UNITED NATIONS DEVELOPMENT PROGRAMME

Assessing the Provision of International Trade as a Global Public Good

A UNDP/ODS Background Paper

By Thomas W. Hertel
Distinguished Professor and Executive Director
Center for Global Trade Analysis (GTAP), Purdue University
403 West State Street, West Lafayette, IN, 47907, USA
hertel@purdue.edu

Prepared for the Book Project
The New Public Finance: Responding to Global Challenges

Office of Development Studies
United Nations Development Programme
New York
- June 3, 2004 -

Assessing the Provision of International Trade as a Global Public Good

1. International Trade as a Global Public Good

Trade Policy: International trade has many of the characteristics of a global public good. As additional countries participate in the global trading arena, the potential gains to any single country from free trade tend to increase. These added gains follow from the ensuing diversity in relative factor endowments and technology, as well as from access to greater product variety (Romer, 1994). In this sense, one can consider the "consumption" of international trade to be largely non-rivalrous in nature. The associated benefits are also often non-excludable – this being the other key aspect of a global public good. To the extent that free trade reduces global price volatility by sharing the burden of adjustment to temporary shocks to supply or demand across many markets (Tyers and Anderson), this is a benefit enjoyed by all countries. Indeed, imports of staple food products are often the most effective way to avoid starvation in the face of droughts and other adverse events. Similarly, the role of a rules-based trading system in circumventing destructive trade wars is of benefit to all countries, regardless of their membership in the World Trade Organization (WTO). Historically many military wars have been fought over natural resources. By making these products available through peaceful means via international trade, the probability of such conflicts is vastly diminished with associated benefits for all nations of the world.

Mendoza (2003) offers an extensive discussion of the evolution of the global trading system and its public good characteristics. His paper focuses largely on trade policy as an obstacle to fair access to the global trading system by developing countries.

This focus on trade policy is also shared with most studies of global trade reform. In this context, the adequate level of provision of the global public good is deemed to be that of "free trade", in which tariffs and export subsidies are eliminated. However, recently authors have become increasingly concerned with non-policy barriers to developing countries' participation in international trade. These other barriers range from inadequate port facilities to outmoded and sometimes corrupt customs clearance procedures. Efforts aimed at remediation of these obstacles to trade are collectively labeled "trade facilitation" and this will be an equally important focal point in this chapter.

Trade Facilitation: As tariffs in international trade have fallen, and as the reliance of firms on outsourcing -- and hence on importation of intermediate inputs -- has risen, other types of trade costs have assumed greater prominence on the global economic landscape. In his recent analysis of international transport costs, Hummels (1999) finds that these transport costs are higher in many cases than the tariffs applied to the trade flows themselves. To this, one must add the cost of clearing customs and other logistical factors. When all is said and done – the direct costs associated with international trade transactions can amount to anywhere from 1 to 15% of the final price of a product (Walkenhorst and Yasui, 2003).

Trade facilitation has historically referred to the logistics of moving goods through ports and efficiently processing the associated documentation (Wilson et al., 2004). Those authors note that the definition has recently been broadened to also include some of the "inside-the-border" aspects of trade, including the regulatory environment in which these transactions take place, as well as the harmonization of international standards. The GATT recognized the importance of trade facilitation with articles pertaining to freedom of transit as well as guidelines for customs procedures. Trade facilitation has also recently emerged as a focal point in the WTO. It was notably featured in the Singapore Ministerial Declaration in 1996, which sought to address trade facilitation from a multilateral perspective, through the establishment of harmonized standards and procedures. However, subsequent efforts to make progress on trade facilitation in the subsequent WTO Ministerial meetings have not been successful. Many developing countries fear that they will be saddled with expensive new, unfunded mandates. Others are simply skeptical about the need for international standards.

While little progress has been made at the multilateral level, trade facilitation has become the focal point of many of the bilateral trade negotiations undertaken in last few years. No where is this more evident than in the Free Trade Agreements (FTAs) involving Singapore – a country which is essentially tariff free! In their study of the potential impacts of the Japan-Singapore FTA, Hertel, Walmsley and Itakura (2001) find that customs automization is the most important component, primarily contributing to increased welfare by reducing the amount of time goods are tied up in trade. They draw on recent estimates by David Hummels indicating that firms value speed in international trade quite highly – particularly for intermediate manufactures. Indeed, for some products, the opportunity cost of an additional day in transit reaches nearly one percent of the value of the product itself (Hummels, 2001). So any measures that facilitate the more rapid movement of goods through from exporter to importer, and ultimately to the user of the product, can potentially be extremely valuable. In fact, Walkenhorst and Yasui (2003) estimate that the associated *indirect* trade costs could be as high as the direct costs, or even higher for some products. They establish a range of 1 – 15% of *cif* values for these indirect costs.

In this report, we will draw heavily on recent work by Wilson, Mann and Otsuki (2004), henceforth referred to as WMO. These authors quantify four different dimensions of trade facilitation: port efficiency, customs environment, regulatory environment and e-commerce. In each case, they evaluate the performance of an individual country, relative to the international best practice. In their subsequent statistical work relating these measures to trade volumes, they find these are all important determinants of exports and imports – and hence access to the global public good offered by international trade. When it comes to setting a target for the adequate level of provision of trade facilitation, this chapter follows a convention established in the work of WMO. Since it is not realistic to bring all developing countries to the highest possible standard in this area, WOM instead focus on the goal of bringing developing countries halfway to the global average level of trade facilitation.

2. Current Access to International Trade

Policy barriers to trade: While successive rounds of GATT/WTO negotiations have succeeded in sharply reducing manufacturing tariffs in developed, and some developing countries, these tariffs remain quite high in much of the developing world. Combined with the increasing prevalence of South-South trade, this means that developing country interests in manufacturing tariff reductions remain strong (Hertel and Martin). However, overall, the largest remaining barriers to merchandise trade are in agriculture, as will be demonstrated below. Thus, it is hardly surprising that agricultural trade has been one of the primary stumbling blocks in the international trade negotiations.

Table 1, which draws on the work of Bouët et al. (2001, 2004), summarizes 2001 average merchandise tariffs for agriculture and food versus manufactures for a grouping of regions which together exhaust global trade.[1] (The average tariffs for Western Europe

[1] These tariffs are based on pre-release 2.1 of the version 6 GTAP data base. They will be updated when the version 6 data base is finalized later this summer. The source of these tariff data is the MacMap data set, developed under a collaborative project between CEPII and the ITC-Geneva (Bouët et al. (2004)).

and NAFTA include the zero tariffs on international trade within the EU and North America, which contributes to a lower average than would be obtained if only external trade were considered.) The highest average tariffs are for agriculture and food products in East and South Asia. Indeed, the trade-weighted, average tariff for agricultural imports into the High Income East Asia region is nearly 100%. These averages mask much greater variation at the tariff line, with some agricultural tariffs in excess of 500% while others have no tariff whatsoever (Gibson, Wainio and Whitley, 2002). Average tariffs on manufactures are generally under 5% in the OECD countries, and often 10% and above in many developing regions. South Asia shows the highest average manufacturing tariffs, with an average of almost 30% in India. Manufactures tariffs in Sub-Saharan Africa and Brazil average about 12%. The final column in Table 1 reports the average tariffs on extractive industries (petroleum, gas and mining). These are generally quite low, with the exception of Australia/New Zealand, South Asia and Sub-Saharan Africa.

Table 2 reports average protection, by merchandise commodity, for the year 2001 also from Bouët et al. (2004). The highest average tariff is for coarse grains (41.4%), followed by sugar (29.7%), then beef and oilseeds. Average non-food manufactures tariffs are all below 10%, with the highest rates for wearing apparel (8.7%), followed by leather products and textiles. Of course these trade-weighted, tariff averages are dominated by the OECD countries, for which trade volume is very high and tariffs are quite low. As we saw from Table 1, average manufactures tariffs in some developing countries are considerably higher.

Another important aspect of the global trading system is the pattern of tariff preferences offered to developing countries – particularly the poorest countries. This is highlighted in Table 3, which reports bilateral tariffs levied by Western European economies on four different exporting regions: Sub-Saharan Africa, excluding South

Africa (SSAr), Brazil, China and North America. There are three reasons why these bilateral rates differ. The first is product composition – the 42 merchandise commodities reported in Table 3 are really composites of much more disaggregated products, many of which face different import duties at the tariff line. The second reason has to do with the fact that product quality, and hence per unit price, often varies widely by exporter. The third reason for these differences is the presence of tariff preferences.

The product composition effect is difficult to discern without providing a great deal more information. Suffice it to say that this is likely the least important of the three sources of bilateral variation. On the other hand, the issue of variation in product quality is very important. It is readily evident when one looks at the tariff rate on beef. For this commodity category, China faces very high tariff rate due to the fact that most of the European tariffs on beef are *specific* tariffs (e.g., $/ton of product). Since China tends to export low value beef, the *ad valorem* equivalent of the associated tariff is very high (172.5%). The contrast with North America is striking. Beef exports from this region to Western Europe are higher quality and hence of higher value. With a high world price per ton of North American beef, the same specific tariff has a much smaller percentage impact on import costs. Indeed, the *ad valorem* equivalent of the tariff on beef imported from this region (65.8%) is only about one-third as large as for China. Because developing countries tend to export lower value products, the presence of specific tariffs – particularly prevalent in agriculture – can have a strong discriminatory effect against poor countries. This point has been specifically highlighted in the recent work by CEPII and the International Trade Center in Geneva (Bouët et al., 2001, 2004).

The preference effect on bilateral tariffs is also evident from Table 3. As one of the poorest regions in the world, SSAr exports many products into the Western European market on a duty-free basis. Indeed, average tariffs on non-food manufactures imported from SSAr are zero, as are tariffs on mining and mineral products and non-temperate agriculture. However, due to the high level of support for some farm products under the EU’s Common Agricultural Policy, we still see protection on these products (e.g., sugar and beef) imported from SSAr.

Another distortion to the global trading system is that of export subsidies. It is mainly practiced by rich countries – with the bulk of the export subsidies being applied by the European Union, followed by Norway, Switzerland and the United States (Elbehri, 2002). The bulk of the export subsidies apply to grains, beef, dairy products and sugar. They serve as a vehicle for eliminating surplus production that is stimulated by high domestic prices and various producer subsidies.

Thus far we have only discussed under-provision of merchandise trade due to policy barriers. However, services trade is becoming increasingly important to the world economy. Accordingly, the WTO initiated the General Agreement on Trade in Services (GATS) to facilitate liberalization of services trade. However, in the absence of tariffs, negotiations in this area have proven more difficult. In addition, GATS attempts to address two very new areas for the WTO: foreign direct investment (commercial presence for the provision of services) and temporary labor migration (i.e. the “movement of natural persons” to provide services). These two areas extend well-beyond the scope of the present paper. For purposes of this study, we will restrict ourselves to the analysis of direct trade in services (e.g., transportation services, business services, etc.).

Table 4 reports services barriers for a range of countries as estimated by Francois, Meijl, and Tongeren (2003). While they do not correspond to actual tariffs, they are presented on a comparable basis to the estimates in tables 1-3, namely as a proportion of estimated world prices for these services. From these estimates it is clear that some markets are highly restrictive across the board, most notably India and South Africa.

Others appear to only restrict services trade in selected sectors, e.g., China's imports of business services, or North America's imports of transport services. It must be stressed that these estimates are highly speculative. They have been obtained from an econometric model which aims to predict the volume of services imports into each country *in the absence of trade barriers.* The tariff-equivalent of this barrier is obtained by increasing import prices until import volumes are scaled back to their observed level.

Trade Facilitation: Improved trade facilitation offers great potential for reducing trade costs and stimulating trade in developing countries. The Australian Department of Foreign Affairs and Trade (DFAT, 2001) has estimated price reductions of up to 15% in time-sensitive air freight (e.g., fresh asparagus) upon conversion from a conventional to a paperless customs system. The daily savings are smaller for bulk goods shipped by sea, but they can nonetheless be significant. For example, in a recent survey conducted by the World Bank, customs clearance for goods arriving by sea averaged only 2 days in a sample of 7 developed countries, vs. 10 days for customs clearance in India (World Bank, 2003). If we apply Hummels' simple 0.8% *ad valorem* value associated with one day's time savings to this, we find that this amounts to an extra surcharge on imports of 6.4%. While this is considerably less than the average tariff in India, it is a pure economic cost, unlike the tariff which generates revenue for the Treasury. Given the wealth of trading partners available in the global marketplace today, the burden of this cost is likely to be borne disproportionately by domestic consumers and firms in India.

While global trade liberalization is a reasonable metric for measuring the current provision status of public good access in the case of trade policy. It is less clear what metric should be adopted in the case of trade facilitation. Many of the institutional features that must be reformed to achieve best practice (access to a stable regulatory environment, freedom from corruption, and access to e-commerce) are tied up with the functioning of the economy as a whole. Even the OECD countries do not exhibit best practice in some areas of trade facilitation (Wilson, Mann and Otsuki, 2004). Therefore, this study adopts the approach of WMO who quantify the provision status of trade facilitation by considering the potential gains in trade of *moving halfway to the global average* in each of their four categories of trade facilitation. With this in mind, WMO use their econometric model to simulate the total effect of trade of each of the four measures, and obtain a global increase in trade of $377 billion, or about 10% of current manufactures trade. The largest share of this increase is attributed to the improvement of e-commerce ($154 billion). This is followed by port efficiency ($107 billion), regulatory environment ($83 billion) and customs procedures ($33 billion).

WMO also report a breakdown in the trade gains under improved trade facilitation, by region, and these estimates will form the key input into our independent estimates of welfare losses associated with under-provision in section 3 below. So it is worth going through the WMO results in some detail. Table 5 summarizes key information for the estimated percentage change in developing country exports from trade facilitation (WMO, Table 8).[2] First of all, note that the impact of *domestic* reforms on exports (first column) is by far the largest part of the total export impact. That is interesting from the point of view of incentives to reform. It seems that countries might be able to proceed on a unilateral basis and still capture most of the benefits of their reforms. Whereas the estimated impact on exports of domestic reforms varies widely across regions, the impact of *partner* reforms is more balanced. Overall, there is a great

[2] WMO also offer estimates of the impact of trade facilitation on imports. However, we focus here on exports, since the subsequent global economic analysis in section 3 will require that exports equal imports and so the two cannot be specified independently.

deal of regional variation across the non-OECD economies. For example, there is an order of magnitude difference between the total export increase in South Asia (40.3%) and that in the MENA region (3.3%), following elimination of half of the difference between the member countries trade facilitation efforts and the world average. The potential for export increases following improved trade facilitation appear to be largest in Asia, followed by Latin America and the Caribbean and then Sub-Saharan Africa. There is also potential for increased OECD trade due to trade facilitation (3.8%), albeit modest, and largely due to partner reforms. Of course, foregone exports are not a measure of economic loss and so the WMO work must be extended in some way to quantify this loss. This extension will be undertaken in section 3.

3. Estimates of Losses Associated with Under-Provision of the Global Public Good

Policy barriers to trade: Over the past decade, there have been a great many studies of the potential gains from multilateral trade policy liberalization. A useful summary is provided by Kym Anderson (2004) in a paper written for the so-called "Copenhagen Consensus Project" sponsored by *The Economist* magazine and the Danish Environmental Assessment Institute. In his review, Anderson notes that most such assessments are built around the Global Trade Analysis Project (GTAP) data base and related modeling frameworks (Hertel, 1997). From the point of view of the present study, the advantage of the GTAP-based approach is that is exhaustive of world trade and economic activity, and it takes into account the bilateral patterns of trade and protection that are so important in today's global economy. Recent examples of such studies of global trade liberalization include: Anderson *et al.* (2002), Francois Meijl and Tongeren (2003) and the World Bank's Global Economic Prospects unit (2003). They conclude that global gains are in the neighborhood of $250 - $350 billion, with 30% to 50% of the gains accruing to non-OECD economies.[3]

These earlier studies of gains from global trade reform were based on the GTAP version 4 or version 5 data bases. One of the most notable limitations of these data bases is the absence of many trade preferences – particularly those for developing countries. As seen above, in the case of SSAr exports to Western Europe (Table 3), these preferences can be quite important, and their omission will overstate the global gains from trade reforms – in particular overstating the gains to the countries currently enjoying such preferential access. Since the countries granted such preferences are often amongst the poorest, this is a serious limitation. Fortunately, this limitation is being remedied. In particular, several studies are in the process of being finalized using protection data from the MacMaps data base upon which Tables 1 – 3 are based (Bchir, Fontagné and Jean (2004); Bouet, Bureau, Decreux and Jean (2004)). Unlike the earlier studies, these papers find that developing countries often lose as a result of trade liberalization. However, these studies do not look at complete liberalization, but rather consider the proposals currently being considered as part of the efforts to restart the Doha Round negotiations.

In light of these contrasting findings regarding the benefits to developing countries of reduced trade barriers, the present paper draws on original simulations conducted with prerelease 2.1 of the GTAP, version 6 data base[4] in concert with the standard GTAP model. Table 5 reports the estimated gains to from global liberalization of the trade barriers outlined above, and reported in tables 1 – 4 (along with elimination of export subsidies as well). The first column in this table reports the percentage change

[3] Base years in these studies vary considerably, as do the assumptions about imperfect competition and liberalization of services trade.

[4] These results will be updated when the version 6 data base is finalized.

in regional real income[5] owing to the removal of these barriers. Note that this figure is positive for all regions, excepting for SSAr. Why is it negative for this region? To understand this, we must return to Table 3, which reported bilateral tariff variation for imports into Western Europe – the biggest market for exports from SSAr. Most of these tariffs are already zero – indicating preferential access into this market. Therefore, when tariffs are removed on competing countries (e.g., Brazil, China, and North America), the value of SSAr's preferences is *eroded.* The demand for their products in the European market falls, therefore reducing export prices and ensuring a terms of trade deterioration for the region. This is evident from the subsequent columns of Table 5 which decompose the total welfare gain (-$530 million) into that deriving from improved efficiency ($1,357 million) and that deriving from changes in the terms of trade (-$1,886 million). While trade liberalization enhances efficiency for Sub-Saharan Africa, the terms of trade deterioration is dominant.

Globally, the terms of trade effects cancel out – one country's export price increase is another country's import price increase.[6] The terms of trade losses generally occur in regions where trade preferences are currently important, including North America and Europe (large free trade areas), the Middle East and North Africa, SSARr, and Central America and the Caribbean which all enjoy considerable tariff preferences on exports to the large North American and European markets. India's terms of trade deterioration derives from the large increase in exports necessitated by the surge in imports following her substantial tariff cuts.

---

[5] Technically, this is the Equivalent Variation associated with the ensuing price changes, expressed as a percentage of net national income in 2001.

[6] The reason the column total is not exactly zero has to do with the differential valuation of $1 of additional income across regions in the world. This follows from non-homothetic consumer preferences in the model.

The largest gainers, as a percentage of real income, are the Former Soviet Union, which has a highly distorted tariff structure presently (hence the large efficiency gains), followed by Australia/New Zealand, South Africa, South Asia and Brazil. Western Europe's proportional gains are less (0.9% increase in real income), but due to the large size of this economy, it dominates the absolute gains ($68,464million).

The final three columns in Table 5 decompose the total welfare gain for each region into that portion attributable to merchandise tariff reductions, liberalization of services trade, and elimination of export subsidies for food products. Overall, the services liberalization measures are dominant, with the ensuing global benefits accruing disproportionately to North America and Western Europe – regions which are also big service importers and exporters. Elimination of export subsidies (largely from the EU) hurts most of the economies due to the subsequent increase in their cost of imports. Exceptions are provided by the major food exporters, such as Australia/New Zealand, South Africa and South America. In summary, this three-way decomposition of the total welfare impacts, by region, clearly shows that the losses to SSAr derive equally from tariff liberalization (preference erosion) and export subsidy elimination (higher import prices for food).

Trade Facilitation: In section 2, we cited the work of WMO (2004) which measures the amount of international trade forgone due to poor trade facilitation. We now face the task of assessing the economic losses associated with this under-provision. This is a more difficult task, and it will require a different tool. We need a tool which will assess the costs and benefits of increased trade for producers, consumers and taxpayers. It is most natural to use the same analytical framework that is used for the tariff analysis. Accordingly, we utilize the GTAP model of global trade, and follow an approach somewhat similar to that of Hertel Walmsley and Itakura (2001) in the study of trade facilitation in the Japan-Singapore FTA.

To match up with the WOM study, countries in the GTAP 5.4 data base are aggregated up to the level of the regions in Table 6. Manufacturing activity is aggregated following their study, and all other activities are grouped into two sectors: primary (agriculture, food and natural resources) and services. Before conducting any simulations, it is important to ensure that the global trade model and the regression analysis of WOM are consistent in their view of the responsiveness of world trade to price changes, as this will be a critical component of the subsequent analysis. Fortunately, WOM report the elasticity of world trade with respect to a one percent cut in global tariffs, and trade elasticities in the GTAP model are adjusted to match this effect.[7]

The simulation of potential losses associated with poor trade facilitation begins with the estimate of exports reported previously in Table 6.[8] The CGE model is then asked to compute the change in the direct and indirect trade costs associated with exports from each of these regions that would be required in order to induce the predicted increase in trade. For example, in order to increase exports from South Asia by 40%, these trade costs (and hence the "effective price") associated with South Asian products in destination markets must fall by about 30%. This is in spite of a relatively high elasticity of substitution (6.2) between imports from different sources. The problem is that, in order to increase exports by this large amount, domestic prices in South Asia must

---

[7] More specifically, we cut the elasticity of substitution between imports and domestic goods in half. This produces the desired elasticity of trade with respect to tariffs of 1.1. In order to preserve the relationship between elasticities across sectors, this reduction is also applied to primary and services sectors.

[8] Since one country's exports must equal another country's imports in a global trade model, we cannot target both of these variables. We choose to focus on exports in this report.

also rise sharply, thereby raising the selling price in destination markets. This is the result of finite factor endowments in the South Asian economy. In order to increase manufactures output by this large amount, labor and capital must be bid away from the primary and tertiary sectors of the economy. The estimates of WOM do not take these general equilibrium considerations into account and therefore likely overstate the potential for increased trade. As a result, when these predicted changes are incorporated into a general equilibrium framework, they dictate a very large change in trade costs.

In light of the Walkenhorst/Yasui estimate of 2 – 30% (of the *cif* price) for direct and indirect trade costs combined, the estimated thirty percent reduction of the direct and indirect trade costs for South Asian export products in destination markets seems implausible.[9] For this reason, *we cut the estimated export volume changes in Table 6 in half* in our subsequent analysis of the economic losses associated with under-provision of trade facilitation in the developing countries. The resulting effective price reductions are reported in Table 7. Note the wide variation in effective price changes across regions, ranging from a low of 0.47% for exports from the MENA region, to a high of 13.2% for South Asian exports. As with the trade volume changes, the price reductions are largest in Asia, with East Asia and Central Asia/Eastern Europe following South Asia in relative size. And they are smallest for Middle East and Africa, with Sub-Saharan Africa following MENA with the second smallest price reduction (1.6%). Latin America and the Caribbean lie in between (3.37% reduction). In the case of the OECD, our methodology for calculating effective price is not very useful due to the high level of intra-OECD

---

[9] Balestreri and Hillberry (2002) offer a cogent critique of the so-called "gravity approach" to trade modeling, of which the WOM study is representative. They argue that this approach places too much weight on trade costs in explaining trade flows. This is another reason to deflate the WOM estimates, prior to our analysis of economic losses associated with the under provision of trade facilitation.

trade. For this reason, we apply the same price reduction as for MENA, which shows the same change in aggregate trade volume following implementation of the WMO trade facilitation measures.

Having ascertained these reductions in direct and indirect trade costs, we are now in a position to assess the losses associated with forgoing them. We do so by implementing these reductions as a form of exogenous "technical change" in the global trade model. In other words, we don't model the infrastructure, customs, regulatory and services reforms explicitly, rather, we model their impact on the delivered price of the product. As with the WOM analysis, this is done one region at a time (individually) to abstract from the potential competition among suppliers as their prices drop in the destination markets. (In a subsequent simulation, we will consider the impact of simultaneous reforms.)

The results of the domestic reforms, implemented one region at a time, are reported in columns A of tables 8 (trade impacts) and 9 (welfare impacts). The trade impacts reported in column A of Table 8 merely reproduce the targeted change of one-half of the original percentage change in trade volumes, as specified in Table 6. The largest absolute volume increase is for East Asia, since that is the largest non-OECD trading region in the model, and it also experiences a substantial reduction in trading costs. The largest percentage increase comes in South Asia (recall Table 6). Of greater interest are the associated welfare changes reported in Table 9. These take account of all the associated changes induced by the reduction in effective export prices – including higher domestic consumer prices, higher incomes, increased imports and increased tax and tariff revenues. The total impact on national welfare is captured in this change in real income.[10] (It is also reported as a percentage of net national income in parentheses.) These gains broadly follow the increases in trade, but it is clear that the change in real income is more complex, with the ordering of regional changes differing between tables 8 and 9. The largest proportional gains in welfare are for East Asia (2.81%), which has the highest trade/GDP ratio. The smallest developing country gains arise in the MENA region, where the effective price reduction is negligible.

Columns B of tables 8 and 9 add the impact of partner reforms of exports. These are also treated as reducing the effective price of exports in the destination markets, since improvements in port facilities, customs procedures, etc. will also contribute to the more timely and efficient delivery of exports. Recall from Table 6 that these trade impacts are much more evenly spread across regions. However, a comparison of the effective price changes for domestic and domestic & partner reforms in Table 7 shows a non-linearity in the associated effective price changes, with much larger increments for the regions where exports are rising more sharply. The overall ranking of welfare gains is unchanged when partner reforms are added. And the total gains in column B of Table 9 amount to $107 billion.

Up to this point, we have focused solely on the impact of reforms implemented individually, one region at a time. This is the way WOM develop their estimates. However, if this part of the global trading system were indeed improved, the effect would be to lower the effective prices of all regions' exports, *simultaneously*. The results from this experiment are shown in Column C of Table 9, and the implications for exports are quite different. When a single region lowers its export price, it is able to displace other suppliers in the destination markets. However, when all regions lower their export prices,

[10] Formally, this is the regional household's Equivalent Variation.

the scope for increasing bilateral shares in the import market is much smaller. As a consequence, exports rise more modestly, as evidenced by the positive differences (B - C) in Table 8.

In contrast to the export volume effects of simultaneous reform, the welfare impacts of all countries reforming trade facilitation simultaneously are slightly enhanced. This may be seen by comparing columns B with C in Table 9. This is because the welfare changes are driven by the underlying enhancements to the economic efficiency of the global trading system, not by the changes in export volume *per se*. This comparison highlights the fallacy inherent in equating increased exports with increased welfare. The total gains for simultaneous, global action on trade facilitation are now $116.8 billion for domestic and partner reforms undertaken together by all regions. When compared to the developing country welfare gains associated with trade policy reforms reported above, this is a large figure. Indeed these gains exceed those from either tariff reform or services trade liberalization, when considered individually.

It is interesting to compare these estimates with some of the others recently published. In a study of the benefits of trade facilitation in the Asia-Pacific region, DFAT (2001) produced a figure of $60 billion. This is comparable in magnitude to the gains reported in Table ZZ for East Asia alone, but the latter region is considerably smaller than APEC, indicating that the WMO-based estimates are more optimistic than those of DFTA. UNCTAD (2001) provided a rough estimate of potential gains from trade facilitation at 2 – 3% of the value of traded goods, which would be $100 - $150 billion if these percentages are applied to the manufactures trade figures used here. So the overall magnitude of estimated benefits are fairly similar between this study and previous ones. However, the distribution of total gains across countries are quite different. Whereas earlier studies have tended to assume uniform impacts across trading partners, the WMO-based estimates demonstrate a great deal of variation across regions.

Of course a complete picture of the losses associated with trade facilitation requires us to take account of trade in primary products and food, as well as potential gains from improved facilitation of exports from the OECD countries themselves. Here, we appeal to the recent scenario developed by Walkenhorst and Yasui, in which they reduce global trade and transport costs by 1%, of which 0.5% is assumed to be due to direct, and 0.5% due to indirect costs. In the case of bulk products trade, it is clear the goods are less time-sensitive, and thereby stand to gain little from incremental increases in the speed of transit (Hummels, 2001). As a consequence, Hertel, Walmsley and Itakura (2001) found quite small gains due to trade facilitation for primary products. Accordingly, we apply only the 0.5% reduction in direct trade costs due to improved trade facilitation of bulk products. This yields a total gain for trade facilitation of $122 billion.

4. Costs of Corrective Actions

Trade Policy: One of the most appealing aspects of policy reform as a vehicle for increasing access to international trade is that it does not require additional outlays of public funds. Unlike trade facilitation, where projects must be undertaken and monies spent, trade policy reform simply requires governments to lower tariffs and reduce barriers to services trade. Of course, to the extent that tariff revenue represents a significant portion of overall tax receipts, the replacement of this lost revenue must also be considered. In the case of the higher income economies, where tariffs are low and the income and value-added taxes are highly developed, this cost of reform is likely to be negligible. Indeed, it will be offset to some degree by the budgetary savings from reduced agricultural export subsidies from many of these same rich countries. However, for those developing countries where tariff revenue remains an important element of total fiscal revenue, some consideration must be given to problem of revenue replacement.

In order to gain a better understanding of how tax replacement might moderate the gains from trade policy reform, the previous trade policy liberalization experiment was undertaken, but this time requiring all regions to replace any reduction in tax revenue with increased value-added taxes. The revised total benefit for each region is reported in the final column of Table 5. As can be seen by comparing these entries to the totals in the middle of the table, North America and Western Europe actually benefit from adding the tax replacement condition, as their terms of trade deteriorate less in this case. However, as a group, the developing countries now gain less than previously from trade policy reform, although the difference is not large.

Another potential cost associated with trade policy reform has to do with the adjustment of workers, as well as capital stocks out of protected sectors and into more competitive activities. Adjustment assistance is often built into trade agreements in developed countries (e.g., NAFTA) and it is recognized that this is an important element of any successful trade agreement. The most natural way to handle such costs is by gradually phasing in the agreement for products where such adjustment is expected to be large. This was the case under the Uruguay Round's Agreement on Textiles and Clothing, aimed at eliminating import quotas on these products in North America and Europe. By phasing reform in over 10 years, the goal was to minimize the cost of adjustment.

The length of time required for such a phase-in depends on the flexibility of the countries' labor markets and the rate of turn-over in the sector's labor force. This issue has been examined in considerable detail in the US International Trade Commission's

Import Restraint Study (2002). This study finds that of the 175,000 workers who would likely be displaced as a result of unilateral elimination of US import barriers, 155,000 would be in the textiles and apparel sector. Based on the experiences of similar workers historically, the authors estimate that, in the absence of any phase-in, unemployment claims would likely temporarily rise by about 111,000. If the reforms were phased in, they conclude that this increase could largely be avoided through natural turn-over in the labor force.

Matusz and Tarr (2000) survey the literature on adjustment costs associated with trade reform. They first consider the experiences of developing countries, where they find that manufacturing employment generally expands following trade reforms. In the case of the developed market economies, they identify a number of studies that have actually produced dollar estimates of the costs of adjustment. They conclude (p. 395) from this survey that "the benefits of trade liberalization are vastly greater than the costs – typically each dollar of adjustment costs is accompanied by more than $20 of benefits."

Trade Facilitation: Unlike the case of tariff reforms, the costs of corrective actions to increase access to international trade by bringing under-provided countries halfway to the global average are likely be rather significant in some cases. While estimates of the cost of this total package of reforms are not available, some evidence is available for individual components. Customs automization is one of the elements of trade facilitation where experience is rapidly accumulating. Walkenhorst and Yasui (2003) provide a summary of the associated costs for a range of developing countries. The cost of a multi-year implementation program appears to be in the range of $20 million, although the cost of software, data communication equipment and computers is perhaps only $5 million. (Walkenhorst and Yasui note that many countries pass these costs on to traders in the form of higher fees.)

One reason for the large number of countries undertaking customs automization is the well-defined nature of the problem and the relatively modest costs involved. On the other hand, the cost of eliminating corruption in the customs service is more challenging. Wilson, et al. (2002) discuss a successful case of eliminating corruption in Peru. This involved firing corrupt employees, increasing salaries 10-fold, and greatly increasing the credentials required for new applicants. Clearly this is not an area for incremental change.

The cost of broader capacity-building measures of the sort called for by the Uruguay Round WTO agreement has been placed at roughly $150 million per developing country, adding up to a total of at least $20 billion (Finger and Schuler, 2001). To this one must add the substantial costs of improving the physical infrastructure underpinning international trade, including sea and air port facilities. Estimates of what it might cost to improve these are not available, but we expect these costs would be at least as high at the cost of bringing institutional capacity up to speed. Furthermore, unlike the costs of training institutional reform, the costs of maintaining improved physical infrastructure are likely to be recurring costs. For purposes of this report, we will use a figure of $20 billion in recurring costs to maintain improved port facilities in developing countries. Despite the size of this estimate, it is still dwarfed by the $122 billion annual gains from moving developing countries halfway to the global average.

5. Net Benefits from Reforms

We now turn to the calculation of net benefits from improved provision of international trade as a global public good. Taking into account the problem of tax replacement, the annual global benefits from trade liberalization amount to $175.71 billion (Table 5), of which two thirds accrue to the OECD and one-third to non-OECD countries. Against this, we must weigh the costs of adjustment, estimated at 5% of the annual gains. Since these are one-time costs, we deduct them in the first year, but not thereafter. Assuming a discount rate of five percent, the net present value of this stream of net benefits from multilateral trade policy liberalization is therefore equal to $3,506.1 billion.

In the case of trade facilitation, the annual flow of net benefits is equal to the annual stream of benefits ($116.772 billion) less the potential annual costs of maintaining improved infrastructure ($20 billion), less the one-time costs of institutional reforms ($20 billion). At a 5% discount rate, this yields a net present value of $1,915.44 billion. While this is a smaller figure than that associated with trade policy reform, nearly four-fifths of the benefits accrue to non-OECD economies. Therefore, trade facilitation is potentially more beneficial to the developing countries than is trade policy reform. Of course a definitive answer to this question awaits detailed estimates of the cost of trade facilitation.

References

Anderson, K., B. Dimaranan, J. Francois, T. Hertel, B. Hoekman and W. Martin (2002), 'The Burden of Rich (and Poor) Country Protectionism on Developing Countries,' *Journal of African Economies* 10(3): 227-57, September.

Anderson, K. (2004), *Subsidies and Trade Barriers*, paper prepared for the Copenhagen Consensus Project, www.copenhagenconsensus.com

Asia Pacific Economic Co-operation (APEC) (1999). *Assessing APEC Trade Liberalization and Facilitation: 1999 Update, Economic Committee*, September 1999. APEC: Singapore.

Balistreri, Edward J. and Russell H. Hillberry (mimeo). "Trade Friction and Welfare in the Gravity Model: How Much of the Iceberg Melts?" U.S. International Trade Commission, Washington, D.C.

Bchir, M.H., L. Fontagné and S. Jean (2004), "Market Access in Non-agricultural Goods: What is at Stake in the Development Round?", paper presented at the Seventh Annual Conference on Global Economic Analysis, Washington, D.C., June 17-19.

Bouët, A., J-C Bureau, Y. Decreux and S. Jean (2004), "Assessing the Impact of Multilateral Agricultural Liberalization: The Contrasted Fortunes of Developing Countries in the Doha Round", paper presented at the Seventh Annual Conference on Global Economic Analysis, Washington, D.C., June 17-19.

Bouët A., Fontagné L., Mimouni M., Pichot X. (2001), Market Access Maps: A Bilateral and Disagreggated Measure of Market Access, Document de travail CEPII, 2001-18, www.cepii.fr.

Bouët A., Y. Decreux, L. Fontagné, S. Jean, and D. Laborde (2004), "Computing an Exhaustive and Consistent, Ad-valorem Equivalent Measure of Applied Protection: A Detailed Description of MAcMap-HS6 methodology", www.cepii.fr.

Department of Foreign Affairs and Trade (DFAT) of Australia and Chinese Ministry of Foreign Trade and Economic Cooperation (2001). *Paperless Trading: Benefits to APEC. Commonwealth of Australia*. http://www.dfat.gov.au/publications/paperless/paperless_trading.pdf.

Elbehri, A. (2002). "Export Subsidies," Chapter 16.D in Dimaranan and McDougall , *Global Trade, Assistance, and Production: The GTAP 5 Data Base*. Center for Global Trade Analysis, Purdue University, West Lafayette, Indiana, USA.

Finger, J.M. and P. Schuler (2001), "Implementation of Uruguay Round Commitments: The Development Challenge" in B. Hoekman and W. Martin (eds.), *Developing Countries and the WTO: A Pro-active Agenda*. Oxford: Blackwell.

Francois, J., H. van Meijl, and F. van Tongeren. 2003. "Economic Implications of Trade Liberalization under the Doha Round", Paper presented at the 6th Annual Conference on Global Economic Analysis held in The Hague, The Netherlands, June 2003.

Gibson, P., J. Wainio, and D. Whitley. (2002). "Agricultural Tariff Data," Chapter 16.C in Dimaranan and McDougall , *Global Trade, Assistance, and Production: The*

GTAP 5 Data Base. Center for Global Trade Analysis, Purdue University, West Lafayette, Indiana, USA.

Hertel, T.W. (ed.) 1997. *Global Trade Analysis: Modeling and Applications*, Cambridge and New York: Cambridge University Press.

Hertel, Thomas W. and Will Martin, 2000. "Liberalizing Agriculture and Manufactures in a Millennium Round: Implications for Developing Countries," World Economy 23: 455-470.

Hertel, Thomas W., Terrie Walmsley and Ken Itakura, 2001. "Dynamic Effects of the 'New Age' Free Trade Agreement between Japan and Singapore", Journal of Economic Integration, December, Vol. 16, No. 4, pp. 446-484.

Hummels, D. (1999), "Toward a Geography of Trade Costs", GTAP Working Paper No. 17, Center for Global Trade Analysis, Purdue University, http://www.gtap.agecon.purdue.edu/resources/working_papers.asp

Hummels, D. (2001), "Time as a Trade Barrier", GTAP Working Paper No. 18, Center for Global Trade Analysis, Purdue University, http://www.gtap.agecon.purdue.edu/resources/working_papers.asp

Matusz, S. and D. Tarr (2000), "Adjusting to Trade Policy Reform", chapter 10 in Anne Krueger (ed.) *Economic Policy Reform: The Second Stage*, Chicago: University of Chicago Press.

Mendoza, R. U. (2003), "The Multilateral Trade Regime: A Global Public Good for All?" in I. Kaul, P. Conceicao, K. le Goulven and R.U. Mendoza (eds.) *Providing Global Public Goods*, New York: Oxford University Press.

Romer, P. (1994), “New Goods, Old Theory, and the Welfare Costs of Trade Restrictions,” *Journal of Development Economics* 43(1):5-38.

Tyers, R. and Anderson (1992), *Disarray in World Food Markets: A Quantitative Assessment*, New York: Cambridge University Press.

United Nations Conference on Trade and Development (2001). *E-Commerce and Development Report*. UNCTAD: Geneva.

United States International Trade Commission (US-ITC) (2002). *The Economic Effects of Significant U.S. Import Restraints*, Washington, D.C.: US-ITC.

Walkenhorst, P. and T. Yasui (2003), “Benefits of Trade Facilitation: A Quantitative Assessment”, paper presented at the APEC Capacity-Building Workshop, Bangkok Thailand, October 8-10.

Wilson, J.S., C.L. Mann and T. Otsuki (2004), “Assessing the Potential Benefit of Trade Facilitation: A Global Perspective”, World Bank Policy Research Working Paper No. 3224, February.

Wilson, John S., Catherine Mann, Yuen Pau Woo, Nizar Assanie, and Inbom Choi, (2002). *Trade Facilitation: A Development Perspective in the Asia-Pacific Region,* Asia Pacific Economic Cooperation: Singapore.

World Bank (2003), *Global Economic Prospects 2004: Realizing the Development Promise of the Doha Agenda,* Washington D.C.: The World Bank, September.

Table 1. Average rates of protection, by region and aggregated commodity

	Agriculture	Processed Food	Nonfood Mnfcs	Extraction
Austr/NewZealand	1.3	26.7	4.9	26.3
North America	4.2	6.2	2.1	0.8
Western Europe	4.9	6.8	0.7	0.3
Eastern Europe	12.0	23.9	3.4	4.2
Former Soviet U.	7.5	16.6	7.6	2.7
Japan	25.2	28.5	1.7	0.6
High Income Asia	96.9	23.9	3.7	3.8
China	7.0	16.1	9.1	4.5
Indonesia	1.3	11.2	5.9	2.6
Rest of SE Asia	21.1	16.4	4.3	2.4
India	23.2	65.0	28.5	19.9
Rest of South Asia	11.9	28.0	14.7	13.1
Turkey	17.4	24.7	1.7	0.4
Rest of MENA	11.4	15.5	9.5	6.2
South Africa	9.2	12.5	7.3	2.4
Rest of SSA	10.3	21.4	12.5	10.9
Brazil	3.3	8.6	12.0	2.0
Rest of South Am.	9.4	9.9	9.4	6.6
Central Am/Carib	6.6	12.7	8.1	5.8

Table 2. Average Protection, by Commodity

Commodity	Tariff rate	Commodity	Tariff rate
paddy rice	4.7	textiles	7.1
wheat	17.8	apparel	8.7
oth grains	41.4	leather	7.2
veg/fruit	9.2	lumber	1.8
oilseeds	20.8	pulp/paper	1.9
raw sugar	7.1	petroleum	3.6
cotton	2.2	chem/plast	3.0
oth crops	8.6	non-metal	3.8
cattle	3.8	iron/steel	3.4
oth animals	5.3	non-ferrous	1.8
raw milk	4.0	fabr metal	3.2
wool	2.1	autos/parts	4.0
forestry	0.7	oth trans	2.1
fisheries	2.7	electrical	1.3
coal	1.2	oth mach	2.6
oil	1.5	oth mnfcs	4.1
gas	0.4		
oth mining	1.0		
beef	23.6		
oth meat	17.6		
veg oils	12.7		
dairy	12.5		
rice	10.0		
sugar	29.7		
oth food	8.3		
bev/tobac	12.6		

Table 3. Bilateral tariffs on Western Europe's imports from different sources

	Exporter					Exporter			
Commodity	SSAr	Brazil	China	NAFTA	Commodity	SSAr	Brazil	China	NAFTA
paddy rice	0.1	0.0	0.7	8.7	textiles	0.0	7.1	8.2	6.8
wheat	0.6	0.0	10.6	17.2	apparel	0.0	8.0	10.1	9.9
oth grains	9.1	16.6	2.0	11.0	leather	0.0	6.3	9.5	4.2
veg/fruit	11.5	6.3	33.3	10.5	lumber	0.0	0.6	0.5	1.3
oilseeds	0.6	3.0	0.3	0.7	pulp/paper	0.0	0.3	0.0	1.0
raw sugar	0.8	0.0	52.4	3.8	petroleum	0.2	0.0	0.0	1.8
cotton	0.0	0.0	0.0	0.0	chem/plast	0.0	1.1	1.7	3.5
oth crops	0.3	4.9	1.4	7.2	non-metal	0.0	1.0	4.4	3.3
cattle	3.4	6.0	0.0	18.5	iron/steel	0.0	1.3	3.3	5.4
oth animals	0.0	1.5	10.1	5.7	non-ferrous	0.0	2.7	2.9	1.9
raw milk	0.0	0.1	0.0	0.0	fabr metal	0.0	0.2	2.7	2.7
wool	0.0	0.0	0.0	0.0	autos/parts	0.0	2.5	0.2	5.9
forestry	0.0	0.1	0.3	0.4	oth trans	0.0	1.1	2.9	1.1
fisheries	0.0	8.2	5.0	6.3	electrical	0.0	1.2	1.0	0.4
coal	0.0	0.0	0.0	0.0	oth mach	0.0	0.1	0.4	1.5
oil	0.0	0.0	0.0	0.0	oth mnfcs	0.0	0.0	2.6	12.7
gas	0.0	0.0	0.0	0.0					
oth mining	0.0	0.0	0.1	0.8					
beef	118.3	125.7	172.5	65.8					
oth meat	8.0	31.9	59.5	30.2					
veg oils	1.8	0.2	4.8	7.6					
dairy	10.5	33.3	25.3	41.6					
rice	0.0	6.0	3.3	4.3					
sugar	117.9	139.2	168.8	59.5					
oth food	0.3	16.7	12.4	15.2					
bev/tobac	1.0	33.2	10.0	17.5					

Table 4. Services Protection

Region		Sector		
	trade	trns/logist	bus svces	oth svces
Netherlands	0	0	0	0
France	12.3	12.1	18.3	19.2
Germany	0	13.7	9.5	0
Rest of EU	12.3	0	0	0
CEECs	1.6	0	0	0
MENA	2.3	0	0	0
North America	0	22.6	1.2	16
South America	13.8	10.4	8.6	5.9
China	0	14.5	37.4	3.7
India	61.3	63.9	32.1	62.2
High Inc Asia	0	0	6.3	0
OthAsiaPac	0	0	0	0
Aust/NZ	0	2.3	9.5	15.2
South Africa	28.3	17.5	32.8	22.6
SSA	0	0	0	0
Rest of Wld	7.2	0	0	0

Source: Francois, Meijl and Tongeren, 2003.

Table 5. Welfare Decomposition: Global Merchandise and Services Liberalization

	Percentage	Millions of 2001 $US						
Region	Welfare	Efficiency	TofT	**Total**	Merch	Svces	Xsub	Tax Replac
Austr/NewZealand	2.4	7472	1636	**9107**	6472	2257	378	8692
North America	0.1	28758	-13575	**15183**	-8082	23708	-442	16927
Western Europe	0.9	69498	-1034	**68464**	11170	52714	4580	69933
Eastern Europe	0.1	1789	-1250	**539**	419	412	-292	597
Former Soviet U.	3.2	9476	1678	**11154**	5191	6321	-358	10650
Japan	0.3	6164	6573	**12737**	11976	1469	-708	13601
High Income Asia	1.4	6786	5241	**12027**	10775	1399	-147	11327
China	0.9	7686	1441	**9127**	5372	3824	-70	7907
Indonesia	1.1	494	1079	**1573**	1524	76	-27	1494
Rest of SE Asia	2	3925	4642	**8567**	7875	784	-92	7569
India	1.9	10326	-1750	**8576**	2161	6423	-8	8323
Rest of South Asia	1.8	1569	930	**2499**	2499	41	-41	2429
Turkey	1.2	332	1183	**1515**	1370	150	-5	1484
Rest of MENA	0.3	9340	-6747	**2593**	2794	796	-997	1418
South Africa	2	2083	43	**2125**	667	1424	34	2061
Rest of SSA	-0.3	1357	-1886	**-530**	-337	143	-336	-811
Brazil	1.8	5898	1744	**7642**	4986	2370	286	7344
Rest of South Am.	0.7	4096	231	**4327**	1743	2551	33	3978
Central Am/Carib	0.5	1466	-582	**884**	515	431	-61	824
OECD		**118678**	**-1159**	**117519**	**32311**	**81548**	**3661**	**120480**
non-OECD		**59836**	**755**	**60591**	**36778**	**25747**	**-1934**	**55267**
World Total		**178514**	**-404**	**178110**	**69089**	**107295**	**1726**	**175746**

Table 6. The Impact of Improved Trade Facilitation on Regional Export Volume (percentage change)

Region	***Domestic Reforms***	***Partner Reforms (***	***Domestic and Partner Reforms Combined***
SSAfrica	8.7	2.2	10.9
SAsia	37.8	2.5	40.3
EAsia	21.1	2.9	24
EECAsia	26.3	3.7	30
MENA	1	2.3	3.3
LAC	16.9	3.1	20
OECD	0.6	3.2	3.8

Source: Wilson, Mann and Otsuki, 2004, Table 8

Table 7. The Impact of Improved Trade Facilitation on Developing Country Directand Indirect Trade Costs (as a percent of world price)

	Domestic Reforms	***Domestic and Partner Reforms***	
Region	**Individual**	**Individual**	**Simultaneous**
SSAfrica	1.28	1.6	1.6
SAsia	12.31	13.2	13.2
EAsia	8.35	9.6	9.6
EECAsia	3.66	4.17	4.17
MENA	0.14	0.47	0.47
LAC	2.85	3.37	3.37
OECD	0.14	0.47	0.47

Source: Author's simulation results

Table 8. The Impact of Improved Developing Country Trade Facilitation on Regional Export Volume: $US million (percentage change in italics)

Region	***Domestic***	***Domestic and Partne***	***Reforms***	
	Individual	**Individual**	**Simultaneous**	
	A	**B**	**C**	**B-C**
SSAfrica	1563	1958	-744	2702
	4.35	*5.45*	*-2.07*	
SAsia	9769	10389	8919	1470
	18.9	*20.1*	*17.26*	
EAsia	76110	86572	78646	7926
	10.55	*12*	*10.9*	
EECAsia	16600	18935	9823	9112
	13.15	*15*	*7.78*	
MENA	396	1305	-4958	6263
	0.5	*1.65*	*-6.27*	
LAC	8179	9679	3491	6188
	8.45	*10*	*3.61*	
OECD	2684	8982	-97107	106089
	0.07	*0.23*	*-2.48*	

Source: Authors simulation results

Table 9. The Impact of Improved Developing Country Trade Facilitation on Regional Incomes: $US million (percent change in parentheses)

Region	***Domestic*** **Individual** **A**	***Domestic and Partne Reforms*** **Individual** **B**	**Simultaneous** **C**	**B-C**
SSAfrica	639	803	1639	-836
	0.22	*0.28*	*0.57*	
SAsia	8632	9248	8453	795
	1.49	*1.59*	*1.46*	
EAsia	56842	65462	64317	1145
	2.81	*3.25*	*3.19*	
EECAsia	6369	7284	7939	-655
	1.36	*1.56*	*1.71*	
MENA	150	495	3484	-2989
	0.02	*0.07*	*0.47*	
LAC	4241	5035	6529	-1494
	0.35	*0.42*	*0.54*	
OECD	5616	18827	24411	-5584
	0.02	*0.08*	*0.11*	
Total	82489	107154	116772	-9618

Source: Author's simulation results