and low, broad-based taxes tend to be in the lower half of the table, where raising tariff revenue is relatively more expensive.

⁴ There are of course many wider taxation issues, linked to social policies, which are not the focus of this study. These include the use of progressive taxation (or exemptions) as a means of redistributing wealth (poverty alleviation). Some product-specific taxes are used to discourage consumption. Taxation is also increasingly being used to encourage environmentally friendly production and consumption.

⁵ GTAP <http://www.gtap.agecon.purdue.edu/>.

Table 2. Marginal costs of tariff and output tax revenue for selected countries

Country	Cost of raising \$1 in tariff revenue \$	Cost of raising \$1 in output tax revenue \$
Tariffs more efficient		
Canada	0.915	1.000
Denmark	1.013	1.029
Japan	1.125	1.442
Mexico	1.024	1.340
Sri Lanka	1.241	1.337
Sweden	1.176	1.200
United Kingdom	1.016	1.173
Output tax more efficient		
Argentina	1.057	1.035
Botswana	1.099	1.001
Chile	1.083	0.995
China	1.556	1.268
Finland	1.241	1.008
Germany	1.262	1.207
Hungary	1.106	1.005
India	1.311	1.155
Indonesia	1.060	1.001
Malaysia	1.092	1.037
Morocco	1.153	1.002
Mozambique	1.105	1.052
Peru	1.176	1.003
Philippines	1.241	1.001
Poland	1.252	1.001
Republic of Korea	1.488	1.134
Singapore	1.372	1.333
Thailand	1.206	1.122
Turkey	1.270	1.041
Uganda	1.148	1.000
United Republic of Tanzania	1.196	1.010
United States	1.112	0.995
Uruguay	1.200	1.026
Venezuela	1.295	1.273
Viet Nam	1.281	1.078
Zambia	1.255	1.062
Zimbabwe	1.139	1.001

Source: Ebrill (2003), with GTAP 5.3 database.

As a result of the tariff reforms and to offset the decline in revenues, many countries have revised their fiscal systems to shift the burden to domestic taxes. These reforms cover the structure of the customs tariffs and other taxes as well as the reform of administrative machinery. In developing countries with large informal economies, these costs may be a significant impediment. Nonetheless, in addition to removing

distortions, several factors may compensate Governments for reductions in tariffs:

- Where tariffs are reduced rather than eliminated and/or where non-tariff barriers are reduced, tariff revenues may rise as a result of increased trade, and this appears to have been the case in a number of countries at the early stage of implementation of World

Bank trade reform programmes. The explanation is related to the responsiveness (elasticity) of imports to tariff changes.

- A reduction in rates may reduce evasion (smuggling) to a significant degree. If tariffs fall, it may no longer be worthwhile evading normal trade procedures.

The conclusion is that while reductions in government revenues are a concern for developing countries in particular and even more so for some countries heavily dependent on this source, there are compensating factors that can partially or in some cases completely offset the revenue reductions for some level of reform. On the other hand, complete tariff elimination necessarily implies the elimination of the tariff revenue source. The main issues then are the speed and cost of implementing new tax laws and the associated changes in fiscal administration.

3. THE STATE OF PLAY IN THE WTO NEGOTIATIONS

Historically, there has been relatively little discussion during trade negotiations of the adjustment process and the fiscal effects of tariff liberalization, in part because, prior to the Uruguay Round, few demands were made on developing countries. However, the Uruguay Round saw increased active participation in the negotiations by the developing countries as demandeurs, and they were also asked to make substantial contributions. To some extent, the developing countries felt that they had not made much progress in opening up markets for their key exports by simply relying on special and differential treatment. In addition, they had also been making considerable strides towards the liberalization of their own economies, usually under World Bank/IMF lending programmes, and they felt that there

was an opportunity to “cash in” on these reforms by active participation in the negotiations. On the other hand, the developed countries started to take a tougher line on seeking developing country reforms, both because they felt that this was good for the developing countries and because they saw that some developing countries were emerging as important markets.

In the aftermath of the Uruguay Round, developing countries began again to question the value of the efforts they had been making on trade reform. They felt that they had not benefited from the promises of big trade and welfare gains from the Uruguay Round, while they were taking on increasing and costly commitments. Moreover, in the wake of the economic crises of 1997-1998, many developing countries suffered serious setbacks with falling output and rising unemployment – even “de-industrialization” - some of which was attributed to the trade reforms. In addition, economists such as Rodrik and Stiglitz started to challenge the linkage between trade openness and economic growth, emphasizing institutional factors as a key to development.

Accordingly, in the current WTO negotiations, which are supposed to have a strong development component, the accumulation of disillusion and concern has led developing countries right from the start to seek some leeway or policy space regarding any new commitments that they may be required to undertake.

The WTO’s Cancún Ministerial Conference was unsuccessful in finding consensus on non-agricultural market access, although the lack of success may have reflected other issues that are cross-linked through the “single undertaking” (“nothing is agreed until all is agreed”). Despite the intensive negotiations in the two years following Doha and the various proposals on the negotiating table, no agreement was achieved in Cancún on the modality or

formula to be used for tariff reductions. Developed countries generally considered that there was not sufficient ambition in the proposed draft presented in Cancún and developing countries believed that it did not sufficiently reflect their interests and concerns. Nonetheless, had the Singapore issues and agriculture been resolved, it seems unlikely that non-agricultural market access would have been a stumbling block.

The state of the non-agriculture market access negotiations is largely unchanged since before Cancún, with the main focus still on finding a tariff-cutting formula that is acceptable to both developed and developing countries. Essentially, Doha requires Member States to reduce tariffs, especially those facing developing countries' exports; however, it also mandates less than full reciprocity from developing countries.

The Cancún Ministerial draft text on non-agricultural products was based on that of the Chairman of the Negotiating Group on Market Access: Revised Draft Elements of Modalities (TN/MA/W/35/Rev.1). The Chairman's text proposed a tariff reduction scheme similar to the "Swiss"/harmonizing formula with the maximum coefficient being a function of each country's national average tariff.⁶ He also identifies seven sectors for complete liberalization: electronics and electrical goods; fish and fish products; footwear; leather goods; motor vehicle parts and components; stones, gems and precious metals; and textiles and clothing.

The United States, the European Union and Canada, in a joint contribution during the summer of 2003, prior to Cancún, had argued for a "single" harmonizing formula

rather than a country-based average tariff reduction formula in order to achieve a real expansion of market access. They also proposed a provision that there would be an increase in the single coefficient as a result of members fully binding their tariffs and participating meaningfully through reductions in their binding overhang that effectively enhance market access.

Whereas the Chairman's text envisages exempting LDCs from tariff reduction commitments, the joint United States, European Union and Canada text proposes that additional provisions be included for LDCs as well as those members with a binding coverage of non-agricultural products of less than 35 per cent of their tariff universe. These members would be exempted from making tariff reductions arising from the application of the formula, and, with the exception of LDCs, would be expected to bind 100 per cent of non-agricultural tariff lines at the overall level of the average bound tariffs of all developing countries after full implementation of current concessions.

The draft Cancún Ministerial text proposes a non-linear formula applied on a line-by-line basis. With reference to other issues, such as sectoral tariff elimination and increasing binding coverage, the draft contains proposals similar to those presented by the Chairman of the Non-agricultural Market Access Negotiating Group.

The Hong Kong, China, Ministerial Conference in December 2005 confirmed an approach based on the so-called "July Package" adopted by the General Council of WTO in August 2004 (referred to as the

⁶ The Swiss formula cuts high tariffs more dramatically. This represents a problem for developing countries that tend to have higher initial tariffs and would therefore be required to make larger cuts under a harmonizing formula. The proposal attempts to address this concern by raising the Swiss formula maximum coefficient according to the average tariff. This provides for the "less than full reciprocity" to the extent that developing countries have higher initial tariffs, but countries with the same average tariffs are treated in the same fashion, irrespective of whether they are developed or developing.

“NAMA Framework” in the Hong Kong, China, Ministerial Declaration). In practice the “July Package” of 2004 set the stage for the end-game in the NAMA negotiations. From that point, discussion became more focused on variations in the “Swiss” formula of the earlier Tokyo Round, by which a pre-selected coefficient would establish a maximum rate, while reducing higher rates by a greater proportion than lower rates. An alternative proposal⁷ sets the coefficient at the national average (or a multiple thereof). Other proposals are based on the idea of a “Simple Swiss” formula, with one coefficient for developed countries and another, higher coefficient for developing countries. Some variations would depend on the use of other flexibilities, e.g. on binding. Consensus on participation in sectoral elimination was still lacking, awaiting a decision in the formula. The provisions for special and differential treatment for developing countries also needed further refinement. No transition period had been agreed for implementation of the Agreement. On a more detailed level, several key questions remained, such as whether trade-weighted or simple average tariffs should be used for binding rate calculations.

4. EXISTING LEVELS OF PROTECTION

Tariffs cuts for non-agricultural products in the Uruguay Round were comparable in scope and depth to those achieved in the earlier Tokyo and Kennedy Rounds, and there was the most important agreement to phase out restrictions on trade

in textiles and clothing under the Multifibre Arrangement by the end of 2004 (but where the main liberalization was “back loaded” to the end of the implementation period). The agreed approach required developed countries to reduce their bound tariffs by one third and developing countries by one fourth, and this was to be achieved by “request and offer”, that is line-by-line negotiations between all possible combinations of interested trading partners. In the end, both developing and developed countries cut around 30 per cent of their tariff lines (Finger and Schuknecht, 1999). Not only did developing countries make deeper absolute cuts than developed countries because they were starting from a higher base, but also the depth of industrial tariff cuts is higher even in percentage terms.⁸ Although it had been proposed that developing countries be granted recognition for the recent unilateral liberalization, it was made clear that this would have to be bound, and there is no explicit on-the-record evidence of such treatment being granted.

Emerging from the Uruguay Round the result was the continued disproportionate bias in protection against developing country exports through tariff peaks and escalation (UNCTAD, 2003). Tariff rates remained dispersed and a number of very high rates, tariff peaks, emerged especially among developed countries.⁹ The importance of tariff peaks on products of interest to developing countries still remains a priority in the multilateral trade agenda. Nearly 10 per cent of developed country tariff lines are in excess of three times the national average (table 3).

⁷ Proposal by Argentina, Brazil and India, based on an earlier draft by the Swiss Chairman of the Negotiating Group on Market Access, Ambassador Pierre-Louis Girard, also known as the “Girard” proposal, TN/MA/W/35/Rev.1.

⁸ The Finger and Schuknecht (1999) study shows that the depth of industrial tariff cuts ($dT/(1+T)$) was 1 percentage point for developed countries and 2.7 percentage points for developing countries.

⁹ There is no unique definition of a high tariff or tariff peak. It is usually understood that a domestic or national tariff peak is a tariff line three times higher than the national average. International tariff peaks are the tariff lines more than 15 per cent above the international average.

Table 3. Tariff peaks as percentage of tariff lines

Scenario	Bound %	Applied %
Developed countries	8.2	9.9
Developing countries	0.4	3.5
Least developed countries	0.4	0.7

Source: derived from UNCTAD TRAINS database.

Tariff escalation is a common and significant phenomenon in respect of developing countries' exports that emerged from the Uruguay Round. Commodity-dependent developing countries face a barrier in their efforts to diversify their production to items with higher value added content. The rise in tariffs down the processing chain particularly affects the intermediate stage, as illustrated in table 4.

As noted earlier, addressing tariff peaks and escalation is one of the cornerstones of the present round of negotiations, and the failure in Cancún represents a backward step in this area.

Before modelling and analysing various scenarios of tariff-cutting formulas it is important to evaluate the existing tariff protection (table A2). The analysis covers 129 countries divided into developed countries, developing countries and least developed countries.¹⁰

Figure 1 shows for non-agricultural products the existing bound and applied rates.¹¹ The bound rates are the basis for the current negotiations, but changes in applied rates determine the economic impact. For most developed countries applied and bound tariffs are the same, although the method of weighting suggests that for large groups of countries the average applied tariff exceeds the average bound tariff. The applied rates are averaged over an incomplete set of tariff lines, only those that are bound. This does not imply that the applied rates exceed the bound rates for a particular item. Developed countries' applied tariffs at 2.9 per cent are much lower than those of developing countries (8.1 per cent). In developing countries, applied rates are much lower than bound rates, providing scope for significant reductions in bound tariffs without any direct economic impact.

Table 4. Tariff escalation: Trade-weighted applied tariffs by stage of processing

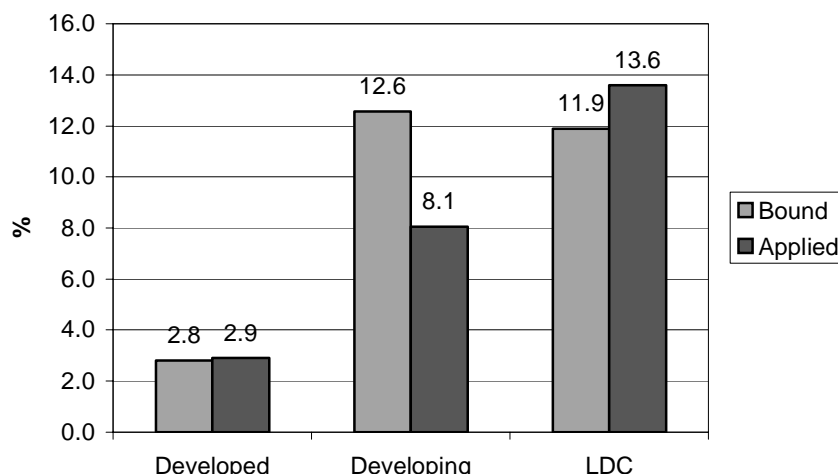
	Primary %	Intermediate %	Final %
Developed countries	0.4	3.0	3.4
Developing countries	6.0	9.1	8.0
Least developed countries	6.9	18.0	12.0

Source: derived from UNCTAD TRAINS database and UN COMTRADE database.

¹⁰ See the Appendix for a complete list of countries analysed. The distinction between developed, developing and least developed countries is based on a UN official classification.

¹¹ Source of tariff data: WTO's Consolidated Tariff Schedule database (CTS) for bound tariffs and UNCTAD's TRAINS for applied rates. A total of 129 countries are covered; for 93 of these the applied rates are those for 2001 and for the rest the closest available year is used. Tariff averages are computed at HS 6 digit levels. For the trade-weighted average the source is the UN COMTRADE database.

Figure 1. Weighted average tariffs for non-agricultural products



Source: derived from UN COMTRADE database, latest year available.

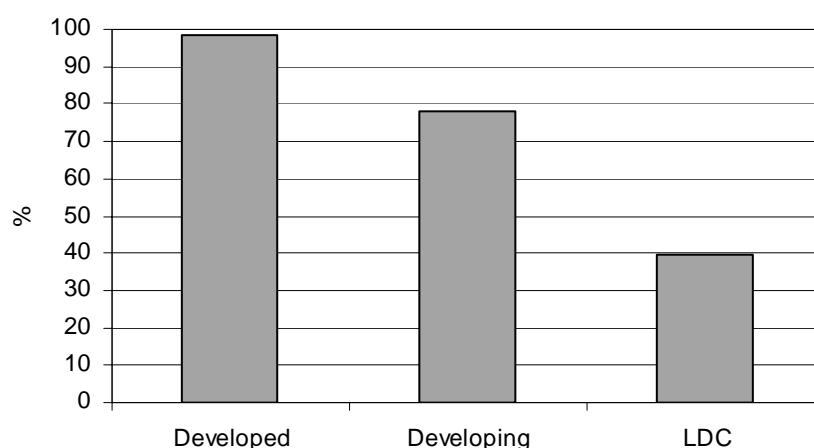
Binding coverage is the percentage of tariff lines that a country binds in the course of accession to the WTO or during WTO tariff negotiations. Binding tariffs means that in future the member country may not be able to raise its applied tariffs higher than the bound tariffs without entering into Article XXVIII tariff renegotiations (or under some form of contingency protection such as anti-dumping). Binding tariffs provides greater security to trading partners and may also be seen as a sign of the predictability of trade policy more generally. Most developed countries have almost all (on average 98.4 per cent) of their tariffs bound as a result of negotiations over the last 50 years. For developing countries binding coverage is much lower (78.2 per cent) and for least developed countries it is quite low (33.1 per cent), essentially because, prior to the Uruguay Round, few demands were made on them to open their markets, which were not perceived as being very important, and also because the developing countries largely lacked negotiating leverage to achieve a balanced exchange of tariff concessions (figure 2). All the non-agricultural proposals

on the negotiating table increase the binding coverage of developing and least developed countries, and, legally, this is a valid commitment in the WTO negotiating process. It is also economically significant through the guarantee of additional security of market access for trading partners and investors.

The significance of the tariffs depends on the pattern (and potential pattern) of trade. Tariff revenues are the product of tariffs and imports. Implicit tariff revenues are shown by sector and region in table A4 and amount to \$248 billion.¹² Within the non-agricultural sector, that is excluding primary and processed agriculture and services, revenues amount to \$171 billion. The major sectors contributing to global distortions are textiles and wearing apparel (\$37 billion), motor vehicles (\$21 billion), manufactured metal products (\$32 billion) and chemicals, rubber and plastics (\$22 billion). About half the revenue (\$83 billion) in the non-agricultural sector is collected in developing countries. The European Union, Japan and the United States collect duties of \$28 billion, \$22 billion and \$21 billion respectively.

¹² This estimate is based on the GTAP database, and is calculated from bilateral applied tariff rates, including bilateral preferences and bilateral trade flows. Tariff revenues may be overestimated to the extent that revenues are not actually collected.

Figure 2. Binding coverage for non-agricultural products



Source: derived from UN COMTRADE database.

In spite of the preferential access enjoyed by many developing and least developed countries, average tariffs on exports from these regions to developed countries may be higher than those facing developed countries themselves. This reflects the varying composition of imports with different tariffs rather than higher tariffs on the same item. Table 5 shows non-agricultural trade-weighted applied tariffs, levied by developed and developing countries on exports from each other. These data include preferential rates. As may be observed, on average imports into developed countries are

levied tariffs of 2.1 per cent on exports from other developed countries and 3.9 per cent on exports from developing countries. On the other hand, developed countries also face higher tariffs in exporting to developing countries (9.2 per cent) than do other developing countries (7.2 per cent). The most significant sectors contributing to the higher tariffs on developing country exports are petroleum and coal products, where developing countries face an average tariff in developed countries of 45 per cent, and textiles and apparel.

Table 5. Weighted average applied tariffs by group

	Developed %	Developing %	Least developed %
Source			
Developed countries	2.1	9.2	11.1
Developing countries	3.9	7.2	14.4
Least developed countries	3.1	7.2	8.3
Total	2.9	8.1	13.6

Source: derived from UN COMTRADE database.

5. THE FOUR SCENARIOS

In this section four alternative scenarios of trade liberalization for non-agricultural products are presented: free trade, Hard WTO, Soft WTO and “Simple” mix. The scenarios have been selected to enable a comparison of the economic implications of the proposals on the negotiating table. The four scenarios are based on proposals made by member States in the WTO Working Group. The proposals have been slightly modified to best suit the modelling purpose and to permit a better comparison of their implications. All scenarios include a fixed reduction in tariffs on resources (coal, oil, gas and unprocessed minerals), services and agriculture. These sectors are responsible for an estimated 30 per cent of the total distortions impeding goods and services trade. As part of the single undertaking in the negotiations some of these distortions are likely to be removed along with reductions in tariffs on non-agricultural goods. If these are not removed, resources may flow out of a protected sector such as textiles into an even more distorted sector such as agriculture, worsening the overall efficiency with which resources are used in an economy. For this reason the scenarios include reductions in tariffs on services and agriculture, but these are the same in each of the scenarios to facilitate comparison of the impacts on the non-agricultural sectors.

The first scenario, free trade, draws from the United States’ proposal to the WTO Working Group in December 2002. It plainly means that all tariffs are reduced to zero for all non-agricultural products for all WTO members unanimously. For this scenario all countries bind their non-agricultural tariffs and reduce them to zero.

The second and third scenarios, so-called Hard and Soft WTO, are two variations from the proposal by the Chairman of the WTO Working Group for non-agricultural tariff reductions. These two scenarios cover the following elements:

1. Tariff reduction formula
2. Sensitive items
3. Binding coverage
4. Level of binding
5. Sectoral elimination

Both the Hard and Soft approaches are based on the WTO proposed harmonizing formula:

$$T_1 = \frac{B \times ta \times T_0}{B \times ta + T_0}$$

where ta is the national average of the base rates, T_0 is the initial rate, T_1 is the final rate, and B is the coefficient, yet to be negotiated, reflecting the level of ambition.

This formula reduces tariffs according to a Swiss formula with maximum coefficient equal to country average, achieving the progressive effect of proportionately greater reductions in higher initial tariffs. This coefficient in the Swiss formula represents the maximum tariff after the application of the tariff reduction formula. In previous applications B and ta were represented as a single coefficient common to all members. The Swiss formula was used for industrial products during the Tokyo Round with a maximum coefficient of 16 per cent.

In the WTO Chairman’s proposal the B coefficient would be common to all countries. B set at 1 implies that the average bound rates become the maximum. The so-called Hard version of the WTO proposal builds upon a B coefficient equal to 0.5. Under this scenario, developed and developing countries with the same average initial tariffs would make the same percentage reduction. In this sense, the proposal does not contain any specific and differential component. However, an element of special and differentiated treatment for developing countries derives from the observation that most of them have higher initial tariffs than developed countries.

In contrast to the Hard WTO scenario in which B equals 0.5, the Soft scenario incorporates a B coefficient differentiated between developed and developing countries. B takes two values, 1 for developed countries and 2 for developing countries. This differentiation of the B coefficient is based on the principle of special and differential treatment and the less than full reciprocity concept for developing countries mandated in paragraph 16 of the Doha Ministerial Declaration.

Both WTO scenarios and the “Simple” mix include a special clause for sensitive products, which will be left unbound, and no tariff cut formula would be applied to them. For modelling purposes, sensitive products are defined as the 5 per cent of the all-tariff lines generating the most revenue and unbound, or all unbound lines, whichever is less.¹³ In modelling this scenario it is assumed that tariff lines gathering the greatest amount of tariff revenue are excluded first. These items have high tariffs, or high trade flows or, most likely, a combination of both. For these tariff lines countries neither bind nor cut their tariffs.

Both Hard and Soft scenarios specify that 95 per cent of the tariffs be bound. However, in the former it would be done at twice the applied rate and in the latter at either twice the applied rate or 50 per cent, whichever is higher. In the Hard scenario tariffs are bound and then the tariff reduction formula is applied. In the Soft scenario unbound tariffs are bound only and are not subject to reductions.

The Hard WTO scenario includes sectoral elimination. This implies the elimination of tariffs for electronics and electrical goods, fish and fish products, textiles, clothing, footwear, leather goods, motor vehicle parts and components, stones, gems and precious metals. The Soft scenario includes sectoral elimination for developed countries only and presumes that developing countries will not carry out the elimination of tariffs in these sectors.

The last scenario analysed, “Simple” mix, draws from a linear cut formula with a cap for tariff peaks and escalation. Different linear coefficients are applied for developed and developing countries. This capping element harmonizes tariffs and has an effect similar to that of the Swiss formula. It is therefore particularly useful in reducing tariff peaks and tariff escalation. The capping formula specifies that no tariff will be higher than three times the national average. This scenario does not include sectoral elimination of tariffs.

As in the Soft WTO scenario, in the “Simple” mix scenario 95 per cent of tariffs are bound at either twice the applied rate or 50 per cent, whichever is higher. No tariff-cutting formula is applied to tariffs after binding them.

The four scenarios are compared in table A3 in the Appendix.¹⁴

¹³ For some countries the number of unbound tariff lines are less than 5 per cent of their tariff universe, hence these unbound items are taken as sensitive products.

¹⁴ For a comprehensive description of the various proposals presented in the WTO Working Group on NAMA, see Laird, Fernández de Córdoba and Vanzetti (2003).

6. CHANGES IN TARIFFS UNDER ALTERNATIVE SCENARIOS

Tables 6a and 6b show the tariff changes after the scenarios defined above have been applied. These numbers need to be interpreted with care. The average tariff depends on the number of tariff lines that are bound. This varies from one scenario to another, as each implies substantially enlarged binding coverage. Table 6b shows the changes in the tariff rates with respect to the tariff lines covered by the initial bindings. The average final bound weighted tariffs for developing countries under the Soft and

Simple scenarios are barely less than the initial tariffs if the newly bound tariffs are included. This is not the case for the Hard scenario, where the final weighted bound rate becomes much lower than the initial owing to the high level of tariff cuts.

The level of ambition for tariff cuts declines in going from free trade through the WTO variants to “Simple” mix. For developed countries trade-weighted applied tariffs fall from 2.9 per cent to 0 per cent under free trade, 0.4 per cent under Hard WTO, 0.6 per cent under Soft WTO and finally 1.6 per cent under the “Simple” mix scenario. For developing countries tariffs are revised from

**Table 6a. Bound and applied tariffs on non-agricultural products
after applying the four scenarios**
(universe of bound tariff lines varies by scenario)

Scenario	Tariffs		Tariffs	
	Simple averages		Weighted averages	
	Bound	Applied	Bound	Applied
	%	%	%	%
Developed countries				
Initial rate	5.7	4.7	2.8	2.9
Free trade	0.0	0.0	0.0	0.0
Hard	0.7	0.6	0.4	0.4
Soft	1.5	0.8	0.9	0.6
Simple	4.1	2.3	2.0	1.6
Developing countries				
Initial rate	29.0	11.1	12.6	8.1
Free trade	0.0	0.0	0.0	0.0
Hard	5.9	4.1	3.0	2.6
Soft	26.4	9.7	17.2	6.0
Simple	28.7	10.1	18.5	6.2
Least developed countries				
Initial rate	46.3	12.6	11.9	13.6
Free trade	0.0	0.0	0.0	0.0
Hard	46.3	12.6	11.9	13.6
Soft	46.3	12.6	11.9	13.6
Simple	46.3	12.6	11.9	13.6

Source: derived from UNCTAD TRAINS database.

8.1 per cent to 0 per cent, 2.6 per cent, 6 per cent and 6.2 per cent respectively. These averages exclude changes in the agriculture and services sectors. In all scenarios least-developed country tariffs do not change.

It is also worth noting that the Soft WTO scenario and “Simple” mix give approximately the same final bound and applied tariff for developing countries (17.2 and 6 for the Soft and 18.5 and 6.2 per cent for “Simple”). Even though different formulas (Swiss for Soft and “linear, harmonizing” for “Simple”) are used the results are similar.

None of the partial approaches have much impact on domestic tariff peaks, defined here as the number of tariff lines in excess of three times the national average. In most cases the number of peaks actually rises following partial liberalization because the average rate has fallen and the most sensitive tariffs (often the highest) are exempted from reduction. This is particularly the case for developing countries under the Hard scenario, where the percentage of peaks exceeding the average rises from the initial 3.5 to 4.9 per cent (see table 7).

Table 6b. Bound and applied tariffs on non-agricultural products after applying the four scenarios
(initial universe of bound tariff lines)

Scenario	Tariffs		Tariffs	
	Simple averages		Weighted averages	
	Bound	Applied	Bound	Applied
	%	%	%	%
Developed countries				
Initial rate	5.7	4.7	2.8	2.9
Free trade	0.0	0.0	0.0	0.0
Hard	0.8	0.6	0.4	0.4
Soft	1.2	0.8	0.6	0.6
Simple	3.7	2.3	1.7	1.6
Developing countries				
Initial rate	29.0	11.1	12.6	8.1
Free trade	0.0	0.0	0.0	0.0
Hard	6.1	4.1	2.6	2.6
Soft	19.4	9.7	8.4	6.0
Simple	22.1	10.1	9.6	6.2
Least developed countries				
Initial rate	46.3	12.6	11.9	13.6
Free trade	0.0	0.0	0.0	0.0
Hard	46.3	12.6	11.9	13.6
Soft	46.3	12.6	11.9	13.6
Simple	46.3	12.6	11.9	13.6

Source: derived from UNCTAD TRAINS database.

**Table 7. Bound and applied tariff peaks
as percentage of tariff lines after liberalization**

Scenario	Bound %	Applied %
Developed countries		
Initial rate	8.2	9.9
Free trade	0.0	0.0
Hard	12.2	10.1
Soft	7.0	11.8
Simple	7.0	10.6
Developing countries		
Initial rate	0.4	3.5
Free trade	0.0	0.0
Hard	1.1	4.9
Soft	0.0	3.4
Simple	0.6	3.7
Least developed countries		
Initial rate	0.4	0.7
Free trade	0.0	0.0
Hard	0.4	0.7
Soft	0.0	0.7
Simple	0.4	0.7

Source: derived from UNCTAD TRAINS database.

Tariff escalation is reduced in developed and developing countries following partial liberalization (table 8). All methods, except free trade, leave significant escalation between primary and intermediate goods, but under the Hard and Soft scenarios the average trade-weighted applied tariffs on final goods are lower than on intermediate goods. The Simple scenario has less impact in reducing escalation, as the harmonizing mechanism is a cap at three times the average tariff as opposed to the Swiss formula.

Finally, the apparent discrimination in developed countries on goods from developing countries is diminished. It will be recalled from table 5 that imports into developed countries faced average tariffs of

2.1 per cent and 3.9 per cent if from developed and developing countries respectively. Under the Simple scenario the averages are about equal, at 1.5 and 1.7 per cent respectively, but under the Hard and Soft scenarios the developing country exporters have an advantage, with average tariffs of 0.7 and 0.8 per cent under these two scenarios. By contrast, developed country tariffs on goods from other developed countries are reduced only to 1.2 and 1.1 per cent. It seems that the major sectors driving these results are petroleum and coal products, which are reduced under all three partial scenarios, and textiles and apparel, where tariffs facing developing countries are substantially reduced under the Soft and Hard scenarios.

Table 8. Tariff escalation: Impact of partial liberalization on trade-weighted applied tariffs

	Primary	Intermediate	Final
	%	%	%
Developed countries			
Initial rate	0.4	3.0	3.4
Free trade	0.0	0.0	0.0
Hard	0.1	0.5	0.4
Soft	0.1	0.8	0.7
Simple	0.3	1.5	1.9
Developing countries			
Initial rate	6.0	9.1	8.0
Free trade	0.0	0.0	0.0
Hard	2.8	3.3	2.4
Soft	4.9	6.7	5.9
Simple	5.1	6.9	6.2
Least developed countries			
Initial rate	6.9	18.0	12.0
Free trade	0.0	0.0	0.0
Hard	6.9	18.0	12.0
Soft	6.9	18.0	12.0
Simple	6.9	18.0	12.0

Source: derived from UNCTAD TRAINS database and UN COMTRADE database. Tariffs are trade-weighted applied tariffs.

7. SIMULATING ALTERNATIVE SCENARIOS

Simulations are undertaken using the GTAP 5.3b database, modified by the authors to take greater account of preferences and the percentage or *ad valorem* equivalent of specific rates of duty (mainly affecting the agricultural sector, which is treated as a single sector in this paper). The original database has 78 countries and regions and 65 sectors that are aggregated as shown in the Appendix tables for the present study. GTAP is a general equilibrium model that includes linkages between economies and between sectors within economies. Industries are assumed to

be perfectly competitive and are characterized by constant returns to scale. Imports are distinct from domestically produced goods as are imports from alternative sources. Primary factors (capital, labour and land) are available in fixed amounts and are fully utilized; that is, there is no unemployment and the labour market adjusts through changes in wages (although we vary this assumption later). Labour and capital can move between all sectors, whereas land is mobile only within the agricultural sectors. The database includes tariffs, export subsidies and taxes, and subsidies on output and on inputs such as capital, labour and land. Border measures are specified bilaterally, so

that the impact of preference erosion can be ascertained. UNCTAD has modified the bilateral tariff data to better reflect existing preferences.

In this type of model, the results are driven by improvements in the terms of trade (e.g. export prices rising faster than import prices) and the efficiency effects of improvements in the allocation of resources between different activities. The results are based on a comparative static analysis, comparing a pre- and post-liberalization situation, without taking account of transition periods or adjustment costs, such as we discussed earlier. As we shall see, while the overall adjustments may be minor, the effects on specific sectors may be quite significant. We have no information that would allow us to take account of any social benefits or externalities – divergences between social costs and benefits (some of which are so-called non-trade concerns) that derive from current intervention in favour of the industrial sector. These factors need to be properly evaluated and taken into account in policy design in the context of any trade or sectoral policy changes resulting from the WTO negotiations or another process.

The quantitative analysis presented in the paper is also limited in that it is not able to take account of all distortions in production and trade. For example, SPS and TBT barriers appear to be of increasing importance, especially in the agricultural sector. Similarly, the paper is unable to address concerns about market entry, which is not always assured even when formal barriers are lifted. In some instances, large marketing companies have a dominant position in the trade of certain products and may capture some of the benefits that would otherwise be passed to producers in the developing countries. Furthermore, in the services sector, our estimates of impediments to trade may not necessarily reflect the actual situation.

8. THE IMPACT OF TRADE LIBERALIZATION

Trade negotiators obviously have a number of objectives in WTO negotiations and these have evolved to take greater account of broader economic and social objectives, as indicated by the Doha Declaration. Nevertheless, the immediate interest of negotiators is in trade flows. Changes in export revenues are a guide to the potential benefits from the negotiations. Although the main reason for exporting goods and services is to purchase imports, an increase in imports is commonly seen as a negative impact because it displaces domestic production. This is a problem if the displaced production is in politically sensitive sectors, by virtue of location, culture or dependence. A third concern is tariff revenues. Many Governments rely heavily on tariffs for government revenues, and the need to replace tariff revenue with alternative sources can be a costly burden for Governments with limited administrative capacity. A final concern is the labour market. A flood of imports may cause an increase in unemployment or a fall in the wage rate, with undesirable social and political consequences. For these reasons we assess each scenario in terms of export revenues, imports, government revenues, welfare, sectoral output and real wages.

Export revenues

The estimated effects on export revenues from the implementation of the four scenarios outlined earlier are shown in terms of percentage increases in table 9. In general, the degree of ambition can be assessed by the global change in revenues, with more ambitious scenarios generating a greater change in revenues. However, this does not necessarily apply for individual sectors or countries. There are increases in exports in all regions in all partial liberalisation scenarios.¹⁵ Under the less ambitious Simple

¹⁵ There are also increases in global export revenues in all sectors, with the exception of the resources sector (coal, oil, gas and minerals).

Table 9. Change in export revenue relative to base

	Free trade	Hard	Soft	Simple
	%	%	%	%
Andean Pact	4.1	2.7	1.3	1.1
Central America & Caribbean	8.3	5.0	1.0	1.0
Canada	0.8	0.9	0.9	0.6
Central and Eastern Europe	5.6	4.5	3.2	3.4
China	9.8	10.0	7.7	5.5
European Union 15	1.6	1.1	0.7	0.7
Indonesia	5.2	4.3	2.8	1.3
India	20.5	14.9	5.3	3.9
Japan	6.5	5.4	3.6	2.4
Middle East	2.9	2.2	0.9	1.0
Mercosur	15.0	9.6	4.4	3.7
North Africa	10.0	8.3	2.1	2.0
Oceania	4.7	3.6	2.9	1.5
Other Western Europe	1.8	1.8	1.5	1.4
Rest of Asia	8.9	7.5	4.9	3.7
Rest of world	6.4	5.3	3.7	3.1
South Asia	12.0	6.3	4.5	2.7
South-East Asia	3.3	2.1	0.9	0.5
Sub-Saharan Africa	4.8	2.5	0.8	0.9
United States	5.6	4.5	3.5	2.4
South Africa	5.7	4.3	2.1	1.2
World	4.4	3.5	2.2	1.7

Source: GTAP simulations.

scenario the change in global export revenues at world prices is \$100 billion. Of this, the increase in developing country exports is \$51 billion, and of this \$35 billion is due to an expansion of Northern markets, while a further \$17 billion is attributed to South-South trade.

The four scenarios generate changes in export revenues in proportion to their tariff reduction (see table 9), with the Soft and Simple scenarios delivering around a third of the export gains of free trade. This does not hold for all regions, of course, but depends on the distribution of cuts in protection and each region's competitiveness in supplying the goods to liberalized markets. Suppliers of temperate agricultural products (Oceania) and textiles (China, South Asia) are favoured.

Imports

Most countries contemplating liberalization are concerned about being flooded by imports (table 10). In fact, in our simulation results, imports tend to follow the pattern of exports, with a large increase in imports, as in China (6.8 per cent under the Simple scenario), being accompanied by an almost corresponding increase in exports (5.5 per cent). The change in imports equals the change in exports globally but not necessarily for each region, where the change in the balance of payments resulting from changes in the current account needs to be accommodated by corresponding changes in the capital account.

Table 10. Change in imports relative to base

	Free trade	Hard	Soft	Simple
	%	%	%	%
Andean Pact	5.0	2.8	0.8	0.5
Central America & Caribbean	11.1	6.0	0.7	0.8
Canada	0.1	0.5	0.8	0.4
Central and Eastern Europe	8.5	6.9	5.2	5.4
China	12.1	11.7	9.1	6.8
European Union 15	0.6	0.5	0.4	0.4
Indonesia	5.6	4.4	2.8	1.1
India	29.2	20.9	6.4	4.6
Japan	6.5	6.6	5.6	4.1
Middle East	5.5	3.5	1.6	1.8
Mercosur	14.4	9.1	3.4	2.8
North Africa	18.2	13.2	2.7	2.4
Oceania	4.7	3.4	2.9	1.2
Other Western Europe	2.1	2.3	2.2	2.0
Rest of Asia	10.6	9.0	5.7	4.4
Rest of world	8.1	5.5	4.0	3.4
South Asia	15.6	7.4	4.6	2.4
South-East Asia	4.4	2.7	1.0	0.5
Sub-Saharan Africa	7.6	3.1	0.1	0.3
United States	2.5	2.4	2.0	1.2
South Africa	9.9	6.8	2.6	1.0
World	4.4	3.5	2.2	1.7

Source: GTAP simulations.

As expected, the changes in imports are all positive in the partial liberalization scenarios. Changes in import levels in the Andean countries, Central America and the Caribbean, and sub-Saharan Africa are quite moderate. However, China, Central and Eastern Europe, India and Japan show quite substantial increases in imports, which reflect the degree of liberalization in these regions. The largest increase in imports – nearly 30 per cent – would occur in India under the Free trade scenario.

As a broad generalization across all scenarios, subject to some exceptions,

developing countries' imports will increase proportionately more than those of the developed countries and regions.

Government revenues

Many developing countries are concerned that trade liberalization will have a significant adverse impact on government revenues because tariff revenues constitute a substantial contribution to public revenue. The importance of tariff revenues to government revenues is shown as the ratio of tariff revenue to government revenue in table 11.¹⁶ Clearly, developing countries are

¹⁶ These data, from the GTAP database, are broadly consistent with the World Bank data presented in Table 1. The GTAP data are based on tariff rates and trade flows and thus may be an overestimate because of smuggling, administrative problems in collection and various exemptions.

Table 11. Initial revenues and change relative to base

	Initial government revenues \$m	Initial tariff revenues \$m	Ratio of tariff to total revenue	Free trade %	Hard %	Soft %	Simple %
Andean Pact	32 738	5 024	0.15	-86	-41	-7	-6
Central America & Caribbean	48 424	15 367	0.32	-86	-42	-5	-4
Canada	125 694	4 332	0.03	-57	-50	-47	-30
Central and Eastern Europe	63 922	15 004	0.23	-76	-64	-51	-49
China	118 821	24 872	0.21	-82	-72	-54	-51
European Union 15	1 479 046	27 858	0.02	-57	-50	-47	-29
Indonesia	14 619	2 666	0.18	-80	-31	-7	-8
India	50 341	11 936	0.24	-87	-58	-13	-12
Japan	407 959	21 679	0.05	-61	-59	-59	-50
Middle East	142 323	12 341	0.09	-80	-54	-30	-29
Mercosur	174 578	16 576	0.09	-83	-51	-16	-15
North Africa	27 693	10 020	0.36	-84	-55	-15	-11
Oceania	79 515	3 031	0.04	-92	-56	-43	-8
Other Western Europe	67 423	5 550	0.08	-41	-40	-40	-38
Rest of Asia	87 896	12 978	0.15	-78	-60	-30	-26
Rest of world	110 574	11 923	0.11	-66	-34	-17	-16
South Asia	10 532	3 887	0.37	-84	-26	-5	-7
South-East Asia	47 877	13 271	0.28	-85	-45	-10	-10
Sub-Saharan Africa	24 943	6 733	0.27	-85	-33	-7	-7
United States	1 201 779	20 866	0.02	-83	-74	-70	-40
South Africa	28 979	2 128	0.07	-84	-59	-18	-10
Total	4 345 675	248 043	0.06	-76	-55	-35	-27

Source: GTAP database and simulations.

much more dependent on this source. Country-level data would reveal even more extreme examples for individual countries, especially for small island developing States that are highly dependent on trade.

The free trade scenario implies that tariff revenues of \$248 billion would be reduced by 76 per cent. Revenues are maintained from tariffs outside the non-agricultural sector. The simulation results indicate that implementation of the Simple scenario would result in an estimated 27 per

cent decline in global tariff revenues from \$248 billion (see table 11). The declines vary significantly across regions, from next to nothing in Central America and the Caribbean to around 50 per cent in China, Central and Eastern Europe and Japan. On this criterion, both the Soft and Simple scenarios would be preferred by developing countries to the more ambitious alternatives. For developed countries the revenue losses under the Hard and Soft scenarios are similar, whereas the Simple scenario results in fewer revenue losses.

Welfare

An overall impact of the gains and losses from liberalization can be captured as welfare, shown in table 12 for each region. Changes in welfare at a national level emanate essentially from two sources: allocative efficiency gains and terms-of-trade effects. The first reflects the benefits of making better use of resources – in effect, getting something for nothing. Terms-of-trade effects refer to gains and losses due to changes in prices of imports and exports. These are important nationally, but sum to zero globally because an increase in the price of exports means that importers have to pay more. Under the Simple scenario, the global gains sum to \$28 billion, with \$9.4 billion accruing to developing

countries. A large part of the remaining gains accrues to Japan. Amongst the losing regions, Canada suffers as the value of its preferential access to the United States is eroded, while sub-Saharan Africa experiences a decline in terms of trade driven by falls in the export prices of services and primary and processed agricultural products, areas that are outside the NAMA negotiations. Sub-Saharan Africa, however, benefits from more ambitious liberalization as the allocative efficiency gains start to outweigh the terms-of-trade losses.

Free trade produces a scattering of winners and losers. Under this scenario the major beneficiaries are Japan, which out-competes the United States and the European Union in the services area; China, which

Table 12. Change in welfare relative to base

	Free trade	Hard	Soft	Simple
	%	%	%	%
Andean Pact	0.05	0.14	0.13	0.07
Central America & Caribbean	0.08	0.16	0.18	0.20
Canada	-0.16	-0.09	-0.06	-0.04
Central and Eastern Europe	-0.18	-0.23	-0.20	-0.12
China	0.30	0.31	0.36	0.02
European Union 15	0.05	0.04	0.00	0.04
Indonesia	0.27	0.37	0.42	0.13
India	0.20	0.34	0.34	0.15
Japan	0.47	0.41	0.33	0.31
Middle East	0.08	0.10	0.06	0.05
Mercosur	0.01	0.05	0.08	0.06
North Africa	0.25	0.33	0.19	0.17
Oceania	0.09	0.13	0.14	0.16
Other Western Europe	0.41	0.42	0.33	0.28
Rest of Asia	1.02	0.80	0.62	0.41
Rest of world	0.21	0.24	0.26	0.21
South Asia	0.46	0.52	0.60	0.21
South-East Asia	0.44	0.57	0.55	0.24
Sub-Saharan Africa	-0.08	0.09	-0.08	-0.03
United States	0.00	0.00	-0.02	0.01
South Africa	0.25	0.16	0.18	0.09
World	0.15	0.14	0.11	0.10
Total in \$m	42 417	40 961	31 947	27 665

Source: GTAP simulations. Welfare is expressed as a percentage of initial GDP.

benefits from allocative efficiency gains; and the rest of Asia. For Japan, these gains reflect terms-of-trade effects, with rising export prices for electronics, motor vehicles, other metals and services exports. Sub-Saharan Africa loses in this scenario because of a deterioration in its terms of trade, particularly falling export prices of services. Canada and Central and Eastern Europe have preferential access to large markets and MFN liberalization erodes their preferences, resulting in negative welfare impacts.

The \$9.4 billion in welfare gains to developing countries in the Simple scenario represents a small but not insignificant addition of 0.10 per cent to GDP each year. After compound growth for ten years the additional gains amount to \$96 billion, worth \$60 billion in today's terms.¹⁷ This may be seen as a useful if modest contribution to poverty reduction, although no account is taken of the adjustment process or any externalities from current intervention.

Sectoral output

Policy makers concerned with structural adjustment will wish to take account of potential changes in the value of output in specific sectors, for which the simulation results under the various scenarios are shown by sector and region in Appendix tables A6–A9. Global output, which is limited by constant endowment of the factors land, labour and capital, is valued in the initial database at \$54,035 billion, including taxes and subsidies (see table A5 for a breakdown of initial values). In absolute terms, the largest falls over the partial liberalization scenarios are in iron and steel (\$2–4 billion) and petroleum and coal products (\$5 billion). Among the more significant increases is that in the output of services (\$7–9 billion). If the tariff cuts are large enough to significantly

reduce applied rates in developing countries, as in the free trade scenario, there will be a big shift out of motor vehicles into services. The most significant reductions are estimated to occur in China (\$2–3 billion).

Perhaps of greater interest are the regional changes in sectoral output. In the Simple scenario, the largest fall in output is in excess of 20 per cent in the leather and petroleum and coal products sectors in Japan. The rest of the world (including the Russian Federation and Central Asia) and the rest of South Asia (i.e. excluding India) are projected to suffer a decline in the motor vehicles sector of 12 and 13 per cent, respectively. For the rest of South Asia (i.e. other than India), this erosion of output rises to 55 per cent under the Hard scenario, but falls back a little to 48 per cent under the free trade scenario, where reductions are spread more evenly. Indeed, the percentage cuts do not increase regularly across scenarios as the level of ambition rises, because the cuts in applied tariffs take effect unevenly, depending on the gap between bound and applied rates and the inclusion or exclusion of specific sectors under different scenarios.

On the plus side, the greatest changes in output following the Simple scenario are around 30 per cent in Indonesian leather, and 25 and 13 per cent in the rest of Asia (mainly the Republic of Korea and Taiwan Province of China) in lumber and petroleum and coal products, respectively. These changes are similar under a free trade scenario. In absolute terms, the largest positive effect is felt in the Japanese motor vehicles and chemicals, rubber and plastics sectors. The sector needing to make the most adjustment is the Japanese petroleum and coal products. This sector has high duties on these products, imported from the Middle East and the rest of Asia.

¹⁷ At a 5 per cent discount rate, \$59 billion = \$96 billion / (1.05)¹⁰.

Table 13. Change in real unskilled wage rates relative to base

	Free trade %	Hard %	Soft %	Simple %
Andean Pact	1.9	0.5	0.2	0.1
Central America & Caribbean	2.7	1.5	0.4	0.4
Canada	0.4	0.3	0.3	0.2
Central and Eastern Europe	3.2	2.8	2.1	2.2
China	2.5	2.7	2.1	1.6
European Union 15	0.3	0.3	0.2	0.2
Indonesia	1.3	1.3	1.1	0.5
India	2.3	2.1	0.7	0.5
Japan	1.3	1.3	1.2	1.0
Middle East	1.5	1.1	0.6	0.6
Mercosur	0.9	0.3	0.1	0.1
North Africa	3.0	2.2	0.6	0.5
Oceania	0.8	0.6	0.5	0.3
Other Western Europe	1.5	1.6	1.5	1.4
Rest of Asia	2.6	2.2	1.4	1.1
Rest of world	0.9	0.6	0.5	0.3
South Asia	2.9	1.5	1.0	0.6
South-East Asia	2.9	2.0	0.8	0.5
Sub-Saharan Africa	2.3	1.0	0.1	0.1
United States	0.3	0.2	0.1	0.1
South Africa	1.7	1.1	0.5	0.3

Source: GTAP simulations.

Among developing countries, the sectors likely to suffer most dislocation following the Simple scenario are motor vehicles, chemicals, rubber and plastics and other manufactures in China, amounting to \$13 billion in forgone output. However, of these sectors, only the motor vehicles sector represents a significant percentage (16 per cent). In the sub-Saharan African region the changes are modest under the Simple scenario, not exceeding 4 per cent in any sector. Under the Hard scenario the percentage changes would rise to -22 per cent for leather and -8 per cent for textiles and apparel. The largest dollar value falls are in processed agriculture and petroleum and coal products. Almost all the gains are expected to be in services and transport equipment other than motor vehicles.

Real wages

One way of looking at the potential impact of the trade negotiations on the labour market is through estimated changes in real wages. In the standard GTAP model closure, labour is assumed to be fully employed, with costless relocation between sectors. This is obviously an abstraction, but the changes in wage rates give an indication of the structural changes that are necessary in order to maintain the existing level of employment. This is useful for comparison between sectors, if not a measure of the absolute costs.

Generally, trade liberalization has the effect of increasing wages for both unskilled workers (shown in table 13) and skilled workers. The returns to capital also tend to

move with wage rates, reflecting the assumed substitutability of factors in production. The wage rates reflect the demand for the good produced by these factors. The results suggest that there is a relative fall in demand for good and services produced by unskilled labour in the developed countries, notably the United States (driven by estimated changes in protection in the textiles and clothing sector), and the European Union (motor vehicles and apparel). Nonetheless, real wages increase rather than fall in these regions, even though other countries gain more. Demand for unskilled labour in the leather, textile and apparel sectors in the United States would fall

by an estimated 5 per cent, 2 per cent and 4 per cent, respectively, even under the moderate Simple scenario, which illustrates why liberalization is a political problem for some countries. However, in the United States there is an estimated increase in demand in primary and processed agriculture and electronics. On the other hand, we estimate that wage rates would increase in Japan, where labour costs in the motor vehicles sector are low compared with the United States and the European Union. This sector is estimated to expand by 3 per cent in Japan, much more than in its main competitors.

Table 14. Impact of flexible labour force, Simple scenario

	Use of unskilled labour with flexible labour force %	Welfare with fixed labour force \$m	Welfare with flexible labour force \$m
Andean Pact	0.27	201	449
Central America & Caribbean	0.51	1 027	1 650
Canada	0.00	-229	-206
Central and Eastern Europe	3.27	-431	3 734
China	2.16	246	8 431
European Union 15	0.00	3 096	2 400
Indonesia	0.41	259	447
India	0.46	641	1 171
Japan	0.00	12 948	12 822
Middle East	0.91	300	2 506
Mercosur	0.21	742	1 627
North Africa	0.67	355	1 043
Oceania	0.00	777	819
Other Western Europe	0.00	1 118	1 194
Rest of Asia	1.95	2 963	7 879
Rest of world	0.52	1 736	3 747
South Asia	0.00	250	209
South-East Asia	0.77	1 045	1 912
Sub-Saharan Africa	0.15	-62	94
United States	0.00	558	293
South Africa	0.54	126	447
Total		27 665	52 655

Source: GTAP simulations. The Simple scenario with flexible labour force assumes endogenous unskilled labour and fixed real wages in developing countries. Use of unskilled labour does not change in the standard Simple scenario.

In developing countries the demand for unskilled labour increases significantly in many developing countries, owing to increased demand for unskilled labour-intensive products such as textiles. This has implications for poverty reduction, it being assumed that the poor are predominantly unskilled and in agriculture.

To assess the impact of trade liberalization on employment in developing countries, we re-estimated the Simple scenario, holding the real wage of unskilled labour fixed (this allows for the movement in nominal wages) and allowing for adjustment

in the level of employment in developing countries. The underlying assumption here is that there exists a pool of unspecified size of unemployed workers that can come into the workforce if demand for their services increases. Alternatively, liberalization might lower the demand for unskilled workers in some countries and overall employment would fall. In many countries, wages are fixed, at least downwards, so that in reality the adjustment occurs in quantity rather than price.¹⁸ The results indicate that in these countries up to 3 per cent more labour would be employed, and, as a result, welfare increases. In the cases of Central and Eastern

Table 15. Use of unskilled labour in selected sectors, Simple scenario

	Motor vehicles %	Petroleum and coal products %	Leather %	Textiles %	Wearing apparel %
Andean Pact	-1.34	0.44	0.02	0.31	0.48
Central America & Caribbean	-0.37	0.94	1.52	2.62	3.08
Canada	0.06	-0.09	-2.18	-1.27	-2.24
Central and Eastern Europe	3.99	3.15	4.20	1.84	3.29
China	-2.95	2.21	5.09	2.32	4.40
European Union 15	0.26	0.22	0.35	-0.28	-0.69
Indonesia	0.41	1.16	5.94	0.52	0.76
India	0.76	1.58	2.32	1.04	2.17
Japan	0.80	-7.64	-7.27	1.01	-0.85
Middle East	0.95	2.26	-1.30	0.20	-0.43
Mercosur	0.27	0.26	-0.05	0.16	0.17
North Africa	-1.59	1.64	0.60	0.39	0.41
Oceania	-0.69	0.01	-0.75	-0.96	-0.19
Other Western Europe	0.06	-0.45	0.00	-0.23	-0.87
Rest of Asia	2.05	6.08	3.54	3.16	2.36
Rest of world	-3.88	0.92	0.00	0.97	0.66
South Asia	-3.76	0.97	-0.85	0.44	1.50
South-East Asia	0.50	1.73	0.09	0.88	1.41
Sub-Saharan Africa	0.15	0.51	-0.36	-0.30	0.08
United States	-0.02	-0.01	-1.06	-0.55	-1.03
South Africa	0.52	0.59	-1.92	0.23	1.19

Source: GTAP simulations. Simple scenario with flexible unskilled labour force.

¹⁸ This is simulated in GTAP by making the quantity of unskilled labour endogenous and fixing the real factor price of the endowment (i.e. real wages). An example of modelling employment within GTAP is given by Kurzweil (2002).

Europe and sub-Saharan Africa, the welfare results are reversed. The change in global welfare is almost doubled, and most of the gains from increased employment are captured locally. Welfare gains are diminished in the major developed countries, which are assumed not to be able to expand their labour use.

These results illustrate that the use of endowments such as labour and capital has a far greater impact on welfare than the allocative efficiency gains or terms-of-trade effects. While the economy-wide effects of liberalization may be to increase demand for labour, these effects are not uniform across sectors. Changes in unskilled labour use in the most sensitive sectors are shown for each region in table 15. The largest negative changes are in Japan (minus 7 per cent). In general, the labour use changes are moderate, but this reflects the level of aggregation of both countries and sectors. A finer disaggregation would reveal greater changes, both positive and negative.

9. IMPLICATIONS AND CONCLUSIONS

Given these estimated potential impacts on exports, imports, government revenues, output, real wages and labour use, what can be said about the best course of action for developing countries? Any generalized policy strategy may be rather difficult to establish since developing countries are not entirely homogeneous: they are all at different stages of development and have different resource endowments. Moreover, individual Governments will have different ideas about the social value of trade and sectoral policy interventions. Finally, policy strategies are difficult to prescribe because liberalization has positive and negative effects, in both the long and short run, and it is not clear what weight policy makers attach to these various effects. The literature suggests that there may be negative

effects in the short run associated with transitional adjustment costs and benefits in the long run following improved allocation of resources. While these adjustment costs may be moderate in the aggregate, our analysis shows that there are large variations in output across regions and sectors.

The potentially important initial costs of adjustment, especially in sectors with political sensitivity, may well be perceived as great enough to deter many policy makers from rushing to follow the liberalization path. Experience of national reforms also suggests that economic and social costs may be unpredictable and some caution seems to be indicated.

Most of the discussion about costs of adjustment is concerned with unemployed labour rather than land or capital, and so policies enhancing the mobility of labour will lower the costs of adjustment. Moving labour out of some sectors has proved difficult because of the absence of alternative industries in the proximity or non-transferability of skills. Fisheries are one example, where coastal towns are dependent on one industry and seafaring skills are not easily transferred to land. However, in developing countries large sectors of the population are employed in agriculture, and a transfer of labour into the unskilled textiles sector in the same district may be more manageable, at least in some cases. For this reason, liberalization of the textiles and apparel sectors is especially important for many developing countries. For those developing countries with an educated workforce, services provide an important growth sector, as India has shown in the provision of software and various back-office services. The regional differences in the costs of services tend to be greater than the differential in the cost of goods, and so there are potentially greater gains from liberalizing this sector. To reduce adjustment costs and other risks, an obvious approach is to phase in adjustment so that capital is replaced at

the rate of depreciation and labour is relocated or retrained over a manageable time frame. Developed countries or the international finance institutions may wish to consider providing some financial assistance to help put in place programmes (social safety nets, training, etc.) and institutions to facilitate the adjustment process. Longer-term programmes aimed at improving infrastructure and supply capacity are important but may not be sufficient to respond to adjustment needs where the focus is more likely to be on retraining and reinsertion, as well as some form of income replacement for those displaced by change.

As noted, for the present study, the GTAP database has been augmented to include impediments to services where the data are available, but more needs to be done to improve the data to correctly identify the available opportunities for developing countries.

Regarding fiscal balance, our analysis shows that tariff revenues fall in most countries, and there is a need to broaden the tax base away from imports. This should be manageable for the majority of countries, particularly following moderate liberalization, such as under the Simple scenario, but a number of countries that are highly dependent on tariff revenues are likely to need to modify their tax regimes and administration, and this cannot be done overnight. If administrative requirements constrain broadening the base, then, in the absence of externalities associated with specific sectors, a superior tariff structure is likely to be one with relatively flat rates, such as a fixed across-the-board tariff. This removes distortions between traded goods while preserving revenues and removes some of the incentives to offer unofficial

administrative fees. In practice, other than “free trade” economies such as Singapore and Hong Kong (China), there are no flat rate economies because almost all countries are now members of one or more regional trade agreements.

As noted in the paper, our data include the main preferences applicable under unilateral schemes such as GSP, as well as under most regional trade agreements. On the basis of our results, there are no overall negative trade effects and only a small welfare loss in sub-Saharan Africa. However, as in the sectoral analysis, it is likely that there would be more dramatic effects in specific countries for specific products, and this is something that needs greater attention.¹⁹

Of the four scenarios presented here, the Hard scenario is about twice as ambitious in terms of tariff-cutting as the more conservative Soft and Simple scenarios. The Hard scenario opens up the important EU, Japanese and US markets by twice as much. However, there are fewer gains for developing countries, at least following adjustment. If means could be found to help developing countries meet the financial and administrative costs of adjustment, through the building of social safety nets, retraining programmes and so on, the more ambitious scenarios would have some advantages. However, if developing countries remain concerned about the potentially important disruptive, short-term effects of liberalization, they may prefer to move more cautiously. Indeed, pushing too hard, too fast could even endanger reform programmes. Between the two more conservative scenarios (Soft and Simple), the impacts are similar, but, as the name suggests, the Simple scenario has the virtue of simplicity and transparency. A linear cut with a cap – perhaps applied after

¹⁹ Unpublished estimates by the authors using UNCTAD’s Agricultural Trade Policy Simulation Model (ATPSM) show some important losses for Mauritius and Zimbabwe in the EU market, with Mauritius suffering some important trade losses in the sugar sector. Our estimates show that the welfare gains in the EU would be more than sufficient to compensate the losers for such losses.

the application of a general formula in order to reduce the incidence of tariff peaks - is much easier to understand and implement than any measure based on individual national averages. The kind of linear reduction examined in this paper (a cut of some 50 per cent in developed country bound rates and a 36 per cent reduction in developing country

rates) would already be more ambitious than what has been achieved in previous GATT rounds, and, while it would entail genuine liberalization in developing countries (even in average applied rates), it would not necessitate onerous adjustments or fiscal reinstrumentation.

REFERENCES AND BIBLIOGRAPHY

- Azhar, A.K.M. and Elliott, R.J.R. (2001). “On the measurement of trade induced adjustment”, University of Manchester Discussion Paper 309, http://les.man.ac.uk/ses/research/Discussion_paper_0309.pdf.
- Bacchetta, M. and Jansen, M. (2003). “Adjusting to trade liberalisation: The role of policy institutions and WTO disciplines”, Special Studies 7, World Trade Organization, Geneva.
- Baldwin, R.E., Mutti, J. and Richardson, J.D. (1980). “Welfare effects on the United States of a significant multilateral tariff reduction”, *Journal of International Economics* 10, pp. 405–423.
- Brown, D., Deardorff, A. and Stern, R. (2001). “CGE modeling and analysis of multilateral and regional negotiating options”, University of Michigan School of Public Policy Research Seminar in International Economics, Discussion Paper No. 468.
- Caballero, R. and Engel, E. (2003). “Adjustment is much slower than you think”, Discussion Paper No. 1430, Yale University, and Working Paper No. 03-25, Massachusetts Institute of Technology, Crowles Foundation Yale University, Massachusetts Institute of Technology, New Jersey and Cambridge, Massachusetts.
- Davidson, C. and Matusz, S. (2001). “On Adjustment Costs”, Michigan State University, Michigan.
- Ebrill, C. (2003). “Trade taxes are better?!? Short answer: No”, International Conference on Policy Modeling”, Istanbul, Turkey, 3–5 July.
- Finger, J. and Schuknecht, L. (1999). “Market access advances and retreats: The Uruguay Round and beyond”, World Bank, Washington, DC, World Trade Organization, Geneva.
- GTAP <http://www.gtap.agecon.purdue.edu/>.
- Harrison, A and Revenga, A. (1995). “Factor markets and trade policy reform”, World Bank manuscript as cited in Matusz and Tarr (1999).
- International Monetary Fund (2000). *Government Finance Statistics Yearbook* (database on CD-ROM – 2003), Washington DC.
- Keen, M. and Lightart, J.E. (1999). “Coordinating tariff reduction and domestic tax reform”, IMF Working Paper WP/99/93, Washington, DC.
- Kurzweil, M. (2002). “The need for a ‘complete’ labor market in CGE modeling”, downloadable from www.gtap.org.

- Laird, S. (1998). "Multilateral approaches to market access negotiations", WTO-TPRD Staff Working Paper TPRD-98-02, Geneva.
- Laird, S., Fernández de Córdoba, S. and Vanzetti, D. (2003). "Market access proposals for non-agricultural products", in Mbirimi, I., Chilala, B. and Grynberg, R. (eds.) "From Doha to Cancún: Delivering a development round", Commonwealth Secretariat, Economic Paper 57, London.
- Magee, S. (1972). "The welfare effects of restrictions on the U.S. trade", *Brookings Papers on Economic Activity* 3, 645–701.
- Martin, W. (2001). *Trade policies, developing countries, and globalization*, World Bank, Washington, DC.
- Melitz, M. (2002). "The impact of trade on intra-industry reallocations and aggregate industry productivity", Working Paper 8881, National Bureau of Economic Research, Cambridge, Massachusetts.
- Melo, J. de and Tarr, D. (1990). "Welfare costs of US quotas in textiles, steel and autos", *Review of Economics and Statistics* 72, pp. 489-497.
- Panagariya, A. (2002). "Formula approaches to reciprocal tariff liberalisation", in Hoekman, B., Mattoo, A. and English, P. (eds.), *Development, Trade and the WTO*, World Bank, Washington, DC.
- Papageorgiou, D., Choksi, A. and Michaely, M. (1990). *Liberalizing Foreign Trade in Developing Countries: The Lessons of Experience*, World Bank, Washington, DC.
- Rama, M. (2003). "Globalization and workers in developing countries", World Bank Policy Research Working Paper 2958, Washington, DC., http://econ.worldbank.org/files/23213_wps2958.pdf.
- Rodrik, D. (2001). "The global governance of trade as if development really mattered", UNDP, Geneva.
- Stern, R.M. (1976). "Evaluating alternative formulas for reducing industrial tariffs", *Journal of World Trade Law*, 10:50–64.
- Trefler, D. (2001). "The long and short of the Canada–US free trade agreement", NBER Working Paper 8293, May.
- UNCTAD (2003) *Back to Basics: Market Access Issues in the Doha Agenda*, UNCTAD/DITC/TAB/Misc.9, Sales No. E.03.II.D.4, Geneva.
- Welch, K., McMillan, M. and Rodrik, D. (2002). "When economic reform goes wrong: Cashews in Mozambique", CEPR Discussion Paper, <http://www.cepr.org/pubs/dps/DP3519.asp>.
- World Bank (2003). "World Development Indicators, 2003", available on CD-ROM, Washington, DC.

- WTO (2002). “WTO Members’ Tariff Profiles” – Note by the Secretariat – Revision, TN/MA/S/4/Rev.1, Geneva.
- WTO (2002). “Market Access for Non-Agricultural Products – Communication from the European Communities”, TN/MA/W/1, Geneva.
- WTO (2002). “Market Access for Non-Agricultural Products – Communication from India”, TN/MA/W/10 and TN/MA/W/10/Add.1-Add.3 (2003), Geneva.
- WTO (2002). “Market Access for Non-Agricultural Products – Communication from the European Communities”, TN/MA/W/11, TN/MA/W/11/Add.1/Corr.1 (2002) and TN/MA/W/11/Add.1-Add.2 (2003), Geneva.
- WTO (2002). “Market Access for Non-Agricultural Products – Revenue Implications of Trade Liberalisation – Communication from the United States”, TN/MA/W/18, TN/MA/W/18/Add.1 (2003) and TN/MA/W/18/Add.2 (2003), Geneva.
- WTO (2002). “Market Access for Non-Agricultural Products – Proposal of the People’s Republic of China”, TN/MA/W/20 and TN/MA/W/20/Corr.1 (2003), Geneva.
- WTO (2003). “Formula Approaches to Tariff Negotiations” – Note by the Secretariat – Revision, TN/MA/S/3/Rev.2, Geneva.
- WTO (2003). “Contribution by Canada, European Communities and United States”, JOB(03)/163, Geneva.
- WTO (2003). “Draft Elements of Modalities for Negotiations on Non-Agricultural Products”, TN/MA/35 and TN/MA/35/rev.1, Geneva.
- WTO (2003). “Preparations for the Fifth Session of the Ministerial Conference Draft Cancún Ministerial Text” – Note by the Secretariat – Revision”, JOB(03)/150, JOB(03)/150/Rev.1 and JOB(03)/150/Rev.2, Geneva.

APPENDIX

Table A1. Tariff revenues as percentage of government revenues (latest)

	%		%		%		%
Albania	15.5	Ecuador	11.3	Macao (China)	0.0	Sierra Leone	48.6
Algeria	10.9	Egypt	12.6	Madagascar	51.9	Singapore	1.6
Argentina	4.3	El Salvador	6.2	Malawi	16.3	Slovakia	1.2
Australia	2.6	Estonia	0.1	Malaysia	12.7	Slovenia	1.7
Austria	0.0	Ethiopia	26.0	Maldives	28.3	Solomon Islands	57.1
Azerbaijan	8.5	Fiji	21.5	Mali	12.0	Somalia	52.5
Bahamas	55.9	Finland	0.0	Malta	4.2	South Africa	2.9
Bahrain	5.9	France	0.0	Mauritania	30.1	Spain	0.0
Bangladesh	22.6	Gabon	17.4	Mauritius	25.0	Sri Lanka	11.3
Barbados	11.2	Gambia	42.8	Mexico	4.1	St. Kitts & Nevis	37.0
Belarus	6.1	Georgia	5.6	Mongolia	7.6	St. Lucia	26.5
Belgium	0.0	Germany	0.0	Morocco	15.9	St. Vincent and the Grenadines	40.3
Belize	49.0	Ghana	26.8	Myanmar	4.1	Sudan	29.0
Benin	56.0	Greece	0.1	Namibia	37.1	Suriname	22.9
Bhutan	1.9	Grenada	18.2	Nepal	27.2	Swaziland	51.9
Bolivia	5.1	Guatemala	15.0	Netherlands	0.0	Sweden	0.1
Botswana	12.4	Guinea	76.6	Netherlands Antilles	39.2	Switzerland	1.0
Brazil	2.9	Guinea-Bissau	37.1	New Zealand	1.7	Syrian Arab Rep.	9.9
Bulgaria	2.0	Guyana	9.0	Nicaragua	7.1	Tajikistan	15.9
Burkina Faso	14.3	Haiti	21.4	Niger	36.4	Thailand	10.4
Burundi	20.2	Honduras	42.4	Nigeria	6.6	Togo	35.4
Cameroon	28.3	Hungary	2.9	Norway	0.5	Tonga	48.4
Canada	1.3	Iceland	1.3	Oman	2.8	Trinidad & Tobago	5.7
Cayman Islands	42.2	India	18.5	Pakistan	12.2	Tunisia	11.5
Central African Republic	39.8	Indonesia	3.1	Panama	10.7	Turkey	0.9
Chad	15.3	Iran (Islamic Republic of)	7.4	Papua New Guinea	27.3	Uganda	49.8
Chile	5.3	Ireland	0.0	Paraguay	10.3	Ukraine	4.5
China	9.5	Israel	0.6	Peru	9.1	United Arab Emirates	0.0
Colombia	7.3	Italy	0.0	Philippines	17.2	United Kingdom	0.0
Comoros	54.0	Jamaica	7.2	Poland	1.8	United Republic of Tanzania	8.6
Congo	7.8	Japan	1.3	Portugal	0.0	United States	1.0
Costa Rica	4.6	Jordan	16.8	Rep. of Korea	6.4	Uruguay	2.9
Côte d'Ivoire	41.8	Kazakhstan	7.0	Rep. of Moldova	5.8	Vanuatu	36.2
Croatia	6.5	Kenya	13.8	Romania	3.1	Venezuela	7.0
Cyprus	3.8	Kuwait	2.8	Russian Federation	13.7	Viet Nam	18.1
Czech Republic	1.4	Kyrgyzstan	3.0	Rwanda	31.1	Yemen	10.3
Democratic Republic of the Congo	31.9	Latvia	1.2	Samoa	50.2	Zambia	15.8
Denmark	0.0	Lebanon	28.1	San Marino	1.4	Zimbabwe	20.5
Djibouti	6.0	Lesotho	47.7	Senegal	36.5		
Dominica	19.6	Liberia	34.6	Seychelles	42.6		
Dominican Republic	42.8	Lithuania	1.1				
		Luxembourg	0.0				

Source: World Bank (2003).

Table A2. Initial and final bound and applied tariffs by sector

	Trade-weighted average tariffs (%)							
	Bound rates				Applied rates			
	Initial	Hard WTO	Soft WTO	"Simple" mix	Initial	Hard WTO	Soft WTO	"Simple" mix
Unprocessed agriculture	9.31	3.09	9.62	10.61	7.15	2.76	5.46	6.12
Processed agriculture	6.49	0.48	2.70	5.64	6.62	0.67	1.80	4.23
Fisheries and forestry	3.22	0.64	6.51	7.81	2.55	0.67	0.92	1.79
Coal, oil, gas and other minerals	2.31	1.29	9.51	9.72	1.62	0.96	1.47	1.53
Petroleum and coal products	9.43	3.47	12.36	13.87	21.49	2.57	3.71	3.96
Lumber	4.23	1.42	4.24	4.77	2.99	1.35	1.96	2.19
Paper products	6.27	2.39	5.98	6.87	4.58	2.02	2.71	2.78
Textiles	12.08	0.07	11.35	15.28	11.83	0.56	4.63	7.93
Apparel	11.92	0.03	6.03	12.26	12.19	0.12	1.54	7.54
Leather	10.22	0.40	9.15	13.28	10.69	0.44	2.22	5.90
Chemicals, rubber and plastics	8.43	3.05	8.63	9.47	6.04	2.59	3.94	4.21
Iron & steel	7.04	2.82	8.80	9.39	5.58	2.53	3.74	3.87
Non-ferrous metals	5.64	1.38	6.16	6.58	4.08	1.26	2.93	3.21
Non-metallic manufactures	8.47	2.76	8.72	10.02	6.72	2.68	4.34	5.10
Fabricated metal products	9.40	3.32	9.60	10.63	7.07	3.46	5.20	5.50
Metal manufactures	7.14	1.44	6.97	7.84	4.69	1.18	2.94	3.32
Other manufactures	3.59	0.81	7.58	8.33	3.24	0.88	1.78	2.32
Motor vehicles	9.62	1.89	6.43	8.63	7.86	2.21	4.50	5.75
Transport other than motor vehicles	3.22	1.30	5.81	6.05	1.83	0.93	1.31	1.40
Electronics	3.47	0.02	3.53	4.04	2.25	0.05	0.99	1.22
Services and other activities	-	-	-	-	0.48	0.38	0.45	0.46

Source: GTAP database and UNCTAD calculations.

Table A3. The Four Scenarios

Proposal	Description	Formula	Sensitive products	Binding	Level of binding	Bind and cut	Sectoral elimination	B coefficient
1	Free Trade	Elimination of non-agricultural tariffs		100%				
2	Hard WTO	Girard Formula $T_1 = \frac{B \times ta \times T_0}{B \times ta + T_0}$	Top 5% among unbound lines with highest tariff revenue, or all unbound lines, whichever is less. ^a No cut or binding	95% of tariff lines	Twice applied rate	Yes	Yes	B = 0.5
3	Soft WTO	Girard Formula $T_1 = \frac{B \times ta \times T_0}{B \times ta + T_0}$	Top 5% among unbound lines with highest tariff revenue, or all unbound lines, whichever is less. No cut or binding	95% of tariff lines	Twice applied rate or 50%, whichever is higher	No	Developed yes Developing no	Developed B = 1 Developing B = 2
4	"Simple" mix	Developed a = 50% Developing a = 36%	Harmonizing Capping No tariff higher than 3 times tariffs national average	Top 5% among unbound lines with highest tariff revenue, or all unbound lines, whichever is less. No cut or binding	95% of tariff lines	No	No	No

^a For some countries the number of unbound tariff lines is less than 5% of their tariff universe, hence these unbound items are taken as sensitive products.

Table A4. Import tax revenues in the modified GTAP 5.3 database (\$m)

	USA	Canada	Central America	Andean Pact	Mercosur	European Union	Other Western Europe	Central and Eastern Europe	Middle East	North Africa	Sub-Saharan Africa	South Africa	China	Japan	India	Other South-Asia	Indonesia	Other South-East Asia	Rest of Asia	Oceania	All other regions	World
Unprocessed agriculture	448	110	688	279	348	3 416	1 106	558	592	607	280	23	2 400	1 980	323	224	45	265	851	2	592	15 136
Processed agriculture	1 394	1 266	1 550	443	736	5 648	2 737	2 020	1 713	1 147	914	188	1 719	6 331	730	385	160	767	1 539	55	1 907	33 350
Fisheries and forestry	1	0	12	3	8	43	1	12	4	17	3	0	37	122	30	4	1	10	99	0	6	415
Coal, oil, gas & other minerals	105	2	61	17	282	0	0	31	250	181	43	12	23	59	1 313	29	17	116	1 161	0	280	3 982
Petroleum and coal products	72	24	423	18	103	43	25	225	218	121	480	4	349	5 456	310	455	72	130	302	1	185	9 017
Lumber	30	24	231	40	103	82	2	263	254	211	109	24	120	257	25	14	8	121	181	53	354	2 506
Paper products	38	4	329	135	331	116	16	354	165	239	147	39	593	6	178	92	35	225	133	78	273	3 527
Textiles	1 992	240	714	175	453	1 421	156	1 237	1 129	1 297	466	185	2 891	725	228	532	156	811	520	307	466	16 099
Wearing apparel	4 364	354	1 106	75	154	1 955	232	598	643	571	171	109	236	1 345	12	23	13	113	300	322	590	13 286
Leather	2 698	159	241	58	147	665	50	306	319	179	128	113	236	1 275	39	14	9	101	120	96	277	7 229
Chemicals, rubber and plastics	1 358	153	1 575	578	2 042	1 327	217	1 494	989	952	674	154	3 588	281	2 004	466	291	1 638	1 393	283	664	22 123
Iron and steel	245	22	276	197	232	75	4	400	480	381	204	21	696	35	635	140	150	812	464	49	225	5 742
Non-ferrous metals	82	6	158	31	148	380	19	156	85	86	42	6	495	39	1 456	32	25	231	393	17	78	3 966
Non-metallic manufactures	459	27	298	132	228	252	28	385	342	304	195	50	388	29	244	126	44	376	353	68	238	4 566
Fabricated metal products	338	51	485	123	361	191	61	474	283	313	357	53	320	14	142	101	129	575	202	94	177	4 844
Metal manufactures	1 514	144	2 306	1 016	3 868	1 322	158	2 143	2 067	1 635	1 022	199	5 261	34	1 902	527	350	2 219	2 536	564	1 066	31 852
Other manufactures	420	49	478	105	340	260	57	215	706	156	290	41	275	111	1 130	73	44	149	149	61	183	5 293
Motor vehicles	1 362	257	1 633	1 031	2 683	1 952	27	1 736	893	951	495	635	1 342	0	251	327	501	2 349	1 000	556	1 392	21 373
Transport other than motor vehicles	78	28	1 141	71	176	435	26	135	139	349	455	2	171	0	150	93	30	461	83	18	261	4 303
Electronics	336	26	1 314	313	1 512	815	10	502	324	173	243	58	2 898	0	362	87	135	492	951	73	391	11 013
Services and other activities	3 531	1 385	348	184	2 323	7 458	617	1 760	746	151	16	213	833	3 582	471	142	453	1 309	250	333	2 318	28 421
Total	20 866	4 332	15 367	5 024	16 576	27 858	5 550	15 004	12 341	10 020	6 733	2 128	24 872	21 679	11 936	3 887	2 666	13 271	12 978	3 031	11 923	248 043

Source: Modified GTAP database.

Table A5. Base value output at market prices in GTAP database (\$ billion)

	USA	Canada	Central America	Andean Pact	Mercosur	European Union	Other Western Europe	Central and Eastern Europe						Sub-Saharan Africa	South Africa	China	Japan	India	Other South-Asia	Indonesia	Other South-East Asia	Rest of Asia	Oceania	All other regions	World
								Central Europe	Eastern Europe	Middle East	North Africa	Sub-Saharan Africa	South Africa												
Unprocessed agriculture	257	31	65	35	170	256	13	73	63	53	50	10	210	70	127	29	24	31	34	34	34	34	127	1 762	
Processed agriculture	564	51	92	57	247	796	36	96	72	29	55	20	172	355	60	28	58	78	84	51	84	51	129	3 128	
Fisheries and forestry	15	14	7	4	10	55	2	6	7	2	13	2	35	24	13	7	9	13	8	5	8	5	14	266	
Coal, oil, gas & other minerals	116	39	29	32	34	53	26	16	137	34	31	14	82	12	12	2	22	14	5	29	5	29	109	847	
Petroleum and coal products	164	16	16	13	22	100	3	10	41	11	6	6	37	57	13	2	7	23	27	7	7	7	35	618	
Lumber	177	29	12	7	31	142	3	16	13	6	4	3	23	34	3	1	11	11	7	12	12	12	12	556	
Paper products	311	45	15	8	52	333	17	19	18	7	3	7	45	157	8	2	6	12	32	20	20	20	21	1 140	
Textiles	112	9	20	9	73	137	3	17	17	5	10	4	125	36	37	17	13	19	45	8	8	8	15	730	
Wearing apparel	90	7	19	9	38	108	2	14	14	11	3	1	60	60	9	7	5	15	16	5	16	5	11	503	
Leather	12	1	7	4	20	52	1	7	4	18	1	1	40	8	3	1	4	7	9	1	9	1	7	208	
Chemicals, rubber and plastics	575	46	47	22	157	721	39	45	46	18	7	14	161	303	44	9	20	49	108	25	25	25	48	2 503	
Iron and steel	110	14	18	5	60	192	13	16	15	5	1	5	73	170	26	2	4	10	62	10	10	10	30	840	
Non-ferrous metals	91	16	8	4	28	104	15	12	9	2	3	11	30	51	8	2	2	7	16	15	15	15	21	454	
Non-metallic manufactures	95	9	14	7	35	212	8	20	18	13	6	3	107	80	10	2	4	15	26	9	26	9	24	719	
Fabricated metal products	225	18	12	5	50	297	7	16	18	7	3	5	59	129	2	1	3	13	32	15	32	15	16	932	
Metal manufactures	634	46	37	9	81	691	47	38	29	8	2	8	197	325	31	3	6	44	115	17	17	17	33	2 399	
Other manufactures	47	5	7	3	25	206	11	10	14	3	6	2	60	76	28	4	2	23	17	2	2	2	20	570	
Motor vehicles	366	58	33	9	74	480	21	23	15	6	1	7	36	312	12	1	11	24	55	14	55	14	43	1 601	
Transport other than motor vehicles	158	9	5	3	11	81	6	8	5	1	2	1	27	44	11	2	1	6	18	6	18	6	10	414	
Electronics	292	18	22	2	24	362	7	16	12	2	1	1	78	419	4	1	8	159	116	4	116	4	8	1 555	
Services and other activities	9 951	640	411	243	1 082	9 016	421	413	641	196	179	150	980	4 746	329	94	175	452	754	566	566	566	852	32 292	
Capital goods	14 359	1 122	897	488	2 327	14 393	698	892	1 206	436	385	275	2 636	7 470	791	217	395	1 023	1 586	853	1 586	853	1 586	54 036	
Total	22	47	46	45	161	721	20	44	303	46	157	18	25	39	108	48	9	49	7	75	7	75	14	2 503	

Source: Modified GTAP database.

Table A7. Change in output following Hard scenario (percentage)

	Central and Eastern Europe													Other South-East Asia				All other regions	World			
	USA	Canada	Central America	Andean Pact	Mercosur	European Union	Other Western Europe	Eastern Europe	Middle East	North Africa	Sub-Saharan Africa	South Africa	China	Japan	India	Other South-Asia	Indonesia			South-East Asia	Rest of Asia	Oceania
Unprocessed agriculture	1	2	0	1	1	-1	-2	0	0	0	0	1	0	-2	0	0	-1	0	-1	2	0	-0.23
Processed agriculture	1	0	0	0	1	0	1	0	-1	0	-1	1	0	-1	-1	-1	-1	0	-1	6	0	-0.08
Fisheries and forestry	0	1	-1	0	1	0	1	-1	-1	1	0	2	0	0	0	0	0	-1	0	2	-1	-0.01
Coal, oil, gas & other minerals	0	0	0	1	1	1	0	0	0	1	0	0	-2	-2	-6	-2	-2	-1	-7	-1	0	-0.10
Petroleum and coal products	0	0	1	1	0	1	-1	-1	4	3	-6	0	-2	-22	9	-3	2	2	14	1	1	-0.83
Lumber	0	1	-2	-1	0	0	-2	-4	-2	-3	-2	1	-1	-1	0	0	0	-1	26	0	0	-0.30
Paper products	0	0	0	0	0	0	0	-1	0	-2	-1	0	-2	0	-1	-2	-1	0	0	0	0	-0.02
Textiles	-3	-10	3	-3	-2	-2	-5	-7	-5	-6	-8	-2	4	4	4	3	6	7	13	-8	3	0.61
Wearing apparel	-6	-19	1	2	-2	-8	-10	-8	-5	7	-9	30	18	-5	23	15	19	25	6	-15	10	-0.12
Leather	-7	-22	-6	-7	0	-1	-6	-1	-19	-11	-22	-24	17	-32	10	-8	49	18	16	3	-8	1.50
Chemicals, rubber and plastics	0	-1	0	0	0	0	0	-2	0	-1	-1	-1	-4	5	-1	-2	-1	-1	0	0	0	0.12
Iron and steel	0	0	-1	-1	-1	1	0	-2	-2	-6	1	5	-4	1	-3	-8	-3	-5	-4	-2	2	-0.45
Non-ferrous metals	1	1	-1	4	0	0	12	-1	-2	-3	-2	0	-5	0	-22	-4	-6	-6	-2	-1	1	-0.36
Non-metallic manufactures	0	-1	-2	-1	0	1	-1	-2	-2	-3	-1	-2	0	0	-1	-3	-1	-3	-3	0	2	-0.09
Fabricated metal products	0	1	0	-1	-1	1	-2	-2	-1	-6	-3	-1	-1	0	5	-3	-2	-2	-1	0	-2	-0.02
Metal manufactures	1	1	-2	-4	-6	1	-1	3	-3	-6	-4	-1	-3	-1	-3	-5	0	2	-2	-1	0	-0.04
Other manufactures	1	0	-7	-2	-1	2	-4	-1	2	-7	-2	4	-1	0	-6	-3	-4	-1	-1	2	1	0.08
Motor vehicles	0	0	2	-21	-1	0	0	5	-4	-32	12	-16	-24	7	-7	-55	-8	-9	2	-5	-14	0.07
Transport other than motor vehicles	-1	1	4	0	0	-2	-6	1	2	11	33	4	1	7	0	-10	-1	-2	1	-2	0	0.09
Electronics	1	3	8	-8	-6	1	0	4	1	-1	-8	-5	4	-1	4	-1	-2	-1	-2	0	-3	0.18
Services and other activities	0	0	0	0	0	0	0	1	0	2	1	0	0	0	1	0	0	0	0	0	0	0.03
Total	0.02	0.03	0.11	-0.22	-0.13	0.01	0.01	-0.11	-0.10	-0.37	-0.31	-0.09	-0.12	0.12	-0.07	-0.13	0.25	0.07	0.22	0.07	-0.13	0.00

Source: GTAP simulations.

Table A9. Change in output following Simple scenario (percentage)

	Central and Eastern Europe													Other South-East Asia			All other regions	World			
	USA	Canada	Central America	Andean Pact	Mercosur	European Union	Other Western Europe	Eastern Europe	Middle East	North Africa	Sub-Saharan Africa	South Africa	China	Japan	India	Other South-Asia			Indonesia	Rest of Asia	Oceania
Unprocessed agriculture	1	2	0	1	1	-1	-2	0	0	-1	0	1	0	-2	0	0	1	-1	1	0	-0.12
Processed agriculture	1	0	0	-1	1	0	2	0	-1	-1	-1	0	0	-1	-1	0	1	-1	5	0	-0.07
Fisheries and forestry	0	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	1	-1	-0.07
Coal, oil, gas & other minerals	0	0	0	0	0	0	0	0	0	0	0	0	-1	-2	-1	-1	0	-3	-1	0	-0.08
Petroleum and coal products	0	0	1	1	0	1	-2	-1	4	2	1	0	-1	-22	3	2	3	13	0	1	-0.85
Lumber	0	1	-1	0	0	0	-1	-4	-1	-2	-1	0	0	0	0	0	0	25	0	0	-0.23
Paper products	0	0	0	0	0	0	0	-1	0	0	0	0	-1	0	0	0	0	0	0	0	0.01
Textiles	-2	-5	8	0	0	-1	-1	-4	-2	-1	-1	-1	0	3	1	1	0	4	-3	2	0.09
Wearing apparel	-4	-8	11	1	0	-3	-3	0	-4	-1	-1	3	7	-2	6	1	2	2	-1	1	-0.15
Leather	-5	-10	3	-1	-1	1	0	3	-7	-1	-3	-10	8	-24	6	-5	-4	6	-3	-2	0.89
Chemicals, rubber and plastics	0	-1	0	0	0	0	1	-2	0	0	0	-1	-2	4	0	-1	0	0	-1	0	0.10
Iron and steel	0	-1	-2	-1	0	1	1	-3	-1	-1	1	2	-2	1	-1	-3	-1	-2	-2	3	-0.27
Non-ferrous metals	1	1	-2	1	0	0	2	-1	0	0	1	-1	-2	0	-3	-1	-2	-1	-1	1	-0.19
Non-metallic manufactures	0	-1	-1	0	0	0	-1	-2	-2	0	0	0	0	0	0	0	-1	-1	0	1	-0.01
Fabricated metal products	0	0	-1	0	0	0	-1	-2	-1	-1	0	0	0	0	1	0	-1	-1	0	-2	0.00
Metal manufactures	0	1	-3	0	-3	1	-1	2	-2	-1	1	0	-2	0	-2	-1	-1	-1	-2	1	-0.04
Other manufactures	0	0	-1	0	0	0	-4	-1	0	-1	0	1	1	1	-1	-1	-1	-1	-1	1	0.03
Motor vehicles	0	0	-4	-5	0	1	0	2	0	-7	-1	0	-16	3	0	-13	0	0	-2	-12	-0.01
Transport other than motor vehicles	0	2	-2	-1	-1	0	-2	0	1	3	3	2	1	1	0	-3	-2	0	-3	0	0.07
Electronics	1	2	-1	0	0	0	1	3	1	0	1	-1	4	-1	-3	0	-2	-1	-2	2	0.12
Services and other activities	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0.03
Total	0.00	0.01	0.00	-0.07	-0.02	0.02	0.02	-0.13	0.00	-0.07	-0.07	0.00	-0.10	0.01	-0.02	0.02	0.06	0.12	0.08	-0.09	0.00

Source: GTAP simulations.

Table A10. Simple and weighted average bound and applied tariffs before and after implementation of the WTO Hard scenario

WTO member	Tariff simple averages (%)					Tariff-weighted averages (%)					Trade value (\$m)
	Bound		Applied		Bound		Applied				
	Before	After*	Before	After	Before	After*	Before	After			
	Initial coverage	Final coverage	Before	After	Initial coverage	Final coverage	Before	After			
Developed countries	5.7	0.8	0.7	4.7	0.6	2.8	0.4	0.4	2.9	0.4	2 603 94
Australia	11.0	1.9	1.8	4.6	1.4	9.5	1.7	1.7	3.9	1.5	57 610
Canada	5.3	0.8	0.8	4.4	0.6	3.7	0.7	0.7	3.0	0.7	204 411
Iceland	9.5	1.0	1.0	2.5	0.5	8.2	1.0	1.0	2.5	0.7	1 859
Japan	2.3	0.2	0.2	3.0	0.2	1.5	0.1	0.1	2.0	0.3	308 333
New Zealand	11.0	1.4	1.4	2.8	1.1	12.0	1.7	1.7	3.2	1.4	12 788
Norway	3.1	0.3	0.3	2.1	0.1	2.3	0.3	0.3	1.4	0.1	30 834
Switzerland	1.8	0.2	0.2	15.1	0.3	1.5	0.3	0.3	7.8	0.2	73 371
United States	3.2	0.4	0.4	3.9	0.6	2.6	0.3	0.3	2.8	0.4	1 081 608
European Union	4.0	0.6	0.6	4.2	0.6	2.8	0.4	0.4	2.8	0.4	832 481
Developing countries/economies	29.0	6.1	5.9	11.1	4.1	12.6	2.6	3.0	8.1	2.6	1 562 121
Albania	6.6	1.0	1.0	10.5	1.0	7.5	1.1	1.1	11.1	1.1	1 074
Antigua and Barbuda	51.5	11.5	11.5	8.9	4.9	66.6	14.2	14.2	13.1	9.2	276
Argentina	31.8	6.8	6.8	12.8	6.0	32.0	7.1	7.1	13.5	6.1	19 020
Armenia	7.5	0.9	0.9	2.3	0.2	6.8	1.0	1.0	0.9	0.1	632
Bahrain	35.1	5.9	5.7	7.6	4.3	15.3	2.9	5.8	7.5	5.1	3 743
Barbados	73.0	15.9	15.9	10.2	5.4	98.0	18.8	18.8	14.6	9.3	857
Belize	51.5	11.5	11.4	9.5	4.7	52.3	14.0	14.0	11.1	7.9	384
Bolivia	40.0	8.8	8.8	9.2	5.9	39.9	9.9	9.9	8.7	6.2	1 433
Brazil	30.8	6.6	6.6	14.4	5.6	30.3	6.7	6.7	10.4	4.0	54 938
Brunei	24.5	5.3	5.2	3.0	1.5	25.0	4.1	4.1	7.3	4.7	942
Bulgaria	23.0	4.5	4.5	11.1	3.8	18.3	4.4	4.4	9.4	3.3	5 935
Cameroon	57.5	6.8	6.9	17.5	7.4	0.5	0.1	6.3	13.7	7.2	1 228
Chile	25.0	5.5	5.5	8.0	5.3	25.0	6.2	6.2	8.0	6.0	14 865
China	9.1	1.8	1.8	14.6	1.8	5.5	1.2	1.2	12.3	1.2	219 705
Colombia	35.4	7.8	7.8	11.8	5.5	35.2	8.6	8.6	10.3	5.7	11 110
Congo	15.3	5.0	6.8	17.5	7.3	0.5	0.2	6.0	16.2	7.1	658
Costa Rica	42.9	9.4	9.4	4.6	2.1	35.5	8.4	8.4	3.9	2.5	5 794
Côte d'Ivoire	8.6	1.8	3.7	11.7	4.2	3.4	0.8	3.2	10.5	3.9	1 468
Croatia	5.5	0.9	0.9	10.1	0.9	4.6	1.0	1.0	9.6	0.8	8 234
Cuba	9.5	2.7	3.7	10.7	4.1	3.3	1.2	3.2	8.6	3.6	3 557
Czech Republic	4.2	0.8	0.8	4.9	0.8	4.2	0.8	0.8	5.4	0.8	26 963
Dominica	50.0	11.0	11.0	8.4	4.4	43.5	11.3	11.3	10.4	7.9	101
Dominican Republic	34.2	7.1	7.1	7.8	3.6	37.0	6.7	6.7	9.2	3.9	7 051
Ecuador	21.3	4.3	4.3	13.4	4.6	16.3	4.7	4.7	10.7	5.0	2 596
Egypt	28.0	5.6	5.6	21.1	5.8	23.7	6.4	6.4	15.5	6.6	11 205
El Salvador	35.7	7.8	7.8	6.6	2.1	31.9	8.9	8.9	5.5	3.4	3 177
Gabon	15.5	3.4	3.4	17.5	3.4	15.3	4.1	4.1	13.7	3.7	787
Georgia	6.5	1.1	1.1	10.4	1.1	6.6	1.4	1.4	9.5	1.4	428
Ghana	34.7	9.5	5.0	13.8	5.5	0.7	0.2	4.7	15.7	4.8	2 600
Guatemala	27.8	4.2	1.9	6.3	1.9	13.0	2.2	3.0	5.7	3.2	4 775
Guyana	50.0	11.1	11.1	9.6	4.8	50.0	13.0	13.0	10.8	7.3	289
Honduras	32.6	7.1	7.1	6.4	2.4	23.1	7.4	7.4	7.5	4.7	2 456
Hong Kong (China)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	176 322
Hungary	6.9	1.4	1.4	8.2	1.7	6.0	1.0	1.0	7.8	2.2	19 786
India	34.3	10.4	10.0	31.1	11.1	18.2	3.3	8.8	24.3	9.0	47 571
Indonesia	36.0	7.9	7.9	6.7	3.6	34.9	9.3	9.3	4.4	2.9	26 766
Jamaica	42.5	8.3	8.3	5.9	2.2	47.6	10.9	10.9	8.9	4.7	2 647
Jordan	15.2	2.8	2.8	14.1	2.5	12.7	3.1	3.1	11.8	2.7	3 955
Kenya	54.1	4.4	6.5	18.5	6.8	2.6	0.7	6.4	12.2	6.3	2 489
Latvia	9.4	1.6	1.6	2.2	0.5	7.2	1.5	1.5	1.4	0.3	3 049
Lithuania	8.4	1.4	1.4	2.6	0.2	8.4	1.8	1.8	1.6	0.3	4 945
Malaysia	14.9	2.5	2.3	9.1	2.1	5.7	1.2	1.2	4.9	2.1	67 871
Malta	49.1	10.7	10.5	7.6	4.8	50.8	6.0	6.0	10.0	2.6	3 118
Mauritius	66.8	15.2	10.8	29.8	11.9	1.7	0.4	8.9	25.4	10.2	1 837
Mexico	34.9	7.7	7.7	17.1	6.9	35.0	5.9	5.9	14.3	5.4	177 809
Morocco	39.2	8.6	8.6	27.9	7.3	38.2	6.6	6.6	26.8	5.7	7 586

.../...

(Table A10, cont'd.)

WTO member	Tariff simple averages (%)					Tariff-weighted averages (%)					Trade value (\$m)
	Bound			Applied		Bound			Applied		
	Before	After*		Before	After	Before	After*		Before	After	
		Initial coverage	Final coverage				Initial coverage	Final coverage			
Nicaragua	41.5	9.1	9.1	4.1	1.8	42.1	11.4	11.4	4.2	3.3	1 467
Nigeria	48.1	14.7	10.2	25.2	10.7	2.6	0.9	11.2	18.2	11.3	4 848
Oman	11.6	2.3	2.3	4.9	2.3	11.2	2.7	2.7	4.9	2.6	3 788
Pakistan	40.9	8.5	8.7	19.8	8.7	14.1	3.0	9.3	20.1	9.6	5 154
Panama	22.8	4.3	4.3	7.0	3.1	18.4	4.6	4.6	6.1	3.1	2 622
Papua New Guinea	30.2	6.1	6.1	17.9	5.6	30.8	7.6	7.6	14.6	7.2	1 305
Paraguay	33.6	7.4	7.4	12.9	5.8	30.4	8.3	8.3	9.8	5.5	1 863
Peru	30.0	6.6	6.6	13.1	6.6	30.0	7.7	7.7	12.3	7.7	6 489
Philippines	23.4	3.7	4.0	6.8	2.9	6.2	1.1	2.3	3.2	1.9	28 594
Poland	9.7	2.2	2.2	10.4	2.8	6.5	1.7	1.7	7.9	3.0	43 588
Rep. of Korea	10.3	1.8	1.8	7.9	2.2	4.6	1.0	1.5	5.6	1.8	112 263
Rep. of Moldova	5.9	0.9	0.9	4.1	0.6	4.2	0.7	0.7	2.0	0.4	745
Romania	31.6	6.8	6.8	15.8	6.0	31.6	6.2	6.2	12.8	4.3	14 277
Saint Kitts and Nevis	70.8	15.7	15.5	8.8	4.7	71.6	17.6	17.6	11.5	8.6	158
Saint Lucia	53.9	11.8	11.8	8.0	3.7	66.8	14.9	14.9	10.9	7.5	205
Saint Vincent & the Grenadines	54.4	11.8	11.8	8.9	4.7	64.0	14.3	14.3	10.6	7.5	134
Singapore	6.3	0.7	0.5	0.0	0.0	1.8	0.2	0.2	0.0	0.0	110 837
Slovenia	24.4	5.3	5.3	9.4	4.2	22.6	5.5	5.5	9.8	4.7	9 426
South Africa	15.9	2.9	2.7	7.9	1.7	11.7	2.2	2.2	4.9	1.5	20 722
Sri Lanka	32.4	3.4	3.1	7.8	3.4	2.3	0.4	1.9	4.8	2.1	4 675
Taiwan Province of China	4.7	0.6	0.6	6.3	0.7	2.7	0.5	0.5	3.3	0.5	99 971
TFYR Macedonia			4.8	13.4	5.0			5.7	11.8	6.2	1 036
Thailand	24.1	5.2	5.2	14.2	4.8	7.7	2.0	3.3	9.1	3.6	57 954
Trinidad and Tobago	50.5	10.8	10.8	6.7	2.9	43.7	13.2	13.2	3.9	2.9	3 541
Tunisia	40.6	7.1	9.6	28.4	10.1	25.4	3.7	7.6	26.0	7.8	7 804
Turkey	16.7	3.8	2.7	7.2	2.1	8.3	1.8	2.6	4.4	1.9	38 050
Uruguay	31.3	6.7	6.7	14.0	5.7	31.0	7.5	7.5	12.1	5.5	2 673
Venezuela	33.9	7.5	7.5	12.1	5.5	33.3	8.2	8.2	13.0	6.6	12 812
Zimbabwe	10.9	3.8	5.9	18.7	6.4	2.3	0.6	6.7	14.2	6.7	1 089
Least developed countries	46.3	46.3	46.3	12.6	12.6	11.9	11.9	11.9	13.6	13.6	16 743
Bangladesh	35.7	35.7	35.7	21.3	21.3	2.9	2.9	2.9	21.8	21.8	5 815
Benin	11.4	11.4	11.4	11.7	11.7	6.1	6.1	6.1	11.7	11.7	483
Burkina Faso	13.2	13.2	13.2	11.7	11.7	4.8	4.8	4.8	10.0	10.0	254
Central African Republic	37.9	37.9	37.9	17.5	17.5	27.6	27.6	27.6	14.0	14.0	59
Chad	75.4	75.4	75.4	17.5	17.5	1.1	1.1	1.1	11.9	11.9	266
Guinea-Bissau	50.0	50.0	50.0	11.7	11.7	38.8	38.8	38.8	12.8	12.8	37
Madagascar	25.3	25.3	25.3	4.4	4.4	5.2	5.2	5.2	3.1	3.1	431
Malawi	43.3	43.3	43.3	12.8	12.8	7.8	7.8	7.8	12.2	12.2	283
Maldives	35.3	35.3	35.3	20.5	20.5	36.4	36.4	36.4	20.0	20.0	300
Mali	14.2	14.2	14.2	11.7	11.7	6.6	6.6	6.6	10.4	10.4	469
Mauritania	10.5	10.5	10.5	10.6	10.6	7.0	7.0	7.0	12.1	12.1	355
Mozambique	99.6	99.6	99.6	13.1	13.1	95.3	95.3	95.3	10.7	10.7	806
Myanmar	22.3	22.3	22.3	5.0	5.0	5.7	5.7	5.7	4.3	4.3	2 044
Niger	38.1	38.1	38.1	11.7	11.7	27.8	27.8	27.8	11.4	11.4	180
Rwanda	91.6	91.6	91.6	9.5	9.5	85.3	85.3	85.3	8.1	8.1	217
Senegal	30.0	30.0	30.0	11.7	11.7	29.8	29.8	29.8	8.6	8.6	1 263
Togo	80.0	80.0	80.0	11.7	11.7	0.0	0.0	0.0	10.5	10.5	287
Uganda	50.5	50.5	50.5	8.5	8.5	0.7	0.7	0.7	6.9	6.9	880
United Republic of Tanzania	120.0	120.0	120.0	15.9	15.9	0.0	0.0	0.0	11.9	11.9	1 349
Zambia	42.7	42.7	42.7	13.5	13.5	3.8	3.8	3.8	11.0	11.0	964

Source: UN COMTRADE and UNCTAD calculations.

* Initial coverage: averages are calculated from the initial bound lines only.

Final coverage: averages are calculated from the initial and newly bound lines.

**Table A11. Simple and weighted average bound and applied tariffs
before and after implementation of the WTO Soft scenario**

WTO member	Tariff simple averages (%)					Tariff-weighted averages (%)					Trade value (\$m)
	Bound			Applied		Bound			Applied		
	Before	After*		Before	After	Before	After*		Before	After	
		Initial coverage	Final coverage				Initial coverage	Final coverage			
Developed countries	5.7	1.2	1.5	4.7	0.8	2.8	0.6	0.9	2.9	0.6	2 603 294
Australia	11.0	2.9	3.1	4.6	1.8	9.5	2.8	3.0	3.9	2.2	57 610
Canada	5.3	1.2	1.3	4.4	0.9	3.7	1.1	3.4	3.0	1.0	204 411
Iceland	9.5	2.0	3.4	2.5	0.9	8.2	1.9	7.2	2.5	1.1	1 859
Japan	2.3	0.3	0.4	3.0	0.3	1.5	0.2	0.8	2.0	0.2	308 333
New Zealand	11.0	2.2	2.3	2.8	1.2	12.0	2.8	2.8	3.2	1.8	12 788
Norway	3.1	0.6	1.3	2.1	0.2	2.3	0.6	1.2	1.4	0.2	30 834
Switzerland	1.8	0.4	0.5	15.1	0.4	1.5	0.4	1.4	7.8	0.3	73 371
United States	3.2	0.6	0.6	3.9	0.8	2.6	0.6	0.6	2.8	0.6	1 081 608
European Union	4.0	0.9	0.9	4.2	0.8	2.8	0.6	0.6	2.8	0.6	832 481
Developing countries/economies	29.0	19.4	26.4	11.1	9.7	12.6	8.4	17.2	8.1	6.0	1 562 121
Albania	6.6	3.6	3.6	10.5	3.6	7.5	3.9	3.9	11.1	3.9	1 074
Antigua and Barbuda	51.5	34.2	34.4	8.9	8.8	66.6	38.9	39.0	13.1	13.1	276
Argentina	31.8	21.0	21.0	12.8	12.6	32.0	21.1	21.1	13.5	12.8	19 020
Armenia	7.5	3.9	3.9	2.3	1.7	6.8	3.8	3.8	0.9	0.6	632
Bahrain	35.1	24.3	30.8	7.6	7.6	15.3	10.6	35.2	7.5	7.5	3 743
Barbados	73.0	48.3	48.3	10.2	10.1	98.0	55.8	55.8	14.6	14.3	857
Belize	51.5	34.3	34.8	9.5	9.1	52.3	34.5	34.6	11.1	11.0	384
Bolivia	40.0	26.6	26.6	9.2	9.2	39.9	26.6	26.6	8.7	8.7	1 433
Brazil	30.8	20.3	20.3	14.4	14.2	30.3	20.0	20.0	10.4	9.8	54 938
Brunei	24.5	16.4	17.2	3.0	3.0	25.0	15.9	16.3	7.3	7.3	942
Bulgaria	23.0	14.2	14.2	11.1	9.9	18.3	11.6	11.6	9.4	8.5	5 935
Cameroon	57.5	36.9	53.2	17.5	17.5	0.5	0.3	48.3	13.7	13.7	1 228
Chile	25.0	16.7	16.7	8.0	8.0	25.0	16.6	16.6	8.0	8.0	14 865
China	9.1	5.5	5.5	14.6	5.5	5.5	3.6	3.6	12.3	3.6	219 705
Colombia	35.4	23.6	23.6	11.8	11.8	35.2	23.5	23.5	10.3	10.0	11 110
Congo	15.3	12.7	51.8	17.5	17.4	0.5	0.4	46.6	16.2	16.1	658
Costa Rica	42.9	28.2	28.2	4.6	4.6	35.5	22.5	22.5	3.9	3.9	5 794
Côte d'Ivoire	8.6	7.5	39.8	11.7	10.7	3.4	2.9	32.1	10.5	9.2	1 468
Croatia	5.5	3.1	3.1	10.1	3.1	4.6	2.7	2.7	9.6	2.4	8 234
Cuba	9.5	8.1	41.4	10.7	10.6	3.3	2.9	26.8	8.6	8.5	3 557
Czech Republic	4.2	2.5	2.6	4.9	2.2	4.2	2.4	2.4	5.4	2.2	26 963
Dominica	50.0	33.5	33.6	8.4	8.2	43.5	29.1	30.0	10.4	10.4	101
Dominican Republic	34.2	22.3	22.3	7.8	7.8	37.0	23.8	23.8	9.2	9.2	7 051
Ecuador	21.3	14.2	14.9	13.4	12.0	16.3	11.5	11.6	10.7	9.5	2 596
Egypt	28.0	17.4	17.6	21.1	15.2	23.7	15.0	15.0	15.5	12.5	11 205
El Salvador	35.7	23.3	23.3	6.6	6.5	31.9	21.2	21.2	5.5	5.5	3 177
Gabon	15.5	10.2	10.2	17.5	9.9	15.3	10.2	10.2	13.7	9.0	787
Georgia	6.5	3.8	3.8	10.4	3.8	6.6	3.6	3.6	9.5	3.6	428
Ghana	34.7	25.9	51.7	13.8	13.8	0.7	0.5	61.4	15.7	15.7	2 600
Guatemala	27.8	20.5	42.4	6.3	6.3	13.0	9.1	31.1	5.7	5.7	4 775
Guyana	50.0	33.4	33.4	9.6	9.2	50.0	33.3	33.3	10.8	10.7	289
Honduras	32.6	21.5	21.5	6.4	6.4	23.1	16.2	16.2	7.5	7.0	2 456
Hong Kong (China)	0.0	0.0	36.3	0.0	0.0	0.0	0.0	33.1	0.0	0.0	176 322
Hungary	6.9	4.7	5.5	8.2	4.9	6.0	4.0	4.6	7.8	5.1	19 786
India	34.3	24.5	39.2	31.1	27.4	18.2	13.1	35.2	24.3	20.5	47 571
Indonesia	36.0	23.7	24.0	6.7	6.6	34.9	22.8	23.8	4.4	4.3	26 766
Jamaica	42.5	27.2	27.2	5.9	5.8	47.6	30.1	30.1	8.9	8.7	2 647
Jordan	15.2	9.1	9.2	14.1	7.6	12.7	8.1	8.1	11.8	6.7	3 955
Kenya	54.1	35.8	55.8	18.5	18.5	2.6	1.7	49.7	12.2	12.2	2 489
Latvia	9.4	5.6	5.6	2.2	1.5	7.2	4.4	4.4	1.4	0.9	3 049
Lithuania	8.4	4.8	4.8	2.6	1.4	8.4	4.9	4.9	1.6	0.9	4 945
Malaysia	14.9	10.1	16.0	9.1	6.8	5.7	4.0	7.0	4.9	3.7	67 871
Malta	49.1	32.5	32.8	7.6	7.6	50.8	33.2	33.3	10.0	10.0	3 118
Mauritius	66.8	46.2	75.4	29.8	29.7	1.7	1.2	68.4	25.4	25.3	1 837
Mexico	34.9	23.2	23.2	17.1	15.7	35.0	23.3	23.3	14.3	13.9	17 7 809
Morocco	39.2	26.1	26.1	27.9	19.4	38.2	25.4	25.4	26.8	19.0	7 586

.../...

(Table A11, cont'd.)

WTO member	Tariff simple averages (%)					Tariff-weighted averages (%)					Trade value (\$m)
	Bound			Applied		Bound			Applied		
	Before	After*		Before	After	Before	After*		Before	After	
		Initial coverage	Final coverage				Initial coverage	Final coverage			
Nicaragua	41.5	27.5	27.5	4.1	4.1	42.1	27.8	27.8	4.2	4.2	1 467
Nigeria	48.1	34.3	60.7	25.2	25.2	2.6	1.9	50.5	18.2	18.2	4 848
Oman	11.6	7.4	7.4	4.9	4.6	11.2	7.2	7.2	4.9	4.4	3 788
Pakistan	40.9	28.5	47.6	19.8	19.4	14.1	9.8	47.8	20.1	19.9	5 154
Panama	22.8	14.7	15.4	7.0	6.6	18.4	12.2	12.2	6.1	5.5	2'622
Papua New Guinea	30.2	19.4	20.7	17.9	13.2	30.8	19.7	19.7	14.6	12.1	1 305
Paraguay	33.6	22.2	22.2	12.9	12.8	30.4	20.5	20.5	9.8	9.6	1 863
Peru	30.0	20.0	20.0	13.1	13.1	30.0	20.0	20.0	12.3	12.3	6 489
Philippines	23.4	16.6	28.3	6.8	6.8	6.2	4.6	19.0	3.2	3.2	28 594
Poland	9.7	6.8	8.2	10.4	7.4	6.5	4.7	5.3	7.9	5.9	43 588
Rep. of Korea	10.3	6.5	7.1	7.9	6.1	4.6	3.2	10.4	5.6	3.9	112 263
Rep. of Moldova	5.9	3.4	3.4	4.1	2.4	4.2	2.4	2.4	2.0	1.3	745
Romania	31.6	20.7	20.7	15.8	14.1	31.6	20.7	20.7	12.8	11.5	14 277
Saint Kitts and Nevis	70.8	47.0	47.1	8.8	8.8	71.6	47.0	47.0	11.5	11.5	158
Saint Lucia	53.9	35.5	35.5	8.0	7.9	66.8	39.8	39.8	10.9	10.8	205
Saint Vincent & the Grenadines	54.4	35.7	35.8	8.9	8.9	64.0	39.0	39.1	10.6	10.6	134
Singapore	6.3	5.3	21.1	0.0	0.0	1.8	1.5	15.3	0.0	0.0	110 837
Slovenia	24.4	16.0	16.1	9.4	9.1	22.6	15.1	15.1	9.8	9.2	9 426
South Africa	15.9	10.1	12.4	7.9	5.8	11.7	7.3	18.5	4.9	3.9	20 722
Sri Lanka	32.4	21.9	47.0	7.8	7.7	2.3	1.7	44.6	4.8	4.8	4 675
Taiwan Province of China	4.7	2.5	2.5	6.3	2.5	2.7	1.5	1.5	3.3	1.4	99 971
TFYR Macedonia			51.8	13.4	13.4			48.7	11.8	11.8	1 036
Thailand	24.1	17.6	32.4	14.2	12.7	7.7	5.7	24.2	9.1	8.2	57 954
Trinidad and Tobago	50.5	33.2	33.2	6.7	6.6	43.7	29.4	29.4	3.9	3.9	3 541
Tunisia	40.6	28.3	44.8	28.4	26.6	25.4	17.9	37.2	26.0	23.8	7 804
Turkey	16.7	12.8	36.7	7.2	6.8	8.3	6.4	28.6	4.4	4.1	38 050
Uruguay	31.3	20.7	20.7	14.0	13.8	31.0	20.5	20.5	12.1	11.8	2 673
Venezuela	33.9	22.5	22.5	12.1	12.0	33.3	22.1	22.1	13.0	12.3	12 812
Zimbabwe	10.9	9.1	54.1	18.7	18.0	2.3	1.5	45.0	14.2	12.2	1 089
Least developed countries	46.3	46.3	46.3	12.6	12.6	11.9	11.9	11.9	13.6	13.6	16 743
Bangladesh	35.7	35.7	35.7	21.3	21.3	2.9	2.9	2.9	21.8	21.8	5 815
Benin	11.4	11.4	11.4	11.7	11.7	6.1	6.1	6.1	11.7	11.7	483
Burkina Faso	13.2	13.2	13.2	11.7	11.7	4.8	4.8	4.8	10.0	10.0	254
Central African Republic	37.9	37.9	37.9	17.5	17.5	27.6	27.6	27.6	14.0	14.0	59
Chad	75.4	75.4	75.4	17.5	17.5	1.1	1.1	1.1	11.9	11.9	266
Guinea-Bissau	50.0	50.0	50.0	11.7	11.7	38.8	38.8	38.8	12.8	12.8	37
Madagascar	25.3	25.3	25.3	4.4	4.4	5.2	5.2	5.2	3.1	3.1	431
Malawi	43.3	43.3	43.3	12.8	12.8	7.8	7.8	7.8	12.2	12.2	283
Maldives	35.3	35.3	35.3	20.5	20.5	36.4	36.4	36.4	20.0	20.0	300
Mali	14.2	14.2	14.2	11.7	11.7	6.6	6.6	6.6	10.4	10.4	469
Mauritania	10.5	10.5	10.5	10.6	10.6	7.0	7.0	7.0	12.1	12.1	355
Mozambique	99.6	99.6	99.6	13.1	13.1	95.3	95.3	95.3	10.7	10.7	806
Myanmar	22.3	22.3	22.3	5.0	5.0	5.7	5.7	5.7	4.3	4.3	2 044
Niger	38.1	38.1	38.1	11.7	11.7	27.8	27.8	27.8	11.4	11.4	180
Rwanda	91.6	91.6	91.6	9.5	9.5	85.3	85.3	85.3	8.1	8.1	217
Senegal	30.0	30.0	30.0	11.7	11.7	29.8	29.8	29.8	8.6	8.6	1 263
Togo	80.0	80.0	80.0	11.7	11.7	0.0	0.0	0.0	10.5	10.5	287
Uganda	50.5	50.5	50.5	8.5	8.5	0.7	0.7	0.7	6.9	6.9	880
United Republic of Tanzania	120.0	120.0	120.0	15.9	15.9	0.0	0.0	0.0	11.9	11.9	1 349
Zambia	42.7	42.7	42.7	13.5	13.5	3.8	3.8	3.8	11.0	11.0	964

Source: UN COMTRADE and UNCTAD calculations.

* Initial coverage: averages are calculated from the initial bound lines only.

Final coverage: averages are calculated from the initial and newly bound lines.

Table A12. Simple and weighted average bound and applied tariffs before and after implementation of the Simple scenario

WTO member	Tariff simple averages (%)					Tariff-weighted averages (%)					Trade value (\$m)
	Bound			Applied		Bound			Applied		
	Before	After*		Before	After	Before	After*		Before	After	
		Initial coverage	Final coverage				Initial coverage	Final coverage			
Developed countries	5.7	3.7	4.1	4.7	2.3	2.8	1.7	2.0	2.9	1.6	2 603 294
Australia	11.0	7.0	7.4	4.6	4.3	9.5	6.1	6.4	3.9	3.7	57 610
Canada	5.3	3.4	3.5	4.4	2.9	3.7	2.4	4.7	3.0	2.1	204 411
Iceland	9.5	6.5	8.9	2.5	2.2	8.2	5.7	11.6	2.5	2.2	1 859
Japan	2.3	1.4	1.6	3.0	1.5	1.5	0.9	1.5	2.0	1.0	308 333
New Zealand	11.0	7.0	7.0	2.8	2.7	12.0	7.7	7.7	3.2	3.0	12 788
Norway	3.1	2.0	2.9	2.1	1.2	2.3	1.4	2.1	1.4	0.7	30 834
Switzerland	1.8	1.1	1.3	15.1	1.1	1.5	1.0	2.0	7.8	0.8	73 371
United States	3.2	2.0	2.0	3.9	2.2	2.6	1.6	1.6	2.8	1.6	1 081 608
European Union	4.0	2.5	2.5	4.2	2.4	2.8	1.8	1.8	2.8	1.7	832 481
Developing countries/economies	29.0	22.1	28.7	11.1	10.1	12.6	9.6	18.5	8.1	6.2	1 562 121
Albania	6.6	5.0	5.0	10.5	5.0	7.5	5.7	5.7	11.1	5.7	1 074
Antigua and Barbuda	51.5	39.1	39.3	8.9	8.8	66.6	50.6	50.7	13.1	13.1	276
Argentina	31.8	24.2	24.2	12.8	12.6	32.0	24.4	24.4	13.5	13.0	19 020
Armenia	7.5	5.9	5.9	2.3	2.2	6.8	5.3	5.3	0.9	0.8	632
Bahrain	35.1	26.6	32.5	7.6	7.6	15.3	11.6	36.2	7.5	7.5	3 743
Barbados	73.0	55.5	55.5	10.2	10.1	98.0	74.5	74.5	14.6	14.3	857
Belize	51.5	39.1	39.6	9.5	9.2	52.3	39.7	39.8	11.1	11.1	384
Bolivia	40.0	30.4	30.4	9.2	9.2	39.9	30.4	30.4	8.7	8.7	1 433
Brazil	30.8	23.4	23.4	14.4	14.3	30.3	23.0	23.0	10.4	10.0	54 938
Brunei	24.5	18.6	19.3	3.0	3.0	25.0	19.0	19.4	7.3	7.3	942
Bulgaria	23.0	17.5	17.5	11.1	10.5	18.3	13.9	13.9	9.4	8.8	5 935
Cameroon	57.5	43.7	53.2	17.5	17.5	0.5	0.4	48.4	13.7	13.7	1 228
Chile	25.0	19.0	19.0	8.0	8.0	25.0	19.0	19.0	8.0	8.0	14 865
China	9.1	7.1	7.1	14.6	7.0	5.5	4.3	4.3	12.3	4.1	219 705
Colombia	35.4	26.9	26.9	11.8	11.8	35.2	26.8	26.8	10.3	10.1	11 110
Congo	15.3	11.6	51.8	17.5	17.3	0.5	0.4	46.5	16.2	16.1	658
Costa Rica	42.9	33.1	33.1	4.6	4.6	35.5	27.5	27.5	3.9	3.9	5 794
Côte d'Ivoire	8.6	6.6	39.5	11.7	10.5	3.4	2.6	31.8	10.5	8.9	1 468
Croatia	5.5	4.2	4.2	10.1	4.2	4.6	3.5	3.5	9.6	3.2	8 234
Cuba	9.5	7.2	41.2	10.7	10.5	3.3	2.5	26.4	8.6	8.2	3 557
Czech Republic	4.2	3.3	3.4	4.9	2.6	4.2	3.3	3.3	5.4	2.7	26 963
Dominica	50.0	38.0	38.1	8.4	8.3	43.5	33.1	34.0	10.4	10.4	101
Dominican Republic	34.2	26.0	26.0	7.8	7.8	37.0	28.2	28.2	9.2	9.2	7 051
Ecuador	21.3	16.2	16.8	13.4	13.1	16.3	12.4	12.5	10.7	10.0	2 596
Egypt	28.0	21.2	21.4	21.1	17.0	23.7	18.0	18.0	15.5	13.6	11 205
El Salvador	35.7	27.1	27.1	6.6	6.6	31.9	24.2	24.2	5.5	5.5	3 177
Gabon	15.5	11.8	11.8	17.5	10.6	15.3	11.7	11.7	13.7	9.4	787
Georgia	6.5	4.9	4.9	10.4	4.9	6.6	5.0	5.0	9.5	5.0	428
Ghana	34.7	26.4	51.7	13.8	13.8	0.7	0.5	61.4	15.7	15.7	2 600
Guatemala	27.8	21.1	42.5	6.3	6.3	13.0	9.9	31.9	5.7	5.7	4 775
Guyana	50.0	38.0	38.0	9.6	9.4	50.0	38.0	38.0	10.8	10.7	289
Honduras	32.6	24.8	24.8	6.4	6.4	23.1	17.5	17.5	7.5	6.9	2 456
Hong Kong (China)	0.0	0.0	36.3	0.0	0.0	0.0	0.0	33.1	0.0	0.0	176 322
Hungary	6.9	5.3	6.1	8.2	5.5	6.0	4.6	5.2	7.8	5.6	19 786
India	34.3	26.1	40.2	31.1	28.1	18.2	13.8	35.9	24.3	21.2	47 571
Indonesia	36.0	27.4	27.6	6.7	6.6	34.9	26.5	27.5	4.4	4.3	26 766
Jamaica	42.5	32.3	32.3	5.9	5.8	47.6	36.2	36.2	8.9	8.8	2 647
Jordan	15.2	11.5	11.5	14.1	9.5	12.7	9.7	9.7	11.8	8.0	3 955
Kenya	54.1	41.1	55.9	18.5	18.5	2.6	1.9	50.0	12.2	12.2	2 489
Latvia	9.4	7.0	7.0	2.2	1.8	7.2	5.4	5.4	1.4	1.1	3 049
Lithuania	8.4	6.4	6.4	2.6	1.9	8.4	6.4	6.4	1.6	1.1	4 945
Malaysia	14.9	11.3	17.1	9.1	7.5	5.7	4.4	7.3	4.9	4.0	67 871
Malta	49.1	37.3	37.5	7.6	7.6	50.8	38.6	38.7	10.0	10.0	3 118
Mauritius	66.8	50.7	75.5	29.8	29.7	1.7	1.3	68.5	25.4	25.3	1 837
Mexico	34.9	26.5	26.5	17.1	16.3	35.0	26.6	26.6	14.3	14.0	177 809
Morocco	39.2	29.8	29.8	27.9	21.4	38.2	29.0	29.0	26.8	21.1	7 586

.../...

(Table A12, cont'd.)

WTO member	Tariff simple averages (%)					Tariff-weighted averages (%)					Trade value (\$m)
	Bound			Applied		Bound			Applied		
	Before	After*		Before	After	Before	After*		Before	After	
		Initial coverage	Final coverage				Initial coverage	Final coverage			
Nicaragua	41.5	31.5	31.5	4.1	4.1	42.1	32.0	32.0	4.2	4.2	1 467
Nigeria	48.1	36.5	60.8	25.2	25.2	2.6	2.0	50.6	18.2	18.2	4 848
Oman	11.6	8.8	8.8	4.9	4.5	11.2	8.5	8.5	4.9	4.3	3 788
Pakistan	40.9	31.1	48.3	19.8	19.3	14.1	10.7	48.8	20.1	19.8	5 154
Panama	22.8	17.4	17.9	7.0	6.5	18.4	14.0	14.0	6.1	5.5	2 622
Papua New Guinea	30.2	23.0	24.1	17.9	14.8	30.8	23.4	23.4	14.6	13.2	1 305
Paraguay	33.6	25.5	25.5	12.9	12.8	30.4	23.1	23.1	9.8	9.6	1 863
Peru	30.0	22.8	22.8	13.1	13.1	30.0	22.8	22.8	12.3	12.3	6 489
Philippines	23.4	17.8	29.1	6.8	6.8	6.2	4.7	19.2	3.2	3.2	28 594
Poland	9.7	7.5	11.0	10.4	8.0	6.5	5.0	10.8	7.9	6.3	43 588
Rep. of Korea	10.3	7.8	8.4	7.9	6.2	4.6	3.5	10.7	5.6	3.9	112 263
Rep. of Moldova	5.9	4.6	4.6	4.1	3.1	4.2	3.3	3.3	2.0	1.6	745
Romania	31.6	24.0	24.0	15.8	14.7	31.6	24.0	24.0	12.8	12.1	14 277
Saint Kitts and Nevis	70.8	53.8	53.8	8.8	8.8	71.6	54.4	54.4	11.5	11.5	158
Saint Lucia	53.9	40.9	41.0	8.0	8.0	66.8	50.7	50.7	10.9	10.9	205
Saint Vincent & the Grenadines	54.4	41.4	41.4	8.9	8.9	64.0	48.7	48.7	10.6	10.6	134
Singapore	6.3	4.8	20.9	0.0	0.0	1.8	1.4	15.2	0.0	0.0	110 837
Slovenia	24.4	18.5	18.6	9.4	9.3	22.6	17.2	17.2	9.8	9.5	9 426
South Africa	15.9	12.1	14.3	7.9	7.1	11.7	8.9	20.1	4.9	4.6	20 722
Sri Lanka	32.4	24.6	47.3	7.8	7.7	2.3	1.7	44.6	4.8	4.8	4 675
Taiwan Province of China	4.7	3.6	3.7	6.3	3.6	2.7	2.0	2.1	3.3	2.0	99 971
TFYR Macedonia			51.8	13.4	13.4			48.7	11.8	11.8	1 036
Thailand	24.1	18.3	32.8	14.2	12.8	7.7	5.9	24.4	9.1	8.3	57 954
Trinidad and Tobago	50.5	38.4	38.4	6.7	6.6	43.7	33.2	33.2	3.9	3.9	3 541
Tunisia	40.6	30.9	46.1	28.4	27.3	25.4	19.3	38.7	26.0	24.6	7 804
Turkey	16.7	12.7	36.7	7.2	6.8	8.3	6.3	28.5	4.4	4.1	38 050
Uruguay	31.3	23.8	23.8	14.0	13.9	31.0	23.6	23.6	12.1	11.9	2 673
Venezuela	33.9	26.2	26.2	12.1	12.0	33.3	25.6	25.6	13.0	12.7	12 812
Zimbabwe	10.9	8.3	54.0	18.7	18.0	2.3	1.7	45.3	14.2	12.1	1 089
Least developed countries	46.3	46.3	46.3	12.6	12.6	11.9	11.9	11.9	13.6	13.6	16 743
Bangladesh	35.7	35.7	35.7	21.3	21.3	2.9	2.9	2.9	21.8	21.8	5 815
Benin	11.4	11.4	11.4	11.7	11.7	6.1	6.1	6.1	11.7	11.7	483
Burkina Faso	13.2	13.2	13.2	11.7	11.7	4.8	4.8	4.8	10.0	10.0	254
Central African Republic	37.9	37.9	37.9	17.5	17.5	27.6	27.6	27.6	14.0	14.0	59
Chad	75.4	75.4	75.4	17.5	17.5	1.1	1.1	1.1	11.9	11.9	266
Guinea-Bissau	50.0	50.0	50.0	11.7	11.7	38.8	38.8	38.8	12.8	12.8	37
Madagascar	25.3	25.3	25.3	4.4	4.4	5.2	5.2	5.2	3.1	3.1	431
Malawi	43.3	43.3	43.3	12.8	12.8	7.8	7.8	7.8	12.2	12.2	283
Maldives	35.3	35.3	35.3	20.5	20.5	36.4	36.4	36.4	20.0	20.0	300
Mali	14.2	14.2	14.2	11.7	11.7	6.6	6.6	6.6	10.4	10.4	469
Mauritania	10.5	10.5	10.5	10.6	10.6	7.0	7.0	7.0	12.1	12.1	355
Mozambique	99.6	99.6	99.6	13.1	13.1	95.3	95.3	95.3	10.7	10.7	806
Myanmar	22.3	22.3	22.3	5.0	5.0	5.7	5.7	5.7	4.3	4.3	2 044
Niger	38.1	38.1	38.1	11.7	11.7	27.8	27.8	27.8	11.4	11.4	180
Rwanda	91.6	91.6	91.6	9.5	9.5	85.3	85.3	85.3	8.1	8.1	217
Senegal	30.0	30.0	30.0	11.7	11.7	29.8	29.8	29.8	8.6	8.6	1 263
Togo	80.0	80.0	80.0	11.7	11.7	0.0	0.0	0.0	10.5	10.5	287
Uganda	50.5	50.5	50.5	8.5	8.5	0.7	0.7	0.7	6.9	6.9	880
United Republic of Tanzania	120.0	120.0	120.0	15.9	15.9	0.0	0.0	0.0	11.9	11.9	1 349
Zambia	42.7	42.7	42.7	13.5	13.5	3.8	3.8	3.8	11.0	11.0	964

Source: UN COMTRADE and UNCTAD calculations.

* Initial coverage: averages are calculated from the initial bound lines only.

Final coverage: averages are calculated from the initial and newly bound lines.

**Table A13. Domestic bound and applied tariff peaks
before and after implementation of the WTO Hard scenario**

WTO member	Number of domestic peaks as percentages of the number of 6 digits tariff lines				Highest peak tariff			
	Bound rates		Applied rates		Bound rates		Applied rates	
	Before	After*	Before	After	Before	After*	Before	After
Developed countries	8.2	12.2	9.9	10.1				
<i>main DCs</i>	8.6	12.5	6.7	7.6				
Japan	10.3	20.9	7.7	20.8	28	1	297	12
United States	8.3	16.2	7.4	1.2	38	2	271	238
European Union	7.1	0.3	5.0	0.9	25	2	25	10
<i>other DCs</i>	8.0	12.0	11.5	11.3				
Australia	6.4	0.0	11.7	4.7	55	-	25	25
Canada	6.4	0.3	10.4	16.0	20	3	25	25
Iceland	7.9	22.0	19.2	13.7	175	4	100	15
New Zealand	6.0	17.0	7.3	21.5	45	5	15	5
Norway	12.1	26.7	13.3	11.9	14	1	206	1
Switzerland	9.2	6.0	7.0	0.1	20	1	889	194
Developing countries/economies	0.4	1.1	3.5	4.9				
Albania	10.1	0.0	0.0	0.0	20	-	-	-
Antigua and Barbuda	0.1	0.0	2.6	12.9	163	-	70	40
Argentina	0.0	0.0	0.0	0.0	-	-	-	-
Armenia	0.0	26.4	23.2	8.1	-	3	10	3
Bahrain	0.0	0.0	0.1	0.0	-	-	50	-
Barbados	0.4	0.0	3.5	9.6	247	-	145	32
Belize	0.0	0.0	3.9	12.5	-	-	70	45
Bolivia	0.0	0.0	0.0	0.0	-	-	-	-
Brazil	0.0	0.0	0.0	0.0	-	-	-	18
Brunei	0.0	0.0	15.7	15.0	-	-	200	200
Bulgaria	0.0	0.0	0.0	0.0	-	-	-	-
Cameroon	0.0	0.0	0.0	1.5	-	-	-	30
Chile	0.0	0.0	0.0	0.0	-	-	-	-
China	1.3	0.0	0.7	0.0	50	-	90	-
Colombia	0.0	0.0	0.0	0.0	-	-	-	-
Congo	0.0	0.0	0.0	1.9	-	-	-	30
Costa Rica	0.0	0.0	17.6	15.2	-	-	38	15
Côte d'Ivoire	0.0	0.0	0.0	2.2	-	-	-	20
Croatia	0.3	0.0	0.0	0.0	25	-	-	-
Cuba	0.7	0.0	0.0	2.3	62	-	-	30
Czech Republic	1.8	0.0	1.5	0.0	29	-	32	-
Dominica	0.0	0.0	2.9	11.8	-	-	165	128
Dominican Republic	0.0	0.0	0.0	16.2	-	-	-	12
Ecuador	0.0	0.0	0.0	1.3	-	-	-	22
Egypt	0.2	0.0	0.2	2.4	160	-	135	54
El Salvador	0.0	0.0	14.0	15.4	-	-	30	14
Gabon	1.2	0.0	0.0	0.0	60	-	-	-
Georgia	0.3	0.0	0.0	0.0	20	-	-	5
Ghana	0.0	0.0	0.0	2.2	-	-	89	40
Guatemala	0.0	22.7	8.9	16.9	-	7	25	25
Guyana	0.0	0.0	3.1	11.8	-	-	70	17
Honduras	0.0	0.0	8.2	15.1	-	-	35	12
Hong Kong (China)	0.0	0.0	0.0	0.0	-	-	-	-
Hungary	1.1	0.0	1.5	2.1	31	-	55	48
India	0.1	0.0	0.4	4.4	150	-	170	105
Indonesia	0.4	0.0	0.6	8.0	125	-	88	80
Jamaica	0.0	0.0	20.8	15.7	-	-	40	15
Jordan	0.0	0.0	0.0	0.0	-	-	-	-
Kenya	0.0	0.0	0.0	1.9	-	-	-	40
Latvia	1.5	0.0	11.6	9.3	55	-	25	4
Lithuania	0.3	0.0	17.2	6.6	30	-	35	4
Malaysia	0.0	0.0	7.6	3.5	-	7	154	154
Malta	0.0	0.0	0.1	0.5	-	-	25	25
Mauritius	0.0	0.0	0.0	2.1	-	-	-	80
Mexico	0.0	0.0	0.0	0.0	-	-	-	-
Morocco	0.0	0.0	0.0	0.0	-	-	-	-

.../...

(Table A13, cont'd.)

WTO member	Number of domestic peaks as percentages of the number of 6 digits tariff lines				Highest peak tariff			
	Bound rates		Applied rates		Bound rates		Applied rates	
	Before	After*	Before	After	Before	After*	Before	After
Nicaragua	0.0	0.0	15.3	9.6	-	-	15	15
Nigeria	0.0	0.0	0.0	1.4	-	-	150	55
Oman	0.0	0.0	0.0	0.0	-	-	-	-
Pakistan	0.0	0.0	0.6	2.4	-	-	250	30
Panama	0.0	0.0	0.0	1.7	-	-	36	15
Papua New Guinea	0.3	0.0	7.6	0.6	100	-	102	100
Paraguay	0.0	0.0	0.0	0.0	-	-	-	-
Peru	0.0	0.0	0.0	0.0	-	-	-	-
Philippines	0.0	0.0	0.3	1.9	-	-	30	30
Poland	0.0	0.0	0.9	3.9	38	-	55	55
Rep. of Korea	3.6	0.0	0.0	4.7	80	-	30	20
Rep. of Moldova	0.1	0.0	11.5	24.4	20	-	15	3
Romania	0.0	0.0	0.0	0.0	-	-	-	20
Saint Kitts and Nevis	0.0	0.0	3.6	13.4	-	-	70	40
Saint Lucia	0.5	0.0	11.5	13.3	170	-	95	40
Saint Vincent & the Grenadines	0.5	0.0	2.5	11.7	170	-	40	23
Singapore	0.0	28.5	0.0	0.0	-	2	-	-
Slovenia	0.0	0.0	0.0	0.0	-	-	-	-
South Africa	2.6	0.0	9.1	17.8	50	-	47	47
Sri Lanka	0.0	0.0	10.9	0.9	100	-	25	25
Taiwan Province of China	2.3	1.2	2.9	1.0	90	2	45	40
TFYR Macedonia	0.0	0.0	0.0	1.9	-	-	-	35
Thailand	0.3	0.0	2.7	3.0	80	-	80	80
Trinidad and Tobago	0.0	0.0	3.9	15.1	-	-	40	19
Tunisia	0.0	0.0	0.0	2.2	180	-	-	43
Turkey	0.7	0.0	5.6	4.3	82	-	125	8
Uruguay	0.0	0.0	0.0	0.0	-	-	-	-
Venezuela	0.0	0.0	0.0	0.0	-	-	-	-
Zimbabwe	0.5	0.0	7.3	2.4	150	-	65	65
Least developed countries	0.4	0.4	0.7	0.7				
Bangladesh	0.1	0.1	0.0	0.0	200	200	-	-
Benin	1.4	1.4	0.0	0.0	60	60	-	-
Burkina Faso	1.2	1.2	0.0	0.0	100	100	-	-
Central African Republic	0.0	0.0	0.0	0.0	-	-	-	-
Chad	0.0	0.0	0.0	0.0	-	-	-	-
Guinea-Bissau	0.0	0.0	0.0	0.0	-	-	-	-
Madagascar	0.0	0.0	7.4	7.4	-	-	20	20
Malawi	0.0	0.0	0.0	0.0	-	-	-	-
Maldives	1.8	1.8	1.1	1.1	300	300	112	112
Mali	2.9	2.9	0.0	0.0	60	60	-	-
Mauritania	0.0	0.0	0.0	0.0	50	50	-	-
Mozambique	0.0	0.0	0.0	0.0	-	-	-	-
Myanmar	0.1	0.1	5.5	5.5	288	288	30	30
Niger	0.0	0.0	0.0	0.0	125	125	-	-
Rwanda	0.0	0.0	0.0	0.0	-	-	-	-
Senegal	0.0	0.0	0.0	0.0	-	-	-	-
Togo	0.0	0.0	0.0	0.0	-	-	-	-
Uganda	0.0	0.0	0.0	0.0	-	-	-	-
United Republic of Tanzania	0.0	0.0	0.0	0.0	-	-	-	-
Zambia	0.0	0.0	0.0	0.0	-	-	-	-

Source: UN COMTRADE and UNCTAD calculations.

* The number of bound lines may differ before and after the implementation of the scenario because of change in the binding coverage.

For the bound rates, no AVEs have been estimated except for Switzerland, which explains the lower bound rates as compared with applied rates in developed countries. Switzerland's AVEs are those provided to WTO (GATT) at the time of negotiation, and are no longer included in CTS.

Table A14. Domestic bound and applied tariff peaks before and after implementation of the WTO Soft scenario

WTO member	Number of domestic peaks as percentages of the number of 6 digits tariff lines				Highest peak tariff			
	Bound rates		Applied rates		Bound rates		Applied rates	
	Before	After*	Before	After	Before	After*	Before	After
Developed countries	8.2	6.9	9.9	11.8				
<i>main DCs</i>	8.6	12.3	6.7	11.3				
Japan	10.3	19.4	7.7	20.2	28	50	297	12
United States	8.3	15.9	7.4	5.6	38	3	271	238
European Union	7.1	1.8	5.0	8.2	25	4	25	10
<i>other DCs</i>	8.0	4.1	11.5	12.0				
Australia	6.4	0.6	11.7	2.6	55	50	25	25
Canada	6.4	0.8	10.4	18.1	20	50	25	25
Iceland	7.9	3.1	19.2	13.1	175	50	100	15
New Zealand	6.0	17.1	7.3	20.4	45	50	15	9
Norway	12.1	1.4	13.3	11.9	14	50	206	3
Switzerland	9.2	1.7	7.0	5.8	20	50	889	194
Developing countries/economies	0.4	0.4	3.5	3.4				
Albania	10.1	0.0	0.0	0.0	20	-	-	-
Antigua and Barbuda	0.1	0.0	2.6	2.6	163	-	70	40
Argentina	0.0	0.0	0.0	0.0	-	-	-	-
Armenia	0.0	0.0	23.2	22.6	-	-	10	8
Bahrain	0.0	0.0	0.1	0.1	-	-	50	44
Barbados	0.4	0.0	3.5	3.5	247	-	145	70
Belize	0.0	0.0	3.9	4.0	-	-	70	45
Bolivia	0.0	0.0	0.0	0.0	-	-	-	-
Brazil	0.0	0.0	0.0	0.0	-	-	-	-
Brunei	0.0	0.0	15.7	15.7	-	60	200	200
Bulgaria	0.0	0.0	0.0	0.0	-	-	-	-
Cameroon	0.0	0.0	0.0	0.0	-	-	-	-
Chile	0.0	0.0	0.0	0.0	-	-	-	-
China	1.3	0.0	0.7	0.0	50	-	90	-
Colombia	0.0	0.0	0.0	0.0	-	-	-	-
Congo	0.0	0.0	0.0	0.0	-	-	-	-
Costa Rica	0.0	0.0	17.6	17.6	-	-	38	30
Côte d'Ivoire	0.0	0.0	0.0	0.0	-	-	-	-
Croatia	0.3	0.0	0.0	0.0	25	-	-	-
Cuba	0.7	0.0	0.0	0.0	62	-	-	-
Czech Republic	1.8	0.2	1.5	0.0	29	50	32	7
Dominica	0.0	0.0	2.9	2.9	-	330	165	165
Dominican Republic	0.0	0.0	0.0	0.0	-	-	-	-
Ecuador	0.0	1.8	0.0	0.0	-	50	-	-
Egypt	0.2	0.0	0.2	0.0	160	60	135	54
El Salvador	0.0	0.0	14.0	14.0	-	-	30	29
Gabon	1.2	0.0	0.0	0.0	60	-	-	-
Georgia	0.3	0.0	0.0	0.0	20	-	-	-
Ghana	0.0	0.0	0.0	0.0	-	178	89	89
Guatemala	0.0	0.0	8.9	8.9	-	-	25	25
Guyana	0.0	0.0	3.1	3.1	-	-	70	41
Honduras	0.0	0.0	8.2	8.2	-	-	35	23
Hong Kong (China)	0.0	0.0	0.0	0.0	-	-	-	-
Hungary	1.1	1.7	1.5	1.2	31	90	55	48
India	0.1	0.2	0.4	0.3	150	210	170	105
Indonesia	0.4	0.0	0.6	2.5	125	100	88	80
Jamaica	0.0	0.0	20.8	21.1	-	-	40	31
Jordan	0.0	0.0	0.0	0.0	-	50	-	-
Kenya	0.0	0.0	0.0	0.0	-	-	-	-
Latvia	1.5	0.0	11.6	11.6	55	50	25	14
Lithuania	0.3	0.0	17.2	19.3	30	-	35	11
Malaysia	0.0	13.8	7.6	1.9	-	243	154	154
Malta	0.0	0.0	0.1	0.1	-	-	25	25
Mauritius	0.0	0.0	0.0	0.0	-	-	-	-
Mexico	0.0	0.0	0.0	0.0	-	-	-	-
Morocco	0.0	0.0	0.0	0.0	-	-	-	-

.../...

(Table A14, cont'd.)

WTO member	Number of domestic peaks as percentages of the number of 6 digits tariff lines				Highest peak tariff			
	Bound rates		Applied rates		Bound rates		Applied rates	
	Before	After*	Before	After	Before	After*	Before	After
Nicaragua	0.0	0.0	15.3	15.3	-	-	15	15
Nigeria	0.0	0.0	0.0	0.0	-	300	150	150
Oman	0.0	0.0	0.0	0.0	-	-	-	-
Pakistan	0.0	0.3	0.6	0.6	-	500	250	250
Panama	0.0	1.7	0.0	0.0	-	50	36	24
Papua New Guinea	0.3	0.5	7.6	1.0	100	200	102	100
Paraguay	0.0	0.0	0.0	0.0	-	-	-	-
Peru	0.0	0.0	0.0	0.0	-	-	-	-
Philippines	0.0	0.0	0.3	0.3	-	-	30	30
Poland	0.0	2.9	0.9	1.5	38	90	55	55
Rep. of Korea	3.6	1.4	0.0	0.9	80	50	30	20
Rep. of Moldova	0.1	0.0	11.5	0.1	20	-	15	7
Romania	0.0	0.0	0.0	0.0	-	-	-	-
Saint Kitts and Nevis	0.0	0.0	3.6	3.6	-	-	70	66
Saint Lucia	0.5	0.0	11.5	11.5	170	-	95	57
Saint Vincent & the Grenadines	0.5	0.0	2.5	2.5	170	-	40	40
Singapore	0.0	0.0	0.0	0.0	-	-	-	-
Slovenia	0.0	0.0	0.0	0.0	-	50	-	-
South Africa	2.6	5.5	9.1	7.1	50	50	47	47
Sri Lanka	0.0	0.0	10.9	10.8	100	-	25	25
Taiwan Province of China	2.3	0.3	2.9	0.4	90	90	45	45
TFYR Macedonia	0.0	0.0	0.0	0.0	-	-	-	-
Thailand	0.3	0.6	2.7	1.9	80	160	80	80
Trinidad and Tobago	0.0	0.0	3.9	21.1	-	-	40	33
Tunisia	0.0	0.0	0.0	0.0	180	-	-	-
Turkey	0.7	1.1	5.6	5.2	82	250	125	125
Uruguay	0.0	0.0	0.0	0.0	-	-	-	-
Venezuela	0.0	0.0	0.0	0.0	-	-	-	-
Zimbabwe	0.5	0.0	7.3	7.1	150	-	65	65
Least developed countries	0.4	0.4	0.7	0.7				
Bangladesh	0.1	0.1	0.0	0.0	200	200	-	-
Benin	1.4	1.4	0.0	0.0	60	60	-	-
Burkina Faso	1.2	1.2	0.0	0.0	100	100	-	-
Central African Republic	0.0	0.0	0.0	0.0	-	-	-	-
Chad	0.0	0.0	0.0	0.0	-	-	-	-
Guinea-Bissau	0.0	0.0	0.0	0.0	-	-	-	-
Madagascar	0.0	0.0	7.4	7.4	-	-	20	20
Malawi	0.0	0.0	0.0	0.0	-	-	-	-
Maldives	1.8	1.8	1.1	1.1	300	300	112	112
Mali	2.9	2.9	0.0	0.0	60	60	-	-
Mauritania	0.0	0.0	0.0	0.0	50	50	-	-
Mozambique	0.0	0.0	0.0	0.0	-	-	-	-
Myanmar	0.1	0.1	5.5	5.5	288	288	30	30
Niger	0.0	0.0	0.0	0.0	125	125	-	-
Rwanda	0.0	0.0	0.0	0.0	-	-	-	-
Senegal	0.0	0.0	0.0	0.0	-	-	-	-
Togo	0.0	0.0	0.0	0.0	-	-	-	-
Uganda	0.0	0.0	0.0	0.0	-	-	-	-
United Republic of Tanzania	0.0	0.0	0.0	0.0	-	-	-	-
Zambia	0.0	0.0	0.0	0.0	-	-	-	-

Source: UN COMTRADE and UNCTAD calculations.

* The number of bound lines may differ before and after the implementation of the scenario because of change in the binding coverage.

For the bound rates, no AVEs have been estimated except for Switzerland, which explains the lower bound rates as compared with applied rates in developed countries. Switzerland's AVEs are those provided to WTO (GATT) at the time of negotiation, and are no longer included in CTS.

**Table A15. Domestic bound and applied tariff peaks
before and after implementation of the WTO Soft scenario**

WTO member	Number of domestic peaks as percentages of the number of 6 digits tariff lines				Highest peak tariff			
	Bound rates		Applied rates		Bound rates		Applied rates	
	Before	After*	Before	After	Before	After*	Before	After
Developed countries	8.2	7.0	9.9	10.6				
<i>main DCs</i>	8.6	8.1	6.7	8.6				
Japan	10.3	8.7	7.7	10.7	28	50	297	15
United States	8.3	8.4	7.4	8.0	38	12	271	238
European Union	7.1	7.1	5.0	7.1	25	13	25	13
<i>other DCs</i>	8.0	6.5	11.5	11.6				
Australia	6.4	7.0	11.7	10.5	55	50	25	25
Canada	6.4	6.3	10.4	10.2	20	50	25	25
Iceland	7.9	7.8	19.2	18.4	175	112	100	15
New Zealand	6.0	6.0	7.3	7.4	45	50	15	15
Norway	12.1	3.7	13.3	14.1	14	50	206	9
Switzerland	9.2	7.9	7.0	8.7	20	50	889	194
Developing countries/economies	0.4	0.6	3.5	3.7				
Albania	10.1	10.1	0.0	10.1	20	15	-	15
Antigua and Barbuda	0.1	0.1	2.6	2.6	163	124	70	40
Argentina	0.0	0.0	0.0	0.0	-	-	-	-
Armenia	0.0	0.0	23.2	20.9	-	-	10	10
Bahrain	0.0	0.0	0.1	0.1	-	-	50	50
Barbados	0.4	0.4	3.5	3.5	247	188	145	70
Belize	0.0	0.0	3.9	3.9	-	-	70	45
Bolivia	0.0	0.0	0.0	0.0	-	-	-	-
Brazil	0.0	0.0	0.0	0.0	-	-	-	-
Brunei	0.0	0.0	15.7	15.7	-	60	200	200
Bulgaria	0.0	0.0	0.0	0.0	-	-	-	-
Cameroon	0.0	0.0	0.0	0.0	-	-	-	-
Chile	0.0	0.0	0.0	0.0	-	-	-	-
China	1.3	1.5	0.7	1.3	50	50	90	34
Colombia	0.0	0.0	0.0	0.0	-	-	-	-
Congo	0.0	0.0	0.0	0.0	-	-	-	-
Costa Rica	0.0	0.0	17.6	17.6	-	-	38	34
Côte d'Ivoire	0.0	0.0	0.0	0.0	-	-	-	-
Croatia	0.3	0.3	0.0	0.3	25	17	-	17
Cuba	0.7	0.0	0.0	0.0	62	-	-	-
Czech Republic	1.8	1.5	1.5	1.2	29	50	32	15
Dominica	0.0	0.0	2.9	2.9	-	330	165	165
Dominican Republic	0.0	0.0	0.0	0.0	-	-	-	-
Ecuador	0.0	0.0	0.0	0.0	-	-	-	-
Egypt	0.2	0.2	0.2	0.3	160	88	135	88
El Salvador	0.0	0.0	14.0	14.0	-	-	30	30
Gabon	1.2	1.2	0.0	0.0	60	46	-	-
Georgia	0.3	0.3	0.0	0.0	20	15	-	-
Ghana	0.0	0.0	0.0	0.0	-	178	89	89
Guatemala	0.0	0.0	8.9	8.9	-	-	25	25
Guyana	0.0	0.0	3.1	3.1	-	-	70	53
Honduras	0.0	0.0	8.2	8.2	-	-	35	27
Hong Kong (China)	0.0	0.0	0.0	0.0	-	-	-	-
Hungary	1.1	2.5	1.5	1.8	31	90	55	48
India	0.1	0.2	0.4	0.3	150	210	170	105
Indonesia	0.4	0.4	0.6	2.5	125	100	88	80
Jamaica	0.0	0.0	20.8	20.7	-	-	40	38
Jordan	0.0	0.0	0.0	0.0	-	50	-	-
Kenya	0.0	0.0	0.0	0.0	-	-	-	-
Latvia	1.5	1.5	11.6	11.0	55	50	25	15
Lithuania	0.3	0.3	17.2	16.0	30	23	35	23
Malaysia	0.0	0.4	7.6	11.0	-	243	154	154
Malta	0.0	0.0	0.1	0.1	-	-	25	25
Mauritius	0.0	0.0	0.0	0.0	-	-	-	-
Mexico	0.0	0.0	0.0	0.0	-	-	-	-
Morocco	0.0	0.0	0.0	0.0	-	-	-	-

.../...

(Table A15, cont'd.)

WTO member	Number of domestic peaks as percentages of the number of 6 digits tariff lines				Highest peak tariff			
	Bound rates		Applied rates		Bound rates		Applied rates	
	Before	After*	Before	After	Before	After*	Before	After
Nicaragua	0.0	0.0	15.3	15.3	-	-	15	15
Nigeria	0.0	0.0	0.0	0.0	-	300	150	150
Oman	0.0	0.0	0.0	0.0	-	-	-	-
Pakistan	0.0	0.3	0.6	0.6	-	500	250	250
Panama	0.0	0.0	0.0	0.0	-	-	36	36
Papua New Guinea	0.3	0.8	7.6	1.7	100	200	102	100
Paraguay	0.0	0.0	0.0	0.0	-	-	-	-
Peru	0.0	0.0	0.0	0.0	-	-	-	-
Philippines	0.0	0.0	0.3	0.3	-	-	30	30
Poland	0.0	7.6	0.9	1.5	38	110	55	55
Rep. of Korea	3.6	4.9	0.0	0.9	80	50	30	24
Rep. of Moldova	0.1	0.3	11.5	3.6	20	15	15	15
Romania	0.0	0.0	0.0	0.0	-	-	-	-
Saint Kitts and Nevis	0.0	0.0	3.6	3.6	-	-	70	70
Saint Lucia	0.5	0.5	11.5	11.5	170	129	95	70
Saint Vincent & the Grenadines	0.5	0.5	2.5	2.5	170	129	40	40
Singapore	0.0	0.0	0.0	0.0	-	-	-	-
Slovenia	0.0	0.0	0.0	0.0	-	-	-	-
South Africa	2.6	5.5	9.1	9.1	50	50	47	47
Sri Lanka	0.0	0.0	10.9	10.8	100	-	25	25
Taiwan Province of China	2.3	2.9	2.9	2.8	90	90	45	45
TFYR Macedonia	0.0	0.0	0.0	0.0	-	-	-	-
Thailand	0.3	0.6	2.7	1.9	80	160	80	80
Trinidad and Tobago	0.0	0.0	3.9	21.1	-	-	40	38
Tunisia	0.0	0.0	0.0	0.0	180	-	-	-
Turkey	0.7	1.1	5.6	5.3	82	250	125	125
Uruguay	0.0	0.0	0.0	0.0	-	-	-	-
Venezuela	0.0	0.0	0.0	0.0	-	-	-	-
Zimbabwe	0.5	0.0	7.3	7.1	150	-	65	65
Least developed countries	0.4	0.4	0.7	0.7				
Bangladesh	0.1	0.1	0.0	0.0	200	200	-	-
Benin	1.4	1.4	0.0	0.0	60	60	-	-
Burkina Faso	1.2	1.2	0.0	0.0	100	100	-	-
Central African Republic	0.0	0.0	0.0	0.0	-	-	-	-
Chad	0.0	0.0	0.0	0.0	-	-	-	-
Guinea-Bissau	0.0	0.0	0.0	0.0	-	-	-	-
Madagascar	0.0	0.0	7.4	7.4	-	-	20	20
Malawi	0.0	0.0	0.0	0.0	-	-	-	-
Maldives	1.8	1.8	1.1	1.1	300	300	112	112
Mali	2.9	2.9	0.0	0.0	60	60	-	-
Mauritania	0.0	0.0	0.0	0.0	50	50	-	-
Mozambique	0.0	0.0	0.0	0.0	-	-	-	-
Myanmar	0.1	0.1	5.5	5.5	288	288	30	30
Niger	0.0	0.0	0.0	0.0	125	125	-	-
Rwanda	0.0	0.0	0.0	0.0	-	-	-	-
Senegal	0.0	0.0	0.0	0.0	-	-	-	-
Togo	0.0	0.0	0.0	0.0	-	-	-	-
Uganda	0.0	0.0	0.0	0.0	-	-	-	-
United Republic of Tanzania	0.0	0.0	0.0	0.0	-	-	-	-
Zambia	0.0	0.0	0.0	0.0	-	-	-	-

Source: UN COMTRADE and UNCTAD calculations.

* The number of bound lines may differ before and after the implementation of the scenario because of change in the binding coverage.

For the bound rates, no AVEs have been estimated except for Switzerland, which explains the lower bound rates as compared with applied rates in developed countries. Switzerland's AVEs are those provided to WTO (GATT) at the time of negotiation, and are no longer included in CTS.

A16. *Ad valorem* equivalent methodology

For aggregation purposes specific tariffs need to be converted to *ad valorem* equivalents. This requires the determination of a suitable price to use as a base for the conversion. Export unit values are commonly used, but selecting the appropriate measure is somewhat arbitrary. A three-step approach for determining unit values is used here:

(1) use tariff line import statistics of the market country available in UNCTAD's TRAINS database; or (if (1) is not available): (2) from the HS 6-digit import statistics of the market country from COMTRADE; or (if (1) and (2) are not available): (3) from the HS 6-digit import statistics of all OECD countries. Once a unit value is estimated, it is used for all types of rates (MFN, preferential rates, etc.).

For this paper the authors have used step (3) of the above. This produces a unique unit value for each product common to all importing countries and all types of rates, and thus generates less variable estimates of tariffs. It also preserves the margin of preference in the preferential rates.

**POLICY ISSUES IN INTERNATIONAL TRADE
AND COMMODITIES**

- No. 1 Erich Supper, **Is there effectively a level playing field for developing country exports?**, 2001, 138 p. Sales No. E.00.II.D.22.
- No. 2 Arvind Panagariya, **E-commerce, WTO and developing countries**, 2000, 24 p. Sales No. E.00.II.D.23.
- No. 3 Joseph Francois, **Assessing the results of general equilibrium studies of multilateral trade negotiations**, 2000, 26 p. Sales No. E.00.II.D.24.
- No. 4 John Whalley, **What can the developing countries infer from the Uruguay Round models for future negotiations?**, 2000, 29 p. Sales No. E.00.II.D.25.
- No. 5 Susan Teltscher, **Tariffs, taxes and electronic commerce: Revenue implications for developing countries**, 2000, 57 p. Sales No. E.00.II.D.36.
- No. 6 Bijit Bora, Peter J. Lloyd, Mari Pangestu, **Industrial policy and the WTO**, 2000, 47 p. Sales No. E.00.II.D.26.
- No. 7 Emilio J. Medina-Smith, **Is the export-led growth hypothesis valid for developing countries? A case study of Costa Rica**, 2001, 49 p. Sales No. E.01.II.D.8.
- No. 8 Christopher Findlay, **Service sector reform and development strategies: Issues and research priorities**, 2001, 24 p. Sales No. E.01.II.D.7.
- No. 9 Inge Nora Neufeld, **Anti-dumping and countervailing procedures – Use or abuse? Implications for developing countries**, 2001, 33 p. Sales No. E.01.II.D.6.
- No. 10 Robert Scollay, **Regional trade agreements and developing countries: The case of the Pacific Islands' proposed free trade agreement**, 2001, 45 p. Sales No. E.01.II.D.16.
- No. 11 Robert Scollay and John Gilbert, **An integrated approach to agricultural trade and development issues: Exploring the welfare and distribution issues**, 2001, 43 p. Sales No. E.01.II.D.15.
- No. 12 Marc Bacchetta and Bijit Bora, **Post-Uruguay round market access barriers for industrial products**, 2001, 50 p. Sales No. E.01.II.D.23.
- No. 13 Bijit Bora and Inge Nora Neufeld, **Tariffs and the East Asian financial crisis**, 2001, 30 p. Sales No. E.01.II.D.27.
- No. 14 Bijit Bora, Lucian Cernat, Alessandro Turrini, **Duty and quota-free access for LDCs: Further evidence from CGE modelling**, 2002, 130 p. Sales No. E.01.II.D.22.

- No. 15 Bijit Bora, John Gilbert, Robert Scollay, **Assessing regional trading arrangements in the Asia-Pacific**, 2001, 29 p. Sales No. E.01.II.D.21.
- No. 16 Lucian Cernat, **Assessing regional trade arrangements: Are South-South RTAs more trade diverting?**, 2001, 24 p. Sales No. E.01.II.D.32.
- No. 17 Bijit Bora, **Trade related investment measures and the WTO: 1995-2001**, 2002.
- No. 18 Bijit Bora, Aki Kuwahara, Sam Laird, **Quantification of non-tariff measures**, 2002, 42 p. Sales No. E.02.II.D.8.
- No. 19 Greg McGuire, **Trade in services – Market access opportunities and the benefits of liberalization for developing economies**, 2002, 45 p. Sales No. E.02.II.D.9.
- No. 20 Alessandro Turrini, **International trade and labour market performance: Major findings and open questions**, 2002, 30 p. Sales No. E.02.II.D.10.
- No. 21 Lucian Cernat, **Assessing south-south regional integration: Same issues, many metrics**, 2003, 32 p. Sales No. E.02.II.D.11.
- No. 22 Kym Anderson, **Agriculture, trade reform and poverty reduction: Implications for Sub-Saharan Africa**, 2004, 30 p. Sales No. E.04.II.D.5.
- No. 23 Ralf Peters and David Vanzetti, **Shifting sands: Searching for a compromise in the WTO negotiations on agriculture**, 2004, 46 p. Sales No. E.04.II.D.4.
- No. 24 Ralf Peters and David Vanzetti, **User manual and handbook on Agricultural Trade Policy Simulation Model (ATPSM)**, 2004, 45 p. Sales No. E.04.II.D.3.
- No. 25 Khalil Rahman, **Crawling out of snake pit: Special and differential treatment and post-Cancun imperatives**, 2004.
- No. 26 Marco Fugazza, **Export performance and its determinants: Supply and demand constraints**, 2004, 57 p. Sales No. E.04.II.D.20.
- No. 27 Luis Abugattas, **Swimming in the spaghetti bowl: Challenges for developing countries under the “New Regionalism”**, 2004, 30 p. Sales No. E.04.II.D.38.
- No. 28 David Vanzetti, Greg McGuire and Prabowo, **Trade policy at the crossroads – The Indonesian story**, 2005, 40 p. Sales No. E.04.II.D.40.
- No. 29 Simonetta Zarrilli, **International trade in GMOs and GM products: National and multilateral legal frameworks**, 2005, 57 p. Sales No. E.04.II.D.41.
- No. 30 Santiago Fernández de Córdoba, Sam Laird and David Vanzetti, **Smoke and mirrors: Making sense of the WTO industrial tariff negotiations**, 2005, Sales No. E.05.II.D.16.
- No. 31 David Vanzetti, Santiago Fernandez de Córdoba and Veronica Chau, **Banana split: How EU policies divide global producers**, 2005, 27 p. Sales No. E.05.II.D.17.

United Nations publications may be obtained from bookstores and distributors throughout the world. Please consult your bookstore or write to:

United Nations Publications

All orders from **North America, Latin America, the Caribbean and Asia and the Pacific** should be sent to:

United Nations Publications
Room DC2-853, 2 UN Plaza
New York, NY 10017, USA
Telephone: (212) 963-8302, Toll Free 1-800-253-9646 (North America only)
Fax: (212) 963-3489
E-mail: publications@un.org

Customers in **Europe, Africa and the Middle East** should send their orders to:

Section des Ventes et Commercialisation
Bureau E-4, CH-1211
Geneva 10, Switzerland
Telephone: 41 (22) 917-2613/2614
Fax: 41 (22) 917-0027
E-mail: unpubli@unog.ch

QUESTIONNAIRE

UNCTAD Study Series on
**POLICY ISSUES IN INTERNATIONAL TRADE
AND COMMODITIES**

*(Study series no. 30: Smoke and Mirrors: Making Sense of the WTO
Industrial Tariff Negotiations)
Readership Survey*

Since 1999, the Trade Analysis Branch of the Division on International Trade in Goods and Services, and Commodities of UNCTAD has been carrying out policy-oriented analytical work aimed at improving the understanding of current and emerging issues in international trade of concern to developing countries. In order to improve the quality of the work of the Branch, it would be useful to receive the views of readers on this and other similar publications. It would therefore be greatly appreciated if you could complete the following questionnaire and return to:

*Trade Analysis Branch
DITC, Rm. E-8076
United Nations Conference on Trade and Development
Palais des Nations
CH-1211 Geneva 10, Switzerland*

1. Name and address of respondent (optional):

2. Which of the following describes your area of work?

Government	<input type="checkbox"/>	Public enterprise	<input type="checkbox"/>
Private enterprise institution	<input type="checkbox"/>	Academic or research	<input type="checkbox"/>
International organization	<input type="checkbox"/>	Media	<input type="checkbox"/>
Not-for-profit organization	<input type="checkbox"/>	Other (specify) _____	

3. In which country do you work? _____

4. Did you find this publication Very useful Of some use Little use
to your work?

5. What is your assessment of the contents of this publication?
 Excellent Good Adequate Poor

6. Other comments:
