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## **The Effects of Agricultural Trade Liberalisation under the Doha Development Agenda with Special Reference to the Asia Pacific Region: A Brief Survey**

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## *I. Introduction*

Agriculture has been the most protected and distorted sector in the Asia-Pacific region similar to many regions in the world. Many countries in the region are currently following a combined approach to agricultural trade reform. While many of them have been making some progress towards multilateral trade liberalisation through the WTO trade negotiations and regional trade liberalisation through RTAs, they have been successful in concluding a large number of BTAs. A growing amount of research is now being conducted on the effects of agricultural trade liberalisation. The main purpose of this paper is to survey the results of recent quantitative studies on the effects of Agricultural Trade Liberalization with special reference to the Asia-Pacific region under the July Framework Agreement or the “July Package” of the Doha Development Agenda, DDA (the decision adopted by the General Council of the WTO on 1 August 2004, see WTO, 2004, WT/L/579).

Remainder of this paper is organised as follows. The key features of agricultural protection in Asia-Pacific are identified in the next section in order to provide the background. Section 3 briefly explain the historical evolution of using computable or applied equilibrium (CGE or AGE) models in quantifying the effects of multilateral trade liberalisation. Section 4 surveys the results of recent quantitative assessments of proposed agricultural trade reform in the July package under the DDA by employing large scale CGE models. The final section of the chapter is devoted to concluding remarks.

## *II. The Main Features of Agricultural Protection in Asia-Pacific*

In this section, we briefly highlight the main features of protection with special reference to the Asia-Pacific region using other studies and two main databases (MAcMap and GTAP databases). Until recently there was not a satisfactory way for a comparison of the level of the protection across regions and countries due to complexities of agricultural protection. However, the agricultural protection has systematically been incorporated into the MAcMap database as a result of the joint effort by ITC (UNCATD-WTO in Geneva) and CEPII in Paris (see for details of the methodology, Bouet, et al, 2004). As noted in Bouet, et al (2004, p.5),

*“the main original contributions of MAcMap-HS6 are: (i) the exhaustive coverage of preferential trade arrangements (PTAs) across the world; (ii) the calculation of the AVE of specific duties, acknowledging the differentiated impact of such duties across exporters, depending on their unit values; (iii) the incorporation of tariff-rate quotas (TRQs) both through the AVE of resulting protection at the margin, and through the calculation of involved rents; (iv) an original aggregation methodology, using a weighing scheme based on reference groups of countries, and limiting the extent of the endogeneity bias inherent to the standard, import-weighted average protection”.*

This database assists policy analysts to compare protection across countries. It has also been well suited to analyse the effects of trade liberalisation within global CGE modelling framework. Therefore, it has been a major input to GTAP version 6 and has helped to improve protection data in the GTAP. Recent studies on Agricultural trade liberalisation have used MACMap database extensively.

Anderson, *et al* (2005) have used the GTAP version 6 database (with the improved protection data from MACMap) to compare protection across regions and important countries in the world. To begin our discussion on tariff protection focusing on the Asia-Pacific region we use their information in Table 1. It shows import-weighted average applied tariffs in countries in Asia-Pacific in comparison with some other countries. The most important feature of Table 1 is that agriculture has been the highly protected sector around the world and this has been even prominent in the Asia-Pacific region. Agricultural protection ranges from 2.6 percent in Australia and New Zealand to 53 percent in South Korea and Taiwan among selected countries in the Asia-Pacific region. Other leading countries in the region such as India, Japan, Vietnam and Thailand have also high aggregated protection rates. As can be seen from Table 1, aggregated tariff rates in EU (25), USA, Canada and leading South American are lower than many countries in the Asia-Pacific region. Table 1 also demonstrates that protection of primary agricultural sectors and processed food is higher than that of manufacturing in many countries in Asia-Pacific.

Table 2 shows the key features of applied agricultural tariffs in the region compared to other countries and regions around the world. As Jean, et al (2005) have demonstrated, the use of conventional average ad valorem tariffs in policy analysis is quite inadequate and misleading. Some countries are using nontransparent specific tariffs and Tariff Rate Quotas (TRQs). These complex issues are important in relation to some countries in Asia-Pacific. For example, specific tariffs play an important role in Japan and Pakistan and TRQs play a key role in Japan, Korea and ASEAN countries (see Jean, et al, 2005 for details).

Table 3 presents more detailed information on agricultural protection in the region. It has more country coverage than Table 1. Agricultural protection ranges from 2.0 percent in Australia to 45.4 percent in South Korea in the region. This rate in other countries such as India, Thailand, Vietnam and the rest of South Asian has also been high. Table 4 shows the variation of agricultural protection among main groups of trading partners (developed countries, developing countries and least developed countries). Some countries are granting preferential tariffs for LDCs. Table 4 reflects this feature. On contrary, many agricultural protection rates are higher for developing countries than developed countries. It is important to note that there are differences tariffs shown in Table 3 and Table 4. Table 3 shows tariffs related to different sectors and Table 4 shows tariffs related to different trading partners. This is the reasons for some discrepancies related to tariff rates on agriculture in different countries shown in tables 3 and 4.

**Table 1: Import-weighted average applied tariffs, by Sector and By Country  
with special reference to Asia-Pacific, 2005**

Importing Region	Agriculture and processed food	Primary Agriculture Only	Processed food only	Textile and Clothing	Other Manufacturing
<b><u>Asia-Pacific</u></b>					
<b>High-Income Countries</b>					
Australia and New Zealand	2.6	0.3	3.3	13.9	4.1
Japan	29.3	48.0	20.8	9.0	0.4
South Korea and Taiwan	53.0	84.5	22.4	9.2	3.6
Hong Kong and Singapore	0.1	0.0	0.2	0.0	0.0
<b>Middle and Low Income Countries</b>					
Bangladesh	12.7	7.4	21.2	29.9	16.2
China	10.3	9.9	11.0	9.6	5.5
India	49.9	25.7	75.6	26.5	24.2
Indonesia	5.0	4.3	6.2	8.0	4.3
Thailand	16.7	12.7	19.2	16.4	7.6
Vietnam	37.1	13.1	41.8	29.1	12.3
Rest of East Asia	13.4	18.6	9.0	8.7	3.5
Rest of South Asia	21.1	14.2	32.0	6.6	14.4
<b><u>Selected Developed Countries</u></b>					
EU25 + EFTA	13.9	13.2	14.7	5.1	1.7
United States	2.4	2.3	2.5	9.6	0.9
Canada	9.0	1.2	14.1	8.7	0.5
<b><u>Selected Middle and Low Income Countries</u></b>					
Argentina	7.1	5.6	7.8	11.1	10.1
Brazil	5.0	2.4	9.0	14.7	9.7
Mexico	10.3	10.8	9.7	7.8	4.3
South Africa	8.6	5.9	10.6	21.9	5.4
Middle East and North Africa	13.1	8.2	18.3	23.9	7.2

Source: Adopted from Anderson, *et al* (2005)

**Table 2: Key Features of Applied Agricultural Tariffs by Country and Region,  
2001  
(Trade Weighted Averages, Percent)**

Country	Overall Average	Ad valorem Tariffs	Specific Tariffs	Tariffs for TRQs*	TRQ Share
<b>Asia Pacific</b>					
Australia	3.0	2.1	0.9	1.0	5.6
Bangladesh	14.4	14.4	0.0	0.0	0.0
China	38.9	38.9	0.0	5.7	22.0
Japan	35.5	9.9	25.6	103.4	8.8
Korea	93.9	93.9	0.0	226.3	38.5
India	55.1	54.3	0.9	0.0	0.0
Pakistan	30.4	9.7	20.7	0.0	0.0
ASEAN	11.2	7.5	3.7	32.0	8.4
<b>Other Selected Countries and Regions</b>					
United States of America	2.7	0.9	1.7	11.2	17.1
Canada	9.7	8.3	1.3	30.7	21.0
Mexico	10.7	10.6	0.1	33.8	23.6
EU	11.8	3.1	8.8	35.5	21.5
Mercosur	12.9	12.9	0.0	6.9	3.3
European Free Trade Area	28.6	2.0	26.6	58.2	33.6
Sub Saharan LDCs	13.1	13.1	0.0	0.0	0.0
Other Sub Saharan Africa	25.6	25.5	0.0	0.0	0.0
Maghreb	17.6	16.2	1.5	39.4	14.3
South African Customs Union	13.0	4.4	8.6	16.3	55.9
<b>Developed Countries</b>	14.3	4.3	10.0	36.9	17.3
<b>Developing Countries</b>	20.9	18.5	2.4	63.7	11.6
<b>LDCs</b>	13.4	13.0	0.3	0.0	0.0
<b>World</b>	17.2	10.8	6.4	46.5	14.4

\*TRQs are new protection instruments “through which a given amount of imports (allocated according to various possible modes of administration, and frequently on a bilateral basis) can benefit from a lowered tariff rate” (Bouet, et al, 2004, p.11)

Source: Adopted from Jean, et al, (2005)

**Table 3: Ad-valorem Equivalent of Aggregate Tariff in the Asia Pacific Region, 2001**

Country (Importer)	By Sectors			Total
	Agriculture	Manufacturing	Textiles and clothing	
Australia	2.0	4.3	16.4	5.2
Bangladesh	21.1	14.9	29.5	17.4
China	24.7	12.5	19.9	14.1
Hong Kong	0.0	0.0	0.0	0.0
India	28.4	30.1	30.3	33.4
Indonesia	8.6	5.1	9.3	5.7
Japan	30.1	0.6	9.9	3.8
Korea	45.4	5.2	11.1	8.9
Malaysia	17.0	11.2	14.0	12.0
New Zealand	2.1	2.2	8.0	2.7
Philippines	10.9	3.9	7.5	4.8
Sri Lanka	21.4	6.1	4.7	7.4
Taiwan	20.3	9.0	9.9	10.2
Thailand	29.8	10.1	21.0	12.7
Vietnam	26.7	10.6	32.6	15.1
Rest of South Asia	28.3	16.6	20.5	19.1
Rest of Southeast Asia	12.8	7.9	9.6	8.0
Rest of Oceania	29.2	3.5	8.7	7.3
<b>Other Developed Countries</b>				
United States	3.8	1.3	10.4	2.3
Canada	13.8	1.6	12.6	3.5
EU (15)	15.0	1.8	6.4	3.1

Source: MAcMap Database

**Table 4: Ad-valorem Equivalent of Agricultural Tariff by Partners, 2001**

Country (Importer)	Partners (by Exporter)		
	Developed Countries	Developing Countries	Least Developed Countries
Australia	2.3	1.3	0.4
Bangladesh	20.5	21.1	15.2
China	23.7	25.8	10.7
Hong Kong	0.0	0.0	0.0
India	53.7	64.8	34.1
Indonesia	9.4	9.3	3.5
Japan	33.1	26.7	9.1
Korea	45.3	46.7	33.2
Malaysia	11.2	24.9	45.2
New Zealand	2.5	1.0	0.1
Philippines	9.6	12.8	7.0
Sri Lanka	18.7	23.6	15.8
Taiwan	18.5	25.1	29.3
Thailand	29.2	30.1	27.6
Vietnam	25.3	25.4	20.9
Rest of South Asia	22.9	31.7	13.9
Rest of Southeast Asia	11.2	13.8	18.8
Rest of Oceania	24.7	28.1	31.7
Other Developed Countries			
United States	4.3	2.7	2.2
Canada	17.3	5.7	0.4
EU (15)	17.0	13.7	2.7

Source: MAcMap Database



### *III. Use of CGE models in Quantifying the Effects of Multilateral Trade Liberalisation*

In general, partial equilibrium approach, macroeconometric models or computable general equilibrium (CGE) models can be used to evaluate the effects of trade liberalization on individual countries or different regions in the world. At present, many policy analysts use global CGE models to evaluate the effects of trade liberalization due to various limitations of other approaches. As noted by Anderson (2004, p.12) in his well-known paper presented at a Roundtable in Copenhagen of the Copenhagen Consensus Project (24-28 May, 2004), “CGE models are far superior for current purposes to partial equilibrium models, which fail to capture the economy-wide nature of the adjustments to reform whereby some sectors expand when others contract and release capital and labor; and they are also superior to macroeconometric models which typically lack sufficient sectoral detail (Francois and Reinert, 1997)”. As Anderson (2004, p.12) further notes, these models have been used to analyse the effects of multilateral trade liberalization since the Tokyo Round of GATT negotiations in the late 1970s and early 1980s and to the current negotiations under the WTO (see, Cline, et al, 1978; Deardorff and Stern 1979, 1986; Whalley 1985). CGE models more suitable to undertake *ex ante* assessments like agricultural trade policy reforms under the DDA because they help policy analysts to identify winners and losers.

Global economic modelling has become a new and flourishing field of research as a result of the increasing demand for quantitative analyses of global issues like multilateral trade negotiations, regional integration arrangements (such as EU, NAFTA, ASIAN and APEC), and global warming (Kyoto Convention etc). Many international and national organisations and individual researchers have undertaken research on these global issues and provided intellectual inputs into the debate. The extensive applied general equilibrium (AGE) modelling efforts on the above issues in recent years reflect the demand for quantitative assessments on these issues. These models have been used as a tool for better understanding of the behaviour of global economy, and as an aid in decision making. For example, five quantitative assessments of the Uruguay Round (UR) using different AGE models have provided very important information to UR trade negotiations. As recognised by Martin (1997), “economic modelling played an important role in guiding negotiating positions in the Uruguay Round and in gaining acceptance for the completed package’ (p.152). Similarly, Baldwin and Venables (1995) have recognised contributions made by AGE models in evaluating regional integration arrangements.

To develop global AGE models and used them to address these global issues quantitatively modellers need consistent and quality global databases. As Phillips and Tyers (1995, p.117) noted “the era of global economic modelling is clearly not yet at an end. Improved models will require improved data for reliability.” Developing an improved reliable global database with detailed commodity and country classifications and a modelling framework is time consuming, expensive and enormous task. To meet this challenge the Global Trade Analysis Project (GTAP) was established in the early 1990s. The GTAP is comprised of a publicly available, fully documented, global database, a standard modelling framework and associated software, a global network of researchers, and a consortium of national and international agencies that provides leadership and base-level support to the project.

Since its inception in 1993, the project and its components have continued to evolve and grow. A publicly available, fully-documented, global data base is the centerpiece of the Global Trade Analysis Project. Since GTAP's inception in 1993, the database, along with the other components of the GTAP have continued to evolve and grow in response to and with the support of the users of the database. Over the last fifteen years, the GTAP database has supported quantitative economic analysis using the GTAP model and other multi-regional, applied general equilibrium models. The popularity of the database among global policy analysts is increasing because the project is always aiming to provide quality and much improved consistent global database.

#### *IV. A Brief Survey of Previous Studies on Doha Agricultural Reform*

As shown in Section 2, it is well-established fact that agriculture has been largely protected worldwide. Protection in agriculture has always been a complex issue. Therefore, agricultural protection has been a key issue in the Doha Development Agenda (DDA). This has attracted close attention of trade policy analysts even before the adoption of the July Package. There has been an increasing demand for quantitative assessments of the impact of agricultural trade liberalisation and there has been a growing body of literature. Tongeren, et al, (2001) have provided a comprehensive survey of the impact assessment studies on agricultural trade liberalisation carried out in the 1990s with particular focus on agricultural reforms in Europe. There have been another wave of impact assessment studies of agricultural trade liberalisation with the Doha Round negotiations (for example, see Beghin, et al, 2002, Diao, et al, 2001, Francois, et al, 2003, Frandsen, et al, 2003, Hertel, et al, 2003 and Goldin, et al, 2003). Although these models have not produced similar results, many of these studies have concluded that developing countries are benefited from the Doha Round.

With the adoption of the July Package, another wave of studies have emerged in quantifying possible effects of trade liberalisation on different regions in the world using the elements of the package as inputs and scenarios for quantitative assessments. Similar to previous assessments, these studies have been carried out by using large-scale global models such as the GTAP model. It is, therefore, important to survey the results of these recent studies before undertaking our analysis. Many of these CGE modelling assessments are optimistic about agricultural trade liberalisation in the context of developing countries.

The results of the World Bank research program on the implications of Doha Agenda for developing countries have been the most influential assessments of trade liberalisation under the Doha round. Anderson, Martin and their research associates at the World Bank have published their results in edited volumes, journal articles and policy briefs. They have also presented these results at a number of conferences and workshops in different parts of the world to advocate further multilateral trade liberalisation, particularly agricultural trade liberalisation (Anderson and Martin 2005a, 2005b, 2005c, 2005d, 2005e, 2005f, 2005g and Anderson, et al, 2005)

In the analysis of agricultural trade liberalisation of the World Bank research project, Anderson, Martin and their associates have used the latest version of the World Bank's Linkage model together with the GTAP version 6 database to project the growth path of the world economy from 2001 to 2015. They have introduced different trade liberalisation scenarios in their analysis. These policy scenarios have focused on three "pillars" of market access, export subsidies and domestic support identified in the current Doha round trade negotiations. Anderson, et al, (2005) and Anderson and Martin (2005a) have nicely summarised the results of the World Bank research program. We reproduce their summary tables in Tables 5 and 6 to facilitate our discussion. The following are the main features of these summary tables.

- Around two-thirds of global economic gains come from agricultural trade liberalisation.
- More than half of the gains to developing countries from global agricultural trade liberalisation would come from agricultural trade liberalisation by developing countries themselves.
- Developing countries merchandise trade liberalisation would contribute about 45 percent to the global welfare gains.
- Developing countries own agricultural trade reforms contribute to their own welfare gains more than developed countries' agricultural trade liberalisation.
- Around 93 percent of gains from agricultural trade liberalisation come from import market access (or cut in import tariffs in agriculture).
- Abolition of export subsidies and reduction in domestic support in agriculture would contribute only small percentages to total gains from agricultural trade liberalisation (2 percent and 5 percent, respectively)

**Table 5: Effects on Economic Welfare of Full Trade Liberalisation from Different Groups of Countries and Products, 2015 (percent)**

From full Liberalisation of :	Agriculture And Food	Textiles and clothing	Other Manufactu res	All goods
<b>Panel A: Distribution of Effects on Global Welfare</b>				
<i>Percentage due to:</i>				
Developed <sup>a</sup> country policies	46	6	3	55
Developing countries' policies	17	8	20	45
<b>All countries' policies</b>	<b>63</b>	<b>14</b>	<b>23</b>	<b>100</b>
<b>Panel B: Distribution Of Effects on Developing Countries' Welfare</b>				
<i>Percentage due to:</i>				
Developed <sup>a</sup> country policies	30	17	3	50
Developing countries' policies	33	10	7	50
<b>All countries' policies</b>	<b>63</b>	<b>27</b>	<b>10</b>	<b>100</b>

<sup>a</sup> Developed countries include the transition economies of Eastern Europe and the former Soviet Union.

Source: Adopted from Anderson and Martin (2005, Table 4).

**Table 6: Distribution of global welfare impacts of fully removing agricultural tariffs and subsidies, 2001 (percent)**

Agricultural liberalization component:	High- income <sup>a</sup> countries	Developing countries	World
High-income <sup>a</sup> countries' liberalization of:			
Import market access	66	27	93
Export subsidies	5	-3	2
Domestic support	4	1	5
<b>All measures</b>	<b>75</b>	<b>25</b>	<b>100</b>

a. High-income countries include the newly industrialised East Asian customs territories of Hong Kong, Korea, Singapore and Taiwan as well as Europe's transition economies that joined the EU in April 2004.

Source: Adopted from Anderson and Martin (2005, Table 5).

As summarised by Anderson and Martin (2005a, pp 1309-1322), the following are the main messages that emerge from the World Bank research program.

- The potential gains from further global trade reform are huge;
- Developing countries could gain disproportionately from further global trade reform;
- Benefits could be as much from South-South as from South-North trade reforms;
- Agriculture is where cuts are needed most;

- Subsidy disciplines are important, but increased market access in agriculture is crucial;
- Large cuts in domestic support commitments are needed to erase binding overhang;
- Large cuts in bound rates are needed also to erase binding overhang in agricultural tariffs;
- A complex tiered formula may be little better than a proportional cut;
- Even large cuts in bound tariffs do little if “Sensitive Products” are allowed, except if a cap applies;
- TRQ expansion could provide additional market access;
- High binding overhang means most developing countries would have to make few cuts;
- Cotton subsidy cuts would help cotton-exporting developing countries;
- Expanding non-agricultural market access would add substantially to the gains from agricultural reform;
- Adding non-agricultural tariff reform to agricultural reform helps to balance the exchange of “concessions”;
- Most developing countries gain, and the rest could if they reform more;
- Preference erosion may be less of an issue than commonly assumed;
- Farm output and employment would grow in developing countries under Doha;
- Poverty could be reduced under Doha; and
- Developing countries could trade off Special and Differential treatment for more market access.

The results of the World Bank study can be used to focus on the distribution of results across countries and regions. We only use the detailed results of one of their policy scenarios which are relevant to agricultural trade liberalisation (ie., the welfare effects of tiered agricultural tariff cuts, elimination of export subsidies and cuts in actual domestic support as of 2001 of 28 percent in the US, 18 percent in the EU, and 16 percent in Norway). Column one of Table 7 summarises the gains from this scenario of the World Bank study across countries in Asia-Pacific in comparison with other selected countries. The most striking feature of these results is that countries in Asia-Pacific are the main winners of Doha agricultural trade liberalisation. While the total global welfare gains from this policy scenario is around US \$ 74.5 billion (2015), the total gains for the Asia-Pacific region is around US\$ 32.6 billion (about 44 percent of the total gains). However, the big winners in the region are developed countries such as Japan, Korea, Taiwan, Australia and New Zealand and Thailand. Only China, Vietnam, Singapore and Hong Kong record small losses. Although many developing countries in South Asia and Southeast Asia would gain from agricultural trade liberalisation, the gains are very small.

Hertel and Keeney (2005) have also examined the effects of agricultural trade policy reforms under the DDA using their recently developed GTAP-AGR model. This is a variant of the standard GTAP model and it has been developed for a special purpose of analysing global agricultural trade policy issues. Some structural characteristics of agricultural production and markets have been incorporated into this model (for details of the model see Keeney and Hertel, 2005). The base year for this study is 2001. Similar to other studies on agricultural trade reforms under the DDA

this study has also under taken a pre-simulation exercise to obtain the baseline data set. During the pre-simulation they have incorporated the phasing out of MFA, commitments made by new members of WTO (such as China) and other changes which have been taken outside the DDA. With above adjustments to the database, Hertel and Keeney (2005) have examined the effects of liberalisation in agriculture under three pillars similar to many other studies. Rather than using a tiered tariff cut, they have introduced a full liberalisation of agricultural tariffs (market access), export subsidies and domestic support by high-income countries. Their welfare results are also summarised in Column two of Table 7.

The results of Hertel and Keeney (2005) also indicate that agricultural trade reforms under DDA generate a substantial amount of global welfare (\$55.7 billions in 2001 value). Developing countries would gain around \$11.9 billion. Similar to previous study, import market access for agricultural products has been the main source of welfare gains (93 percent of total gains). The relative contribution of abolition of export subsidies and domestic support has been minimal. According to their study small countries such as Bangladesh, Vietnam and the Philippines in Asia-pacific would lose and big countries like India and China would gain from full agricultural trade liberalisation under the DDA (see Column two of Table 7).

Recently, Antimiani, et al (2005) have examined the effects of agricultural trade liberalisation under alternative scenarios by incorporating the outcomes of interaction between the strategies of country groups in the negotiations. The GTAP model and the database (version 6) have been used in this analysis. Their simulations are based on a 2013 baseline. They have derived the 2013 baseline data set by introducing two different types of shocks. Firstly, they have used projections from other sources such as the World Bank for GDP, population, agricultural labour force and the total factor productivity to update the 2001 GTAP version 6 database to 2013. Secondly, a number of policy shocks have been used to take into account of policy changes between 2001 and 2005 such as the EU enlargement. The novelty of this study is that the incorporation of strategic interactions between developed and developing countries on the basis of game theory. In general, their results are also consistent with the World Bank Study.

The main results Antimiani, et al (2005) have been summarised in Column three of Table 9 with the focus on countries in Asia-Pacific. The gains from agricultural trade liberalisation in their study are similar to the World Bank study. According to their study the total global welfare gains is around US\$ 69.2 billion (2013) and the total Asia-Pacific gains is around US\$31.6 billion (around 46 percent). Once again Japan, Korea, Taiwan and Thailand are the biggest winners in the region and countries such as China, Vietnam, Bangladesh and Indonesia would marginally lose from Agricultural trade liberalisation.

The above three studies are highly optimistic about agricultural trade liberalisation. The last column of Table 7 summarises the results of another recent study carried out by a group of researchers who are also main contributors in compiling protection data systematically and developing MAcMap database (Bouet, et al, 2004 and 2005). They claim that the most of the global CGE studies on Doha agricultural trade liberalisation are excessively optimistic due to a number of reasons. According to (Bouet, et al, 2004, p.5) these reasons are:

*“(i) protection is not precisely measured; traditionally, it does not include trade preferences, regional agreements, and the gap between applied and bound protection, at a disaggregated level; (ii) the complex effects of the various types of domestic support are not accounted for; (iii) various groups of DCs are not distinguished (net food exporters vs. net food importers, LDCs benefiting from huge trade preferences, LDCs with main exports severely penalised by tariff peaks...)”.*

To overcome the above problems in previous studies Bouet, et al, (2004) have developed their own global CGE model known as the MIRAGE model to specifically assess the effects of agricultural trade liberalisation. They have used GTAP version 5 database to implement the MIRAGE model together with improved protection data from MAcMap database. In this model agricultural domestic support policies have explicitly been included. A several groups of developing countries with distinguished features have also been identified and imperfect competition has been introduced to some sectors in the model as well.

Similar to previous studies they have established a baseline for the year 2001. The baseline equilibrium has been obtained by using a pre-experiment simulation exercise to incorporate post 2001 developments such as the Uruguay Round commitments in agriculture, phasing out MFA and WTO’s accession of China. Using this baseline, Bouet, et al, (2004) have carried out simulations to reflect Doha agricultural trade liberalisation in three “pillars” (market access, export subsidies and domestic support). Their cumulative results of change in welfare are shown in the last column of Table 7. Their welfare results are shown in percentage change form rather than in absolute dollar terms compared with other three studies. The welfare results of this study indicate that agricultural trade liberalisation under DDA would lead to very small percentage increase in global welfare (0.08%). The results across countries and regions indicate that developing countries in Asia-Pacific would gain again from agricultural trade liberalisation. However, agricultural trade liberalisation results in welfare losses in country groups such as Sub-Saharan African, Mediterranean and poorest countries in the world. In general, in contrast to many other CGE studies, this study suggests that the welfare gains from agricultural liberalisation are very small.

**Table 7: Gains from Doha Agricultural Trade Liberalisation in Recent Studies**

Country/Region	Anderson, et al (2005) In Billion Dollars	Hertel and Keeney (2005)	Antimimi, et al (2005) In Billion Dollars	Beuet, et al (2004) % change
<b>Asia-Pacific</b>				
Australia and New Zealand	2.0	n/a	2.0	n/a
Hong Kong and Singapore	-0.1	n/a	n/a	0.05
Japan	18.9	n/a	23.5	0.05
South Korea and Taiwan	10.9	n/a	3.1	n/a
Bangladesh	0.0	-0.050	-0.1	n/a
China	-0.5	0.560	-1.4	0.15
India	0.2	1.275	1.8	n/a
Indonesia	0.1	0.085	-0.2	n/a
Malaysia	n/a	n/a	1.3	n/a
Philippines	n/a	-0.085	-0.1	n/a
Sri Lanka	n/a	n/a	0.2	n/a
Thailand	0.9	n/a	1.0	n/a
Vietnam	-0.1	-0.007	-0.2	n/a
Rest of South Asia	0.2	n/a	0.7	n/a
Rest of East Asia	0.1	n/a	n/a	n/a
High-Income Countries	65.6	41.6	n/a	n/a
EU 25 + EFTA	29.5	n/a	8.8	0.14 and 0.11
United States of America	3.0	n/a	3.0	0.05
Canada	1.4	n/a	1.1	n/a
Developing Countries	9.0	11.9	n/a	n/a
East Asia and Pacific	0.5	n/a	n/a	n/a
South Asia	0.4	n/a	n/a	0.17
Europe and Central Asia	0.1	n/a	n/a	n/a
Middle East and N. Africa	-0.8	n/a	n/a	n/a
Sub-Saharan Africa	0.3	n/s	n/a	n/a
Latin America & Caribbean	8.1	n/a	n/a	n/a
Transition Economies	n/a	2.2		
World Total	74.5	55.7	69.2	0.08



## *V. Concluding Remarks*

As surveyed in this paper, a number of impact assessment studies have been carried out over the last year or so to examine the impact of the July package in general and agricultural trade liberalisation in particular. The GTAP database has been used in all of these studies within CGE modelling frameworks. However, the models differ from study to study. The main results drawn from four studies were summarised in the preceding section. It is very difficult to judge which evaluation is right or wrong. At least, three of four studies surveyed in the previous section are consistent. The results of these studies consistently demonstrate that agricultural trade liberalisation under the DDA is beneficial for many countries in the Asia-Pacific region. All the studies surveyed in this paper indicate increases in global welfare as a result of agricultural trade liberalisation under the DDA. However, the estimates of annual global welfare gains vary from study to study ranging from US\$ 74.5 to US\$ 69.2. The reasons such as the nature of different models, base year, model closure and aggregation of different sectors and regions can be used to explain the differences between these estimates. In general all of these studies predict welfare gains for many countries in the Asia-Pacific region under the DDA agricultural trade liberalisation.

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