

Trick or Treat?
Development opportunities and challenges in the WTO negotiations on industrial tariffs

Santiago Fernandez de Córdoba, Sam Laird and David Vanzetti¹

Abstract

Negotiations on industrial tariffs in the current WTO work programme have turned out to be surprisingly difficult. On the one hand, developing countries, particularly in Africa, are concerned about the potential negative effect on their industrial development of developed country efforts to push them into deep cuts in applied tariffs: after the disillusion of the Uruguay Round, promises of welfare gains seem like buying one of Akerloff's lemons. On the other hand, a number of the more complex formula proposals for tariff-cutting make it difficult for participants to evaluate how what they have to do compared with what they hope to receive. The developing countries may achieve greater exports and welfare gains from the more ambitious proposals, but computations show that these also imply greater imports, lower tariff revenues, some labour market adjustments and reduced output in some politically sensitive sectors. Some way of assisting the developing countries in coping with these adjustments is required to take advantage of the opportunities presented by the negotiations. Proposals for Bank-Fund "facilities" to already indebted countries to meet new WTO obligations may not be the highest development priority.

Key words: WTO negotiations, trade, industrial tariffs, development, special and differential treatment, CGE modelling,

¹ Trade Analysis Branch, DITC, UNCTAD. Laird is also Special Professor of International Economics, University of Nottingham. The views expressed in this paper are those of the authors and do not necessarily reflect the views of UNCTAD or its members. Contact: tab@unctad.org
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1. Introduction

The WTO negotiations on industrial tariffs raise a number of important development-related issues. One such issue is the extent to which the negotiations address barriers that face the key exports of developing countries as they try to expand and diversify their production and trade.² A second issue is the extent to which commitments that are being sought from the developing countries contributes to their economic development. While economists generally agree that, at least in the longer term, trade liberalisation is beneficial to economic development, there is some controversy about the relative importance of openness and institutions as well as the validity of intervention to support industrialisation or in the presence of externalities.³ Finally, if the argument for liberalisation prevails, what kind of measures are needed to support the adjustment process, how much would these measures cost, who would pay, and would the financing of trade adjustments necessarily be the highest development priority?

This paper looks first at proposals in the non-agricultural market access negotiations in the WTO. Second, we attempt to evaluate the economic impact of these proposals using a global general equilibrium model (GTAP). Third, we look at some of the literature on adjustment to trade reform. And, finally, we consider the need for supporting policies and other development options.

2. Current proposals in the WTO on industrial tariffs

A large number of proposals have been made in the WTO negotiating Group on Non-agricultural Market Access (NAMA), of which six proposals had a formula as a core element.⁴ Of these, the Chinese, EU, Korean and Japanese proposals have a strong “harmonizing” elements in that higher than proportional reductions in tariffs would be made on the higher rates. In this they bore a resemblance to the Swiss formula used in the Tokyo Round, although this used a single coefficient of 14, which became the maximum rate for all affected tariffs in all participating countries. The first phase of the initial US proposal was similar, but the US also proposed universal free trade after 10 years. The Indian proposal was for unspecified linear cuts with a lesser reduction by developing countries, e.g. 50 per cent by developed countries and 33.3 per cent cut by developing countries.

² This problem has been well documented over the years in studies by the IMF, UNCTAD, the World Bank and the WTO.

³ See, for example, Sachs and Warner (1995), Rodrik (2001).

⁴ See Laird, Fernandez de Córdoba and Vanzetti (2003) for an analysis.

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 (WTO document TN/MA/W/35/Rev.1). Since the basic Swiss formula with a single maximum coefficient would be harmonizing across countries was seen as presenting a problem for developing countries with higher initial tariffs, the Chairman proposed that the Swiss formula maximum coefficient would be set according to each country's own average tariff, that is, it would tend to harmonise within rather than across countries. This was also seen by the Chairman as providing for "less than full reciprocity" to the extent that developing countries have higher initial tariffs (but there was no differentiation between developed and developing countries with similar average rates). The Chairman also identified seven sectors for complete free trade by all countries (except the least developed): electronics & electrical goods; fish & fish products; footwear; leather goods; motor vehicles parts & components; stones, gems, & precious metals; and textiles & clothing.

Canada, the EU and the United States, in a joint contribution during the summer of 2003, prior to Cancún, argued for a 'single' harmonizing formula rather than a country-based average tariff reduction formula in order to achieve real expansion of market access. Whereas the Chairman's text envisaged exempting LDCs from tariff reduction commitments, the joint text proposed that additional provisions should be included for LDCs and those IDA-only eligible members as well as members with a binding coverage of non-agricultural tariff lines that is less than 35 per cent. These members would be exempt 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.

Despite this last minute intervention by the large developed country players, the draft Cancún Ministerial text retained the main elements of the proposal of the Chairman of the Non-agricultural Market Access Negotiating Group, except that it adopted the Canadian, EU and US proposals to allow some flexibility for countries that currently have very low binding coverage, mainly in Africa.

Ultimately, the WTO's Cancún Ministerial Meeting 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"). Developed countries generally considered there was insufficient ambition in the proposed draft presented in Cancún, while 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.

At the time of writing (May 2004), 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. In summary, all the proposals, including those made by China, Republic of Korea, India, South Africa, Malaysia and others, are still on the negotiating table, and countries can put forward new proposals, whether or not based on those already on the table.

3. Evaluation of the economic impact of key proposals

Scenarios

To assess the potential quantitative impact of the various proposals under consideration in the WTO, we have selected four scenarios to highlight the spread of policy options. These do not entirely correspond to any specific proposal. These four scenarios we call 'free trade' (full tariff liberalisation 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, and may be regarded in a sense as a “benchmark” scenario.

The second and third scenarios represent two 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 Non-agricultural Market Access (NAMA) Group. This Framework text places the emphasis on a non-linear formula approach to tariff-cutting, to be supplemented by sectoral tariff elimination on 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 analyse 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 our analysis, The Hard Scenario represents a more ambitious ("liberalising") approach to the negotiations, while the Soft scenario introduces important elements of special and differential treatment that are not present in the Hard scenario, as explained below. 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 the initial rate, T_1 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 the average bound rates become the maximum. The so-called Hard version of 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 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 on 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 less⁵. In modelling this scenario it is assumed that tariff lines gathering the greatest amount of tariff revenue are excluded first. These items have either high tariffs, 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 the later 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 & 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. This capping element harmonizes tariffs and has a similar effect to 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.

Like 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.

To simulate a trade negotiation in which all sectors are covered, all our scenarios include similar reductions in the level of intervention in the resources (coal, oil, gas and unprocessed minerals), services and agriculture sectors. 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 of the Doha Ministerial text ("nothing is agreed until all is agreed"), 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 one 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.

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

The four scenarios are compared in Table 1.

Average applied tariff changes

In our analysis we apply the various formula to bound rates, including newly bound rates under the different proposals. We then compare these bound levels to applied rates and only modify those applied rates if they are affected by new bindings. This change in the applied rates is what drives the results.

Table 2 shows the changes in the average applied tariff in developed and developing countries and the least-developed countries (LDCs) after applying the scenarios defined above. The level of ambition for tariffs cuts declines in going from free trade through the WTO variants to 'simple' mix. For developed countries, trade-weighted applied industrial 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 8.1 per cent to 0 per cent, 2.6 per cent, 6 per cent and 6.2 per cent respectively. In all but the "free trade" scenario least-developed country tariffs do not change. These averages cover industrial products only and exclude the changes of 30 per cent assumed for the agriculture and services sectors.

Methodology

Simulations are undertaken using the global computable general equilibrium Global Trade Analysis Project (GTAP) model and version 5.3 of the underlying database, modified by the authors to take account of changes in applied rates after the formulae are applied to bound rates, to include bilateral and reciprocal preferences from the UNCTAD TRAINS database, and to include the percentage or *ad valorem* equivalent of specific rates of duty that we have computed (mainly affecting the agricultural sector which is treated as two sectors in this paper).⁶ In the main analysis in this paper, industries are assumed to be perfectly competitive and are characterised 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 utilised. 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, subsidies on output and on inputs such as capital, labour and land. Border measures are specified

⁶ GTAP <http://www.gtap.agecon.purdue.edu/>. The original database has 78 countries and regions and 65 sectors that are aggregated as shown in the annex tables for the present study.

bilaterally, so the impact of preference erosion can be ascertained. UNCTAD has modified the bilateral tariff data to reflect 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, without taking account of transition periods or adjustment costs, which we discuss later. The quantitative analysis is also limited in that it is not able to take account of all impediments in production and trade, such as non-tariff measures and the absence of competition in the supply chain. In this respect we may have overestimated the benefits from liberalisation. On the other hand, we have underestimated the impacts by ignoring dynamic gains and increasing returns to scale. The model is best used for comparing scenarios rather than estimating absolute magnitudes.

Effects on overall economic welfare

An overall impact of the gains and losses from liberalisation can be captured as welfare, shown in Table 3 for each region under each scenario. Under the Simple scenario, the global gains sum to \$28 billion with \$9.4 billion accruing to developing countries. Amongst the losing regions, Canada suffers as the value of its preferential access into 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 liberalisation 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 benefits from allocative efficiency gains; and Rest of Asia. For Japan, these gains reflect terms-of-trade effects, with rising export prices for the electronics, motor vehicles, other metals and services exports. Sub-Saharan Africa loses in this scenario because of deterioration in its terms of trade, particularly falling export prices of services.

The \$9.4 billion in welfare gains to developing countries in the Simple scenario represents a modest addition of 0.10 per cent to GDP growth each year. After compound growth for ten years the additional gains amount to \$96 billion, worth \$60 billion in today's terms.⁷ This

⁷ At a 5 per cent discount rate, \$59 billion = \$96 billion / (1.05)¹⁰.

may be seen as a useful contribution to poverty reduction, but this does not take account of any externalities that may be associated with trade intervention in the short or long terms nor of any adjustment costs.

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 4. In general, the more ambitious scenarios generate a greater change in export revenues with some variations across regions (and sectors). Under the less ambitious Simple 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. That is, 30 per cent of the developing country increase in exports is to other developing country markets. North-North trade is estimated to increase by only \$4 billion.

Imports

Most countries contemplating liberalisation are concerned about being flooded by imports (Table 5). 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 need to be accommodated by corresponding changes in the capital account.

As expected, the changes in imports are all positive in the partial liberalisation scenarios. Changes in imports levels in the Andean countries, Central America & Caribbean and Sub-Saharan Africa are quite moderate. However, China, Central and Eastern Europe, India and Japan show quite substantial increases in imports, reflecting the degree of liberalisation in these regions. The largest increase in imports – nearly 50 per cent – would occur in India under the Free trade scenario.

As a broad generalisation 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 liberalisation will have a significant adverse impact on government revenues because tariff revenues make up 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 6.⁸ Clearly, developing countries are much more dependent on this source. However, as discussed later, country level data reveal even more extreme dependency on tariff revenues, especially in the cases of small island developing states.

The free trade scenario implies 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. The declines vary significantly across regions, from next to nothing in Central America & Caribbean to around 50 per cent in China. 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.

Sectoral output

Policymakers concerned with structural adjustment will wish to take account of potential changes in value of output in specific sectors. Estimates of the potential percentage changes in output in some key sectors are given in Table 7. In absolute terms, the largest falls over the partial liberalisation scenarios are in iron and steel (\$2-4 billion) and petroleum and coal products (\$5 billion).⁹ 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).

⁸ These data, from the GTAP database, are broadly consistent with the IMF 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.

⁹ Absolute values depend on the degree of aggregation, which is necessarily somewhat arbitrary. The greater the disaggregation, the greater the likelihood of large percentage changes.

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 World (including Russia and Central Asia) and 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 highest changes in output following the Simple scenario are around 30 per cent in Indonesian leather, and 25 and 13 per cent in 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 Rest of Asia.

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. Of these sectors, the motor vehicles sector faces the most significant losses - 16 per cent overall. 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.

Welfare with a flexible labour force

In the standard GTAP model closure, changes in wage rates give an indication of the structural changes that are necessary to maintain the existing level of employment. However, we also 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 (Table 8). 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, liberalisation 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.¹⁰ 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 Europe and Sub-Saharan Africa, the negative welfare results estimated under the standard closure 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 that are assumed not to be able to expand their labour use.

4. Adjustment

The cost of moving resources

While the aggregate results for welfare and employment from the above analysis give little rise for concern, several possible problems were identified. These include the large increase in imports in some developing countries, pointing to possible balance of payments problems, large declines in output in some sectors in some countries, and large tariff revenue losses.

Perceived high adjustment costs may be one of the reasons for the hesitation of some developing countries to take on board some of the more ambitious liberalisation proposals. There is relatively little documented evidence about the scale and nature of these costs or the adjustment process of local economies in the aftermath of trade liberalisation, despite some 15 years of unilateral reforms in developing and transitional economies. For informed policy-making, governments need a better understanding of the costs to their economies following changes in their tariffs.

Conceptually, adjustment costs may be defined as the cost of moving resources from one sector to another that occur in the immediate period after changes in policies. Changes in relative prices, or regulations, make some firms or sectors uncompetitive, leading 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

¹⁰ 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).

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 liberalisation and the ability of the workers to find a new job. 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 de Melo and Tarr (1990) on the heavily protected US textiles, clothing, steel and motor vehicles sectors suggests cost would amount to 1.5 per cent of the gains from liberalisation even during the adjustment period. The basis for these estimates is the earnings losses of the displaced workers and the duration of unemployment.¹¹ More recently, a study of the US-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, cited in Bacchetta and Jansen 2003).

Unfortunately, empirical evidence from developing countries is scarce, although there is plenty of anecdotal evidence about unemployment following liberalisation. 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 small, merely a few dollars per year, and these were offset by 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 et al., 1990).

¹¹ 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.

Harrison and Revenga (1995) observed increasing employment following liberalisation in Costa Rica, Peru and Uruguay (quoted in Bacchetta and Jansen, 2003, p. 18).

Perhaps the most comprehensive analysis of developing country labour markets following trade liberalisation and other forms of globalisation has been undertaken by Rama (2001). He surveys over 100 papers and concludes that: (i) wages grow faster 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; (ii) unemployment tends to be higher following liberalisation, but in the long run is no higher in open economies; and finally (iii) 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.

Fiscal imbalance

Many developing countries are concerned that trade liberalisation will have a significant adverse impact on government revenues because tariff revenues make up substantial contribution to public revenue. As we have seen, tariff revenue losses are often in the order of 50 per cent (100 per cent in the case of “free trade”), so this seems to be a point to take into consideration. The question is the extent to which this will make a substantial difference to overall government revenues. In the OECD countries certainly there should not be a problem, since tariffs typically make up around 1 per cent or less of overall government revenues and these countries have well-developed tax systems to facilitate any need for revenue replacement from alternative sources. However, as Table 9 shows, the situation is quite different for the developing countries where the share of tariffs in total government revenue rises to as much as 76 per cent in Guinea. 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.

One consequence then of the current WTO negotiations is that 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. This could be an advantage in the

longer term, since, in principle, 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.

In some cases, the switch to domestic taxes may be achieved relatively easily. For example, 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 on petroleum, tobacco and alcohol) may well operate in practice essentially 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.

Another issue is the cost of raising taxes through tariffs rather than 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.

Estimates using the GTAP database and UNCTAD tariff data tend to confirm the desirability of switching away from trade taxes, although the data say nothing about the cost of making the switch (such as, re-training of officials, new computer equipment, programming, etc., after the preparation and passage of new tax laws.) 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. For example, in China and Korea (Rep.) the cost of raising \$1 in tariff revenue was estimated at \$0.56 and \$0.49, respectively, whereas \$1 in output tax costs \$0.27 and \$0.13, respectively. On the other hand, in Japan the cost of raising \$1 of tariff revenue is \$0.12 compared with \$0.44 for output taxes, reversing the implications. In general, higher taxes are related to higher cost of raising revenue. In high-taxation countries, e.g. Denmark and Sweden, the cost of tariff revenue exceeds the costs of output, income or consumption taxes. However, in developing countries with high tariffs, from the perspective of strict fiscal efficiency – that is, ignoring any trade or industrial policy issues - it would be more efficient in the longer term to switch to broad-based taxes, although there would also be costs involved in making the transition.

How to handle the adjustment

Nevertheless, the process of adjusting to a more open trading world is not costless and the question arises how best to mitigate the adverse effects on trade, output, employment and revenues from the proposals that are now being considered in the WTO negotiations. One obvious approach is to phase-in policy changes so that labour and capital has more time to adjust. In the Uruguay Round, for example, the lowering of tariff rates for industrial and agricultural products has generally taken place in six equal annual reductions which began in 1995, except that developing countries had 10 years to complete the reductions in agricultural products. Least-developed countries were typically granted even longer time frames for implementation. Thus, some transitional period is to be expected and is envisaged in the Chairman's draft text.

At Cancún, the World Bank representative announced that the Bank would increase its lending to assist developing countries to take advantage of trade integration. New resources would be devoted to trade facilitation and logistics, including in port, roads, customs and reforms of trade-related institutions, as well as to the design of trade reform programmes to increase international competitiveness. These are important development priorities, although, given their long-term nature, it is not clear that these new measures will address the adjustment problems.¹² It would seem that further work, along the lines of Rama 2003) would be needed to implement social safety nets, re-training, etc., to solve the immediate fallout from the WTO negotiations.

Concerning tariff revenue reductions, it will take some time and effort to switch to alternative sources of funding to replace the substantial losses that a number of developing countries seem to be facing. Where tariffs are eliminated, as is the case in several proposals (free trade as well as sectoral elimination under the WTO Chairman's proposal) this implies a complete elimination of the revenue source, and the challenge is greater. The main issues then are the speed and cost of implementing new tax laws and the associated changes in fiscal administration. On the other hand, where tariffs are reduced rather than eliminated and/or where non-tariff barriers are reduced, tariff revenues may even 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. In addition, a reduction in rates may

¹² Work at UNCTAD suggests that for Africa in particular, the greater export response can be achieved through infrastructure development than other issues such as market access (Fugazza, 2004).

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

A related issue is that any shortfall in government revenues could lead to a deficit in the Balance of Payments (the "twin deficits" problem). The IMF has proposed to establish a Trade Integration Mechanism to mitigate concerns that implementation of WTO Agreements might give rise to temporary BOP shortfalls. The Fund's expectations are that such shortfalls are unlikely to be large for most countries, but it admits that they could be significant in the short run for some countries (IMF, 2004).

A problem with the Bank and Fund proposals is that they essentially indicate a willingness to lend to countries that currently have considerable debt burdens. And the question must be asked whether the current WTO proposals represent the best use of development finance. If infrastructure projects are indicated to give the greatest response then this should be a higher priority in trade, but it may well be that there are other calls for funding such as efforts to fight AIDS that should have even higher priority. To the degree that bilateral aid flows (donations) can be used, this would seem preferable to increasing debt. The issue of timing on further trade reforms, in view of their potential benefits, would seem better left to the countries themselves to decide.

5. Conclusions

The aggregate results in our study indicate quite moderate changes in output, suggesting that there is little to worry about in respect of any structural adjustment costs, and this is consistent with findings by some other authors.¹³ However, as we have seen, these 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, and new policies would need to be put in place in a number of developing countries. Of course, the results in some specific countries with our regional groups could be different and there may also be some variations in specific sectors.

¹³ 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, but we retain the more conservative assumptions of perfect competition and constant returns to scale.

In an important variation from the standard GTAP model in which employment is maintained while wages adjust, we allowed for the possibility of bringing the unemployed into the labour force. This is shown to have an impact far greater than the efficiency gains that result from an improved allocation of resources or terms of trade effects.

Finally, a number of developing countries could face difficulties in implementing the more ambitious tariff reductions proposed in this round of negotiations. While these bring greater longer-term gains in welfare and exports, they also imply greater imports, greater revenue losses and declines in output, which are likely to precede the gains. If developing countries wish to pursue the more ambitious proposals, then consideration needs to be given to developing appropriate support measures to facilitate the implementation of the final agreement and to minimize the burden of adjustment. Some recent experiences of national reforms also suggest that economic and social costs may be unpredictable and some caution seems to be indicated.

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, and this would be quite normal in the implementation phase in multilateral trade negotiations. The IFIs have also indicated that they may be able to provide financial assistance to help developing countries cope with any BOP problems (the IMF) or to put in place programmes (social safety nets, training, etc.) and institutions to facilitate the adjustment process (The World Bank). Here, the problem is that many of these countries are already highly indebted, and it is not obvious that further trade liberalisation is necessarily the highest development priority for further borrowing at this time.

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Table 1: Four tariff-cutting 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 ¹⁴ . 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% which ever is less	No	Developed Yes	Developed B=1
							Developing No	Developing B=2
4 'Simple' Mix	Developed a=50%	$T_1 = a \times T_0$	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% which ever is less	No	No	
	Developing a=36%	Harmonizing Capping No tariff higher than 3 times tariffs national average						

¹⁴ For some countries the number of unbound tariff lines are less than 5% of their tariff universe, hence these unbound items are taken as sensitive products.

Table 2: Changes in average applied tariffs on non-agricultural products after applying the four scenarios

Scenario	Tariffs	Tariffs
	Simple Average	Weighted Average
	%	%
Developed countries		
Initial Rate	4.7	2.9
Free Trade	0.0	0.0
Hard	0.6	0.4
Soft	0.8	0.6
Simple	2.3	1.6
Developing countries		
Initial Rate	11.1	8.1
Free Trade	0.0	0.0
Hard	4.1	2.6
Soft	9.7	6
Simple	10.1	6.2
LDCs		
Initial Rate	12.6	13.6
Free Trade	0.0	0.0
Hard	12.6	13.6
Soft	12.6	13.6
Simple	12.6	13.6

Source: Derived from UNCTAD TRAINS database.

Table 3: 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 West 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	42417	40961	31947	27665

Source: GTAP simulations.

Table 4: 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 West 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
Total	4.4	3.5	2.2	1.7

Source: GTAP simulations.

Table 5: 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 West 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
Total	4.4	3.5	2.2	1.7

Source: GTAP simulations.

Table 6: Initial revenues and change relative to base

	Initial Govern- ment revenue s	Initial Ratio of tariff revenues to total revenue	Free trade	Hard	Soft	Simple
	\$m	\$m	\$m	%	%	%
Andean Pact	32738	5024	0.15	-86	-41	-7
Central America & Caribbean	48424	15367	0.32	-86	-42	-5
Canada	125694	4332	0.03	-57	-50	-47
Central and Eastern Europe	63922	15004	0.23	-76	-64	-51
China	118821	24872	0.21	-82	-72	-54
European Union 15	1479046	27858	0.02	-57	-50	-47
Indonesia	14619	2666	0.18	-80	-31	-7
India	50341	11936	0.24	-87	-58	-13
Japan	407959	21679	0.05	-61	-59	-59
Middle East	142323	12341	0.09	-80	-54	-30
Mercosur	174578	16576	0.09	-83	-51	-16
North Africa	27693	10020	0.36	-84	-55	-15
Oceania	79515	3031	0.04	-92	-56	-43
Other West Europe	67423	5550	0.08	-41	-40	-40
Rest of Asia	87896	12978	0.15	-78	-60	-30
Rest of World	110574	11923	0.11	-66	-34	-17
South Asia	10532	3887	0.37	-84	-26	-5
South East Asia	47877	13271	0.28	-85	-45	-10
Sub-Saharan Africa	24943	6733	0.27	-85	-33	-7
United States	1201779	20866	0.02	-83	-74	-70
South Africa	28979	2128	0.07	-84	-59	-18
Total	4345675	248043	0.06	-76	-55	-35

Source: GTAP database and simulations.

Table 7: Change in output following the four scenarios

	USA	Canada	Central America	Andean Pact	Mercosur	European Union	Other 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
Free trade																						
Textiles	-1	-4	3	-1	-1	-1	-2	-4	-4	-6	-7	-1	2	3	3	1	5	3	6	-3	1	0.36
Wearing apparel	-2	-6	0	4	-1	-3	-2	-3	-3	2	-6	11	7	-2	15	23	12	15	2	-7	3	0.58
Leather	-1	-5	-3	-4	1	1	0	0	-13	-5	-14	-7	11	-13	10	2	21	14	5	2	-3	1.86
Chemicals, rubber and plastics	0	0	-2	-2	-1	0	0	-2	0	-4	-5	-1	-3	4	-2	-5	0	0	0	-1	-1	0.13
Motor vehicles	0	0	7	-23	1	0	0	2	-4	-25	21	-10	-18	5	-6	-47	-11	-12	3	-5	-11	0.05
Transport other than motor vehicles	-1	0	6	0	0	-2	-4	-1	0	1	20	1	2	6	-1	-19	4	1	2	0	-1	0.30
Hard																						
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
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
Soft																						
Textiles	-4	-10	9	2	0	-3	-3	-6	-4	-4	-2	0	4	2	3	3	6	9	9	-8	5	0.62
Wearing apparel	-8	-18	9	4	0	-7	-6	-6	-7	-4	-1	17	16	-6	16	14	16	18	10	-16	14	-0.34
Leather	-9	-22	1	-1	0	-2	-3	2	-9	-2	-8	-14	14	-31	4	-11	45	11	12	-3	0	1.66
Chemicals, rubber and plastics	0	-1	0	0	0	0	0	-2	0	0	0	-1	-3	4	-1	-1	-1	0	0	-1	0	0.09
Motor vehicles	1	1	-4	-9	0	0	0	2	0	-15	1	-4	-20	5	0	-15	-1	-1	1	-3	-12	0.05
Transport other than motor vehicles	1	2	-1	-1	-2	0	-3	1	0	7	3	2	0	0	-1	-5	-4	-2	-2	-2	-1	0.08
Simple																						
Textiles	-2	-5	8	0	0	-1	-1	-4	-2	-1	-1	-1	0	3	1	1	0	1	4	-3	2	0.09
Wearing apparel	-4	-8	11	1	0	-3	-3	0	-4	-1	-1	3	7	-2	6	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	29	-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	0	-1	0	0.10
Motor vehicles	0	0	-4	-5	0	1	0	2	0	-7	-1	0	-16	3	0	-13	0	-1	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	-2	-3	0	0.07

Table 8: Impact of flexible labour force, Simple scenario

	Use of unskilled labour with flexible labour force	Welfare with fixed labour force	Welfare with flexible labour force
	%	\$m	\$m
Andean Pact	0.27	201	449
Central America & Caribbean	0.51	1027	1650
Canada	0.00	-229	-206
Central and Eastern Europe	3.27	-431	3734
China	2.16	246	8431
European Union 15	0.00	3096	2400
Indonesia	0.41	259	447
India	0.46	641	1171
Japan	0.00	12948	12822
Middle East	0.91	300	2506
Mercosur	0.21	742	1627
North Africa	0.67	355	1043
Oceania	0.00	777	819
Other West Europe	0.00	1118	1194
Rest of Asia	1.95	2963	7879
Rest of World	0.52	1736	3747
South Asia	0.00	250	209
South East Asia	0.77	1045	1912
Sub-Saharan Africa	0.15	-62	94
United States	0.00	558	293
South Africa	0.54	126	447
Total		27665	52655

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.

Table 9: Countries with tariff revenues as percentage of government revenues of at least 20% (latest)

	%		%		%		%
Bahamas, The	55.9	Gambia, The	42.8	Mauritius	25	Somalia	52.5
Bangladesh	22.6	Ghana	26.8	Namibia	37.1	St. Kitts & Nevis	37
Belize	49	Guinea	76.6	Nepal	27.2	St. Lucia	26.5
				Netherlands		St. Vincent and the	
Benin	56	Guinea-Bissau	37.1	Antilles	39.2	Grenadines	40.3
Burundi	20.2	Haiti	21.4	Niger	36.4	Sudan	29
				Papua New			
Cameroon	28.3	Honduras	42.4	Guinea	27.3	Suriname	22.9
Cayman Islands	42.2	Lebanon	28.1	Rwanda	31.1	Swaziland	51.9
Central African							
Republic	39.8	Lesotho	47.7	Samoa	50.2	Togo	35.4
Congo, Dem. Rep.	31.9	Liberia	34.6	Senegal	36.5	Tonga	48.4
Cote d'Ivoire	41.8	Madagascar	51.9	Seychelles	42.6	Uganda	49.8
Dominican Republic	42.8	Maldives	28.3	Sierra Leone	48.6	Vanuatu	36.2
				Solomon			
Fiji	21.5	Mauritania	30.1	Islands	57.1	Zimbabwe	20.5

Source: World Bank 2003.