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Sam Laird, Santiago Fernandez de Cordoba and David Vanzetti

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Abstract

Various proposals in the WTO non-agricultural market access negotiations are explained and analysed using a global general equilibrium model.¹ The results show that proposals involving deeper tariff cuts imply greater increases in imports and exports, but greater losses in tariff revenues that will need to be made up in some way. They also show greater welfare gains in the longer term, resulting from the improved allocation of resources and changes in the terms of trade, but there are several qualifications to this finding. First, the overall numbers conceal important adjustments in individual sectors and countries, and these adjustments will normally occur in the first several years of the implementation of the tariff changes, while the overall benefits only start to accrue later. Second, no account is taken of the potential benefits deriving from the use of tariffs for industrial policy purposes, in particular where there is a divergence between social and private costs and benefits (externalities), and the options for alternative policies have been limited by WTO agreements. Third, concomitant action is required on WTO rules and on market entry conditions to ensure that the potential benefits are realised. Under all proposals the greater adjustments would be made by developing countries, and it may well be that the proposals for deeper cuts entail going too far, too fast for many developing countries, They could also lead to increased use of contingency measures such as anti-dumping actions. If adjustment costs are too high, this could also endanger the reform process, and a more measured approach may be indicated – a case of "make haste slowly".

Outline

1. The Significance of Market Access Negotiations, the Mandate and the Main Proposals
2. Techniques and Formula Approaches for Tariff Negotiations
3. Issues Facing Developing Countries
4. Quantitative Assessment of Alternative Proposals
5. Market Entry
6. Overall Assessment

¹ Any new proposals that emerge before Cancun are likely to fall within this broad analytical framework.

I. THE SIGNIFICANCE OF MARKET ACCESS NEGOTIATIONS, THE MANDATE AND THE MAIN PROPOSALS

Economies which have been able to diversify towards the production and export of manufactures have grown faster and been better able to withstand economic downturns than economies which remain highly dependent on the basic commodities, including the LDCs.² However, the process of diversification and expansion of developing countries' production and exports of manufactures has been hindered by tariff and non-tariff barriers in major markets. Yet while there are considerable trade and welfare gains to be made from liberalisation of trade in manufactures, this had not been included in the WTO's Built-In Agenda, agreed at the end of the Uruguay Round. This was remedied by the WTO's work programme adopted at its Fourth Ministerial Meeting in Doha in November-December 2001.

In Doha, WTO Ministers agreed, in the part of the Ministerial Declaration relating to non-agricultural market access, "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" (paragraph 16 Doha Ministerial Declaration). Full account is 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 current market access negotiations in non-agricultural products are procedurally being handled in a negotiating group that is mainly concerned tariff reductions, while most non-tariff barriers (NTBs) affecting trade in these products are being covered in groups dealing with rules negotiations, for example on anti-dumping, rules of origin, TBT/SPS, etc. The main negotiable NTBs affecting non-agricultural products are those in textiles and clothing, which are scheduled to be phased out in 2005 under the provisions of the Uruguay Round Agreement on Textiles and Clothing. The NTB negotiations, and any possible replacement of textiles and clothing restraints with alternative forms of contingency protection, such as anti-dumping or safeguards, will need to be taken into account in evaluating what might be agreed in relation

² For a more detailed discussion of the issues, see UNCTAD, 2002.

to industrial tariffs (as well as in the overall broad package covered by the Single Undertaking).

In relation to industrial tariffs, the main focus of discussions has been on finding a modality that would meet the criteria set out in the Doha Declaration, and, ultimately, in meeting the negotiating and trade policy objectives of the participants in the negotiations. In the first phase of the negotiations, the main attention has revolved around finding a formula to meet these goals, unlike the Uruguay Round where the main modality was request and offer (although in a number of sectors tariffs were reduced on a zero-for-zero basis, by which a critical mass of countries cut tariffs to zero in ten sectors). At the time of writing (mid-June 2003), no decision had been made on modalities but a number of proposals are on the table. This paper looks at approaches that have been used in the past, the current proposals and attempts a preliminary evaluation of these proposals, based on certain assumption about elements in the proposals that are yet to be defined or perhaps negotiated.

II. TECHNIQUES AND FORMULA APPROACHES FOR TARIFF NEGOTIATIONS

*Historical background*³

The procedures used in trade negotiations have evolved since the beginning of trade negotiations. At the outset of the GATT, the initial approach used was the request-and-offer procedure, under which contracting parties negotiated reciprocal bilateral market access concessions, which were provided to other Contracting Parties by virtue of the MFN principle. This procedure reduced average tariffs by around 20 per cent on industrial products (Baldwin 1987). This technique was also used during the next four rounds of negotiations (Annecy (1949), Torquay (1950-01), Geneva (1955-56) and Dillon Round (1960-62)) with, however, much less liberalisation (barely an average of 2.5 per cent reduction in average tariffs).

³ For further reading on the history of the different tariff-cutting formulas refer to Stern (1976), Laird (1998), Laird and Yeats (1987) and Panagariya (2002)

During the Kennedy Round and the Tokyo Round more comprehensive tariff reduction formulas were used. The simplest method used was the proportional cut or the linear reduction approach, used in the Kennedy Round (1963-67) (50 per cent coefficient of reduction, but because of the exceptions, the final average was only 35 per cent reduction). Only during the Tokyo Round (1974-79) was the so-called Swiss Formula introduced, achieving a 30 per cent reduction in average tariffs. It is also called a harmonising approach as it makes more than proportional cuts to higher rates. It is therefore particularly useful for reducing tariff peaks and tariff escalation.

These two approaches yielded greater market access concessions for products with high tariffs than for products with low ones, i.e. they produce greater improvements in market access for goods typically exported by developing countries, except that the permitted exemptions often were precisely in those product areas.

During the Uruguay Round (1986-94) the procedure used was targeted 30 per cent average reduction on industrial products, leaving the distribution between the tariff lines to be negotiated bilaterally, i.e., by request and offer. Simultaneously, the Quad countries agreed in the Uruguay Round to ten "zero-for-zero" initiatives (beer, brown spirits, pulp and paper, furniture, pharmaceuticals, steel, construction equipment, medical equipment, agricultural equipment and toys) and one "harmonization" initiative - chemical products. After the Uruguay Round, the Information Technology Agreement (ITA) used a zero-for-zero approach, by which a critical mass of countries agreed to reduce all tariffs to zero on the selected range of products.

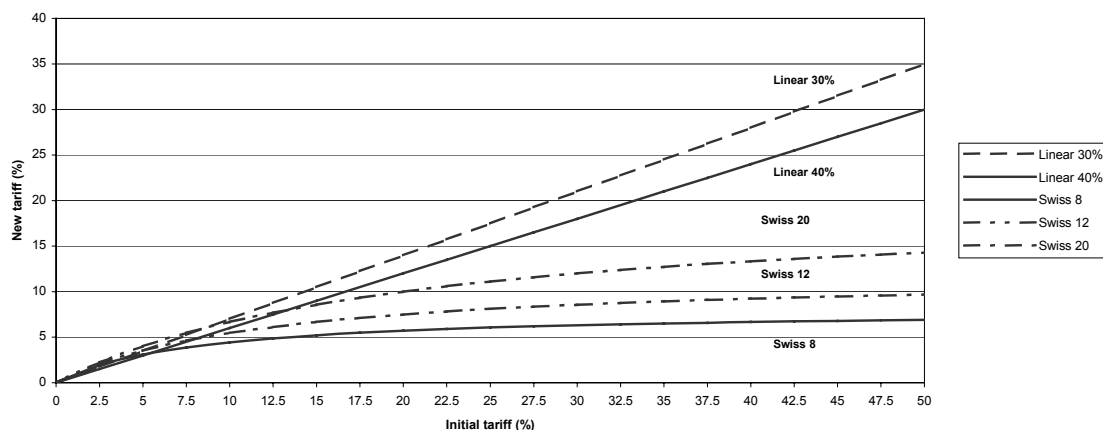
Comparison of Linear Cut and Swiss Formula

The linear approach used to cut tariffs across-the-board in Kennedy Round tariffs can be expressed as:

$$T_1 = a \times T_0 \tag{1}$$

where T_0 is the initial bound tariff rate and T_1 the final bound rate and $(1-a)$ is the percentage reduction. The effects of a linear cut of 40 per cent and 30 per cent are shown

**Figure 1: Comparison of Linear Cut and Swiss Formula
(Tariffs for 0% to 50%)**



in Figure 1. While this formula brings large reduction in the absolute value of higher tariffs, proportionally it does not reduce higher tariffs more than lower tariffs.

The progressive effect of higher reductions of tariffs for highly protected products is achieved through a harmonization formula, of which the so-called Swiss formula is an example:

$$T_1 = \frac{(a \times T_0)}{(a + T_0)} \quad (2)$$

where a is a maximum coefficient and no tariff included in the negotiating list can be higher than that of this expressed coefficient. It is a harmonising approach as it makes more than proportional cuts to higher rates (see Figure 1 below). It is therefore particularly useful in reducing tariff peaks and tariff escalation. The Swiss formula was used for industrial products during the Tokyo Round with a maximum ceiling of 16 per cent. The Swiss formula with coefficients of 20, 12 and 8 is illustrated in Figure 1.

As may be observed for Figure 1, because of its progressive nature the Swiss formula has the feature of reducing higher tariffs by more, in absolute and relative terms, than lower tariffs. For example, let us compare the application of a 40 per cent linear cut and a Swiss formula with a coefficient of 8 to two initial tariffs, the first being a low rate of 5 per cent and the second being a higher rate of 50 per cent. With the linear cut the new tariffs would be 3 per cent and 30 per cent, respectively, with a percentage reduction of 0.6 in both cases.⁴ After applying the Swiss formula the new rates would be 3.1 per cent for the first tariff and 6.9 per cent for the second, giving a percentage reduction of 0.14 and 0.62. This illustrates that, under

⁴ The percentage reduction or ratio cut is defined as T_1/T_0 . In the case of the Linear Cut this is equal to $c=(1-a)$. In the Swiss formula the ratio becomes $a/(a+T_0)$

a linear cut, the percentage reduction is, in fact, equal for all tariff rates, but under the Swiss formula the percentage reduction declines implying that the higher initial tariff rates are subject to larger percentage cuts. The importance of these basic approaches is that in the current WTO negotiations, all approaches are essentially variations of these two alternatives, with various adaptations. Later in the paper, we shall discuss below the implication of the application of these alternative approaches for developing countries.

The New Formulae Dilemma

Given the mandate of the Doha Declaration, namely to reduce trade barriers on non-agricultural products, in particular on products of export interest to developing countries, negotiators are in search of a formula that would achieve these objectives. In our view, this formula should fulfil certain basic criteria: it should be simple, transparent and address the high rates facing developing countries' exports. However, the approach adopted also has to take account of the special needs of developing countries and LDCs, including through less than full reciprocity, as envisaged in the Doha Ministerial Declaration. In essence, this means that, while there should be an effort to make deep cuts in rates facing developing countries' exports, the developing countries should be required to make lesser cuts. The notion here is that developing countries should be allowed some flexibility or "policy space" to use tariffs for industrial policy purposes (as envisaged also in GATT Article XVIII:A). This parallels the use of non-tariff measures for health and safety, environmental, security and other reasons that are linked to externalities – where private and social costs and benefits diverge. While it is now widely recognised that liberalisation is beneficial in the longer term (other than in respect of externalities, which merit long-term intervention), there is also evidence from the World Bank and other studies of important short-term adjustment costs, and the differentiation in the treatment of developing countries in WTO rules and procedures is also a recognition of the validity of a more cautious approach to reform in those countries.

A number of countries has submitted proposals to the WTO Negotiating Group on Market Access. However, only the following countries presented clearly defined formulas: *People's Republic of China, European Communities, India, Japan, Korea and United States*. It is important to remember that all of these particular proposals cover non-agricultural products

and do not include services or agricultural products that are covered by other negotiating groups.

China has presented the following formula:

$$T_1 = \frac{(A + B \times P) \times T_0}{(A + P^2) + T_0} \quad (3)$$

T_0 : Base rate

T_1 : Final rate

A : Simple average of base rates

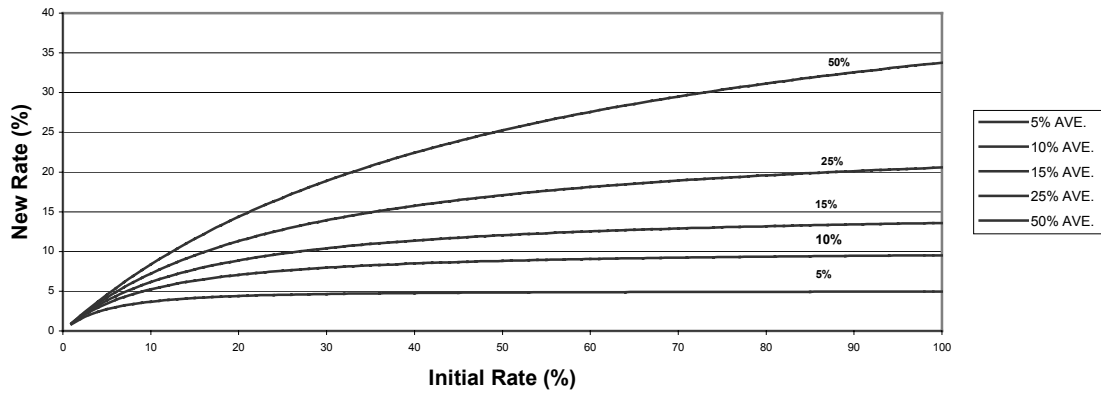
P : Peak factor, $P=T_0/A$

B : Adjustment coefficient, e.g. for 2010, $B=3$; for 2015, $B=1$

When applied this formula works like the familiar Swiss formula with a variable coefficient dependent on the simple average of the base rates. The base rate would be different for developed and developing countries. For developed countries, the base rate would be the applied rates in 2000 (essentially the bound rates since these countries have almost 100 per cent binding coverage), and for developing countries and newly acceded countries it would be a simple average between applied rates in 2000 and their final bound rate. For the current example we have used $B=1$.

In Figure 2 it is possible to see how the Chinese formula works in a similar way to the Swiss formula.

Figure 2: People's Republic of China Formula (B=1)



The ratio cut for the Chinese formula would be:

$$\frac{T_1}{T_0} = \frac{(A + B \times P)}{(A + P^2)} + T_0 \quad (4)$$

This in essence is similar to the one analysed above for the Swiss formula but with the difference being the starting curve for each country, which in itself depends on the simple average of the base rates. As with the Swiss formula, the Chinese formula has the advantage of bringing about larger proportional reductions to higher tariffs, but the degree of harmonisation depends on the initial average rates. Therefore, the same initial rate would be reduced by varying amounts depending on the countries' average rate.

The *European Commission* has proposed a "compression mechanism":

$$\{T_1 = B_1^L + (T_0 - B_0^L) * \frac{(B_1^U - B_1^L)}{(B_0^U - B_0^L)}, \quad (5)$$

with B_0^L and B_0^U as lower and upper limits in base bracket, and B_1^L and B_1^U as same limits in the new bracket, and where T_0 = initial duty.

Technically, the number of ranges that can be specified is unlimited. In this formula the B parameters, as well as the base and final bracket levels, in the formula have to be negotiated. For the purpose of illustration the following parameters have been used for B:

T_0 from 0% to 2%, $B=0\%$

T_0 from 2% to 15%, $B_L=1.6\%$, $B_U=7.5\%$

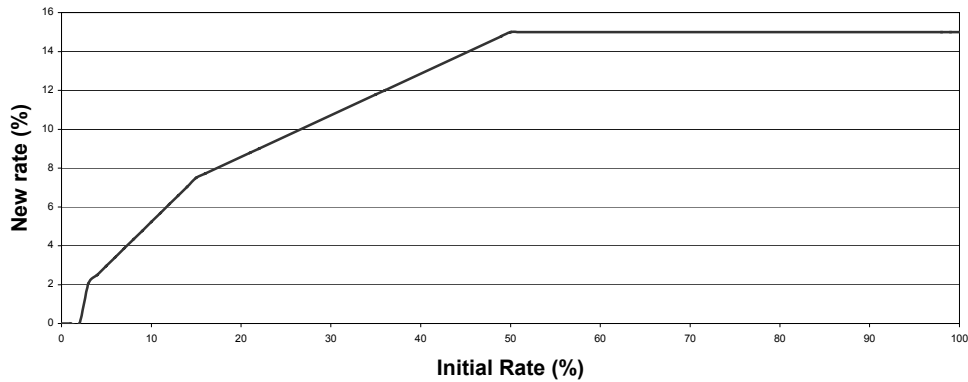
T_0 from 15% to 50%, $B_L=7.5\%$, $B_U=15\%$

T_0 above 50%, $B=15\%$.

In Figure 3 it is possible to observe how this formula would reduce tariffs. With this example all tariffs above 50 per cent become 15 per cent. Between 2 per cent and 50 per cent the formula behaves like a linear cut. And below 2 per cent they are basically eliminated.

This formula is sensitive to the B parameter. It works like a linear formula with a maximum cap for tariffs. Due to this cap all the tariffs are compressed to a maximum aggressively reducing tariff peaks and escalation, and in this sense, the EC approach is similar in effect the Swiss formula.

Figure 3: EU Formula



The *Indian* proposal is for a linear reduction with developing countries making two thirds of the cuts of developed countries. India has elaborated its initial proposal by illustrating the hypothetical effects of (a) developed countries reducing tariffs by 50% and developing countries by 33-1/3%, which we show on Figure 4 (and later use in the quantitative evaluation), and (b) developed countries reducing tariffs by 45% and developing countries by 30%, but India does not say that it favours one approach over the other. India also envisages tackling tariff peaks by specifying that no rate should exceed three times the national average, with developing countries maintaining some degree of flexibility on this issue. India also makes proposals on the binding coverage, taking account of flexibilities for development. First, developing countries chose on the actual bindings on some tariff lines while still maintaining the percentage reduction on an average basis as per specified above. Second, developing countries should have the flexibility to decide that the individual tariff bindings above shall be on at least 15% of the bound tariff lines of the concerned country. However, even after applying these flexibility considerations the overall percentage reduction should be achieved.

The mathematical proposal for tariffs is:

Step 1:

$$T_{F1} = \left(1 - \frac{AY}{100}\right) * T_O \quad (6)$$

Step 2:

$$T_F = T_{F1} \text{ or } 3 * T_A \text{ whichever is less} \quad (7)$$

Where:

A = less than full reciprocity' parameter;

$A = 1$ for developed countries and

$A = 0.67$ for developing countries

Y = Reduction percentage (to be negotiated)

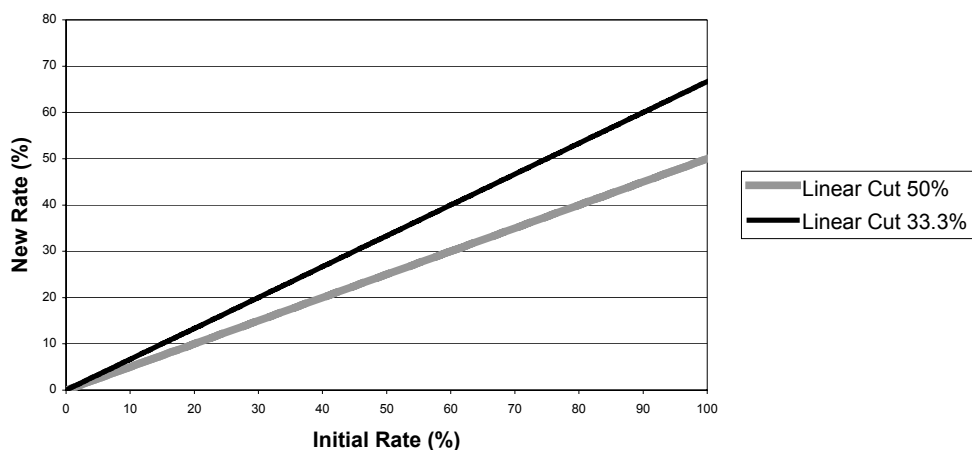
T_0 = Present bound tariff on an individual tariff line

T_{F1} = Reduced tariff after Step 1 on the individual tariff line

T_A = Simple average tariff after Step 1

T_F = Final bound tariff on the individual tariff line.

Figure 4: Example of Indian Formula



The notion of a two-thirds reduction for developing countries derives from previous negotiating rounds. For example, the Uruguay Round Agreement on Agriculture had a linear 36 per cent tariff reduction for developed countries and 24 per cent for developing countries. The Indian approach is therefore a well-tried method for incorporating the "less than full reciprocity" concept in reduction commitments. It, therefore, reflects the Special and Differential Treatment that developing countries are to have when addressing market access liberalisation. It also introduces an element of flexibility for developing countries by granting them lesser cuts in their tariffs.

Korea has presented a mechanism that combines linear cuts with minimum cuts per tariff line. To start they have defined a target of 40 per cent reduction of the trade weighted average tariff rate with at least 20 per cent reduction through a linear cut of all bound tariffs.

To attack tariff peaks and escalation *Korea* proposes that tariffs above twice the national average, after the 20 per cent reduction, should be further reduced by 70 per cent of the difference between them and twice the simple national average:

$$T_1 = (T_0 \times 0.8) - 0.7 \times (T_0 - 2 \times T_a) \quad (8)$$

where:

T_1 : maximum tariff rate after reduction

T_0 : tariff rate before reduction (above twice the national average)

T_a : national average tariff rate.

Furthermore tariffs above 25 per cent, after 20 per cent reduction, shall be further reduced by 70 per cent of the difference between them and 25 per cent.

$$T_1 = (T_0 \times 0.8) - 0.7 \times (T_0 - 25) \quad (9)$$

where:

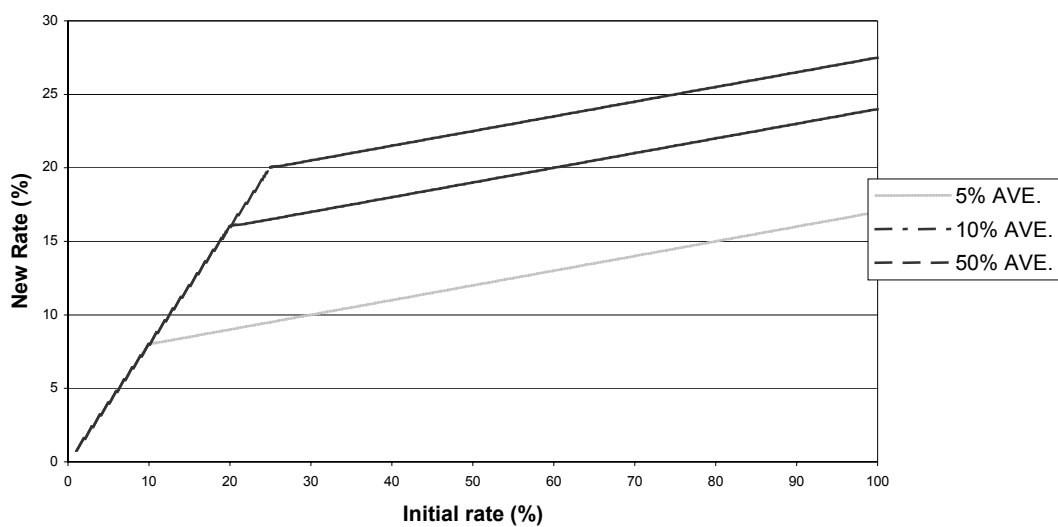
T_1 : maximum tariff rate after reduction

T_0 : tariff rate before reduction (above 25 per cent).

If a tariff is above twice the simple national average and also above 25 per cent, the final rate will be whichever is lower after the reduction described above. If the resulting average after applying both cuts is still above the 40 per cent target, each country should make further reductions at its own discretion.

In Figure 5 it is possible to see the new tariff profile after applying the Korean proposal has elements of simplicity (linear cut), harmonization or compression within a country and differentiated treatment across countries. The formula is a linear formula that cuts tariffs depending on the trade weighted average. It also introduces minimum cuts per tariff line and at the same time addresses tariff peaks and escalation through more aggressive linear cuts to tariff lines with "elevated" tariffs.

Figure 5: Korean Formula



The *United States* has proposed that tariffs should be phased out as shown in Table 1:

Table 1: US proposal for industrial products

Phase	Period	Products Covered	Target Tariff	Modality
First	2005-2010	Products with tariffs of 5% or below	0%	Zero
		Products with tariffs above 5%	Maximum: 8%	Swiss formula with a maximum coefficient of 8%
		Highly traded sectors*	0%	Zero-for-zero
Second	2010-2015		0%	Not defined

* Agricultural equipment, bicycle parts, chemicals, civil aircraft, construction equipment, environmental technologies, fish and fish products, furniture, information technology and electronics products, medical equipment, non-ferrous metals, paper, pharmaceuticals, scientific equipment, steel, toys and wood products.

The US proposal could be defined as a "cocktail" approach: in the first phase until 2010 "zero-for-zero" and a harmonization formula (Swiss formula), and in a second phase from 2010 until 2015 a linear cut formula.

The pressure to reduce low or "nuisance" tariffs to zero is not new. Quad countries first used the "zero-for-zero" initiative during the Uruguay round.⁵ This is said to reduce transaction costs, but the same paper-work is required to justify non-payment as to compute the level of a non-zero duty, and rules of origin still have to be applied as well as other border controls and fiscal adjustments. Removing "nuisance" tariffs can lead, during the transitional period from 2005 to 2015, to greater than proportionate reductions in tariffs on raw materials on which initial tariffs are often below 5 per cent, increasing effective protection (more protection for value added) on the next processing stage. Cutting low tariffs on raw materials has been a deliberate strategy of some industrial countries in the past – it fosters their processing industries, with developing countries as sources of raw materials.

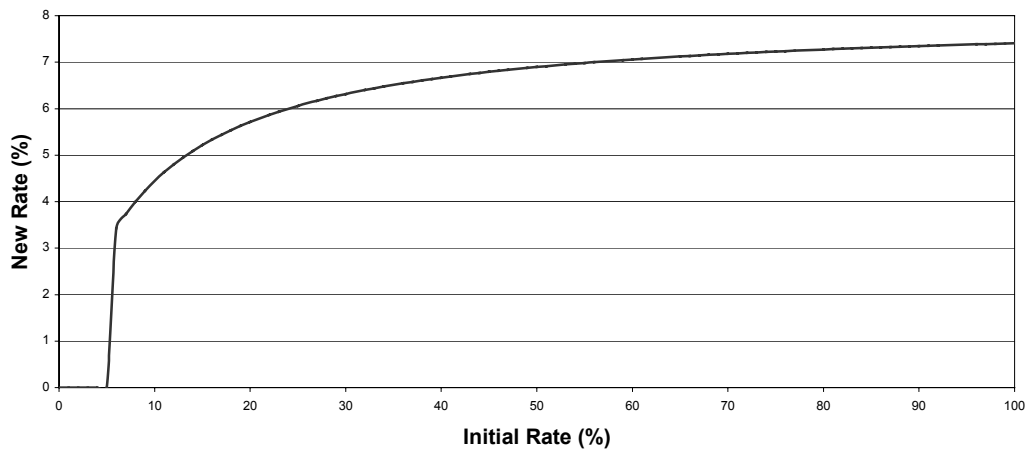
⁵ It was applied on 10 specific commodities: beer, brown spirits, pulp and paper, furniture, pharmaceuticals, steel, construction equipment, medical equipment, agricultural equipment and toys.

For the first phase (preceding full global free trade as far as tariffs are concerned), the US proposes a Swiss formula with an 8 per cent coefficient. As seen above the formula would look like:

$$T_1 = \frac{(a \times T_0)}{(a + T_0)} \quad (10)$$

where a is 8. This is also illustrated in Figure 6.

Figure 6: US Formula



Under the US proposal the average industrial tariffs in developing countries of 40 per cent would be reduced to 6.7 per cent in this first phase. On the other hand, developed countries would reduce their average bound tariffs from 3.5 per cent to zero per cent. With this proposal no tariff can ever be higher than that expressed in the coefficient, in this case 8 per cent – most tariffs in developing countries would in fact fall to around 6 per cent in the first phase and then to zero.

Japan has presented a "hybrid approach" with a formula that simply introduces a target average tariff rate. This average would be different depending of the level of development of each WTO member. How the reductions would be distributed between the different tariff lines is left to each member to decide.

After viewing these proposals, the *Chairman of the WTO Negotiating Group on Market Access* has put forward his own version⁶. First, all tariff would be converted to percentage form (ad valorem equivalents, and a base rate would be established under which 95 per cent of lines and 95 per cent of imports would be bound (except for LDCs), with some credit being granted for autonomous liberalisation since the end of the Uruguay Round.⁷ Then, tariffs would be cut according to a Swiss formula with the maximum coefficient set equal to the simple average tariff times a common factor yet to be negotiated. No time period is specified for implementation. In addition, tariffs would be eliminated in specific sectors, namely electronics and electrical goods, fish and fish products, textiles, clothing, footwear, leather goods, motor vehicle, parts and components, stones, gems and precious metals, which are said to be of export interest to developing countries, and where the transition period to duty-free trade by all developing countries except LDCs would be three times longer than for developed countries.⁸ These cuts would then be supplemented by further liberalisation by request and offer, zero-for zero, and sectoral negotiations. Least-developed countries would not be required to undertake reduction commitments, except to make efforts to increase their binding coverage.

The WTO formula component is given by:

$$T_1 = \frac{B \times ta \times T_0}{B \times ta + T_0} \quad (11)$$

where ta is the national average of the base rates, T_0 the initial rate, and T_1 the final rate. B is a coefficient common to all countries yet to be determined. B set at 1 implies the average bound rates become the maximum. Hypothetical rates for four different averages are shown in Figure 7. For example, if the base average tariff is 8 per cent, then a 10 per cent duty would be

⁶ WTO (2003) 'Draft Elements of Modalities for Negotiations on Non-Agricultural Products', TN/MA/W/35, Geneva.

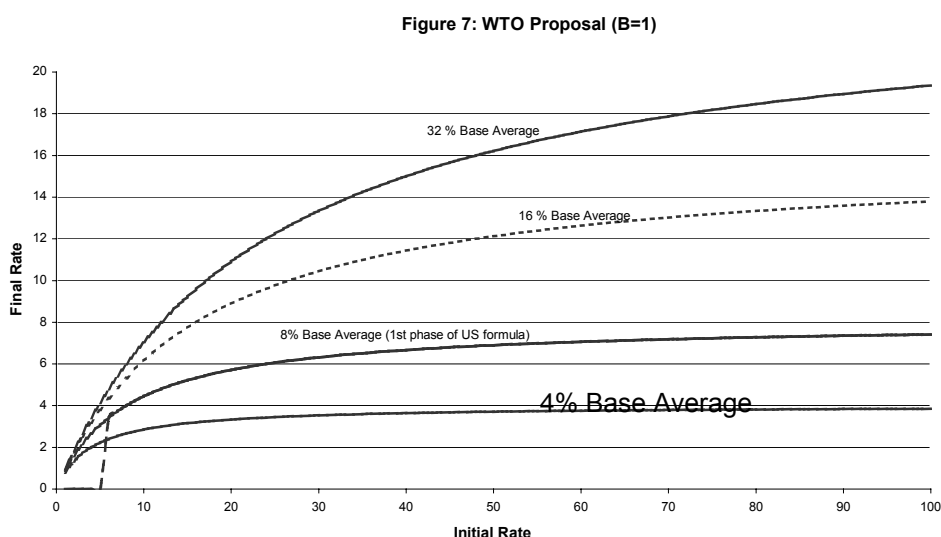
⁷ Newly acceding countries would also be granted some latitude on reduction commitments to take account of concession made in the accession process.

⁸ Trade statistics suggest that developed countries also have important interests in several of these sectors, exceeding developing countries in their share in world exports.

reduced to 5 per cent, and if the base average tariff is 16 per cent then 10 per cent would be reduced to 8 per cent. However, tariffs above the average are reduced more than proportionately. Thus, if the base average is 8 per cent, then a 30 per cent duty would be reduced to 6.5 per cent, and if the base average tariff is 16 per cent then a 30 per cent would be reduced to 10.5 per cent.

If $B=2$, and a base average tariff of 8 per cent, then an initial individual rate of 10 per cent would be reduced only to 6.5 per cent rather than the 5 per cent when $B=1$.

Under this proposal, developed and developing countries with the same average initial tariffs would make the same percentage reduction. In other words, the proposal does not contain any specific and differential component, unless the B factor is set at a higher level for developing countries.

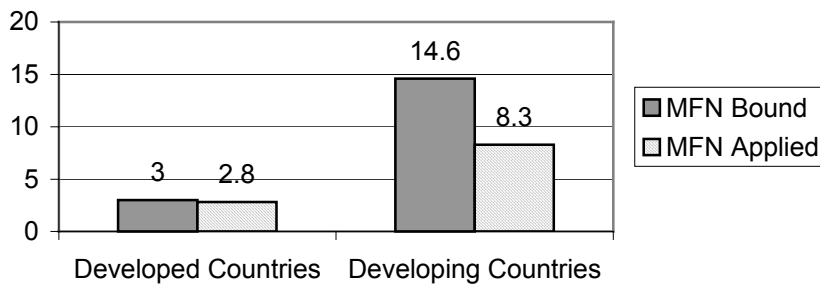


Implications for developing countries

The implication of applying these approaches becomes clear from Figure 8, which shows that developing countries tariffs are, on average higher than those of the developed countries. If the Swiss formula with a coefficient of 8 from Figure 1 were applied, then average developed country tariffs would be reduced from 3 to 2.2 per cent, while the developing country average would be reduced from 14.6 to around 5.2 per cent. Under a linear cut of 40 per cent, the corresponding numbers would be 3 to 1.8 per cent for

developed countries and 14.6 to 8.8 per cent. In other words, the larger proportionate and absolute cuts would be made by the developing countries under Swiss type formulae, while the larger absolute but similar proportionate cuts would be made by developing countries under a linear approach.

Figure 8: MFN Bound and Applied Tariffs



However, historical practice and the legal basis for earlier GATT and WTO negotiations is to base tariff reductions on bound rates (rates set in earlier negotiations and set out in legal schedules). In practice, almost all developed country applied MFN rates on non-agricultural products are identical to their MFN bound rates, but in the case of the developing countries, as a result of unilateral reforms under Bank-Fund programmes in the last 10-15 years, their average applied MFN rates are some 30 per cent lower than their MFN bound rates, so that a linear cut of 30 per cent on their bound rates would leave their applied rates untouched, on average. However, there is considerable variation across products and countries, so that detailed calculations are necessary to allow countries to compute the effect of the proposals on their particular case.

As commented earlier, the deeper cuts imply longer-term welfare gains, but higher short-term adjustment costs, and may also imply foregoing some leeway or policy space for the use of tariffs as an instrument of industrial policy. On the other hand, if a linear formula of some 30 per cent or a Swiss formula with a coefficient of around 30 were applied to developing countries MFN bound rates then there would be little immediate effect on developing countries applied tariffs, although there would be greater security of access to their markets for trading partners, and this would constitute a valid and valuable contribution to the WTO negotiations. Such greater security of access might also be expected to have positive effects on investment and trade, as well as paving the way for further liberalisation in future rounds.

III. ISSUES FACING DEVELOPING COUNTRIES

Tariffs and development strategies

As noted earlier, it is generally accepted that, at least in the long term, trade liberalisation improves the efficiency in the allocation of scarce resources in an economy, lifts economic welfare and contributes to economic growth.⁹ However, this relationship between openness and growth is essentially an empirical matter, as economic theory provides no formal linkage. Thus, other economists criticise the econometric evidence, and emphasise the importance of governance rather than openness *per se*.¹⁰

However, despite the long-term case for liberalisation, the short-term effects can often be negative, so that the pace and sequencing of liberalisation is also a political question.¹¹ Despite nearly 20 years experience of reform, there is no clear-cut formula that guarantees that reform will bring about a monotonically increasing level of welfare. Thus, for many countries, a more measured approach to liberalisation is indicated. Indeed, if a reform is pushed to hard with negative consequences, then the reform process itself may be endangered – a case for “Make haste slowly”. In any case, there is also need to design social programmes to offset these negative effects and facilitate the reform process, but all of this takes time and money. Of course, countries at different stages of development and viewpoints have different perspectives and priorities in this regard, hence the difficulty in finding an approach to negotiations that satisfies all.

The potential gains from liberalisation are greater when a number of countries carry out liberalisation at the same time – the rationale for the WTO multilateral process. In addition to the longer term gains from restructuring at home, there are new export opportunities, and these potential gains make liberalisation more palatable.

It should be noted that “liberalisation” does not necessarily mean free trade, even in tariffs, as there can be an economic case based on externalities for long-term intervention, as noted earlier, but rather a process of allowing the play of dynamic comparative advantage by making an economy more responsive to economic forces.

⁹ See, for example, Sachs and Warner (1995).

¹⁰ Rodrik (1999).

¹¹ Mosley, P. (2000).

The various formulae proposals now tabled remove some of the latitude for the use of tariffs for development purposes, as envisaged by GATT Article XVIII:A (and as was practiced by the major developed countries at the early stages of their own industrialisation)¹². However, some of the proposals presented imply a more rapid or deeper reform in trade policy than others, notably the United States' proposal that seeks full tariff elimination, "free trade". While a few developing countries that have already moved far in their own trade reforms might find this to be feasible, for the large majority of developing countries such an approach may mean going "too far, too fast" with reform, and could entail unacceptable adjustment costs. A quantitative evaluation of the proposals, making some assumptions in respect of undefined elements, is provided in Section D, below.

Non-full reciprocity and S&D

From past practice, the "non-reciprocity" that is mentioned in the Doha Declaration, would normally mean lesser tariff cuts would be applied by developing countries and LDCs and that longer transition periods would be available for the implementation of negotiated tariff cuts. As an example, in the Uruguay Round, developed countries cut their industrial tariffs by 38 per cent and agricultural tariffs by 36 per cent, while developing countries made tariff reductions of 34 per cent for industrial products and 24 per cent for agriculture. Both groups of countries cut their industrial tariffs in six equal annual instalments, but in agriculture the developing countries had 10 years to make the cuts, while the developed countries completed the cuts in six years.

Very few of the current proposals before the WTO at present have a detailed elaboration of non-reciprocity should be handled, and it might be useful to invite the proponents to spell this out to permit a fair comparison of the proposals.

¹²Rodrik (2001).

Preference erosion

Reductions in bound rates that also reduce applied rates (and non-zero preferential rates) will lead to changes in preference margins with possible consequent effects on trade flows (trade diversion). Developing countries whose margin of preference is eroded may face negative trade diversion (on a comparative static analysis) unless their exports are regulated by import quotas. On the other hand, they may gain from the erosion of preferences within RTAs and preference schemes of which they are not beneficiaries. LDCs and ACP countries with deep preferences most likely face negative trade diversion, but much depends on their utilization of such preferences. Where utilization ratios are low, possibly associated with the application of rules of origin, then the gains from trade creation would be more important.

It is also important to take account of a number of other factors. First, if there is a general stimulus to trade and investment as a result of the current WTO negotiation, then the dynamic effect on general economic growth may offset any possible negative effects from trade diversion. Second, much depends on the supply capabilities of developing countries to take advantage of preferences: it is widely accepted that more needs to be done to improve the supply capabilities of the developing countries, particularly the LDCs, to allow them to take advantage of trade opportunities. Third, the benefits received depend on rules of origin and other formalities, which are often restrictive, so that even LDCs, which often face zero preferential tariffs, may gain from MFN liberalisation on many items. Fourth, the potential advantages of preferences are often offset by conditionalities imposed by the donors in relation to other social or economic conditions in the beneficiary countries. Fifth, most least-developed countries are not participants in regional trade agreements and could likely gain from MFN liberalisation in other developing country markets. Sixth, taking account of the above points, it may be preferable for most developing countries to obtain more secure MFN reductions on their key exports, rather than the preservation of preference margins on high MFN rates. To some extent, developing countries have been relatively quiescent about the barriers that they face, because they fear the possible loss of preferences. Finally, the large majority of preferences have been captured by relative few players and their overall value for many developing countries is quite small.

Tariff and government revenues

Tariff revenues are an important source of government revenue for many developing countries. IMF data indicates that the contribution of tariff revenues ranges greatly from virtually nothing in Italy to 75 per cent in Guinea. Less extreme examples are Cameroon and India where tariff revenues represent 28 and 20 per cent of government revenues, respectively; these are still substantial shares in revenues to be replaced by alternative forms of taxation.

Eliminating tariffs altogether implies tariff revenues would be reduced to zero. However, while tariff reductions, short of elimination, reduce revenues from existing imports, these reductions may be wholly or partly offset by the increased demand for imports, creating a higher revenue base. Any revenue losses would need to be replaced with taxes on income, profits, capital gains, property, labour, consumption or non-tax revenues. This is a long-term process that can be expensive to implement. In small countries where most goods are imported, a sales or consumption tax could replace tariff revenues, but such important changes to fiscal systems are costly and take time to implement.

The likely effects on tariff revenues of the various proposals now being discussed in the WTO are examined in Section D, below.

Tariff bindings and coverage

Bound tariffs are the only legal basis for WTO negotiations; Members bind and reduce tariffs in accession or multilateral negotiations and these binds are included in schedules of commitments. Binding tariffs means that in future a WTO Member is not able to raise bound rates without entering into Article XXVIII tariff renegotiations. In the current WTO negotiations, there is now considerable pressure being put on developing countries to increase the share of their trade covered by binding commitments and also to reduce applied tariffs. Indeed, the WTO proposals explicitly provides for the increase in binding coverage to 95 per cent of tariff lines and 95 per cent of imports by all countries except LDCs. Since binding coverage for some African countries is as little as 3 per cent, this would be a very large increase in commitments.

This gap between applied and bound tariffs that exists in developing countries is a result of autonomous reforms by these countries in the last 10-15 years. Many developing countries

have reduced applied tariffs unilaterally under recent reform programmes, and they have sought credit for such liberalisation. This was discussed in the Uruguay Round and some countries have indicated that account was taken of such liberalisation, but there is no public evidence of their having received credit for such actions. Indeed, the general reaction by developed countries is that only bindings matter and credit could only be afforded if cuts in applied rates were bound in the WTO. The argument is that applied rates could again be increased – despite the fact that the reductions were mostly a condition of lending operations by the World Bank and the IMF where the board voting systems favour the developed countries.

If developing countries are obliged to reduce MFN bound rates to levels that are below their applied rates, then this would eliminate any flexibility that developing countries have to use tariffs for development purposes, as discussed earlier. Moreover, there would be an increased likelihood of resort to anti-dumping actions and other contingency measures that can be costly to apply and tend to be captured by protectionist interests.

On the other hand, if after the current negotiations, developing countries cut MFN bound rates, leaving applied rates as they are or only partly reduced, such MFN reductions should still be seen as affording increased security of access to their market. This would itself be considered a valid legal commitment in the negotiations in non-agricultural products, even where rates are set at ceiling levels, higher than applied rates, as was done the Uruguay Round agriculture negotiations by many developed and developing countries.¹³

The likely effects of the current proposals in the WTO on bound and applied rates are given in Section D, below.

Potential trade and welfare gains

Assessing the impacts of across the board global liberalisation is best undertaken with an applied general equilibrium model the captures both inter-sectoral and trade linkages. One study, cited in the US proposal, has estimated that developing countries could see welfare

¹³ In the Uruguay Round negotiations on agriculture where all tariffs had to be bound by all participants, many developing countries set their new bound rates at 50 per cent.

gains of more than US\$ 500 billion from duty-free trade.¹⁴ The modelling includes assumptions of economies of scale and imperfect competition. These assumptions tend to inflate the gains from trade. Most importantly, the analysis assumes liberalisation in the services sector that accounts for the major part of the gains. In turn, this depends on some estimates of the trade effects of measures used in the services sector that are themselves estimated by econometric techniques. A more conservative approach is to assume constant returns to scale, perfect competition and, in the absence of reliable data, no liberalisation of the services sector. Such an approach is followed in the next section, in which six alternative proposals are analysed.

IV. QUANTITATIVE ASSESSMENT OF ALTERNATIVE PROPOSALS

The six alternative market access proposals for tariff reductions in non-agricultural products are those of the European Union, the United States, China, India, Korea, and the WTO. These were described earlier in the paper. In simulating these proposals there are no reductions in tariffs agriculture or in tariffs on services. In addition, we have arbitrarily excluded tariff reduction commitments for the 49 least-developed countries, although it is not clear whether this was the intention in some of the proposals. The simulations are described in Table 2.

¹⁴ Brown, Deardorff and Stern (2001).

Table 2: Alternative liberalisation scenarios

(Based on proposals, modified to take account of undefined elements)¹⁵

“EU”	Initial tariffs under 2 per cent are eliminated, tariffs between 2 and 15 per cent are reduced by 50 per cent, tariffs between 15 and 25 per cent are reduced by 55 per cent with final tariffs capped at 15 per cent. No reductions in agriculture or services or in least developed countries.
“Korea”	For industrials, as specified by formula. No reductions in agriculture or services or in least developed countries.
“India”	50 per cent reduction in bound import tariffs in developed countries and 33.3 per cent reduction in developing countries for industrials. No reductions in agriculture or services or in least developed countries.
“China”	For industrials, as specified with B=1. No reductions in agriculture or services or in least developed countries.
“WTO”	Tariffs reduced according to a Swiss formula with maximum coefficient equal to country average. Tariffs eliminated for electronics & electrical goods, fish and fish products, textiles, clothing, footwear, leather goods, motor vehicle, parts and components, stones, gems and precious metals. No reductions in agriculture or services or in least developed countries.
“US”	All tariffs eliminated. No reductions in agriculture or services or in least developed countries.

Note: Under the “WTO” simulation, the binding of developing country tariffs at double the applied rate follows the WTO proposal except that the WTO proposes to bind 95 per cent of tariff lines and imports. Obviously, it could be very important which lines are excluded.

Simulations are undertaken using GTAP, a static general equilibrium model that includes linkages between economies and between sectors within economies. 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 (land, labour, capital, etc) are substitutable but as a composite are used in fixed proportions to intermediate inputs. We use the GTAP Database Version 5.3b, which has 78 countries and regions and 65 sectors that, in our analysis, are aggregated into 21 regions and 21 sectors as shown in Table A1 in the Appendix.

¹⁵ For the actual details of proposals, see Section B.

This modelling approach is useful for making broad evaluations of alternative proposals, in which the relativities would most likely hold even though the precise magnitudes of the changes might vary under the assumptions of the model (economies of scale, etc.). However, it is important to understand that the results are comparative static (a comparison of a "before" and "after" situation without plotting the time path or the process and costs of adjustment) and *ceteris paribus* (no account is taken of other changes in the world economy). Moreover, in order to limit the number of tables, we present the gross results which conceal much more important adjustments in specific sectors.¹⁶ Knowledge of where the negative effects fall in specific sectors can be useful in the design of adjustment programmes or social safety nets to offset the negative effects of real changes in an economy following tariff reductions. In addition, even where there are net gains in one of our regions, there may be losses for some countries within those regions. This is particularly the case with food importers who may face higher food bills as export subsidies are eliminated under the agricultural part of the simulation. These countries are adversely affected by terms of trade movements and do not receive the (long-term) allocative benefits from reform.¹⁷ Finally, we can take no account of possible benefits - externalities, where social benefits of a policy exceed costs - that might result from the use of tariffs for development purposes and where the use of alternative instruments has been precluded by WTO rules.

The basic tariff reduction proposals as used in the modelling exercise are outlined in Table 2. New tariffs, after the application of the formulae, are calculated at the HS six-digit level for 148 countries from UNCTAD's TRAINS 2002 database. Where bound rates are missing, applied rates are used (except under the "WTO" proposal where applied rates are bound at double the current levels, or 5 per cent where applied rates are zero). Specific tariffs are ignored. The proposed bound and applied rates are then compared to provide new applied rates that were then aggregated to the GTAP category level using trade weights, implying that tariffs on products with no trade are ignored. Applied tariff reductions are calculated bilaterally, taking account of a number of regional arrangements that have been included in the GTAP database (but full preferential data is not yet included). In the GTAP database

16 Detailed sectoral data are available from the authors in GTAP format for those with the necessary software – Viewsol - to read the output.

17 Vanzetti and Peters (2003) analysed potential gains from agricultural trade liberalisation using UNCTAD's partial equilibrium Agriculture Trade Policy Simulation Model that covers 175 countries and 36 commodities. Only 50 countries experience welfare gains under the EU agricultural liberalisation scenario.

bilateral tariffs also differ according to the trade weights applied to the different applied tariffs.

To give an indication of the likely impacts of the various proposal, the levels of initial and final bound and applied tariffs are shown in Table 3 for developed and developing countries. These are calculated as an import-weighted average at the six-digit level of the non-agricultural tariffs. Bound rates are the subject of negotiation, but the changes in applied rates are what are used in the estimates of the economic effects in subsequent tables. The data indicate that the developing countries start from a higher base and hence are asked under the various proposals to make the largest cuts in bound and applied rates, at least in terms of percentage points. The greatest change occurs under the US proposals, while the changes for developing countries' bound rates under the EU, Chinese and WTO (B=1) proposals are similar (around 60 per cent reduction), while the least reductions take place under the Korean and Indian proposals. All proposals imply reductions of applied rates for developing countries as a whole. There would of course be considerable differences across countries and sectors.

Table 3: Bound and applied non-agricultural tariffs before and after application of various proposals

	Developed countries		Developing countries	
	Bound %	Applied %	Bound %	Applied %
Initial	3.0	2.8	14.6	8.3
Proposal				
EU	1.6	1.5	5.6	4.6
Korea	2.1	1.8	11.5	7.0
India	1.4	1.3	10.8	7.5
China	1.1	1.1	5.7	5.0
WTO (B=1)	0.7	0.6	5.8	4.1
USA	0.0	0.0	0.0	0.0

Source: Derived from GTAP database, Comtrade, TRAINS and AMAD.

Results of Simulations

In the simulations we focus on changes in imports, tariff revenues, exports, domestic production and economic welfare (i.e. impact on national income). We also examine the sensitivity of the WTO proposal to changes in the B factor and to the inclusion of free trade in the special sectors said to be of interest to the developing countries.

The global change in imports is estimated to range from 1.8 to 5 per cent under the US free trade proposal (Table 4). Corresponding to the tariff changes, the greatest increase in imports result from the US free trade proposals; the EU, Chinese and WTO (B=1) proposals are next, and the Korean and Indian proposals imply the least increase in imports. The largest increases in imports take place in developing countries and the lowest increase takes place in the developed countries. This reflects the greater reductions of tariffs in the developing countries under all proposals.

Small negative overall effects appear in a few cases. This occurs because, under general equilibrium modelling, there can be changes in inward and outward trade flows as a result of policy changes in other countries as well as at home: if exports are affected, for example because of changes in preference margins – as in the case of Canada and Central America into the US market – then there would be less exports (see Table 6) and less

imports (Table 4).

Again there are important sectoral variations, even where the overall changes are small.

Table 4: Change in imports relative to base

	Scenario					
	EU	Korea	India	China	WTO	USA
	%	%	%	%	%	%
European Union 15	0.2	-0.1	0.0	0.2	0.2	0.4
United States	2.2	1.4	1.8	1.9	2.1	2.0
Japan	4.7	2.7	3.1	4.9	4.9	6.1
China	14.1	7.4	6.5	14.0	12.2	17.0
India	16.6	2.5	3.9	14.3	12.6	22.8
Canada	0.1	-0.2	-0.4	-0.2	-0.2	-0.8
Oceania	2.1	0.6	1.3	3.0	2.2	4.0
Other West Europe Central and Eastern Europe	1.6	0.0	0.0	0.0	0.1	-0.6
Indonesia	10.5	4.3	5.0	10.3	9.5	15.3
South East Asia	10.2	6.4	6.4	10.2	9.7	12.4
South Asia	5.8	3.3	3.1	5.6	5.2	6.8
Rest of Asia	18.6	13.2	14.5	18.5	18.0	20.7
Central America & Caribbean	9.1	5.0	4.8	9.5	8.6	12.4
Mercosur	2.2	-1.0	-1.1	1.9	1.5	5.5
Andean Pact	13.2	4.6	4.9	12.2	11.0	22.9
North Africa	5.8	1.6	0.7	5.4	3.9	10.3
Middle East	17.3	3.0	4.0	15.1	14.3	21.7
South Africa	10.8	5.3	5.4	8.2	7.8	10.3
Sub-Saharan Africa	3.8	0.8	2.3	3.5	4.3	5.3
Rest of World	6.6	2.9	5.2	8.5	8.8	10.1
World	4.7	3.1	4.0	4.7	5.6	5.6
	3.9	1.8	1.9	3.7	3.5	5.0

Source: GTAP simulations.

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 value of import taxes from the GTAP database is shown in Appendix Table A2. This is a combination of tariff rates plus trade flows. Total taxes are calculated in the database at \$304 billion, of which \$104 billion is in unprocessed and processed

agricultural products (not liberalised in these simulations) and \$45 billion in textiles, leather and apparel, a sector of great interest to developing countries. There are also sizeable amounts in chemical, rubber and plastics, manufactured metal products, electronics and motor vehicles. There is virtually nothing in services, most likely a reflection of poor quality data.¹⁸

Across the regions, changes in import revenues are significant in Europe, the United States, Japan and China but there are also significant amounts in developing regions, and in proportional terms these would be more important for these countries. According to the GTAP database, some 64 per cent of the estimated tariff revenues are collected in regions outside the developed countries (i.e., EU, USA, Japan, Canada, Oceania and Other Western Europe). Almost 50 per cent of the estimated tariff revenues on imports of agricultural products are collected by developing countries. For example, the Middle East appears to gain significant revenues from imports of agricultural products.

The effects of the various proposals on tariff revenues are shown in Table 5. The simulation results indicate a fairly substantial decline in global revenues but significant variation across countries, depending on the specific initial protection levels and trade flows. Again the results correspond to the changes in tariffs and to the level of imports, with the greatest losses resulting from the US proposal, followed by the EU, Chinese and WTO (B=1) proposals, and with the least impact coming from the Indian and Korean proposals.¹⁹ However, the losses are not in direct proportion to the tariff cuts, as these reductions are assumed to be passed on to consumers, leading to increased demand for imports and hence the revenue base.

Nevertheless, given the importance of tariff revenues in total government revenues, all countries will have to consider how to replace these revenue losses from alternative sources, and this problem will be acute for a number of developing countries that are still

¹⁸ Brown, Deardorff and Stern 2002 had significant levels of protection on services, and most of the gains in their study come from liberalisation of this sector.

¹⁹ The US proposal does not eliminate tariff revenue because it is modelled here as leaving some tariffs in the agricultural and service sectors.

highly dependent on trade taxes. Under the various proposals, in order to balance their budgets many developing countries will be forced to raise taxes on income, profits, capital gains, property, labour, and consumption or through non-tax revenues to compensate. Broad-based taxes have the advantage of being less distortionary but they are not as simple to collect as tariff revenues, particularly for countries with poorly developed administrative systems. As noted in Section C, tax changes may require some time to implement.

Table 5: Change in tariff revenue relative to base

	Scenario					
	EU	Korea	India	China	WTO	USA
	\$m	\$m	\$m	\$m	\$m	\$m
European Union 15	-53	-31	-40	-54	-56	-66
United States	-67	-40	-52	-67	-70	-80
Japan	-14	-8	-11	-14	-15	-16
China	-62	-28	-17	-61	-47	-81
India	-65	-10	-13	-56	-49	-93
Canada	-40	-23	-29	-42	-41	-51
Oceania	-56	-19	-30	-74	-56	-95
Other West Europe	-4	-3	-3	-4	-4	-5
Central and Eastern Europe	-39	-4	-2	-39	-30	-72
Indonesia	-55	-30	-23	-54	-47	-87
South East Asia	-59	-33	-28	-60	-54	-82
South Asia	-49	-37	-38	-48	-45	-61
Rest of Asia	-38	-18	-18	-38	-33	-58
Central America & Caribbean	-32	-4	-4	-31	-28	-72
Mercosur	-50	-14	-14	-49	-44	-91
Andean Pact	-39	-10	-4	-40	-28	-81
North Africa	-40	-3	-3	-35	-31	-65
Middle East	-31	-19	-18	-32	-28	-45
South Africa	-27	-6	-14	-25	-30	-42
Sub-Saharan Africa	-46	-19	-23	-56	-46	-71
Rest of World	-39	-25	-33	-37	-46	-52
Total	-44	-20	-22	-44	-40	-62

Source: GTAP simulations.

The overall effects on exports similarly correspond broadly to the degree of tariff liberalisation under the various proposals. However, there is also likely to be considerable variation across regions and products. Countries that export products that

are currently highly protected are likely to see the ambitious US proposal as attractive (Table 6), followed by the EU, Chinese and WTO (B=1) proposal, while the least expansion in exports occur under the Indian and Korean proposals. Small export losses appear to be the likely result of the loss of preferences under regional trade agreements or unilateral schemes, although the database does not contain full preferential data.

Table 6: Change in export revenue relative to base

	Scenario					
	EU	Korea	India	China	WTO	USA
	%	%	%	%	%	%
European Union 15	0.8	-0.1	0.3	0.2	0.7	0.4
United States	4.3	1.4	3.1	1.9	4.3	2.0
Japan	6.5	2.7	4.0	4.9	6.4	6.1
China	12.4	7.4	6.2	14.0	11.1	17.0
India	11.5	2.5	3.2	14.3	8.9	22.8
Canada	0.4	-0.2	-0.1	-0.2	0.3	-0.8
Oceania	2.8	0.6	1.6	3.0	2.8	4.0
Other West Europe	0.1	0.0	-0.1	0.0	0.2	-0.6
Central and Eastern Europe	5.7	4.3	2.7	10.3	5.3	15.3
Indonesia	9.2	6.4	5.9	10.2	8.9	12.4
South East Asia	4.2	3.3	2.5	5.6	4.1	6.8
South Asia	12.3	13.2	9.2	18.5	12.0	20.7
Rest of Asia	7.5	5.0	4.0	9.5	7.2	12.4
Central America & Caribbean	2.4	-1.0	-0.2	1.9	2.0	5.5
Mercosur	13.5	4.6	5.8	12.2	11.5	22.9
Andean Pact	4.6	1.6	1.1	5.4	3.6	10.3
North Africa	9.5	3.0	2.2	15.1	8.6	21.7
Middle East	3.5	5.3	1.8	8.2	3.4	10.3
South Africa	2.4	0.8	1.3	3.5	2.6	5.3
Sub-Saharan Africa	3.5	2.9	2.8	8.5	4.7	10.1
Rest of World	4.9	3.1	3.7	4.7	5.4	5.6
World	3.7	1.8	1.9	3.7	3.5	5.0

Source: GTAP simulations.

Table 7 reveals some significant changes in output, positive and negative across regions, under the various proposals. This results from the combined effects of change in the prices and volumes of imports and exports under the various scenarios. A potential problem is falling output, and, most likely, employment, in Europe, the USA and Japan, as well as, among the developing countries, the Central American & Caribbean region and Africa. A closer scrutiny of detailed sectoral data, not reproduced here, shows that the fall in output is driven by terms of trade rather than quantity effects, and the changes in terms of trade are driven by negative export price effects in resources, other motor vehicles and other manufactures. Asia and Sub-Saharan Africa enjoy positive export price effects in services, other manufactures and textiles.

Overall, it seems that European and American producers have small negative effects on production as a result of liberalisation in the industrial sector whereas other regions appear to gain. The result implies that most governments might see scope for switching labour from agriculture to the industrial and service sectors. On the other hand, we are unable to comment on possible cross-sectoral effects, e.g. as between industry on the one hand and agriculture and services on the other. Judging from the study by Brown, Deardorff and Stern (2001), EU and US policymakers may well see significant scope for output gains following liberalisation, especially in services.

The pattern across regions is quite diverse, and appears to be less systematically linked to the various proposals than trade and revenue effects. However, it is important to note that there could be even greater effects in specific sectors in some countries, and policy makers will be concerned to look at the need for social safety nets in those sectors that are likely to suffer the greater negative effects from changes in their own countries.

Table 7: Change in value of output relative to base

	Scenario					
	EU	Korea	India	China	WTO	USA
	%	%	%	%	%	%
European Union 15	-1.1	-0.7	-0.9	-1.1	-1.1	-1.2
United States	-1.1	-0.5	-0.7	-1.1	-1.1	-1.5
Japan	0.8	0.5	0.5	0.9	0.9	1.3
China	0.9	0.8	1.6	1.0	1.5	0.6
India	-0.8	0.1	0.4	-0.5	-0.2	-1.8
Canada	-1.4	-0.9	-1.1	-1.5	-1.5	-2.0
Oceania	-1.3	-0.5	-0.6	-1.6	-1.2	-2.0
Other West Europe	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5
Central and Eastern Europe	3.2	2.4	3.1	3.3	3.6	3.6
Indonesia	1.0	0.5	1.1	1.1	1.3	0.7
South East Asia	0.4	0.4	0.6	0.4	0.5	0.2
South Asia	2.5	1.5	2.2	2.6	2.9	1.9
Rest of Asia	2.9	1.9	1.9	2.9	2.7	3.5
Central America & Caribbean	-1.6	-1.1	-1.2	-1.5	-1.6	-1.9
Mercosur	-1.1	-0.4	-0.3	-1.3	-1.2	-1.2
Andean Pact	-0.9	-0.2	0.1	-0.9	-0.6	-1.9
North Africa	0.6	0.7	1.1	0.9	1.2	-0.7
Middle East	1.2	0.9	1.1	1.1	1.2	0.9
South Africa	-0.6	-0.1	0.0	-0.5	-0.5	-1.0
Sub-Saharan Africa	-1.6	-0.6	0.2	-1.8	-0.6	-2.6
Rest of World	-1.2	-0.7	-0.8	-1.2	-1.2	-2.0

Source: GTAP simulations. Note: Value of output is measured as the change in the value of GDP. This abstracts from changes in terms of trade.

The static annual gains and losses in regional welfare from the tariff reforms are shown in Table 8. This is essentially a comparison of utility - satisfaction consumers gain from their expenditure - before and after liberalisation with no account taken of the adjustment process. The global gains in welfare, shown in the final row, are essentially changes in GNP, i.e. domestic output plus changes in terms of trade. The welfare estimates range from some \$21 billion under the Korean and Indian proposals to over \$40 billion under the US free trade scenario. The EU, Chinese and WTO (B=1) proposals produce similar results, some \$33 - \$34 billion, while the Korean proposal produces the least welfare gains.

Under all scenarios analysed here the large majority of the welfare gains go to the developing countries, and hence they gain more under the more radical reforms. This is because, in this kind of analysis, the allocative efficiency gains come predominantly from one's own liberalisation. However, changes in terms of trade also play a role. Under the analysis, the European Union and the United States suffer a very small welfare loss. This results from the fact that liberalisation in agriculture and services is excluded from the analysis. Resources therefore flow to the relatively highly protected agriculture sector, adding to the distortions and representing an efficiency loss. In addition, there is a decline in the terms of trade in the services sector for which export prices fall in this analysis (probably reflecting the lack of protection data in this sector and perhaps the differing definitions of unskilled labour in different regions in the database). As terms of trade effects net out to zero globally, these losses represent gains to regions that import from these countries.

Table 8: Change in welfare relative to base

	Scenario					
	EU	Korea	India	China	WTO	USA
	%	%	%	%	%	%
European Union 15	-0.10	-0.09	-0.12	-0.10	-0.13	-0.08
United States	-0.05	-0.02	-0.04	-0.06	-0.06	-0.08
Japan	0.19	0.10	0.10	0.21	0.19	0.29
China	0.54	0.41	0.60	0.56	0.67	0.49
India	0.30	0.12	0.20	0.30	0.31	0.20
Canada	0.00	-0.09	-0.13	-0.13	-0.14	-0.21
Oceania	0.01	0.01	0.01	-0.06	-0.03	-0.07
Other West Europe	0.76	0.51	0.52	0.59	0.60	0.57
Central and Eastern Europe	1.99	1.37	1.66	1.92	2.06	2.15
Indonesia	1.52	1.22	1.29	1.50	1.52	1.51
South East Asia	0.84	0.52	0.62	0.82	0.82	0.83
South Asia	1.27	0.89	1.06	1.28	1.31	1.20
Rest of Asia	1.02	0.65	0.63	1.06	0.98	1.26
Central America & Caribbean	-0.02	-0.24	-0.22	-0.07	-0.11	-0.03
Mercosur	0.31	0.15	0.17	0.26	0.24	0.40
Andean Pact	0.47	0.21	0.19	0.37	0.34	0.44
North Africa	1.13	0.49	0.65	1.07	1.09	0.92
Middle East	1.01	0.50	0.56	0.73	0.72	0.80
South Africa	0.31	0.12	0.22	0.28	0.31	0.28
Sub-Saharan Africa	0.26	0.15	0.43	0.24	0.51	0.17
Rest of World	0.07	0.02	0.05	0.06	0.08	-0.01
	\$m	\$m	\$m	\$m	\$m	\$m
Total welfare	34312	20696	21818	34527	33165	40162

Source: GTAP simulations.

Note: Percentage changes in welfare are measured as utility. Total welfare is equivalent variation. These are static, annual gains.

Sensitivity Analysis

Two questions remain. The first relates to the significance of the B value in the WTO proposal. This parameter, which determines the level of liberalisation, is assumed to be common across all countries in the current analysis. The default value, 1, in the analysis implies all tariffs are reduced using the Swiss formula with a maximum in each country equal to its current average bound tariff. A value of 2 implies a maximum of twice the average and so forth. To assess the importance of

this, the WTO proposal was simulated with a B of 2. A second question relates to the importance of eliminating tariffs in specific sectors. To assess this the WTO proposal was simulated with tariff reductions in these sectors set as for other non-agricultural sectors.

The calculated tariff changes are shown in Table 9 for developed and developing countries. For example, the initial developed country average bound tariff of 3.1 per cent is reduced to 0.7 per cent under the standard WTO proposal, 1.0 if B=2 and 1.2 per cent if all sectors are treated similarly without the eliminations of tariffs. It is clear the elimination of tariffs in specific sectors is important in reducing developed country tariffs, but it also has a significant impact on developing country average applied tariffs, reducing them further from 6.7 to 4.1 per cent, accounting for more than half the reduction from the initial applied tariff of 8.3 per cent.

Table 9: Average trade weighted bound and applied tariffs under alternative assumptions

		Bound			
		Initial	WTO (B=1)	WTO (B=2)	WTO (B=1 without sectoral elimination)
Developed		3.0	0.7	1.0	1.2
Developing		14.6	5.8	7.7	9.3
		Applied			
		Initial	WTO (B=1)	WTO (B=2)	WTO (B=1 without sectoral elimination)
Developed		2.8	0.6	0.8	1.0
Developing		8.3	4.1	4.6	6.7

Source: Derived from COMTRADE, TRAINS and AMAD.

The effect on imports of simulating these alternative tariff reductions is shown in Table 10. The first column, WTO=1, is a repeat of the standard WTO simulation shown in Table 4. Raising the Swiss coefficient to twice the national average reduces the annual global increase in imports from 3.5 to 3.2 per cent. The impact varies somewhat across regions, depending on the compositions of the trade. The importance of eliminating tariffs in specific sectors has a greater impact, reducing the increase in global imports to 2.4 per cent. The largest increases in imports, in percentage terms at least, occur in developing countries, but exports would also increase by a similar amount, given

the constraints of the model. The small negative numbers for some regions appear related to the reduction in preferential margins in key markets on the export side, which becomes reflected in imports under general equilibrium analysis

Table 10: Changes in imports in WTO scenario with alternative B coefficients and without specific sector tariff elimination

	Scenario		
	WTO=1	WTO=2	WTO=1, no exclusions
	%	%	%
European Union 15	0.2	0.1	0.0
United States	2.1	2.1	1.8
Japan	4.9	4.5	3.9
China	12.2	11.7	7.8
India	12.6	11.1	5.9
Canada	-0.2	-0.2	-0.2
Oceania	2.2	2.1	1.5
Other West Europe Central and Eastern Europe	0.1	0.2	-0.1
Indonesia	9.5	8.6	6.4
South East Asia	9.7	9.1	7.4
South Asia	5.2	4.8	4.1
Rest of Asia	18.0	17.5	16.2
Central America & Caribbean	8.6	7.9	6.1
Mercosur	1.5	1.4	-0.8
Andean Pact	11.0	9.5	6.8
North Africa	3.9	3.1	2.0
Middle East	14.3	13.2	7.5
South Africa	7.8	7.6	6.2
Sub-Saharan Africa	4.3	4.0	3.0
Rest of World	8.8	7.4	7.2
Total	5.6	5.3	4.7
	3.47	3.22	2.41

Source: GTAP simulations.

Note: In the third scenario tariffs in the specific sectors, namely electronics and electrical goods, fish and fish products, textiles, clothing, footwear, leather goods, motor vehicle, parts and components, stones, gems and precious metals, are treated as other sectors.

Finally, the results for welfare are shown in Table 11. The first column, WTO=1, is once again a repeat from Table 4, i.e. B=1 with specific sectoral elimination. Doubling the Swiss coefficient reduces annual global welfare gains (cf. B=1) by an estimated \$2.1 billion to \$31.0 billion. Eliminating tariffs in specific sectors contributes to global gains of \$6.5 billion compared with the standard scenario. Where these sectors are included, most of the gains go to the regions doing the additional liberalising, Japan and Rest of Asia (Korea and Taiwan). Nonetheless, consistent with the earlier modelling results that greater liberalisation produces higher welfare in the longer term (again without taking account of adjustment costs or externalities), with the exception of China and Rest of World, developing regions enjoy greater welfare gains under B=1 rather than B=2, and benefit also from eliminating tariffs in specific sectors. This is subject to the qualifications about comparative static analysis and adjustment costs, mentioned previously.

Table 11: Change in welfare in WTO scenario with alternative B coefficients and without specific sector tariff elimination

	Scenario		
	WTO=1	WTO=2	WTO=1, no exclusions
	%	%	%
European Union 15	-0.13	-0.13	-0.13
United States	-0.06	-0.06	-0.06
Japan	0.19	0.16	0.13
China	0.67	0.66	0.69
India	0.31	0.31	0.26
Canada	-0.14	-0.12	-0.12
Oceania	-0.03	-0.02	0.00
Other West Europe	0.6	0.61	0.52
Central and Eastern Europe	2.06	1.97	1.85
Indonesia	1.52	1.50	1.42
South East Asia	0.82	0.81	0.71
South Asia	1.31	1.32	1.21
Rest of Asia	0.98	0.93	0.75
Central America & Caribbean	-0.11	-0.12	-0.16
Mercosur	0.24	0.18	0.22
Andean Pact	0.34	0.29	0.28
North Africa	1.09	1.06	0.92
Middle East	0.72	0.72	0.63
South Africa	0.31	0.29	0.28
Sub-Saharan Africa	0.51	0.48	0.48
Rest of World	0.08	0.08	0.07
Total welfare	\$m 33165	\$m 31024	\$m 26630

Source: GTAP simulations.

Note: In the third scenario tariffs in the specific sectors, namely electronics and electrical goods, fish and fish products, textiles, clothing, footwear, leather goods, motor vehicle, parts and components, stones, gems and precious metals, are treated as other sectors. Percentage changes in welfare are measured as utility. Total welfare is equivalent variation.

V. MARKET ENTRY

Both the possibility of entering foreign markets and the ability to do so are essential for exports. The possibility of entering depends on market access conditions, which are determined by the legal and administrative conditions imposed by the importing countries under internationally agreed trade rules. The ability to enter a market, however, is a function both of the competitiveness of the exporter, which in turn is determined by the relative cost and quality of the product, and the characteristics of supply chains and the structure of markets (e.g. the degree of oligopoly).

While the exporter can do much to improve the competitiveness of its products, market access conditions, market exigencies and the characteristics of supply chains are to a large extent exogenous to developing-country exporters, which are often small and wield little power. Naturally, international trade rules broadening market access are the result of intergovernmental negotiations, and therefore all States Members of WTO have the right, if not the power, to affect the scope and content of these rules. Governments, however, have neither direct involvement nor much leeway in influencing the characteristics of market structures and supply chains, apart from implementing rules for competition. Here, large firms determine the modus operandi of supply chains and, thus, effectively the distribution of value added and who gains how much from trade. Smaller firms can influence the functioning of the supply chains and the distribution of total value added only if they have specialized and differentiated products – in other words, if they can turn the value chain into a producer-driven one. A new phenomenon that is radically changing market entry conditions, particularly in the case of agro-food, is the recent growth of international supermarket chains.

As noted earlier, negotiations within the WTO on NTBs are taking place in the context of negotiations on rules, rather than market access per se. In this context, measures covered by the WTO Agreements on the Application of Sanitary and Phytosanitary Measures (SPS) and on Technical Barriers to Trade (TBT) are of particular significance. Meeting the requirements of the SPS agreement is one of the principal concerns of agro-food exporters. This is complicated by the multiplicity of these requirements across different markets. Considerable costs must be borne in order to meet the health and environmental requirements, and to apply the Hazard Analysis Critical Control Point (HACCP) principles. These requirements would definitely create difficulties in the short term, but in the long run exporters would be forced to increase their

competitiveness. Considerable difficulties are, however, presented by the way the standards are set, and challenging their legality is extremely difficult, particularly for developing countries. Even in the case of internationally agreed norms, developing countries' concerns are often inadequately reflected owing to their lack of technical skills and negotiating ability.

While market access barriers and international trade measures implemented by Governments comprise the first hurdle to selling in international markets, clearing this hurdle does not guarantee that market entry will be assured and the product will appear on retailers' shelves. For instance, SPS requirements define the necessary but not sufficient conditions for being able to export. Many, and in most cases much more stringent, quality and labelling requirements, as well as conditions regarding production and processing practices, are imposed by importing firms themselves. Particularly in the case of food items, meeting the requirements of importing firms and distribution and retailing channels is the ultimate prerequisite for success. Moreover, these requirements are usually more stringent than the government regulations reflected in measures undertaken in accordance with the requirements of the SPS Agreement. When requirements are made by private enterprises, there is no way to contest them legally, except in situations where rules of competition are violated.

The requirements set by Governments and firms go beyond product specifications to cover the way in which the product is produced. Competitiveness and market entry, in many instances, depend more on the production process than on the product itself. Not only do small producers lack the financial means and technical skills to meet these requirements, but when they do meet them, they have significant disadvantages. Traceability is important: buyers want to know for sure how production has been carried out by all suppliers. When a large number of small producers are involved, the transaction costs incurred by the buyer are significantly bigger than those involved in dealing with a small number of large producers. A rational buyer would like to avoid these extra costs by using large suppliers.

Another agreement whose implications for diversification are sometimes overlooked is the TRIPS Agreement. For example, the rules governing geographical indications (GI) have been designed with the products of industrial countries in mind, and traditional knowledge is not sufficiently protected. Moreover, importers are sometimes apprehensive about purchasing from developing countries because they worry that seeds and other inputs utilized in production may not satisfy the requirements of the TRIPS Agreement. This has affected some high-value horticultural products such as cut flowers, which offer significant opportunities for export and diversification.

VI. OVERALL ASSESSMENT

There are serious policy dilemmas for developing countries in reconciling their own trade and industrial policy strategies to the constraints that may be set in the on-going WTO negotiations in the area of market access for non-agricultural products. Most countries want to advance their liberalisation processes but the timing and sequencing is not clear. Also, the state of trade policy is at different stages across the developing world and there are different trade and production interests. While there are expected to be longer-term gains from liberalisation, there are also short-term adjustment costs and there may be unexplored options for developing countries in the use of tariffs for industrial development purposes. For many countries a cautious or measured approach may be preferable. This seems to be feasible within the framework of the Doha Ministerial Declaration, which recalls that Article XXVIII *bis* states that non-full reciprocity is required from developing countries and LDCs and that S&D treatment is to be applied. From past practice, this would normally mean that, if developing countries choose to make offers, then lesser tariff cuts would be required than from other developing countries, and that, where they do participate, longer transition periods.

On the whole, a formula approach would seem best to address the needs of developing countries for improved access to major markets, given their lack of bargaining power. Swiss-formula-based approaches more dramatically attack tariff peaks and escalation in their export markets, but tariff peaks could be addressed under a linear approach, and India, for example has suggested that no rate should exceed three times the national average.

However, Swiss-style approaches represent a problem for developing countries that tend to have higher initial tariffs and would therefore be required to make larger cuts under such harmonising formulae. The WTO proposal goes some way to addressing this by basing the tariff reductions on the initial average, so that countries with higher tariffs are not obliged to reduce them to the level of those with lower initial tariffs. However, the assessment of the WTO proposal hinges to a large extent on the value of B. If this were higher for developing countries as a form of “less than full reciprocity” or Special and differential treatment, then the reductions that they make would be less and they would preserve a degree of policy space.

Given the latitude that developing countries have from the negotiating mandate in affording them less than full reciprocity, the low binding-coverage and the gap between applied and bound rates, then a differentiated simple linear cut would also preserve some policy space for developing countries. Special and differential treatment could be afforded by a differential percentage cut on MFN bound rates. In this respect the Indian and Korean proposals provide similar latitude to developing countries and similar trade and welfare effects. Consideration might be given to allowing lesser cuts for sensitive sectors, subject to a minimum cut of say 15 per cent (as in the UR Agriculture Agreement). Zero-for-zero, or elimination of nuisance tariffs – which have advantages and disadvantages economically - could similarly be accommodated within such a mixed approach. This approach would also allow developing countries the latitude for the development of their own trade and industrial policies.

The WTO proposal provides some latitude for the protection of sensitive sectors by allowing for 5 per cent of lines and of imports to be unbound. India has suggested that 15 per cent of lines might be unbound in developing countries, as a measure of S&D treatment.

In any case, the analysis shows that, whatever the approach, the developing countries will be required to make the greater cuts in their bound tariffs and will face greater proportional increases in imports. They will also suffer substantial losses in tariff revenues – and this will be a serious concern in a number of cases. The greatest cuts take place under the US "free trade" proposals, followed by similar cuts in the EU, Chinese and WTO (B=1) proposals (from 14.6 to 5.8 per cent), while the lowest cuts are under the Indian and Korean proposals (to 10.8 and 11.5 per cent respectively, assuming that India followed the 50/33.3 per cent cut as in the simulations). The developing countries are also being asked to make the greater commitments by way of extension of the tariff binding coverage, which is by itself a valid and valuable commitment, irrespective of the effects on applied tariffs. All of this is a significant reversal of the normal concept of special and differential treatment. On the other hand, the formulae with deeper cuts also offer greater export opportunities and, in the longer term (once adjustment costs are met) should lead to greater welfare gains. Whatever the approach, liberalisation will require the provision of funds to pay for adjustment programmes and social safety nets to offset the negative effects, and, the deeper the cuts, the more funds will be needed.

Prima facie, it appears that countries that benefit from unilateral preferences, e.g. LDCs, ACP countries, etc., could loose from the effects of erosion of preferences in the market access negotiations on non-agricultural products. However, even in markets where preferences appear important, in practice there is often considerable under-utilisation of preferences and, even on a comparative static analysis, LDCs could gain from MFN liberalisation. LDCs would also gain in individual markets and RTAs where they now face MFN rates. The situation is highly variable by country and product. On a dynamic basis LDCs may gain from the general boost that successful negotiations give to world production and trade. Where preference erosion leads to clear-cut negative effects, then preference-receiving countries may need some kind of assistance to help offset the negative impacts of trade liberalisation and undertake economic restructuring to new international trading conditions.

Overall, developing countries have a difficult task in ascertaining their own best interest in the current WTO negotiations on non-agricultural market access and in reconciling the options with their own trade and industrial policy strategies. They will want to take account of the potential gains from MFN trade liberalisation, which could be quite substantial, against possible losses in development flexibility, and, in the case of the LDCs, potential preference losses. In making such judgements, the developing countries will need to look at their particular situation, their specific products and main markets, the degree of preference utilisation, the effects of RTAs, potential gains in other developing countries, and the operation of rules of origin, TBT/SPS and TRIPS issues, other factors affecting market entry and their own supply capabilities.

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Appendix

Table A1: Country and commodity coverage

Regions	Sectors
1 European Union 15	Unprocessed agriculture
2 United States	Processed agriculture
3 Japan	Fisheries & forestry
4 China	Resources
5 India	Petroleum and coal products
6 Canada	Textiles
7 Oceania	Leather
8 Other West Europe	Apparel
9 Indonesia	Non metallic manufactures
10 South East Asia	Lumber
11 South Asia	Paper products
12 Rest of Asia	Chemicals, rubber and plastics
13 Central America & Caribbean	Metal manufactures
14 Mercosur	Iron and steel
15 Andean Pact	Non ferrous metals
16 South Africa	Fabricated metal products
17 Central and Eastern Europe	Manufactures nec
18 North Africa	Electronic
19 Middle East	Motor vehicles
20 Sub-Saharan Africa	Other transport nec
21 Rest of World	Services

Table A2: Import tax revenues in the GTAP 5.3 database (\$m)

	EU	USA	JPN	CHN	IND	CAN	OCE	OWE	CEE	IDN
Unprocessed agriculture	2897	1873	8463	2153	246	134	15	2200	843	153
Processed agriculture	10862	3207	16258	3116	386	2046	148	6927	2802	289
Fisheries & forestry	100	5	130	39	11	0	0	1	7	1
Resources	1	176	-708	16	1078	0	0	3	37	41
Petroleum and coal products	398	137	277	436	133	43	3	168	229	87
Textiles	2574	1920	868	4751	268	268	388	52	899	293
Leather	1252	2837	892	331	14	209	126	20	262	25
Apparel	4296	4430	1559	629	11	400	392	103	500	23
Non metallic manufactures	522	620	66	598	255	46	78	14	325	54
Lumber	452	206	385	184	22	38	51	4	218	20
Paper products	285	64	26	794	105	13	83	1	320	52
Chemicals, rubber and plastics	2652	1841	522	4137	1645	223	318	27	1382	504
Metal manufactures	3003	2831	102	5673	1515	304	700	53	2156	461
Iron and steel	299	442	118	915	514	74	53	10	352	183
Non ferrous metals	401	179	44	466	1460	8	17	2	123	36
Fabricated metal products	461	467	48	399	115	78	100	9	407	179
Manufactures nec	729	634	185	486	440	58	73	9	191	83
Electronic	4508	1587	0	3412	493	95	154	46	798	274
Motor vehicles	2602	1399	0	1241	221	279	660	2	1852	1045
Other transport nec	615	233	0	303	53	33	23	35	139	83
Services	0	0	-4	-3	0	0	12	0	15	0
Total	38909	25091	29232	30077	8984	4349	3395	9686	13856	3886

Table A2 (cont.): Import tax revenues in the GTAP 5.3 database (\$m)

	SEA	RSA	RAS	CA&C	MER	AND	NAF	MDE	SSA	SAF	ROW	Total
Unprocessed agriculture	1040	275	5498	836	367	280	814	4387	237	105	300	33117
Processed agriculture	2104	741	2729	1989	856	576	2672	9037	1076	750	2454	71023
Fisheries & forestry	28	6	112	6	7	4	7	5	5	0	7	483
Resources	56	276	1179	167	394	80	42	164	73	3	215	3293
Petroleum and coal products	759	1113	298	290	164	56	74	404	300	4	101	5476
Textiles	1227	814	473	618	504	209	1123	1030	475	168	653	19574
Leather	151	19	114	187	222	63	152	280	162	148	368	7832
Apparel	223	35	240	860	218	89	475	508	192	84	894	16162
Non metallic manufactures	416	181	349	205	240	146	262	409	228	70	304	5389
Lumber	160	20	157	140	124	44	197	421	139	30	524	3535
Paper products	320	160	150	159	365	156	212	231	201	54	203	3952
Chemicals, rubber and plastics	1873	914	1435	802	1799	674	765	1320	763	209	1055	24859
Metal manufactures	2830	996	3178	1189	3856	1038	1567	2939	1244	383	1498	37516
Iron and steel	632	270	609	188	266	231	311	577	246	30	290	6611
Non ferrous metals	257	147	484	51	136	50	64	174	37	13	81	4230
Fabricated metal products	651	161	211	219	372	139	284	362	487	69	353	5570
Manufactures nec	260	110	171	279	351	104	133	555	300	61	211	5424
Electronic	1702	172	2142	619	1499	307	232	672	381	76	524	19695
Motor vehicles	2701	416	1051	623	3594	1158	980	1557	643	665	1055	23746
Other transport nec	464	145	118	1275	187	76	276	413	365	4	313	5154
Services	0	0	39	191	0	237	0	140	506	0	167	1302
Total	17855	6971	20737	10892	15523	5717	10639	25585	8061	2925	11571	303943

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