



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

A ROAD AHEAD FROM CANCUN? WEIGHING UP SOME GIVE-AND- TAKE SCENARIOS IN A DDA SPIRIT

Shamim Shakur, Allan Rae and Srikanta Chatterjee

Discussion Paper No. 04.10 – November 2004



Massey University

DEPARTMENT OF APPLIED AND INTERNATIONAL ECONOMICS

This series contains work in progress at the Department of Applied and International Economics, Massey University. Comments and criticism are invited. Quotations may be made on explicit permission of the author(s).

Further copies may be obtained from:

The Secretary
Department of Applied and International Economics
Massey University

Private Bag 11222

Palmerston North

NEW ZEALAND

Phone: 06 350 5799 Extn 2679

Fax: 06 350 5660

Discussion Paper 04.10

ISSN.1174-2542

Price: \$10

A ROAD AHEAD FROM CANCUN? WEIGHING UP SOME GIVE-AND-TAKE SCENARIOS IN A DDA SPIRIT¹

Shamim Shakur²

Allan Rae

Srikanta Chatterjee

Department of Applied and International Economics
Massey University
Palmerston North
New Zealand

ABSTRACT

Given that around 20 percent of the members of the World Trade Organisation (WTO) are identified as least developed countries (LDC's), global trade negotiations, resumed after the Cancun fiasco of September 2003, must address some major development issues in the spirit of the Doha Development Agenda (DDA), if they are to make any headway. This will, predictably, involve some sensible give-and-take not only between the developed countries and the LDC's, but also amongst the LDC's themselves, and between them and other developing countries. Issues of restrictions affecting agricultural trade - a major factor in the failure at Cancun - need re-addressing; but non-agricultural trade issues must also feature in the negotiations as that could make some acceptable policy compromises possible. This paper investigates, in a computable-general-equilibrium (CGE) framework, the welfare impacts on selected developed and developing country groupings of several scenarios of trade liberalisation that are likely to enhance agricultural and non-agricultural trade flows within the LDC's, and between them and other developing countries. The scenarios will involve experimentation with selected commodities that are of special export interest to LDC's to identify some modalities of trade liberalisation and policy reciprocity, that are more likely to be acceptable to all parties.

¹ Paper prepared for presentation at the Ninth International Convention of the East Asian Economic Association in Hong Kong, November 13-14, 2004.

² Enquiries about the paper may be addressed to this author whose e-mail address is s.shakur@massey.ac.nz.

1. INTRODUCTION

After intense negotiations- almost down-to-the-wire haggling, the World Trade Organization's (WTO) 147 member governments approved on 31 July 2004, an accord on the framework of future WTO negotiations. This latest accord brings the Doha Round talks back on track after a bitter collapse in September 2003 in Cancun, Mexico. The accord also brings new, albeit cautious, optimism towards successful completion of DDA when trade ministers meet for the Sixth conference in December 2005, in Hong Kong.

It is helpful to remember that the need to address the issue of agricultural protectionism has long been acknowledged by the WTO as well as by its rich and poor members. Indeed, the Uruguay Round Agreement on Agriculture (AoA) provided a mutually accepted framework to dismantle gradually the existing barriers that affect agricultural trade. Commitments to reduce agricultural protection relates to three major policy areas, sometimes referred to in the WTO circles as the "three pillars", viz. domestic support, export competition and market access. There is, in addition, the recognition that the poorest of the developing countries need special treatment that would ensure that they receive more generous trade concessions and, where possible, without having to reciprocate, as the WTO rules normally require.

The launch of the Doha Round in November 2001 witnessed two overtures on the part of the developed countries to inspire confidence amongst the poor countries that their concerns were not being ignored. These were the Everything But Arms (EBA) initiative of the European Union, and the explicit undertaking to re-examine the Uruguay Round Agreement on Trade-related Intellectual Property (TRIPs) issues affecting the developing countries. The Doha declaration also contained a formal waiver for preferential schemes such as the Cotonou Agreement. Closer to the Cancun meeting, fresh unease amongst the poor countries surfaced in several areas such as the cotton subsidy used by many developed, and some developing, countries to the serious detriment of several poor countries, particularly, but not exclusively, in West Africa.

The issue of manufacturing trade protectionism is also one that is resented by both the developed and developing countries. The developed countries with a much longer history as "industrial economies" have always argued - often with some justification - that the developing countries, in an effort to diversify their economies away from primary production, have long used many and varied instruments to restrict trade, to the detriment of the developed economies. Indeed, the degree of protection on industrial products has remained persistently higher in the developing countries. For their part, the developing countries point to the unfairness of the system that kept textile and clothing, a labour-intensive major, item of trade of many developing countries outside the GATT altogether. Other labour-intensive products like leather and footwear, likewise, faced severe restrictions in world trade.

One of the more significant decisions for the developing countries to emerge out of the Uruguay Round was to end the Multi Fibre Arrangement (MFA) that operated outside the GATT to control trade in textile products, and include textiles and clothing within the WTO process by 2005. Ironically, while this decision is generally considered to be a welcome development, it has helped to divide the larger developing countries from the smaller ones.

The smaller developing countries see this concession as a reciprocal gesture made by the developed countries to secure similar concessions from the larger developing countries in other areas of trade. As the smaller developing countries cannot offer concessions that are attractive enough to the other countries - developed and larger developing - they are left out of these concessions. These perceptions, right or wrong, underline the delicate nature of the issues in the trade policy area. They also highlight the importance of pragmatism over expectations of "fairness" in trade policy negotiations. When parties around the negotiating table are prepared to compromise on what they may consider to be an "ideal" or a "fair" policy stance from their own national point of view, the chances of achieving success, if only second best ones, probably improve.

It is in this spirit that this paper attempts to model scenarios of trade liberalisation involving agricultural and non-agricultural trade to assess their welfare implications for selected countries and country groupings. The paper acknowledges the declared developmental goals of the Doha round as pivotal to not only improving the prospects of eventual success in the negotiations, but also to start redressing some of the stark realities of poverty, malnutrition, ill health and lack of life opportunities in many developing countries, especially in the least developed countries. As Uri Dadush, director of the World Bank's Economic Policy and Prospects Group observes "a round that brings down barriers in agriculture, advances the timetable on textiles, and agrees to curtail antidumping at the same time it takes up the concerns of industrialised countries has the potential for being a true Development Round" (World Bank 2002). In this paper we cover these issues, and quantify the gains and losses - and their sources - by simulating in a computable general equilibrium (CGE) modelling framework alternative liberalisation scenarios. We include liberalisation of the cotton sector as part of the agricultural reform generally; we examine liberalisation of textile, apparel and leather, as well as manufactures more generally. We simulate reductions in tariff, export subsidy and domestic support for agriculture, and compare their impact on the welfare levels of the selected parties.

The structure of the paper is as follows: section 2 starts with a stage-setting discussion on the current state of multilateral trade negotiations. Achievements in trade policy areas since the end of the Uruguay Round, especially in respect of trade involving agriculture and textile, apparel and leather, are summarised along with the remaining obstacles that trade negotiators would have to overcome for a successful completion of DDA. Section 3 covers the relevant theoretical issues, and the issues of measurement of welfare changes and its sources, following the implementation of each modelled scenario. The modelling techniques are then introduced in section 4, with an elaboration of the commodities and regional aggregations selected. Section 5 reports and interprets the results from the trade liberalisation experiments. The concluding section brings together the major findings of these experiments with a discussion on their implications for policy in the Doha Round.

2. THE ROAD TO DOHA

The Doha Round, successor to the UR, was launched at the fourth Ministerial conference in November 2001. After the disastrous failure of the earlier Seattle Ministerial conference in 1999 and the anti-globalisation backlash that followed its demise, the Doha Round brought some relief and gave multilateral negotiations a fresh start. Key decisions were agreed on continued negotiations to further liberalise agricultural trade (beyond those achieved during UR), reduce tariff and non-tariff barriers to industrial trade, offer special and differential treatment to developing countries including duty-free and quota-free access to goods originating in least-developed countries³. The World Bank (2002) estimates potential annual gain of \$2.8 trillion from the elimination of trade barriers and trade-related reforms on all goods and services by 2015. Presumably, this is what the Doha Round would like to achieve in the ten years to 2015. Further, the World Bank estimates put potential developing country gains to the tune of \$1.5 trillion that would, potentially, lift 320 million people out of poverty. In regard to the split of the gains from liberalising industrial and agricultural sectors, the Bank estimates two-thirds of the gain from cutting tariffs on industrial goods (about \$300 billion) would go to developing countries, and they would gain a roughly equivalent amount from the abolition of trade-distorting agricultural subsidies in the OECD. Specific reforms would need to be agreed in various sectors and regions to achieve these results.

2.1 From Uruguay to Doha- Areas of extended reforms

(a) Agriculture

The Doha ministerial declaration (WTO 2001a, para. 13) states that "without prejudging the outcome of the negotiations we commit ourselves to comprehensive negotiations aimed at: substantial improvements in market access; reductions of, with a view to phasing out, all forms of export subsidies; and substantial reductions in trade-distorting domestic support."

The URAA and the Sanitary and Phytosanitary (SPS) Agreement laid the foundation of an ambitious goal of liberalising global agricultural trade and bring it in line with trade in industrial products. The URAA 'tariffed' many distortions by converting NTBs into tariffs equal to the difference between internal and external prices existing during 1986-88. All tariffs were bound and cut by a minimum of 15 percent and an average reduction equal to 36 percent, for developed countries. However, often these bindings are set at very high rates compared to those that are actually applied. Many of the high-protection countries pursued a process of 'dirty-tariffication', which led to higher levels of protection than existed at the time of the Uruguay Agreement. As the new millennium folded, agricultural tariffs remained far above their industrial counterpart. Gibson et al (2001) estimated post UR global bound tariffs for agricultural products at 62%.

³ The Doha round also agreed on important decisions on clarifying and improving WTO rules on anti dumping procedures, investment and competition rules- the so called "Singapore issues" and dispute settlements. However, these areas are not researched in this paper.

(b) Industrials

Since the inception of the GATT in 1947, completion of eight trade rounds have reduced developed country average tariffs on industrial goods to levels from which further reductions can only be modest. In the post UR situation, problems remained in areas of tariff dispersion and high bound tariffs. A survey (WTO 2001b) of 42 developed and developing countries found the average level of bound tariffs for industrial products ranged from 1.8% to 59%. The same study found differences between the average bound and average applied tariff rates reaching more than 30% in some countries. The developing country interests in reducing trade barriers in industrial products were mixed. Hertel and Martin (2000 p.468) notes manufactured exports account for about three-quarters of total merchandise exports for the average developing country. The average tariff imposed by high-income countries on manufactured imports from developing countries are, on average, four time as high as those imposed on manufactured imports from other high-income countries (Hertel and Martin 2000, p.464). At the same time the developing countries through their high and differentiated tariffs, themselves share the blame of restricting trade in industrial products. The focus at this point turned on developed country peak tariffs and tariff escalations that restrict developing country exports in textile and apparel, processed food, leather goods and footwear.

The Doha Declaration launched negotiations on a new round of reductions in tariff and non-tariff barriers on industrial goods, under the term "market access for non-agricultural products." The main interest of developing countries is that developed countries bring down their tariff peaks and tariff escalation on products, especially on apparel, textile, and processed food. Our trade liberalisation experiments reflect these interests.

(c) Special and differential treatment of developing countries

In the past, GATT's most-favoured nation (MFN) obligation meant developing countries were free riders in that they did not have to reciprocate by opening their own markets to foreign competition. The apparent concession to developing countries also meant their non-participation in seven out of eight trade rounds under the auspices of the old GATT. The developing countries were deprived of improved access to industrial country markets for the competitive but lucrative agricultural and apparel exports. The Uruguay Round should be commended for bringing together 115 countries, a majority of these representing developing states, for the first time in a major reciprocity agreement.

One cornerstone of the Doha Development Agenda is the provision of special and differential treatment (SDT) of developing countries. The Doha Ministerial declaration states "...the contribution of developing countries to market access reduction commitments in the non-agricultural market access and agriculture negotiations should take account of their levels of development in particular sectors, as well as their food security, rural development and livelihood concerns.."

2.2 From Doha to Cancun- Why did the Cancun meeting fail?

The Fifth Ministerial Conference of the WTO in Cancun, Mexico in September 2003 broke up amid acrimony and disagreements between the rich and the poor countries on several issues of which agricultural trade policies practised by the rich countries was, arguably, the most prominent. However, there were many other reasons as discussed below.

First, multilateral trade negotiations in recent times have become more complex. The WTO now has 147 member countries. Gone are the days of the GATT era when the US and European Community were the main hegemonic powers. The developing countries realise they have huge stake in securing trade concessions from industrial countries. They are now as much part of intense coalitional politics as their developed counterparts adding to the complexity of WTO deliberations. This was clearly observed in Cancun.

Second, some "visible" members failed to achieve a negotiated balance of concessions - a give and take approach to bargaining. The US, EU and Japan were unwilling to commit substantial changes to their current policies of protecting agriculture and in some manufacturing sectors. Having failed to meet an earlier deadline to agree on modalities for farm trade talks, a US-EU proposal was hastily tabled in late August 2003. The developing countries read very little in the proposal beyond how each country's subsidies were classified under the green, blue, and amber boxes of the WTO Agreement on Agriculture. An alliance of developing countries led by China, India, Brazil and South Africa that came to be known as the G-20 was formed at this point mainly to resist the US-EU proposal - thereby further polarising the conflict. The EU and Japan were seemingly keen on negotiations on the Singapore issues, probably for tactical reasons - to avoid decision points on agriculture. The middle income developing countries objected to lowering their own trade barriers which were already much higher than developed countries, without increased access to these latter markets. As Bhagwati (2004) observed, developed countries insist on a level playing field before they agree to abandon their insistence on trade protection and production subsidies. Lack of reciprocity sealed the destiny of the Cancun meeting.

Third, many developing countries were keen to preserve the value of their regional preferences especially from the US, EU and other former colonial masters. Fearful of WTO reform proposals that would erode their "margins of preference" in industrial markets, some of these developing countries threatened to delay or block these proposals in Cancun. As a result of all these, trade negotiations stalled at Cancun, putting the Doha Round in serious jeopardy.

2.3 Current state of negotiations

The Doha Round provided the much needed psychological boost to free traders, but three years since its formal launch, very little tangible result has been achieved. Significant and contentious trade barriers remain to make it impossible to conclude DDA within the stipulated deadline of 1 January 2005. The WTO did manage to achieve a Framework Agreement amongst its 147 members in Geneva on 31 July 2004 to restart the stalled negotiation process. It seemingly provides a structure that needs to be implemented for furthering the Doha

Development Agenda (DDA) so that one can be cautiously optimistic about its successful conclusion not too long after the deadline. Contentious issues remain to the individual elements that need to be resolved and we focus on these below:

(a) Market Access

Following on from the UR, the Doha declaration vowed to continue an accelerated negotiation to liberalise agriculture and start new negotiations to further reduce tariff and NTBs to trade industrial products. Unfortunately, at this point we find direct border barriers in both developed and developing countries remain stubbornly high, threatening market access commitments made by WTO member states. Low average tariffs in OECD countries camouflage the fact that tariffs remain unacceptably high in agriculture and textiles and clothing. These sectors also represent major export potential for lesser developed countries. Anderson (2000) states that the levels of protection applied by developed countries in these two sectors are more than ten times the average protection applied on other (industrial) sectors.

(b) Agriculture as the stumbling block

From the developing-country members' point of view, agricultural trade liberalisation is the single most important objective to pursue in multilateral trade negotiations. Some progress has been made in clearing up outstanding technical and procedural issues and many negotiating proposals have been put forward. But "agricultural protection in high income countries remain almost as high as it was at the end of the Uruguay Round, and serious distortions continue to plague agriculture in developing countries" (Sally 2003 p. 15).

In regard to agriculture, the most significant outcome of the July 2004 framework accord is a historic commitment to eliminate all export subsidies and export credit guarantees at a date yet to be set. Other agreements reached in the accord are to reduce the cap on trade-distorting subsidy payments by 20 percent in the first year of the agreement, remove trade-distorting practices in food aid and state-run export boards, and use an unspecified formula to lower tariff barriers (including cutting the highest tariffs by the largest amount)⁴. Accordingly, our liberalisation experiments calculate the relocation and welfare effects of eliminating export subsidies, reducing trade-distorting supports and tariff barriers.

(c) Cotton

As a crop cotton is often held up as a prime example of how rich nation subsidies shut out the poor. "The General Council recognizes the importance of cotton for a certain number of countries and its vital importance for developing countries, especially LDCs. The Special Session of the Committee on Agriculture shall ensure appropriate prioritization of the cotton issue independently from other sectoral initiatives.Work

⁴ We note, however, that paragraph 13 in the July 2004 Accord relating to "blue box" definition appears to permit inclusion of new support programmes introduced in the 2002 US Farm Bill.

shall encompass all trade distorting policies affecting the sector in all three pillars of market access, domestic support, and export competition, as specified in the Doha text and this Framework text." (Doha Work Programme, Draft General Council Decision of July 2004, WT/GC/W/5351, 31 July 2004)

(d) Industrials

Like agriculture, proposals for industrial trade reforms have been numerous. To date, the U.S. has brought the most ambitious proposal to the Doha Round. US National Foreign Trade Council has 2015 as the target date for scrapping all industrial tariffs, with 2010 as the intermediate target date for eliminating all tariffs under five percent, and bringing maximum tariffs down to eight percent. The proposal is supported by New Zealand, Hong Kong, and Singapore while the EU and Japan remain ambivalent. The real opposition, however, comes from most developing countries, especially the least developed ones. Unique to these developing countries is the dependence of their governments on customs duties as a source of revenue. A narrow tax base on which to impose direct taxes mean a tariff removal proposal will be met with less enthusiasm. This is unfortunate as these poorer countries stand to reap maximum benefit from tariff reduction. The potential of triple benefits would accrue from (i) efficiency gains in opening their own markets to imports, (ii) the opening of other developing-country markets to their exports, and, (iii) the opening of developed-country markets to their exports, particularly in textiles, apparel and footwear. The July 2004 accord also includes some issues related to industrial products that are not yet agreed on and will be discussed in future talks; that is, cutting import tariffs below a maximum ceiling based on an unspecified formula and bringing some tariffs to a fixed level or eliminating them.

In terms of UR Agreement on Textile and Clothing (ATC), It is fair to say that so far not much has been done, and the phase-out of quotas has been back-loaded to the last year. The fear is that high tariffs and a cascade of antidumping actions will follow in 2005 and beyond. The fear is now amplified by China's entry to the WTO since 2001. There is a good chance that the new round will suffer a further serious setback if developed countries do not live up to their ATC commitments by the 2005 deadline (Sally 2003, p.17).

(e) Developing and Least-Developed Countries

The text of the July 2004 framework accord makes clear that the Least-Developed Countries, which will have full access to all special and differential treatment provisions as stated in section 2.2, are not required to undertake reduction commitments. "The specific concerns of preference dependent, commodity dependent countries and net food-importing developing countries shall be appropriately addressed, in the context of multilateral liberalization commitments undertaken in the Doha Round" (Doha Work Programme, Draft General Council Decision of July 2004, WT/GC/W/5351, 31 July 2004). Further, developed members, and developing country members, in a position to do so, should provide duty-free and quota-free market access for products originating from least-developed countries.

Non-reciprocity as implied in special and differential treatment must be approached with caution. Standard trade theory literature suggests that the bulk of the gains from trade come from unilateral trade liberalisation. The give-and-take approach in which trade negotiators haggle over export concessions in return for import access to their own markets do not have as much economic merit when considered against unilateral trade liberalisation. It is no surprise that the results of our experiments support this point. The LDC welfare gains turn out to be either small, or even negative under this differential arrangement. However, the reality of domestic politics suggests such unilateral liberalisation is prone to be challenged by powerful protectionist interests at home. Multilateral negotiations with firm commitments from trading partners can help mobilise support of domestic exporters to overcome such protectionist interests, lending support for a multilateral approach. Rights to market access for exports and guarantees against arbitrary protection by more powerful nations that embody WTO rules may provide inducement to smaller and lesser-developed countries to join the march towards global free trade (Krugman 1999).

It should be pointed out that the special and differential treatment (SDT) contained in the Doha Ministerial Declaration was meant for least-developed countries. Standard trade theory suggests all countries, irrespective of their level of economic development, should subscribe to the give-and-take (reciprocity) principle to extract maximum benefit from the WTO system. Non-reciprocity as contained in SDT can potentially cause more harm than good for the developing countries. The WTO's concern here is that the least-developed countries have legitimate implementation issues to address, given the complexity of the Uruguay Round agreements and their limited capacity to give effect to them domestically. The middle-income and/or more advanced developing countries like India or Argentina does not have these problems of comparable magnitude to those of sub-Saharan Africa, for example. Accordingly, we have categorised the member states as (i) developed, (ii) developing, and (iii) least developed economies in our experiments and allowed for SDT in line with the DDR declaration.

3. TRADE LIBERALISATION: SOME THEORETICAL CONSIDERATIONS

The economic rationale for removing trade barriers of all kinds should be the fact that a country benefits from opening its own markets regardless of what policies other countries choose to pursue. The superiority of free trade over autarky or restricted trade, based on the comparative advantage of countries, is well entrenched in trade theory ever since David Ricardo's classic demonstration of it. The only exceptions in the form of a country exploiting its monopoly or monopsony power in trade by imposing an optimum tariff, or temporarily protecting a domestic (infant) industry are based on a particular set of special conditions. And even then, their superiority over free trade in welfare terms is valid only for the country using them. For global efficiency and welfare maximisation, free trade is unexceptionable.

In the past two decades, countries as diverse as Australia, New Zealand, Chile, the Philippines, Indonesia, India, Hungary and Poland have decided unilaterally to abandon the old autarkic model of import substitution in favour of greater integration into the global economy. Albania, virtually a closed economy until the late 1980s, joined the WTO in September 2000. China, too, an emerging giant in the world economy and trade after its long economic isolation, negotiated long and hard, and finally gained entry into the WTO in 2001. The driving force for opening up domestic markets in these countries was not seen so much as a prospect of a *quid pro quo* by other prosperous nations, but the realization that protectionism was preventing the most efficient use of scarce resources, and thereby harming economic growth. The removal of tariff barriers affects both production and consumption, and the benefits are unambiguous, if done in a non-discriminatory fashion.

Selective agreements that remove barriers amongst partners, but permit barriers against outsiders, however, have been more in evidence over the years. The theory of economic integration captures these effects in terms of trade creation and trade diversion that typically arise out of the formation of a preferential trading arrangement such as a customs union. Trade creation results when the removal of barriers within the union creates new trade opportunities for the most efficient partner. Trade diversion occurs when such intra-union tariff removal plus a common tariff against third countries divert trade away from a more efficient third country to a union partner. While the former has the potential to improve welfare of the union members through allocative efficiency gains and consumer surplus gains within the union, the latter reduces global welfare. The *net* effect on global welfare therefore will depend on the balance of the welfare gains and losses of trade creating and trade diverting consequences of selective tariff removals. Welfare gains and losses are measured in terms of gains and losses in real output of countries. It is an exercise in the theory of the second best as it is only universal free trade that offers the first-best Pareto optimality. This research examines several alternative scenarios for trade liberalisation, and computes their effects, *ex ante*, on the welfare levels of countries and country groups.

By observing the relative prices of goods within the protected countries and their world prices – the difference being a measure of the tariff equivalence – one can capture the effect of the removal of a trade barrier. When a tariff (or some other trade barrier) is removed, the import of the good in question usually rises, and its price falls in the previously protecting country, while its output and price rise in the countries that are its more efficient producers. Resources will be removed from these sectors in the importing countries and reallocated to other, more efficient, uses, giving rise to allocative efficiency gains there. Similar efficiency gains in the exporting country will result from more resources being devoted to the freed-up sectors.

The decline in the import price will lead to an increase in consumption, and a corresponding gain in consumer surplus in the importing country adding to the welfare improvement it experienced from allocative efficiency gains. The trade balance of the exporting countries will improve in respect of the freed-up sectors – another source of potential gains for them.

However, the changes indicated above are only direct, ‘first-round’, changes. In any partial setting of tariff removals that are proposed from time to time, there often arise several flow-on effects. For example, any reduction of prices at the upstream end resulting from a selective approach to tariff removal may encourage using the cheaper imported inputs to produce more at the downstream end, and thereby reduce trade there. This kind of tariff escalation is quite common, and it usually has an adverse impact on global welfare levels.

A further source of gain/loss is the expected change in the terms of trade resulting from the removal of barriers that increase the prices of some traded goods, and lower those of others. The empirical findings of the paper confirm the possibility of such changes.

The exercise involving the measurement of welfare changes in terms of consumer surplus requires capturing the pure substitution effect, i.e. the substitution of imports for import substitutes prompted by the change in relative prices, while the consumers’ real income was held constant. The income effect of the price change is thus netted out. Typically, the assumption is made that the income effects are relatively unimportant (Corden 1975), and it is not necessary therefore to derive a compensated demand curve for estimating the welfare changes in terms of substitution effects alone. In common with a number of other studies in this area (Khan 1997, Martin 1997), this paper uses the equivalent variation to measure the changes in welfare. This Hicksian concept is embedded in the ordinal approach to the measurement of consumer surplus, and is closely related to the concept of compensating variation alluded to above.

While all this is relatively straightforward, and based on sound theoretical insights, there are other issues in the area of trade liberalisation that are more complex, and need exploring in analytical terms first. One example of this complication concerns the removal of trade or domestic subsidies that have helped keep prices of some traded goods cheaper in the importing countries. Removal of these subsidies or stopping the practice of dumping products in selected export markets by major exporters will inevitably raise prices of the products concerned in the importing countries, and lower their welfare. Similarly, greater use of the Most Favoured Nation (MFN) principle of extending trade liberalisation would require the removal of preferential access to markets. While this has the potential to improve allocative efficiency, it will also have adverse distributional consequences on those that currently enjoy preferential access.

These issues have a theoretical dimension as outlined above. They also have several practical dimensions that need consideration in the context of promoting trade liberalisation by removing subsidies on traded products and/or stopping their dumping in selected markets. Subsidised imports from rich countries – or dumping by them – reduce domestic production of the products in question, and increase import dependence. If they involve food products, as they often do, they may increase food insecurity. In many cases, such subsidised trade and in some instances food aid, results from the need of the rich exporting countries to dispose of their surpluses of certain products. Once the surpluses are taken care of, the subsidies cease or food aid flows diminish, and the recipients face hardship. Trade based on comparative advantage, on the other hand, would promote efficiency in the long run by enforcing competition in the domestic market.

However, the removal of subsidies and the practice of dumping will almost always pose a short run adjustment problem that will need to be dealt with, possibly through international financial transfers. The revenue savings derived from the removal of the subsidies could be used to set up a “development fund” to be made available to the affected countries to enable them to continue importing the products at (higher) market prices while their own producers respond to the challenge of a larger domestic market unfettered by artificially lower import prices. Estimates from the OECD and IMF do not foresee substantial price increases in the case of cereals, for example (IMF 2002). The need for assistance therefore is not likely to be large. In any case, the benefits of lower prices of imported staple foods do not often reach the poorest consumers living away from the urban centres of developing countries because of the transport costs within these countries, and/or the actions of importers’ and traders’ cartels formed to maximise the rents offered by the subsidies.

Subsidised trade can also have major market disrupting effects in third countries. Rich countries seeking to offload surplus agricultural products in several developing countries can disrupt exports from one developing country to another by making them uncompetitive at prices that reflect their costs of production. South-South trade represents approximately one-half of total trade of developing countries. In the absence of subsidies and dumping, such trade could offer more opportunities for producers to compete, develop new market outlets and derive greater economies of scale. This is likely to be the case with US subsidies on cotton, for example. In a similar vein, according to an FAO report (FAO 2002), very little of the benefits of export credits provided by the developed countries are aimed at net food importing countries.

Thus, while this paper accepts that the removal of trade subsidies and dumping has the potential to harm the interest of the importing countries through increased prices, it considers such outcomes to be of a short-term nature. It also affirms, in the light of the discussion above, that the anticipated increase in the import prices may not be as high as the costs of continuing with the current, grossly distorted, system that does not benefit the poorest anyway.

4. MODEL, DATA AND LIBERALISATION EXPERIMENTS

4.1 The model and data

We use the standard Global Trade Analysis Project (GTAP) applied general equilibrium model (Hertel 1997). This is a multi-region model built on a complete set of economic accounts and detailed inter-industry linkages for each of the economies represented. The GTAP production system distinguishes sectors by their intensities in five primary production factors: land (agricultural sectors only), natural resources (extractive sectors only), capital, and skilled and unskilled labour. Producers choose inputs that minimise production costs subject to separable, constant returns to scale technologies. Market clearing conditions equate supply with demand for each factor of production. In trade, products are differentiated by country of origin, allowing bilateral trade to be modelled, and bilateral international transport margins are incorporated and supplied by a global transport sector. The model is solved using GEMPACK (Harrison and Pearson 1996).

The version 6 pre-release 3 GTAP database used here is benchmarked to 2001. Thus the commitments of the Uruguay Round should be fully reflected in this database, at least for developed countries. We aggregate this database from its full 86 regions by 57 sectors up to 17 regions and 21 sectors. This aids computation and enables us to highlight sectors and regions of particular interest. As regards regions, our choices allow the definition of three regional groupings - developed, developing and the least developed (see Appendix Table 2). At the sectoral level, we define a number of farm and processed food sectors to enrich the agricultural reform components of our liberalisation scenarios, including a crop-fibre sector to allow us to say something about impacts on the cotton sector. Among other sectors, those associated with textiles, apparel and leather products are separately modelled (see Appendix Table 1).

4.2 Scenario Design

As agreed in the Uruguay Round, the multi-fibre arrangement (MFA) is to be completely phased out by the beginning of 2005. Although many countries are currently raising concerns over possible impacts, we partially anticipated this agreement in our analysis by eliminating the quantitative barriers to this trade before conducting further trade liberalisation scenarios. The GTAP database represents these quotas through a system of export taxes, which we reduced to zero in a prior simulation.

Two trade liberalisation scenarios are employed. In each, special and differential treatment (SDT) is recognised through lower reductions to developing region trade barriers in some cases, and no liberalisation requirements for the least-developed regions of Asia and Africa. This is in line with Doha Ministerial Declaration (see section 2.1c) as well as the July 2004 framework accord (see section 2.3e). A simple, single-tier approach to lowering tariff barrier is employed, involving cuts of 50% and 25% for developed and developing regions respectively. The second scenario assumes developing regions make the same reduction in trade barriers as do their developed counterparts, in part to illustrate any benefits to the former regions from deeper reductions in their own import protection. Moreover, as stated in section 2.3(e), the Doha Ministerial declaration distinguishes the legitimate concerns of the least-developed countries from the middle-income developing countries for SDT.

Both scenarios incorporate the elimination of agricultural export subsidies, as agreed in the WTO July Framework Agreement. We do not apply this reform to developing countries however in recognition of differential treatment, and also the fact that almost all such subsidies are incurred by developed countries. Reductions in subsidies related to domestic farm support programmes are another important component of the agricultural negotiations. We focus only the most trade-distorting of these subsidies, namely output subsidies (e.g. price support programmes) and subsidies to intermediate inputs. Thus we simulate no changes to the levels of spending in either the blue or green boxes. These reform scenarios along with stipulated policy changes in all regional groupings are summarised in Table 1.

Table 1: Scenario Design: Percentage Shocks to Policy Variables

Policy variable	Scenario #1	Scenario #2
<i>Tariffs^a</i>		
Developed regions	-50	-50
Developing regions	-25	-50
Least developed regions	No change	No change
<i>Agricultural export subsidies^b</i>		
Developed regions	-100	-100
Developing regions	No change	No change
Least developed regions	No change	No change
<i>Trade-distorting domestic subsidies^c</i>		
Developed regions	-50	-50
Developing regions	-25	-50
Least developed regions	No change	No change

- a. All sectors. Percentage reductions are from applied tariffs in the base year that have been converted to *ad valorem* equivalents where necessary in the GTAP database.
- b. Applied to exports of the farm and processed food sectors only
- c. Defined as total expenditures on output & intermediate input subsidies to farm production only.

5. RESULTS AND INTERPRETATIONS

5.1 Gains from trade and domestic reforms

Regional welfare gains from the two trade reform scenarios outlined in section 4.2 are reported in Table 2 below. Table 3 then goes on to decompose global welfare gains by type of reform and their origin from developed or developing regions. WTO member states are still negotiating on actual tariff-cutting formulas so that tariff and domestic subsidy reductions applied are hypothetical and taken as "reasonable" in our judgement. However, the one area of firm agreement in the July 2004 framework accord is elimination of all export subsidies by developed countries in agriculture. Accordingly, we calculate and report regional welfare gains from its implementation in Table 4. Tables 5-11 then give estimates of welfare gains to selected regional economies, especially those located in East and Southeast Asia. These tables are reported at the end of this section. Gains to these regional economies are decomposed by type of reform and where they are initiated in developed or developing regions. All gains are calculated as equivalent variation measures and measured in 2001 US dollar.

Table 2: Welfare Changes from Reform Scenarios (Equivalent Variation estimates in 2001 US\$ million)

Region	Reform Scenario #1	Reform Scenario #2
rest_NAFTA	-262	-267
USA	-850	-97
Japan	4788	6066
China	2790	2365
ASEAN5	2122	2994
NEAsia	2913	4542
LDC_Asia	429	546
LDC_Africa	-218	-182
EFTA	3248	3371
Rest_Eur	410	452
CER	2092	2159
EU_new	251	476
Indi_SL	1222	1810
EU	9543	11650
Sth_America	2637	2060
SACU	395	555
ROW	452	1278
Global	31963	39777

Table 3: Decomposition of Global Welfare Gains by Type of Reform in Developed and Developing Regions under Reform Scenario 1 & 2 (US\$ million)

Policy reform ^a	Developed regions		Developing regions		Total	
	Scenario		Scenario		Scenario	
	#1	#2	#1	#2	#1	#2
Tariff reductions: Agriculture	15,282	15,290	2,373	4,610	17,655	19,900
Tariff reductions: Textile, Leather & Apparel	2,882	2,821	1,942	3,747	4,824	6,568
Tariff reductions: Manufactures	3,078	3,065	3,068	5,584	6,146	8,649
Export subsidy: Agriculture	410	511	--		408	511
Domestic subsidy: Agriculture	727	774	-1	-1	726	773
Total	22,379	22,261	7,382	13,940	29,759	36,401

^a Totals do not equal those of Table 2 as reductions to services trade barriers are excluded here.

Table 4: Export subsidy: Contributions to Regional Gains in Welfare Due to Removal of Ag. Export Subsidy by Developed Countries (2001 US\$ million)

Region	Welfare gain: Scenario # 1
European Union	3,348
CER + S. America	428
LDC Asia + LDC Africa	-308
Other developing regions	-1,506
Other developed regions	-1,554
Total	408

5.2 Interpretation of results

(a) Scenario 1

From Table 2 and Table 3, we note that about half of global welfare gain (US\$ 15,282 mill of US\$ 31,963 mill) can be attributed to agricultural tariff reductions in developed regions. Also two-thirds of global gain (US\$ 22,379 mill of US\$ 31,963 mill) can be obtained from all reforms in developed regions. This shows tariff reforms (market access) especially in agriculture should be prioritised in WTO negotiations. For developing countries, tariff reductions in manufacturing and TLA sectors contribute about 15% of the global gain in welfare. However, much of the recent focus in the WTO has been on export subsidies. The decision reached in the July 2004 accord to remove agricultural export subsidies would contribute a little over 1% of the global welfare gain. The main beneficiary is expected to be the EU, but there is also some gain to CER (Australia and New Zealand) and South America owing to improved terms-of-trade (ToT) for their agricultural exports (Table 4). The result rationalises EU's support to remove all export subsidies in the framework agreement. The corollary of this, of course, is that the least developed food-importing regions, as well as other developed and developing regions experience a negative welfare impact from removal of agricultural export subsidies because of the adverse ToT effect on food importers.

Table 2 shows that all Asian regions have welfare gain - greatest for Japan, least for LDC_Asia. Estimates of welfare gains to regional economies, including a break down of these gains from selected policy reforms under scenario 1 are reported in Tables 5-11. Countries located in East and Southeast Asian regions are given special attention in selecting reporting countries. . Main contributors for Japan's gain were agricultural and manufacturing tariff cuts in developed regions. For China, TLA tariff cuts in developed regions contributed most of her welfare gain. The results are very similar for LDC_Asia. NE_Asia benefits equally from developing region tariff cuts as from those in developed regions. India_SL benefits primarily from developing region cuts in agricultural and manufacturing tariffs (also reflecting this region's high tariffs in these sectors) and TLA tariff cuts in developed regions. ASEAN_5 gain equally from tariff cuts in both developed and developing regions.

LDC_Africa experienced a welfare loss in this scenario, by far the major contributor being the developed country removal of agricultural export subsidies (Table 6). However cuts in developed country agricultural tariffs and support to their farmers (including cotton) made a positive contribution. Table 12 shows that LDC-Africa's cotton output rose 7.5% and her exports by 12%. In each case, one-half of the increase was due to the reductions in domestic support in developed regions (mainly EU and US). The global (import) price index for this sector increased about 3%, with two-thirds of that increase due to cuts in domestic farm support (Table 13).

(b) Scenario 2

Under this scenario, when developing regions were assumed to make the same reduction (50%) in tariffs as do their developed counterparts, an extra \$8 billion is added to world welfare gains (Table 2). Half of the additional \$8 billion is gain to Asian countries, with the majority going to developing Asian countries. Of that \$4 billion, one-half is due to developing countries additional cuts to manufacturing tariffs, and one-quarter to their additional agricultural tariff cuts. These results suggest a case could be made for special and differential treatment (SDT) that involves a longer phase-in period, but not lower tariff and subsidy reductions.

With higher developing country tariff cuts, all regions gain further, except China (Table 2). Like other developing regions, China's allocative efficiency improves primarily due to expansion in its TLA and electronics sectors. A difference is that terms-of-trade changes made positive contribution to China's welfare gain in scenario 1, but a negative contribution in scenario 2. For example the world export price index for TLA rise in scenario 1, but actually fall in scenario 2 with the major contributor to this drop being the developing country tariff cuts for TLA. Domestic Chinese TLA prices rise in scenario 1 due to developed country tariff cuts. In scenario 2, China's TLA prices remain almost unchanged, as the influence of developed country tariff cuts in raising prices is compensated by the increased reduction in developing region tariffs on these goods. Thus China's TLA export prices rise much less in scenario 2 than in scenario 1.

Table 5: Decomposition of ASEAN 5 Welfare by Type of Reform in Developed and Developing Regions (US\$ million):

Policy reform	Developed regions	Developing regions	Total
Tariff reductions: Agriculture	207	200	407
Tariff reductions: Textile, Leather & Apparel	695	-3	692
Tariff reductions: Manufactures	189	770	959
Export subsidy: Agriculture	-82	---	-82
Domestic subsidy: Agriculture	-6	2	-4
Total	1003	969	

Table 6: Decomposition of LDC_Africa Welfare by Type of Reform in Developed and Developing Regions (US\$ million)

Policy reform	Developed regions	Developing regions	Total
Tariff reductions: Agriculture	47	17	64
Tariff reductions: Textile, Leather & Apparel	-21	10	-11
Tariff reductions: Manufactures	-15	-14	-29
Export subsidy: Agriculture	-264	---	-264
Domestic subsidy: Agriculture	31	4	35
Total	-222	17	---

Table 7: Decomposition of Japan's Welfare by Type of Reform in Developed and Developing Regions (US\$ million)

Policy reform	Developed regions	Developing regions	Total
Tariff reductions: Agriculture	3160	69	3229
Tariff reductions: Textile, Leather & Apparel	-108	231	123
Tariff reductions: Manufactures	1722	635	2357
Export subsidy: Agriculture	-710	---	-710
Domestic subsidy: Agriculture	-624	-6	-630
Total	3440	929	---

Table 8: Decomposition of China's Welfare by Type of Reform in Developed and Developing Regions (US\$ million)

Policy reform	Developed regions	Developing regions	Total
Tariff reductions: Agriculture	113	19	132
Tariff reductions: Textile, Leather & Apparel	2320	-123	2,197
Tariff reductions: Manufactures	455	142	597
Export subsidy: Agriculture	-85	---	-85
Domestic subsidy: Agriculture	-108	-1	-109
Total	2695	37	---

Table 9: Decomposition of LDC_Asia Welfare by Type of Reform in Developed and Developing Regions (US\$ million)

Policy reform	Developed regions	Developing regions	Total
Tariff reductions: Agriculture	16	57	73
Tariff reductions: Textile, Leather & Apparel	381	-17	364
Tariff reductions: Manufactures	-5	23	18
Export subsidy: Agriculture	-44	---	-44
Domestic subsidy: Agriculture	-28	-2	-30
Total	320	61	---

Table 10: Decomposition of Welfare Change in NE Asia by Type of Reform in Developed and Developing Regions (US\$ million)

Policy reform	Developed regions	Developing regions	Total
Tariff reductions: Agriculture	-56	679	623
Tariff reductions: Textile, Leather & Apparel	651	322	973
Tariff reductions: Manufactures	796	516	1,312
Export subsidy: Agriculture	-171	---	-171
Domestic subsidy: Agriculture	-186	-3	-189
Total	1034	1,514	---

Table 11: Decomposition of Welfare Change in India + Sri Lanka by Type of Reform in Developed and Developing Regions (US\$ million)

Policy reform	Developed regions	Developing regions	Total
Tariff reductions: Agriculture	-19	311	292
Tariff reductions: Textile, Leather & Apparel	338	-27	311
Tariff reductions: Manufactures	-35	343	308
Export subsidy: Agriculture	-2	---	-2
Domestic subsidy: Agriculture	15	19	34
Total	297	646	---

Table 12: Changes to LDC-Africa's Cotton Economy: Scenario # 1

Variable	Total change	Change due to cut in domestic subsidy by developed countries
Net exports	\$153 mill	\$71 mill
Output	7.5%	3.3%
Producer price	1.0%	0.7%
Total export volume	11.7%	5.3%

Table 13: Change in Global Import Price Index of Crop Fibre (Cotton): Decomposition by Type of Reform in Developed and Developing Regions (percentage change) Under Scenario # 1

Policy reform	Developed regions	Developing regions	Total
Tariff reductions: Agriculture	0.56	-0.01	
Tariff reductions: Textile, Leather & Apparel	0.07	-0.03	
Tariff reductions: Manufactures	-0.01	-0.06	
Export subsidy: Agriculture	0.29	---	
Domestic subsidy: Agriculture	1.96	0.08	
Total			2.8

6. CONCLUSION

If the Doha Round is truly to be a ‘development round’, then its agreements should reflect major sources of potential gain to the developing country WTO members. The G-20 group of developing countries continues to emphasise in Committee on Agriculture discussions that the real problem that needs to be addressed is trade-distorting domestic support in developed countries (Bridges 2004). Much negotiating and analytical effort seemingly continues to be aimed at the many and often complex domestic subsidy issues. For example to what extent are each of the myriad farm support instruments trade-distorting? How many boxes should exist, what might be the criteria governing box contents, and what might be the reduction commitments for each box? Yet previous research has indicated that such an emphasis on reform of domestic subsidy programmes promises relatively little gain to developing countries. Josling (2000) argues that developed countries may be willing to make deeper cuts in market access barriers if they have the leeway to compensate farmers through domestic programmes, and that tightening domestic support limits could therefore have a negative impact on agricultural trade. Hoekman *et al.* (2002) report that cuts to tariffs generate positive gains to developing countries, whereas cuts to domestic support lead to losses for such countries. Rae and Strutt (2003) show that improvements to market access promise the greatest gains to developed and developing countries and ought to be the priority issue, and Sumner (2000) reached a similar conclusion. The analysis of Dimaranan *et al.* (2003) indicates that cuts in tariff barriers and related market price support plus increased use of decoupled direct payments (as has been occurring in the OECD region) can be a ‘win-win’ outcome in that farm incomes in industrial countries can be maintained at the same time as world price distortions are decreased and would result in welfare gains for the majority of developing countries. Our own results summarised in section 5 supports this view, with our simulated cuts in trade-distorting domestic support in the developed countries contributing welfare losses in many developing and least-developed countries.

The already-agreed eventual elimination of agricultural export subsidies, at least based on our analyses, appears to mainly benefit (for different reasons) those regions currently using such subsidies, and some major exporters of those products whose trade is currently distorted through export subsidy usage. While the latter include some developing countries (e.g. in South America) the aggregate impact on developing and the least-developed countries is negative.

Our conclusion, therefore, is that market access should receive top priority in the negotiations, especially if the development agenda is to be successfully pursued, and that special and differential treatment (SDT) should be re-focussed on adjustment and assistance issues. In Table 14, some of our results are aggregated over all developing countries. Under either scenario, tariff reductions in the developed countries make the major contribution to the welfare gains of the developing world, and improved market access across all sectors, agricultural and non-agricultural, make substantial contributions to this outcome. The extent to which such gains will be realised is of course unknown. The July 2004 Framework potentially offers even greater gains in the area of agricultural market access for example, by expressing agreement to the principle that higher tariffs should be subject to higher cuts within a tiered formula. Countering this promise, however, is the prospect of countries

specifying ‘sensitive products’, for which tariff cuts may be smaller provided that this is accompanied by some expansion in import quotas. Will developing country exporters be able to compete successfully for a share of such expanded access opportunities for likely sensitive products such as rice, dairy and sugar? What kinds of development assistance might improve their ability to strengthen commercial linkages to the multinational supermarket chains that increasingly dominate food importing and retailing?

But increased access to import markets is not limited to those in industrial countries. South-South trade is also restricted through entry barriers. Differential treatment for developing countries is firmly established in the Doha Round. This can be justified in terms of such countries abilities to deal with the adjustment issues that often accompany trade liberalisation. Time, and development assistance, may well be required for institution-building and strengthening of social support networks for example. Such differential treatment, however, comes at a cost in terms of foregone economic efficiency gains. Our results indicate that should developing countries adopt the same market access modalities as we model for the industrial world, then the contribution of developing region tariff reductions to their own welfare gain is almost the same as that which results from developed region market access reform. Differential treatment within our tariff reduction modality is shown to cost developing regions in the aggregate almost US\$3.5 billion, which exceeds the cost to developed countries of \$3 billion. The prospect of the latter gain to rich countries from the developing world’s acceptance of similar reduction modalities could be used in bargaining for the kinds of international development assistance that we eluded to in section 3 above.

Table 14: Welfare Gains to Developing Regions With and Without Differential Treatment Regarding Reduction Commitments (2001 US\$ million)

Policy reform	Scenario #1	Scenario #2
<i>In developed regions:</i>		
Tariff reduction: agriculture	2,524	2,520
Tariff reduction:TLA	4,329	4,264
Tariff reduction:Manufactures	2,234	2,227
Subtotal	9,087	9,011
<i>In developing regions:</i>		
Tariff reduction: agriculture	1,635	3,000
Tariff reduction:TLA	831	1,450
Tariff reduction:Manufactures	2,069	3,461
Subtotal	4,535	7,911
Total over all tariff reductions	13,622	16,922
<i>In developed regions:</i>		
Agricultural export & domestic subsidies	-1,723	-1,704
Total welfare gain^a	12,942	16,055

^a Totalled over all developing regions (see Appendix Table 2). Individual components do not add to total due to exclusion of service trade reforms in the above.

REFERENCES

- Anderson, K. (2000). "The future agenda of the WTO," in *From GATT to the WTO: The Multilateral Trading System in the New Millennium*, WTO Secretariat, Geneva.
- Bhagwati, J. (2004). "Don't Cry for Cancun", *Foreign Affairs*, 83(1), 52-59.
- BRIDGES (2004). "WTO Agriculture Session Addresses Next Steps from July Framework" 8(33), 6 October.
- Corden, W.M. (1975). "The Costs and Consequences of Protection: A Survey of Empirical Work", in P.Kenen (ed.), *International Trade and Finance*, Cambridge University Press, Cambridge.
- Dimaranan, B., T. Hertel and R. Keeney (2003). "OECD Domestic Support and the Developing Countries". Revised version of paper presented to UNU/WIDER project meeting on "The Impact of the WTO Agreement on Low Income Countries", Helsinki, Finland, 4-5 October 2002. Centre for Global Trade Analysis, Purdue University.
- FAO (2002). 'FAO Papers on Selected Issues Relating to WTO Negotiations on Agriculture', p.87.
- Harrison, W.J., Pearson, K.R. (1996). "Computing Solutions for Large General Equilibrium Models using GEMPACK," *Computational Economics* 9, 83-127.
- Hertel, T.W. (Ed.), (1997). *Global Trade Analysis: Modeling and Applications*. Cambridge University Press, Cambridge and New York.
- Hertel, T.W. and Martin, W. (2000). "Liberalising Agriculture and Manufactures in a Millennium Round: Implications for Developing Countries," *World Economy*, 455-469, (April).
- Hoekman, Bernard and Kostecki, Michel (1995). *The Political Economy of the World Trading System: From GATT to WTO* (Oxford: Oxford University Press, 1995), pp. 20-33.
- Hoekman, B., Ng, F. and Olarreaga, M. (2002). "Reducing Agricultural Tariffs versus Domestic Support: What's More Important for Developing Countries?" Presented at the Fifth Global Economics Conference, Taipei, Taiwan, 5-7 June.
- International Monetary Fund (2002). *Market Access for Developing Country Exports (Selected Issues)*.
- Josling, T. (2000). "New Farm Programs in North America and Their Treatment in the WTO: Discussion," *American Journal of Agricultural Economics* 82: 775-777.

- Khan, F. C. (1997). "Household Disaggregation", in J.E. Francois and K.A. Reinart (eds.), *Applied Methods for Trade Policy Analysis*, Cambridge University Press, Cambridge.
- Krugman, Paul (1997). "What Should Trade Negotiators Negotiate about?" *Journal of Economic Literature* 35, no.1 (March 1997): 13–20
- Martin, W. (1997). "Measuring Welfare changes with Distortions", in Francois, J.E. and Reinert, K.A. (Eds.). *Applied Methods for Trade Policy Analysis*, Cambridge University Press, Cambridge.
- Rae, Allan and Strutt, Anna (2003). "The Current Round of Agricultural Trade Negotiations: Should we Bother About Domestic Support?" *Estey Centre Journal of International Law and Trade Policy* 4(2):98-122.
- Sally, Razeen (2003). "Whither the WTO? A Progress Report on the Doha Round," *Trade Policy Analysis* No. 23, CATO Institute, Washington, D.C. March.
- Sumner, D.A. (2000). "Domestic Support and the WTO Negotiations," *Australian Journal of Agricultural and Resource Economics* 44: 457-474.
- World Bank (2002). "Global Economic Prospects 2002: Making Trade Work for the World's Poor," 273 pages, Washington D.C., November.
- WTO (2001a). "Ministerial Declaration," WT/MIN (01)/DEC/W/1, November 14, available at www.wto.org.
- WTO (2001b). "Market Access- Unfinished Business: Post-Uruguay Round Inventory and Issues," Economic Research and Analysis Division, April 2001.

APPENDIX

Definition of regions and sectors:

Appendix Table 1: Sectoral Aggregation

Sector name	Description
<i>Farm production:</i>	
Rice	Paddy rice
grain_oilsd	Wheat, other grains, oilseeds
hort	Fresh fruit, vegetables & nuts
crop_fibre	Plant-based fibres (e.g. cotton)
oth_crops	Other crops (e.g. sugar)
animal_prod	Livestock farming
Milk	Milk
<i>Other natural resource based:</i>	
nat_res	Forestry, fishing, coal , oil & gas, other minerals
<i>Processed food sectors:</i>	
meat	Red and white meats
dairy	Dairy products
sugar	Refined sugar
oth_procfood	All other processed foods
<i>Textiles & clothing:</i>	
textile	Textiles
apparel	Wearing apparel
leather	Leather products
<i>Other manufacturing and service sectors:</i>	
natres_prods	Wood & paper products, petroleum, coal , chemical, rubber & plastic products
metals	Ferrous metals, metal products
transprt	Motor vehicles, transport equipment & parts
elctronic	Electronic equipment
oth_mnfcs	Others
Svces	All services

Appendix Table 2: Regional Aggregation

Region name	Description
<i>Developed regions</i>	
rest_NAFTA	Canada, Mexico
USA	USA
Japan	Japan
CER	Australia, New Zealand
EU	EU-15
EU_new	The ten new members as of 2004
EFTA	Switzerland, rest of EFTA
<i>Developing regions</i>	
China	Mainland China
ASEAN5	Indonesia, Malaysia, Thailand, Philippines, Singapore
Indi_SL	India, Sri Lanka
NEAsia	South Korea, Hong Kong, Taiwan
Sth_America	Caribbean, Central & South America
Rest_Eur	Rest of Europe including Russia
SACU	South Africa, Botswana & rest of South African CU
ROW	Turkey, Morocco, & rest of Middle East & North Africa
<i>Least developed regions</i>	
LDC_Asia	Vietnam, Bangladesh, rest of East, South & Southeast Asia, Pacific Islands
LDC_Africa	Rest of Sub-Saharan Africa

LIST OF RECENT DISCUSSION PAPERS

- 03.01 J. E. Alvey, *Adam Smith's optimistic teleological view of history*, February 2003.
- 03.02 J. E. Alvey, *Adam Smith's view of history: Consistent or paradoxical?*, March 2003.
- 03.03 H.-J. Engelbrecht and A. Mahon, *Maori and the information workforce, 1991-2001*, April 2003.
- 03.04 J. J. Su, *A note on spurious regression in panels with cross-section dependence*, June 2003.
- 03.05 J. E. Alvey, *Adam Smith's pessimistic view of the future of commercial society: rhetoric or reality?* September 2003.
- 03.06 J. E. Alvey, *Adam Smith's globalization (but anti-secularization) theory*, September 2003.
- 03.07 J. Obben and A. E. Nugroho, *Determinants of the funding volatility of Indonesian banks: A dynamic model*, December 2003.
- 04.01 J. E. Alvey, *Context and its relevance for Adam Smith's theological and teleological views, the foundation of his system of thought*, January 2004.
- 04.02 J. E. Alvey, *The theological foundation of Adam Smith's work*, January 2004.
- 04.03 J. E. Alvey, *The "New, Optimistic, Theistic View" of Adam Smith and the problem of Smith's "pessimistic" views of history*, March 2004.
- 04.04 N. A. Campbell, *Tariffs, Quotas and the Corrupt Purchasing of Inappropriate Technology*, May 2004.
- 04.05 H.-J. Engelbrecht and V. Xayavong, *Information and Communication Technology and New Zealand's Productivity Malaise: An Industry-Level Study*, June 2004.
- 04.06 J. E. Alvey, *The Role of Teleology in Adam Smith's Wealth of Nations: A Belated Reply to Kleer*, July 2004.
- 04.07 R. Gounder, *Stochastic Frontier Analysis of New Zealand's Manufacturing Industries: Some Empirical Results*, July 2004.
- 04.08 J. E. Alvey, *A Critical Review of Lisa Hill's View of Adam Smith's 'Hidden Theology'*, September 2004.
- 04.09 J. E. Alvey, *John Locke After 300 Years*, October 2004.
- 04.10 S. Shakur, A. N. Rae, S. Chatterjee, *A Road Ahead from Cancun? Weighing up some give-and-take Scenarios in a DDA Spirit*, October 2004.