

Impact of Global Trade Liberalization on Regional Trade Balances

Dr. Shamim Shakur

School of Economics and Finance

College of Business, Massey University

Social Science Tower, Room 4.22, Palmerston North, New Zealand

Tel: 64-6-350-5799 x 2556 E-mail: s.shakur@massey.ac.nz

Received: October 29, 2011

Accepted: November 9, 2011

Published: January 1, 2012

doi:10.5539/ijef.v4n1p48

URL: <http://dx.doi.org/10.5539/ijef.v4n1p48>

Abstract

General equilibrium effects of trade liberalization on trade balances remain an important consideration for trade policy makers as welfare-improving trade liberalization initiatives may fail if it is perceived to have negative consequences on trade balance. Further, composition of trade balance matters in that a food imbalance is viewed as less tolerable than imbalances in other sectors. Potential trade imbalances from a multilateral trade accord are one of the most contentious issues stalling WTO's Doha Round. Using the GTAP applied general equilibrium model this paper evaluates alternative approaches to further liberalizing global food and non-food trade. By creating a separate textile and clothing sector from within manufacturing sector, the paper highlights the conflicts among developing and developed country interests. Finally, by extending tariff cuts to all sectors and regions, the paper demonstrates the interactions between reformed sectors, and the advantages offered by a comprehensive round of trade negotiations.

Keywords: CGE model, Trade balance, Doha Round, Tariffs

1. Introduction

An overwhelming literature on trade liberalization suggests economic growth is the most important benefit from trade (see Winters 2004). At the same time if trade liberalization raises the growth of imports faster than exports, an external constraint may as well inhibit growth rather than enhance it. In the end, whatever the benefits may be, one of the major concerns associated with trade liberalization is the likely impact on the trade balance (Edwards and Lawrence, 2008).

A trade deficit with resultant current account deficit is made up by foreign borrowing. According to Yongding (2007), large and persistent deficit is a worry even for the economic powerhouses like the United States (US), United Kingdom (UK), Canada and Australia as their borrowing costs goes up. In regard to the US, the author (Yongding 2007, p. 6) believes that for many economists as well as governments, the real danger may not be the US deficits per se, but the perception of the deficit. Morici (2006) warns that the trade deficit imposes a tremendous drag on the US economy, and warns that the current Doha Round of negotiations does little to solve this important problem. He identifies trade deficit as a detriment to the US economic growth and believes continued economic prosperity of the US would depend on reducing the trade deficit significantly. Recent downgrades of several sovereign credit ratings, including that of US, can only lay support to such worries. For many poor nations with low sovereign credit ratings (some carry no rating at all) failure to correct such prolonged trade deficit may see borrowing sources dry up. Trade imbalances can result in economic instability. An indefinitely large deficit in relation to modest gross domestic product (GDP) may be inconsistent with long-run equilibrium in many of these poor nations.

Against the backdrop of such popular rhetoric, volume of cross-border trade is slowing at an alarming rate. Volume of world merchandise exports plunged 12 percent in 2009, the biggest drop since World War II. Trade volumes typically decline in recessionary environment, but the current disparity is too big by historical standards (see Figure 1). On-going stalemate at WTO's (World Trade Organization) Doha Round that was originally scheduled to conclude in 2005 may thus be explained in terms of re-emergence of protectionism amid fear of growing trade imbalances. This study aims to identify the sources of trade imbalances in global regions and recommend trade reforms that can minimize stalemate at WTO over this contentious issue.

2. Literature

In recent times, use of computable general equilibrium (CGE) models to estimate potential economic gains from trade liberalization has ballooned. Hess and Von Cramon-Taubadel (2008) compiled a raw data set comprising over 1200 such studies published between 1994 and 2006. The Global Trade Analysis Project (GTAP) or the Linkage model (produced by the World Bank which also uses GTAP datasets) has been the choice of methodology in most of these studies. As expected, preoccupation with expected economic gains calculated as equivalent variation measure by GTAP means other impacts like those on trade balance are overlooked in these studies.

Using panel data and combined time series/cross section analysis, Santos-Paulino and Thirlwall (2004) estimated the effect of trade liberalization on export growth, import growth, the balance of trade and the balance of payments for a sample of 22 developing countries. In their findings, trade liberalization raised import growth more than it stimulated export growth such that balance of trade and payments worsened. They suspect this worsening balance has constrained the growth of output and living standards in developing countries and suggests a cautionary approach to the sequencing and degree of liberalization. Panagariya (2004) suggest that net agricultural importers-particularly least developed countries (LDCs) would suffer a “static balance of payments loss” from the terms of trade effect as world prices rise to their detriment.

Hertel *et al.* (2000) used GTAP model to examine the interaction between non-agricultural reforms and agricultural trade balances in global regions by simulating 40 percent cuts in protection in agriculture, mining and manufacturing, and services. As expected, reductions in agricultural protection had the strongest impact on the regional food trade balances. Interestingly however, for some regions, most notably Southeast Asia and South Asia, non-agricultural reforms were dominant in that they reversed the sign of the change in the food trade balance following liberalization. In particular, for China, manufacturing tariff cuts were as important as agricultural liberalization in determining the change in China's food trade balance- both reforms contributing to a substantial decline in China's aggregate food trade balance.

3. Modeled Sectors and Reforms

Recent statistics suggest less than 7 percent of world trade is in agricultural products, while manufactured goods (60 percent) and traded services (20 percent) make the bulk of the remainder trade (Polaski, 2007). By creating a separate sector within manufactures, this research takes a closer look at textiles, clothing and leather (TCL) trade. (Note 2)The justification to form a separate sector involving TCL trade is quite strong in the context of current research objective. Bouët *et al.* (2010) reports that by 2010, the share of LDCs in global exports fell by two-thirds from 1970 to 2000, twice as much as the fall in their share of global income. One important reason for LDCs poor export performance is implicit discrimination against their exports in rich-country trade policies. Often the most generous market access concessions offered by the rich countries to the LDCs contain exceptions. It turns out, as Bouët *et al.* (2010) states; these exceptions are “usually concentrated in a narrow range of products where LDCs have comparative advantage, especially agricultural commodities and labor-intensive manufactures, such as textiles, apparel, and footwear.” Because export compositions of LDCs are not diversified, effects of such exclusion, often driven by domestic lobbying interests in developed countries can have a magnified effect in LDC exports. Earlier, Panagariya (2002, p. 1219) raised a similar concern when he argued that despite an overall success of the Uruguay Round (UR), the agreement “shortchanged developing countries” mainly because of the way in which the industrial countries had implemented the Agreement on Agriculture (AoA) and the Agreement on Textiles and Clothing (ATC). Both had been executed in such a way as to minimize the liberalization of the heavily protected markets. After abandonment of the multi-fiber arrangement (MFA) quotas in 2005, the problem with textile and clothing continues to persist in that tariffs in the main importing countries remain high compared to other industrials. In the case of leather and leather products, the problem faced by developing countries is that of “escalating tariffs” by most developed and some developing countries that increase with the level of processing. By lowering the value of their exports, this adversely affects their trade balance position

Agricultural tariffs continue remain far above their industrial counterpart. Gibson *et al.* (2001) estimated post UR global bound tariffs for agricultural products at 62 percent. Similarly, Panagariya (2002) states that because of ‘dirty tariffication’ (defined as the proportion by which announced tariff equivalent rate exceeds the actual tariff equivalent rate), the effective level of agricultural protection could potentially increase by an estimated 61 per cent in the EU and 44 per cent in the US. Increased market access from a result of lower tariff would improve trade balances of many efficient producers. Empirical research can identify the winners and losers from the contentious but necessary reform that is done here.

For industrial products, although average industrial tariffs have been falling since WWII, pockets of resistance remained in labor-intensive manufacturing. Hertel and Martin (2000 p.468) note that manufactured exports account

for about three-quarters of total merchandise exports for the average developing country. Compare this against agriculture where “overall, U.S. agricultural exports to developing countries now exceed those to wealthy countries and are growing at a faster pace” (Polaski, 2007). Most of the developing country exports are in the low-tech TCL sector that is discussed earlier in this section and prompted formation of a separate TCL sector for simulation exercises. In addition to TCL, trade patterns in successful developing countries have changed radically in recent decades. The traditional pattern in which developing countries supply primary commodities in return for manufactures has given way to one in which the overall exports of developing countries are dominated by manufactured exports – many of which involve relatively advanced technologies (Hertel *et al.*, 2002; World Bank, 2004). For these developing countries to be drawn in to multilateral negotiations, further reductions and harmonization of industrial tariffs are to be included in the current round agenda.

When tariffs are removed, the decline in the import price will lead to an increase in domestic consumption while a loss of protective effects would mean reduction in domestic production. The trade balance of the importing countries would worsen- a potential source of discomfort for them in spite of overall gain in welfare. Trade balance of the exporting countries will improve in respect of the freed-up sectors – a source of potential gains for them on top of conventional gains from trade.

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. Specifically removal of tariffs by a large importer would increase price of its import on top of higher volume and aggravate negative impact on trade balance that is measured in value rather than physical tonnage. Empirical findings of the paper confirm the possibility of such changes.

4. Model, Data and Liberalization Scenarios

In general, CGE models are a very useful tool for *ex ante* experimentation with trade policy scenarios. In the current context of explicitly analyzing the inter-linkages between agriculture, TCL and other manufacturing sectors of the economy to quantitatively assess the impact of proposed trade reforms on regional trade balances, CGE models are ideally suited. This research uses the GTAP applied general equilibrium model (Hertel 1997). This is a relatively standard, multi-region model built on a complete set of economic accounts and detailed inter-industry linkages for each of the economies represented. In GTAP, products are differentiated by country of origin, allowing bilateral trade to be modeled, and bilateral international transport margins are incorporated and supplied by a global transport sector. For an overview of the GTAP model and database, see Hossain (2011). The GTAP model is solved using GEMPACK (Harrison and Pearson 1996). Aggregations applied to the GTAP database to the level of 14 regions and 3 sectors are shown in Table 4.

Trade liberalization scenarios modeled in this paper is simple, practical and logical. The designed scenario here involves (i) a partial liberalization of existing trade barriers in (ii) all sectors and (iii) carried out by all countries belonging to WTO.

In CGE literature involving trade reforms, it has become customary to design a complete trade liberalization scenario either on its own or in conjunction with alternative partial liberalization scenario. In the latter case, inclusion of a complete trade liberalization although perceived as an unlikely scenario, but frequently justified on its “benchmark” value as complete free trade remains the ultimate objective of a trade reform initiative. Global free trade would happen in distant future, but what is more practical in current climate is that of partial liberalization. Trade negotiators at the WTO’s Doha Round are still embroiled in hammering out the modalities, including formulae for further tariff reductions. In the absence of a firm consensus, simulations performed here adopted a simple formula that involves a reduction in average applied tariff by all countries irrespective of their development status.

This last point calls for some justification. A vast majority of CGE literature assumes developing countries reform less or none as they are given more moderate targets and longer adjustment period in implementing their trade liberalization commitments compared to their developed counterparts. At the same time the Doha round has been criticized for not requiring developing countries to reciprocate concessions with obligations on market access. (Note 1) Export performances of developing members are being hindered by protectionist policies in developed as well as developing countries. The effects of tariff reductions by all groups are quantified in this research.

Finally, the across-the-board tariff cuts are extended to (i) the agricultural and food, (ii) textiles, clothing and leather (TCL) and (iii) other manufacturing sectors to illustrate the interactions between agricultural and non-agricultural reforms, and the advantages offered by a comprehensive round of trade negotiations. Earlier, Rae *et al.* (2001) quantified the welfare changes from trade liberalization in selective sectors on the Asia Pacific Economic Cooperation (APEC) members. Selective tariff removal was shown to create downstream bias in heavily protected

sectors, worsening resource misallocation in underlying economies. The conclusion of that research was to extend the tariff reduction scenarios at a global level. This is achieved in the current research. By using the decomposition technique of Harrison *et al.* (1999), the separate impact of each of these three groups of sectoral trade reforms on the models variables are obtained. Thus, for example, an overall welfare gain or expansion in trade can be broken down to the changes due to agricultural, TCL and other manufacturing liberalizations.

To summarize, reforms in this liberalization experiment are to reduce tariffs on agricultural and food, textiles, clothing and leather, and other manufactures by 36 percent in all regions, and to cut expenditures on agricultural and food export subsidies by developed countries by 36 percent.

5. Results and Interpretations

The results of the trade liberalization scenarios outlined above are summarized in three tables. They show changes in regional trade balances in respect to three disaggregated sectors: agriculture and food (Table 1), TCL (Table 2) and other manufacturing sector (Table 3) from partial liberalizations. Positive values in these tables indicate an increase in net exports (or for importers, a reduction in net imports). Each of these tables also shows the calculated trade balances for partial liberalization occurring in each of these sectors in isolation, as well as the aggregated trade balance from all three sectors.

From Table 1, the agricultural trade balance in Australia, New Zealand, North and South America improves substantially. Many of these countries belong to the Cairns Group for whom inclusion of agriculture is an important enticing factor to the new round. (Note 3) Agricultural trade balance in Japan and the EU are worsened in this reform. Among developing countries, densely populated China and South Asian countries experience negative impacts in their food trade balance. In contrast, the TCL trade balance experiences a complete reversal from these outcomes in that China, South Asia and Northeast and Southeast Asia get the biggest positive boost, while the US, EU Japan, Africa, Australia and New Zealand experience negative changes to their TCL trade balance (see Table 2). In explaining impacts to TCL trade balances in Africa (negative) and developing Asia (positive), it can be said that the US currently offers duty-free access to apparel exports from sub-Saharan African countries because of its targeted AGOA (African Growth Opportunities Act) initiative. The Asian counterparts, on the other hand, are deprived of this benefit as the current Generalized System of Preferences (GSP) program that is available to them excludes apparel. This indicates that reforms in the TCL sector can be the draw card to lure developing countries in Asia into future multilateral trade talks.

Interdependence either by way of complementarity of substitutability of the sectors that is a desirable property of general equilibrium modeling can be seen from comparing the tables. For example, China gets the highest boost among all regions in TCL trade balance from global TCL reform (Table 2) but comes at cost in that its agricultural trade balance worsens significantly as can be seen in Table 1. Same can be said about South Asia that has emerged as a leading exporter of textile and clothing at the expense of agriculture. This is because higher exports of textile and clothing would call for higher import expenditure on inputs of crop fiber (cotton). Africa is a major exporter of cotton (regarded agriculture) but not in its downstream industrial product (regarded TCL). Africa's TCL trade balance worsens from a liberalized TCL trade (Table 2) but improves agricultural trade balance (Table 1) as global demand for crop fiber increases. Partial equilibrium models would not show such complementarities. Australia, New Zealand and South America, as members of the Cairns group of agricultural exporters benefit by an improved agricultural and food trade balance that is linked to a lower tariff in "other manufacturing" sectors (Tables 1 and 3). Trade balance for other manufacturing sectors in these countries obviously worsen as they import more from lower protection in this sector but more than compensated in their comparatively advantaged agricultural sector such that overall trade balance improves. This is how advantages of a comprehensive free trade works to the betterment of all countries that are aptly captured in a CGE model like the one used here.

In terms of the remaining manufacturing sectors' trade balance from a comprehensive liberalization, the results are mixed (see Table 3). Japan, EU and the US experience very favorable trade balance changes while non-EU Europe, Australia, New Zealand and Canada cannot follow the suit of their developed counterparts. All of the developing countries would experience deteriorating trade balance in the other manufacturing sectors. This re-affirms the importance of including TCL, a manufacturing sub-sector that has largely been kept outside of tariff reform agenda, in to the overall trade liberalization framework

6. Conclusions

Scheduled originally to conclude in 2005, frictions amongst developed countries as well as between developed and developing members of the WTO continues to pose threats to successful outcome of the Doha Round. Welfare gains are important, but may not be enough to convince many participating nations of the virtues of freer trade embodied in the current trade round as their impact on trade balance matters. Liberalizing agriculture and food generally

improves the trade balance position of developed regions (except Japan and EU) but worsens those of developing regions (except South America). Both Japan and EU would more than offset this loss from a tariff reform in manufacturing sectors that excludes TCL; but then developing countries' trade balances suffer additional setback from such move. For these developing countries, relief to their trade balance worries is offered by liberalizing the TCL sector. All these suggest liberalizing initiatives that combine agricultural trade and trade involving labor-intensive products might bear fruit because they are capable of offering incentives to both the industrialized and developing countries to cooperate.

Despite the GATT/ WTO's success in lowering the tariff rates on manufactured products, there is systematic discrimination against manufactured products in which developing countries have a strong comparative advantage. Textile, clothing and leather (TCL) are the kind of manufactured products that face strong trade barriers in the developed world. By treating TCL as a separate sector and then applying across-the-board uniform tariff reductions in all sectors (agriculture and manufacturing being other sectors), the paper unleashes the practicality of a comprehensive trade round. Partial equilibrium frameworks ignore many of the inter-linkages between economy's sectors and their impacts on rest of the economy- in particular, their effects on the trade balance. The applied general equilibrium model (GTAP) used in the simulations in this research captures the interactions between these sectoral reforms, and brings out the advantages offered by a comprehensive round of trade negotiations.

References

- Bouët, A., & Laborde Debucquet, D. (2010). Assessing the potential cost of a failed Doha Round. *World Trade Review*, 9(2), 319-351, <http://dx.doi.org/10.1017/S1474745609990267>
- Bouët, A., Laborde Debucquet, D., Dienesch, E., & Elliott, K. (2010). The costs and benefits of duty-free, *quota-free market access for poor countries*: Who and what matters? IFPRI Discussion Paper 990. Washington, D.C. International Food Policy Research Institute (IFPRI). [Online] Available: <http://www.ifpri.org/sites/default/files/publications/ifpridp00990.pdf>
- Edwards, L., & Lawrence, R. (2008). South African trade policy matters: Trade performance and trade policy. *Economics of Transition*, 16: 585–608. <http://dx.doi.org/10.1111/j.1468-0351.2008.00338.x>
- Gibson, P., Wainio, J., Whitley, D., & Bohman, M. (2001). Profiles of Tariffs in Global Agricultural Markets. AER No. 796. *Economic Research Service*, USDA, Washington, DC.
- Harrison, W.J., & Pearson, K.R. (1996). Computing Solutions for Large General Equilibrium Models Using GEMPACK. *Computational Economics*, 9 (2), 83-127. <http://dx.doi.org/10.1007/BF00123638>
- Harrison, W.J., Horridge, J.M., & Pearson, K.R. (1999). Decomposing simulation results with respect to exogenous shocks, Paper presented at Second Conference on Global Economic Analysis, 20-22 June.
- Hertel, T.W. (Ed.) (1997). *Global Trade Analysis: Modeling and Applications*, Cambridge University Press, Cambridge and New York.
- Hertel, T.W., & Martin, W. (2000). Liberalising Agriculture and Manufactures in a Millennium Round: Implications for Developing Countries. *World Economy*, 23 (4), 455-469.
- Hertel, T. W., Anderson, K, Francois, J. F., & Martin, W. (2000). Agriculture and Non-Agricultural Liberalization in the Millennium Round. CIES Working Paper No. 16. Available at SSRN: <http://ssrn.com/abstract=231205>
- Hertel, T., Hoekman, B., & Martin, W. (2002). Developing countries and a new round of WTO negotiations. *World Bank Research Observer* 17 (1), 113–140. <http://dx.doi.org/10.1093/wbro/17.1.113>
- Hess, S., & Von Cramon-Taubadel, S. (2008). A Meta-Analysis of General and Partial Equilibrium Simulations of Trade Liberalisation under the Doha Development Agenda. *The World Economy*, 31, 804–840. <http://dx.doi.org/10.1111/j.1467-9701.2008.01103.x>
- Hossain, S. M. (2011). Liberalizing Agriculture by OECD Countries: Welfare, Growth and Distributional Impact in Developing Countries, *International Journal of Economics and Finance*, 3 (3), 167-176. <http://dx.doi.org/10.5539/ijef.v3n3p167>
- Morici, P. (2006). The Doha Round: No Help for America's Trade Deficit? [online] Available:<http://www.rhsmith.umd.edu/faculty/pmorici/The%20Doha%20Round%20No%20Help%20forAmericas%20Trade%20Deficit.pdf>
- Panagariya, A. (2002). Developing Countries at Doha: A Political Economy Analysis. *The World Economy*, 25, 1205–1233. <http://dx.doi.org/10.1111/1467-9701.00489>
- Panagariya, A. (2004). Subsidies and Trade Barriers: Alternative Perspective 10.2. In B. Lomborg, (Ed.). *Global*

Crisis, Global Solutions. Cambridge, U.K. and New York: Cambridge University Press.

Polaski, S. (2007). Breaking the Doha Deadlock: Congress Could Play a Pivotal Role, Trade, Equity, and Development Project. *Carnegie Endowment for International Peace*, Washington, DC 20036.

Rae, A., Chatterjee, S., & Shakur, S. (2001). The Sectoral Approach To Trade Liberalisation: Should We Try To Do Better? *International Trade Journal*, 15(3), 293-322. <http://dx.doi.org/10.1080/088539001753228009>

Santos-Paulino, A., & Thirlwall, A. P. (2004). The impact of trade liberalisation on exports, imports and the balance of payments of developing countries. *The Economic Journal*, 114, 50-72. <http://dx.doi.org/10.1111/j.0013-0133.2004.00187.x>

Winters, A. L. (2004). Trade Liberalisation and Economic Performance: An Overview. *The Economic Journal*, 114 (493), 4-21. <http://dx.doi.org/10.1111/j.0013-0133.2004.00185.x>

World Bank. (2004). Global Economic Prospects 2004: Realizing the Development Promise of the Doha Agenda. World Bank, Washington, DC.

Yongding, Y. (2007). Global Imbalances and China. *Australian Economic Review*, 40: 3-23. <http://dx.doi.org/10.1111/j.1467-8462.2007.00438.x>

Notes

Note 1. Jagdish Bhagwati at the 2002 Annual Meeting of the World Economic Forum. Bhagwati also criticized bilateral trade deals and sectoral agreements by adding these are increasingly “taking the good players away from Geneva.”

Note 2. Services sector is aggregated with other manufacturing in simulation design simply because trade in services is not the focus of this research.

Note 3. The Cairns Group is an interest group of 19 agricultural exporting countries formed with the objective to bring about liberalization of global agricultural trade. The Group successfully forced agriculture onto the agenda of the Uruguay Round that eventually led to the Agreement on Agriculture.

Table 1. Change in the agricultural and food trade balance (US\$ million)

Region	Total	Due to partial liberalization in		
		Agriculture & food	TCL	Other Manufacturing
anz	2405	2170	98	147
chn	-1767	-1156	-693	83
nea	-554	-91	-330	-133
jpn	-6099	-5788	95	-405
sea	716	1282	-260	-306
sas	-205	-139	-274	209
can	864	659	71	134
usa	5242	4161	441	640
sth_amer	4445	4292	410	-257
eu	-6813	-7567	479	275
eft	873	862	-1	12
oeu	-564	-98	-154	-311
afr	103	-13	6	110
row	-1945	-1774	-1	-169

Table 2. Changes in the textile, clothing & leather (TCL) trade balance (US\$ million)

Region	Total	Due to partial liberalization in		
		Agriculture & food	TCL	Other Manufacturing
anz	-659	-240	-480	53
chn	5617	430	5205	-18
nea	2991	138	3783	-930
jpn	-1731	196	-1346	-582
sea	2087	-274	2904	-543
sas	2572	31	1398	1143
can	-655	-9	-738	93
usa	-4275	-260	-4935	920
sth_amer	-2764	-681	-1961	-122
eu	-6150	219	-6989	620
eft	-196	-37	-176	17
oeu	478	56	841	-419
afr	-145	22	-195	28
row	-15	335	-177	-174

Table 3. Changes in the trade balance for remaining manufacturing sectors (US\$ million)

Region	Total	Due to partial liberalization in:		
		Agr & food	TCL	Other manufacturing
anz	-1433	-1296	243	-293
chn	-6293	188	-4220	-2261
nea	-2489	-572	-2990	1074
jpn	13913	3712	1234	8967
sea	-2568	-689	-2024	145
sas	-4338	82	-1079	-3340
can	-437	-488	444	-393
usa	3880	-2582	3794	2668
sth_amer	-4520	-3210	1454	-2764
eu	11477	6146	4376	955
eft	-887	-904	14	3
oeu	-4335	-466	-945	-2924
afr	-3568	-75	1	-3494
row	-3057	205	-38	-3224

Table 4. Regional and commodity sector aggregations from GTAP model

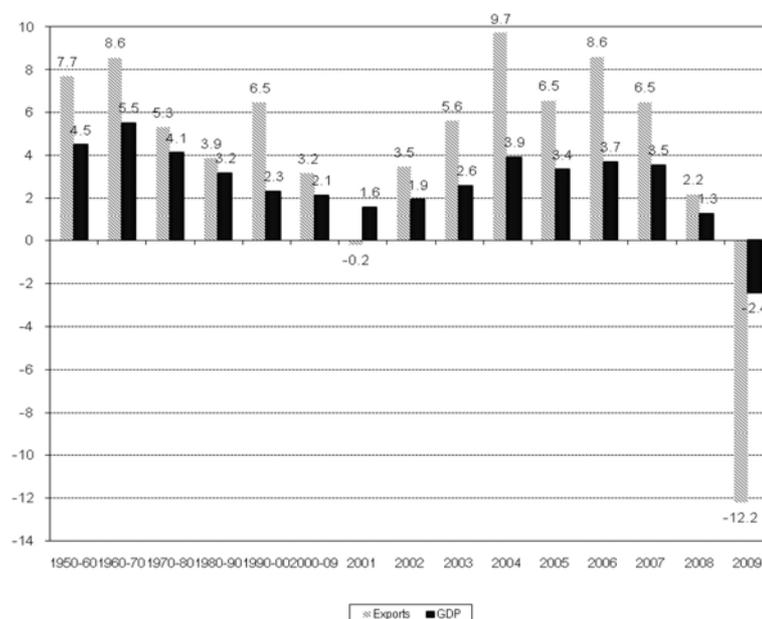
Aggregation of GTAP Regions

Acronym	Countries included	Acronym	Countries included
anz	Australia and New Zealand	chn	China and Hong Kong
oeu	Other European countries	usa	U.S.A.
eft	EFTA	can	Canada
jpn	Japan	sth_amer	Mexico, Central & South America
nea	South Korea and Taiwan	eu	EU
sea	Indonesia, Malaysia, Philippines, Thailand, Singapore, Vietnam	row	Rest of the world
afr	Africa	sas	South Asia

Aggregation of GTAP Sectors

Aggregated sector name	Included products
Agriculture and food	Paddy rice, Wheat, Vegetables, fruit, nuts, Raw milk, Dairy products, Cereal grains, Meat: cattle, sheep, goats, horses, Meat products, Animal products.
Textile, clothing & leather (TCL)	Textiles, Leather products, Clothing & wearing apparel.
Remaining manufacturing & services	Processed foods, beverages and tobacco, Forestry & minerals, Motor vehicles & parts, transport equipment, Electronics, machinery and equipment, Other manufacturing, Services.

Source: GTAP Database



Source: International Trade Statistics 2010, The World Trade Organization (WTO).

Figure 1. Volume of world merchandise exports and gross domestic product, 1950-2009
(Annual percentage change)