

## II. Exploring the impacts of trade liberalization in Asia and the Pacific

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### Introduction

While it is commonly accepted that multilateral liberalization will bring the greatest global gains from liberalization, regional agreements may be much more feasible in the short term. The dictum from the traditional trade theory on the superiority of unilaterally applied free trade for a small economy under perfect competition is universally accepted but rarely applied to policymaking. Reasons for this are many, ranging from using trade policy for non-economic objectives (e.g., employment), to circumstances in an actual economy and markets being different from those of the economic model (e.g., existence of economies of scale, imperfect competition or imperfect information). Nevertheless many countries have embraced the advantages of open trade regimes and have pursued liberal trade unilaterally or more often through membership in the multilateral trading system, the General Agreement on Tariffs and Trade (GATT) and the World Trade Organization (WTO). On the other hand, both trade theory and the international trading rules allow for the discriminatory trade policies in the forms of preferential or regional trade agreements.

In practice, of the economies in Asia and the Pacific that are members of WTO, only Mongolia does not belong to any preferential trade agreement, while most countries are implementing multiple agreements, often with same partners. This phenomenon of tangled relationships, created by multiple overlapping trading arrangements, is known as the “noodle bowl”. It increases the transaction and implementation costs of trade agreements, and adversely affects potential benefits to the members of the agreement.

A large body of literature already exists that explores the reason for proliferation and stylized evidence of the preferential trade agreements in Asia and the Pacific.<sup>1</sup> Major findings of that literature with regard to characteristics of the process and contents of agreements already in place in the region are that:

- (a) Most agreements are bilateral, with partners belonging to a different geographical regions, and only rarely do agreements link economies that share borders. Figure 1 reflects that 43 per cent of all BTAs in force are among members in different regions, and only 19 per cent are among the countries sharing the borders;
- (b) With respect to regional trade agreements (RTAs), the average number of partners is almost 8 per RTA. However, the only RTA in the Asian and Pacific region connects countries that belongs to different Asian subregions is the Asia-Pacific Trade Agreement (APTA) while only one comprises countries on different continents (Trans Pacific Strategic Economic Partnership). Ten RTAs overlap

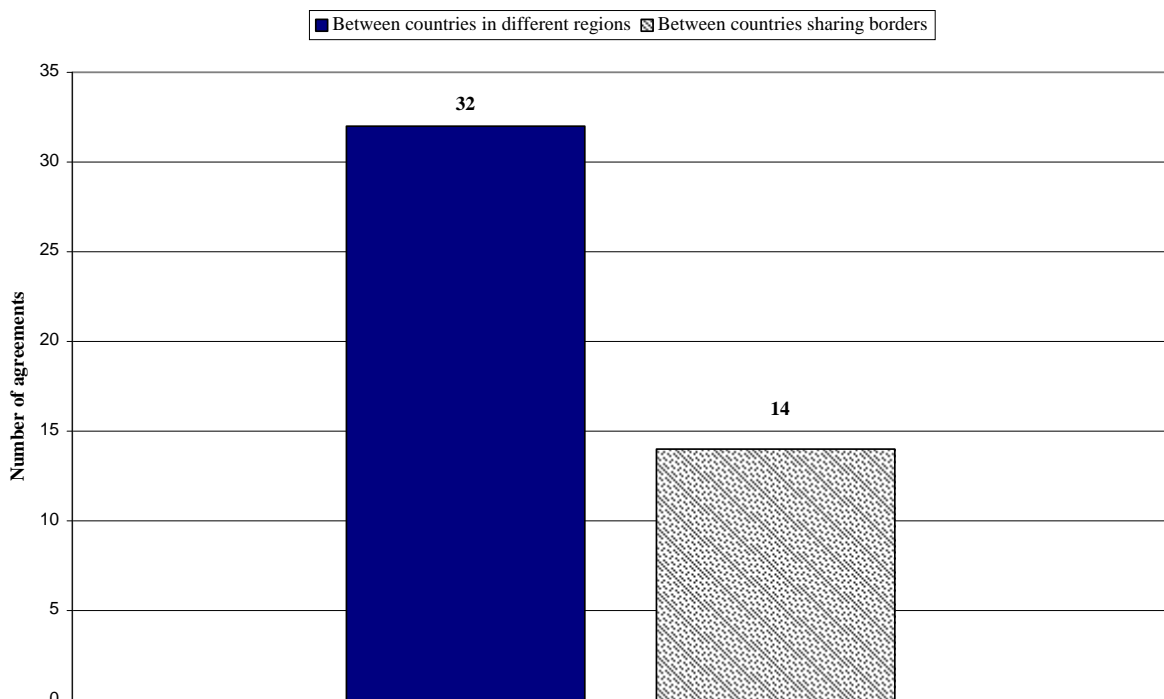
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<sup>1</sup> For example, see ESCAP, 2009, Asian Development Bank, 2008, and Bonapace and Mikic, 2007, and the references therein. Note also in this chapter that the terms “preferential trade agreements” and “regional trade agreements” are used interchangeably and as synonyms.

with the geographical subregions in Asia and the Pacific, for example, the South Asian Free Trade Agreement (SAFTA) for South Asia; the ASEAN Free Trade Area (AFTA) for South-East Asia; and the Pacific Island Country Trade Agreement (PICTA) for the Pacific Island States;

- (c) In many cases, agreements are shallow in coverage and they do not seriously cut the barriers in mutual trade. In many cases, agreements just list areas of possible concessions (e.g., non-tariff protectionism, WTO plus areas etc.) without really providing better market access or national treatment for the goods from partner countries. Instead, the shallow trade concessions are used as a kind of reward for countries accepting regional cooperation in non-trade or non-economic areas;
- (d) Often agreements focus on border measures, typically tariffs, allowing for “behind-the-border” measures to be maintained as well as obstructing potential beneficial effects of the agreement on the level of competition, transfer of technology, trade in services and development of the services sector, which are instrumental in increasing an economy’s overall efficiency (see table 1 for more details);
- (e) Only a few agreements specifically look into the issues of tariff revenue loss and suggest possible compensation for such loss;
- (f) Despite the Asian and Pacific region in general comprising relatively open economies, only a few RTAs explicitly mention the possibility of enlargement of the agreement.

**Figure 1. Bilateral trade agreements – not really between the neighbours**



Source: Asia-Pacific Trade and Investment Database (APTIAD), 2009

**Table 1. Trade agreements beyond the commitments in trade in goods**

| <i>RTA</i>                                | <i>NTMs</i> | <i>Investment</i>    | <i>Services</i>      | <i>Competition</i>   | <i>IPR</i> | <i>TF</i>            |
|---|-------------|----------------------|----------------------|----------------------|------------|----------------------|
| ASEAN-Australia-New Zealand FTA (AANZFTA) | ✓           | ✓                    | ✓                    | ***                  | ✓          | ✓                    |
| ANZCERTA <sup>1</sup>                     | ✓*          | -                    | ✓ Separate agreement | ✓ Separate agreement | -          | ✓ Separate agreement |
| APTA <sup>2</sup>                         | -           | In progress          | In progress          | -                    | -          | In progress          |
| ASEAN (AFTA) <sup>2</sup>                 | ✓           | ✓ Separate agreement | ✓ Separate agreement |                      | ✓          | ✓                    |
| ASEAN-China PTA <sup>2</sup>              | ***         | ***                  | ✓ Separate agreement | -                    | -***       | -                    |
| BIMSTEC-FTA                               | ***         | ***                  | ***                  | -                    | -          | ***                  |
| India-Singapore BTA <sup>1</sup>          | ✓           | ✓                    | ✓                    | ✓                    | -***       | ✓                    |
| PICTA                                     | ✓           | -                    | -                    | ✓                    | -          | ***                  |
| SAFTA                                     | -           | ***                  | -                    | ***                  | -          | ***                  |
| TRANS-PACIFIC SEP <sup>1</sup>            | ✓           | In progress          | ✓                    | ✓                    | ✓          | ✓                    |

Source: Compiled from APTIAD, September 2009

1: notified under GATT Art. XXIV (and under GATS Art.V where applicable)

2: notified under Enabling Clause

✓: commitments exist

-: no commitments exist

\*: limited to quantitative restrictions; standards covered with different arrangements

\*\*\*: expressed commitments to negotiate

\*\*\*: limited to one article in the Agreement and /or to cooperation

From the comparison of the features of Asia-Pacific regionalism with the accepted rule of thumb on policymaking on RTAs (Schiff and Winters, 2003), it can be seen that the Asia-Pacific approach to RTAs does not necessarily create the largest benefits to members; however, it is also true that it does not generate large losses for non-members.

To increase the benefits, policy actions would need to be taken to correct/manage the noodle bowl phenomenon; coverage of the type of barriers and use of trade concessions for non-trade objectives (i.e., to enhance regional cooperation in other areas etc.). In other words, existing trade agreements need to be merged and transformed into one under the common rules of origin. This consolidation process meets the strongest objections from many different stakeholders who may see RTAs as providing each one with an essential gain. Since this process of consolidation is a difficult political and legal process, it would be useful to better understand the benefits of an agreement that covers most of one huge geographical area. The European Union constitutes a living example of a consolidated RTA; however, since the

types of regional integration pursued by the European Union and, potentially, by the Asian and Pacific region are very different, it is not possible to directly use the European experience.

It is however possible to use a simple comparative static computable general equilibrium (CGE) model to simulate scenarios that are similar to the processes of consolidation/ integration in the real world. In this chapter, a global trade model is used to consider a range of alternative trade liberalization scenarios for Asia-Pacific economies. The implications for production, trade flows and welfare impacts of a complete and a shallow tariff-based liberalization are explored across the whole region (a form of disentangling the noodle bowl). Asia-Pacific liberalization scenarios are compared to the two processes of liberalization that are already evolving – the integration among the Association of Southeast Asian Nations plus 6 (ASEAN+6) countries<sup>2</sup> and WTO- Doha Development Agenda (DDA) driven liberalization.<sup>3</sup>

## A. Modelling framework and data

Economic modelling is undertaken using the Global Trade Analysis Project (GTAP) model and database.<sup>4</sup> This model is comparative static, with interactions between regions and sectors captured within a consistent framework (Hertel, 1997). The behaviour of private individuals, firms and governments, together with their responses to changing market conditions, are modelled. Consumers maximize welfare, subject to their budget limitations, while firms maximize profits using the limited resources available in the economy. When the various trade liberalization scenarios are simulated, changes in welfare, real GDP, trade flows, prices and output of commodities are all endogenously determined.<sup>5</sup>

The modelling is based on data from version 7 of the GTAP database, covering 113 countries/regions<sup>6</sup> and 57 sectors, with a base year of 2004 (Narayanan and Walmsley, 2008). The full database is aggregated to 24 sectors and 40 regions, with a particular focus on Asia-Pacific countries,<sup>7</sup> as detailed in annex tables 2 and 3. Regions and sectors are further aggregated for reporting results.

### 1. Baseline

The GTAP version 7 database has a benchmark year of 2004. However, before considering trade liberalization scenarios, the database is projected to 2010. To do this, assumptions are made about a small number of macroeconomic variables, following the innovative path commenced by Hertel and others (1996). In particular, exogenous projections

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<sup>2</sup> ASEAN comprises 10 members: Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam, and the "six" comprise Australia, China, India, Japan, New Zealand and Republic of Korea.

<sup>3</sup> Due to the need to keep this paper simple, the ASEAN+6 liberalization scenarios does not take into account the removal of barriers other than tariffs, and WTO-DDA is represented through a simple uniform tariff cut.

<sup>4</sup> See [www.gtap.agecon.purdue.edu](http://www.gtap.agecon.purdue.edu) for detailed information on the model and database.

<sup>5</sup> The model is solved using GEMPACK software (Harrison and Pearson, 1996), using the RunGTAP interface.

<sup>6</sup> The GTAP database uses term "region" for both a single economy and a group of economies for which no separate national data are available, or which are aggregated into a group for modelling purposes. For example, both India and rest of South Asia are called "regions". Therefore, in this paper "region" and country/economy are used as synonymous.

<sup>7</sup> In particular, those economies which are members of the Economic and Social Commission for Asia and the Pacific (ESCAP). More details on the membership are available from [www.unescap.org/about/member.asp](http://www.unescap.org/about/member.asp).

of each region's GDP growth, as well as endowments of population, skilled and unskilled labour, and physical capital are applied.<sup>8</sup> Annex table 3 provides details of the macroeconomic assumptions. Changes in the structure of production for each region are driven by growth encompassing differences in the relative rates of factor accumulation in combination with the relative factor intensities in each sector as well as price and income elasticities. While not intended to be a forecast of the global economy, the projection aims to give a better picture of how the structure of economies and the trade flows may look at the time of potential liberalization.

The 2010 baseline modelled here includes the removal of remaining Agreement on Textiles and Clothing quotas from the GTAP v7 database.<sup>9</sup> The average tariffs imposed and faced by each region are provided in annex tables 4 and 5, which give an indication of the sectors and regions where protection remains relatively high. Particularly high tariffs are found in the crops and other food sectors; for each of these sectors, average world tariffs are approximately 10 per cent. The textile, clothing and leather products sector also has relatively high average tariffs of approximately 8.5 per cent globally. While average global tariffs are lower for other sectors modelled, there can be significant variation at the regional level. For example, average motor vehicle tariffs are below 4 per cent; however, with the exception of Japan, Asian economies tend to impose substantial tariffs (see annex table 4).

## 2. Scenarios modelled

Four alternative liberalization scenarios are modelled here, including variations of south-south trade liberalization between Asia-Pacific economies, ASEAN+6 liberalization and multilateral WTO liberalization. These scenarios are designed to allow exploration of some of the potential gains from more or less inclusive preferential agreements for Asia-Pacific economies. The scenarios are summarized in Table and detailed below.

**Table 2. Summary of scenarios modelled**

| Name        | Details   |
|-------------|---|
| Scenario 1a | 25 per cent intra-Asia-Pacific tariff reductions  |
| Scenario 1b | 100 per cent intra-Asia-Pacific tariff reductions |
| Scenario 2  | 100 per cent intra-ASEAN+6 tariff reductions      |
| Scenario 3  | 25 per cent WTO tariff reductions                 |

### (a) *Scenario 1: Pan-Asia-Pacific liberalization*

In this first set of scenarios, we consider liberalization of South-South trade between Asia-Pacific economies. These liberalizations include all Asia-Pacific economies that are regional members of ESCAP (full details are provided in annex table 1). Two variations of this region-wide liberalization scenario are modelled here, the first with a 25 per cent

<sup>8</sup> Based on Walmsley, 2006. Updated macroeconomic projections were kindly provided by Terrie Walmsley, and augmented with additional data (World Bank, 2009).

<sup>9</sup> For further analysis of the ATC quotas that remain for China, see Whalley, 2008.

reduction in all intra-Asia-Pacific tariffs and the second with full removal of all intra-Asia-Pacific tariffs.

(b) *Scenario 2: ASEAN+6 liberalization*

The second scenario models ASEAN+6 liberalization. In particular, it models the full removal of intra-ASEAN+6 tariffs.

(c) *Scenario 3: Multilateral liberalization*

The third scenario models most-favour-nation (MFN) multilateral liberalization through a 25 per cent reduction in all tariffs between WTO member economies. (See annex table 1 for full inclusion details.)

## **B. Results and discussion**

The discussion of the results begins with a summary of aggregate output and welfare results, including decomposition of the key factors driving regional changes in welfare. It is followed by an analysis of impacts on regional exports, and examination of sectoral implications of the liberalization scenarios.

### **Aggregate output and welfare results**

All regions participating in the various liberalization scenarios are projected to experience increased real GDP, as indicated in figure 2. However, regions excluded from the trade liberalizing agreements are expected to suffer a reduction in their real GDP. For example, the United States and 27 members of the European Union (EU27) are not included in the above defined trade liberalization scenarios and Figure 2 indicates that as a consequence they experience reduced real GDP levels in these scenarios (scenario 1a, 1b and 2) but enjoy increased real GDP when included in the liberalization scheme (i.e., WTO liberalization in scenario 3).

Not surprisingly, regions included in the Asia-Pacific region-wide liberalization perform particularly strongly in terms of real GDP gains with full removal of intraregional tariffs. The more moderate 25 per cent tariff reduction naturally leads to smaller real output gains. Also considered is liberalization without including agriculture, broadly following the WTO non-agriculture market access sectors.<sup>10</sup> As the results tend to be similar in pattern to the liberalization of all products, they are not reported in detail here. However, it is notable that the impact of excluding agricultural products from the liberalization has a negative impact on the real output gains for all regions, and with particularly large proportional impacts on Japan, other high-income Asian countries as well as India. Since these are the countries with a particularly strong interest in maintaining protection for their agriculture sectors in the current DDA, it would be interesting to explore how broadly their negotiating position is discussed among all domestic stakeholders.

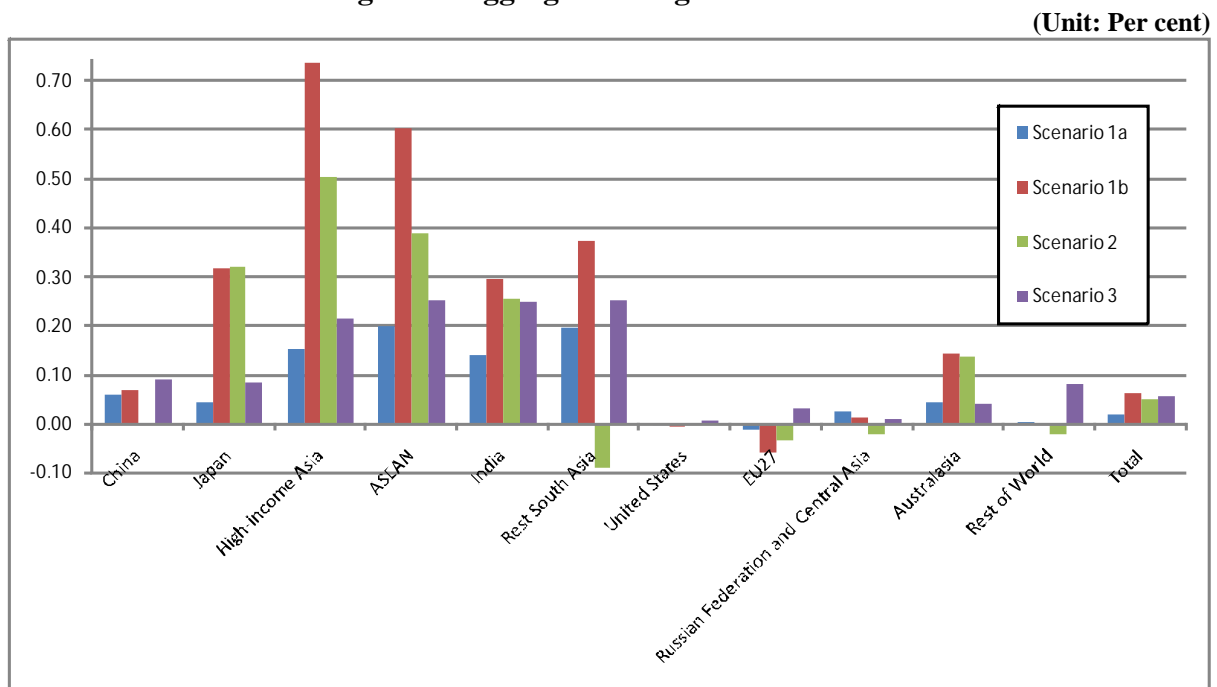
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<sup>10</sup> That is, products not covered by the Agreement on Agriculture, including manufacturing products, fuels and mining products, fish and forestry products (see [www.wto.org](http://www.wto.org)).

Scenario 2 generates relatively strong real output gains for all countries included in the liberalization. The exception to this is China, which gains much more from wider liberalization that includes all Asia-Pacific economies or WTO members. Notably, the second scenario is the only scenario that leads to aggregate output reductions for the “Rest of South Asia” region, since this is the only liberalization from which this region is excluded. The situation is similar for the Russian Federation and the Central Asia region.

With regard to the aggregate impacts on welfare<sup>11</sup> in Figure , the results are more diverse. This is primarily because welfare in this type of modelling is determined not only by improved allocative efficiency in use of resources, but also by changes in terms of trade for each region. In general, allocative efficiency is expected to improve with reductions in tariffs and other distortions, mirroring changes in real output for an economy. However, terms of trade reflect the price of a country’s exports relative to the price of its imports; these will inevitably deteriorate for some regions, thus contributing adverse impacts on welfare.

**Figure 2. Aggregate changes in real GDP**



<sup>11</sup> As measured by an equivalent variation in income (Hertel, 1997).

**Figure 3. Aggregate changes in welfare under each scenario**

(Unit: US\$ billion)

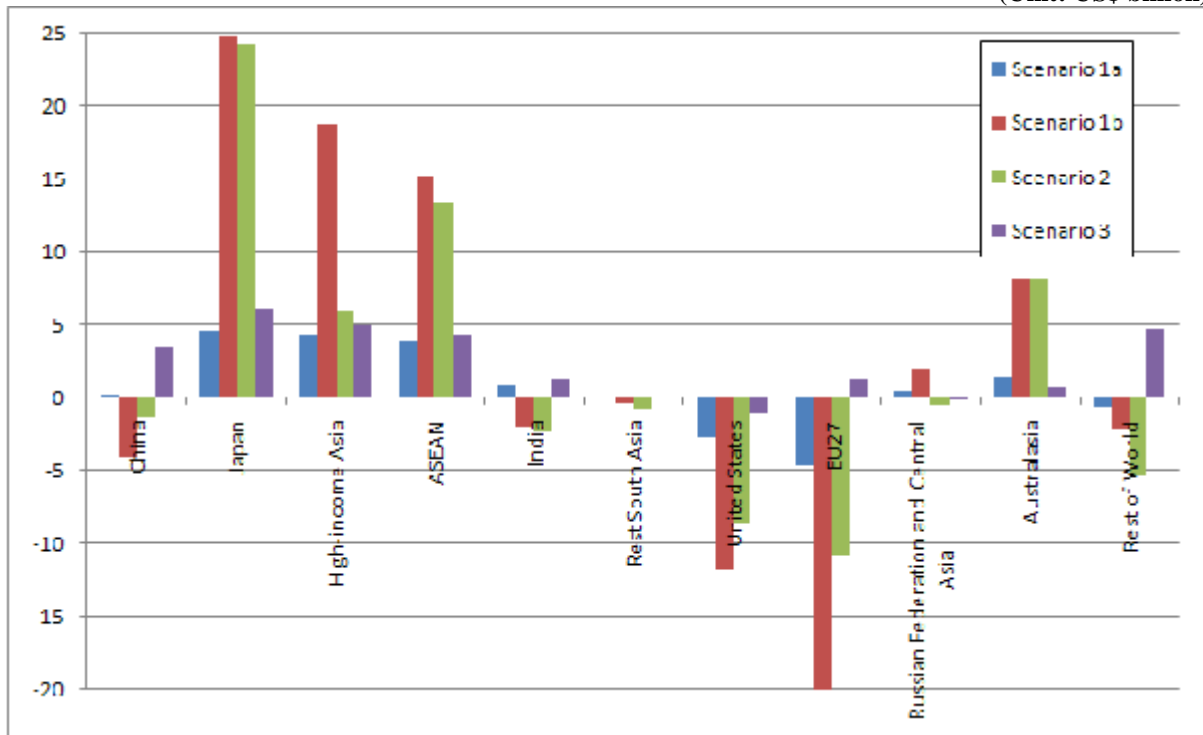


Table decomposes the contributions of allocative efficiency and terms of trade changes for each region. The table needs to be examined in order to understand the overall impacts summarized in Figure .



As noted above, the allocative efficiency effects – with resources tending to move to more efficient uses when distortions are reduced – mirror changes in real GDP. These effects are positive for all regions taking part in the various liberalization scenarios. However, terms of trade impacts may reinforce, dampen or even overturn these.<sup>12</sup> For example, the results for China indicate a small increase in welfare under the scenario that involves a 25 per cent reduction in intra-Asia-Pacific tariffs. However, under the scenario where tariffs are fully eliminated, the results suggest a reduction in welfare for China. The explanation, as indicated in Table , is that while allocative efficiency increases in each scenario, terms of trade deteriorate. In scenario 1a, the terms of trade effects dampen the increases in allocative efficiency, leading to small overall welfare increases. However, with the full elimination of intraregional tariffs in scenario 1b, the terms of trade impact is sufficiently strong to overturn the impact of increased allocative efficiency and increased real output.

Looking deeper into the terms of trade result reveals that the price index for China's exports declines by 0.15 per cent while the price index for imports increases by 0.56 per cent, leading to a worsening of the terms of trade. This worsening is primarily due to the electronics, other machinery and chemicals, rubber and plastics sectors. In particular, the price of imports for these products increases relatively strongly, harming China's terms of trade.

Figure indicates reductions in overall welfare for India in scenarios 1b and 2. Table 3 indicates that in this case again, it is the terms of trade overturning positive allocative efficiency impacts. In the full removal of intraregional tariffs scenario, the price index for India's exports reduces by 1.95 per cent, while the price index for imports increases by 0.23 per cent. Again, it is manufacturing sectors driving this negative terms of trade effect, however, in the case of India, export prices are the main problem, with India experiencing particularly strong declines in exports of manufactured products, including chemicals, rubber and plastics and the other manufactured product sector in this scenario.

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<sup>12</sup> Changes in the price of capital goods will also have an impact on welfare in the GTAP model; however, these effects have not been included in the decomposition since they do not generate strong insights in this comparative static framework.

**Table 3. Decomposition of welfare by region and scenario**(Unit: US\$ million <sup>a</sup>)

| Region                              | Welfare               | Scenario 1a | Scenario 1b | Scenario 2 | Scenario 3 |
|-------------------------------------|-----------------------|-------------|-------------|------------|------------|
| China                               | Total EV              | 270         | -4 024      | -1 334     | 3 495      |
|                                     | Allocative eff.       | 1 547       | 1 787       | 15         | 2 324      |
|                                     | Terms of trade        | -1 606      | -7 153      | -2 211     | 1 076      |
| Japan                               | Total EV              | 4 635       | 24 803      | 24 267     | 6 087      |
|                                     | Allocative eff.       | 2 060       | 15 716      | 15 742     | 4 075      |
|                                     | Terms of trade        | 2 962       | 10 449      | 9 929      | 2 345      |
| High-income Asia                    | Total EV              | 4 302       | 18 819      | 6 033      | 4 989      |
|                                     | Allocative eff.       | 2 070       | 9 937       | 6 810      | 2 883      |
|                                     | Terms of trade        | 2 717       | 10 974      | 314        | 2 614      |
| ASEAN                               | Total EV              | 3 899       | 15 277      | 13 461     | 4 258      |
|                                     | Allocative eff.       | 2 025       | 6 117       | 3 949      | 2 543      |
|                                     | Terms of trade        | 1 699       | 8 384       | 8 810      | 1 437      |
| India                               | Total EV              | 827         | -1 965      | -2 340     | 1 320      |
|                                     | Allocative eff.       | 1 320       | 2 771       | 2 404      | 2 332      |
|                                     | Terms of trade        | -413        | -4 030      | -3 972     | -785       |
| Rest of South Asia                  | Total EV              | 108         | -373        | -718       | 107        |
|                                     | Allocative eff.       | 454         | 864         | -210       | 586        |
|                                     | Terms of trade        | -150        | -221        | -347       | -160       |
| United States                       | Total EV              | -2 637      | -11 654     | -8 579     | -999       |
|                                     | Allocative eff.       | -166        | -649        | -595       | 754        |
|                                     | Terms of trade        | -2 206      | -9 708      | -7 046     | -1 504     |
| EU27                                | Total EV              | -4 598      | -19 986     | -10 780    | 1 401      |
|                                     | Allocative efficiency | -1 833      | -8 166      | -4 806     | 4 298      |
|                                     | Terms of trade        | -2 868      | -12 229     | -6 403     | -2 950     |
| Russian Federation and Central Asia | Total EV              | 535         | 1 976       | -507       | -68        |
|                                     | Allocative eff.       | 235         | 101         | -208       | 98         |
|                                     | Terms of trade        | 65          | 744         | -927       | -505       |
| Australasia                         | Total EV              | 1 413       | 8 159       | 8 153      | 742        |
|                                     | Allocative eff.       | 350         | 1 199       | 1 148      | 340        |
|                                     | Terms of trade        | 971         | 6 412       | 6 477      | 372        |
| Rest of the World (ROW)             | Total EV              | -585        | -2 239      | -5 421     | 4 796      |
|                                     | Allocative eff.       | 132         | -364        | -1 591     | 5 924      |
|                                     | Terms of trade        | -1 196      | -4 154      | -5 059     | -1 972     |
| Total                               | Total EV              | 8 169       | 28 792      | 22 235     | 26 129     |
|                                     | Allocative eff.       | 8 193       | 29 312      | 22 657     | 26 158     |
|                                     | Terms of trade        | -25         | -532        | -434       | -32        |

<sup>a</sup> Allocative efficiency and terms of trade effects do not sum up to the total change in equivalent variation (EV), due to changes in the price of capital goods (see footnote 12).

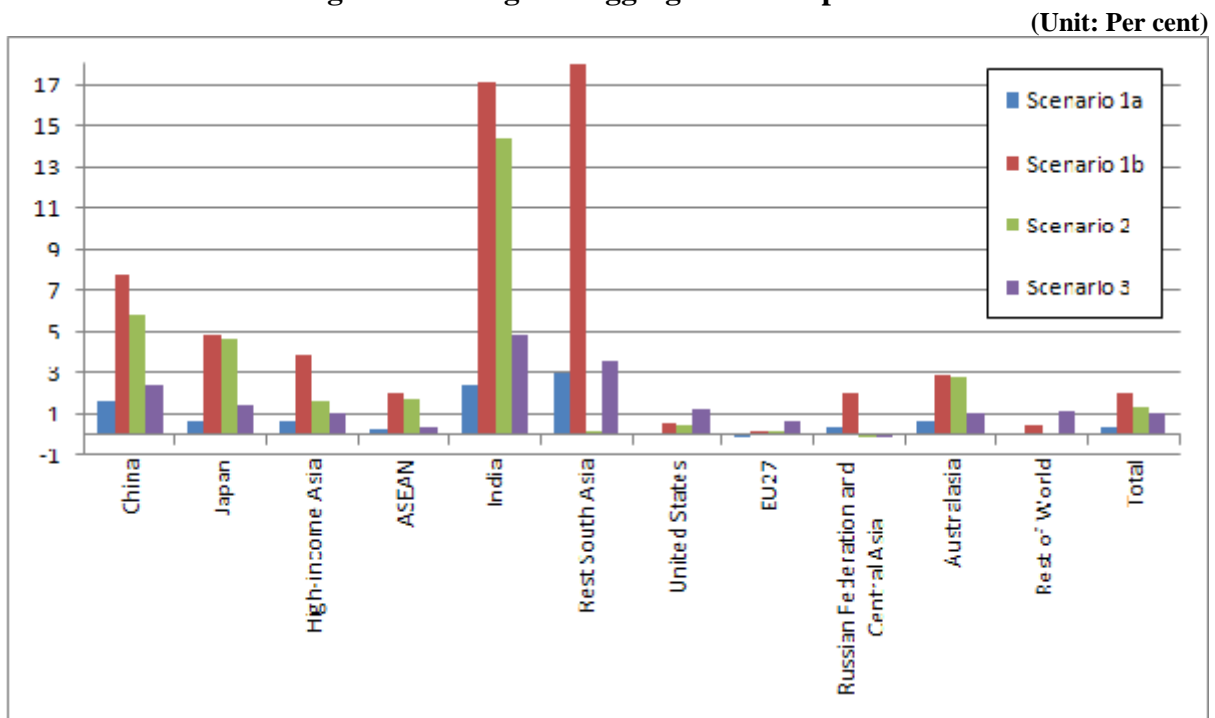
It is notable that the gains for many regions in Scenario 2 are similar to those in Scenario 1b. In particular, full removal of tariffs in ASEAN+6 alone is estimated to lead to US\$22billion in total world welfare gains. This indicates that over three quarters of the total welfare gains from full tariff removal could come from removal of tariffs within ASEAN+6

alone. For countries including Japan and Australasia, our results suggest the increased allocative efficiency and overall welfare gains from ASEAN+6 will be very similar to the increase from full Asia-Pacific tariff removal. However, for ASEAN+6 itself, only 65 per cent of the allocative efficiency gains available from full Asia-Pacific liberalization will come from removal of intra-ASEAN+6 tariffs. While for China, the allocative efficiency effects of Asia-Pacific liberalization are US\$1.8b, compared with less than US\$0.2b if only ASEAN+6 reduce tariffs. This is consistent with data presented in Figure , indicating less than 0.001 per cent increase in China’s real GDP with ASEAN+6, compared with 0.07 per cent increase if there is full Asia-Pacific liberalization.

### C. Impact on trade flows

Relatively strong increases in trade flows are projected for many regions under the various scenarios, as shown in Figure and Figure . Increases in both exports and imports are relatively strong in percentage terms for India and the Rest of South Asia. A significant part of the explanation for this is likely to lie in the relatively high tariffs imposed by these regions (see annex table 4). Once these are reduced or removed, there are relatively strong increases in imports and also exports.

**Figure 4. Changes in aggregate real exports<sup>13</sup>**

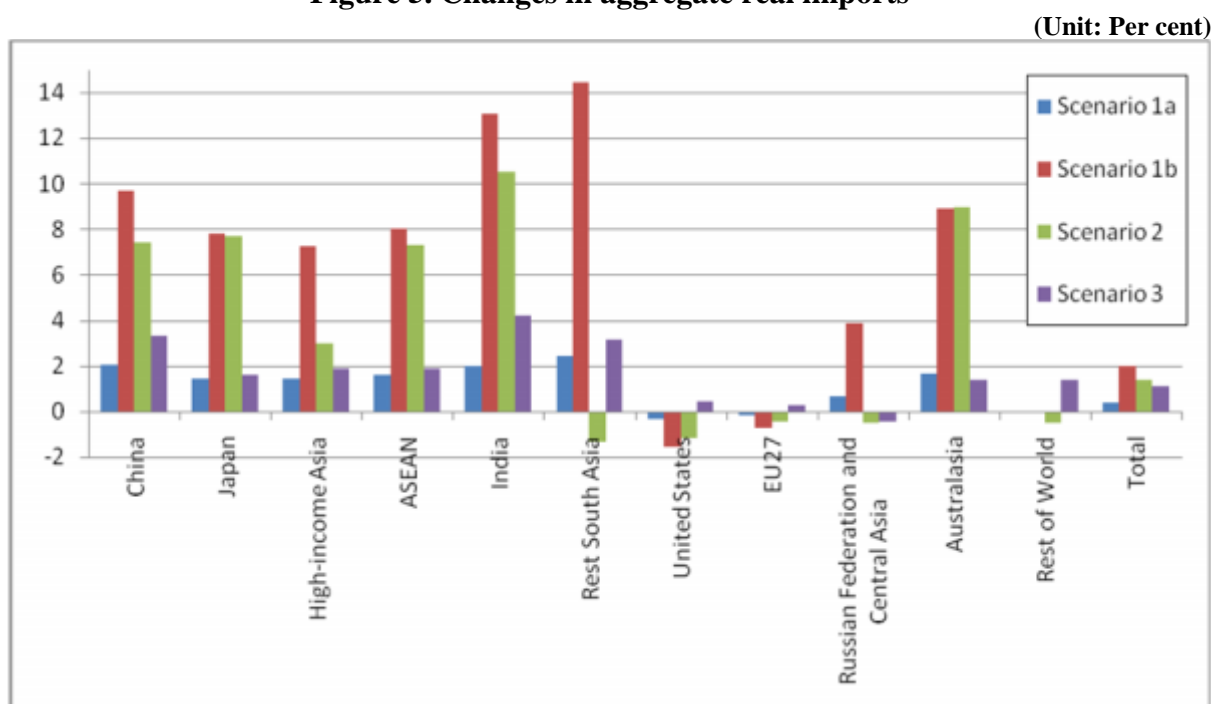


For most regions, the more ambitious the reform, the greater the increase in exports and imports. For example, the greatest increases for Asia-Pacific as a whole come from scenario 1b, which includes full removal of tariffs in the region. These increases for most regions are much greater than the increased trade arising from liberalization within the smaller ASEAN+6 grouping in scenario 2. However, for Australasia there are only slightly more exports, and similar changes in imports, when scenario 1b is compared to scenario 2.

<sup>13</sup> This includes transportation margins and results may therefore differ slightly from the totals in tables 3 and 4.

The results for Australasia, which includes Australia and New Zealand, tend to be dominated by Australia as the larger country. The largest increase in imports comes from China (US\$ 5.5 billion under scenario 1b, but US\$ 5.8 billion under scenario 2). The largest increase in exports is to India (US\$ 13.8 billion under scenario 1b, but US\$ 15.5 billion under scenario 2). Looking further into these increased exports to India reveals that exports from the extraction sector are US\$ 1.1 billion higher and metals US\$ 500 million higher under the ASEAN+6 scenario than under the pan-Asia-Pacific scenario. This is due to the preferential access that Australia has under ASEAN+6 rather than under ESCAP. Indeed, other ASEAN+6 countries also increase extractive product exports to India more than under pan-Asia-Pacific liberalization. However, the Islamic Republic of Iran is excluded from ASEAN+6, and it exports US\$ 5.2 billion fewer extraction sector products to India under the ASEAN+6 scenario than it does under the region-wide tariff removal scenario.

**Figure 5. Changes in aggregate real imports**



World exports under scenario 3 grow by 1.04 per cent, i.e., more than three times what the growth under scenario 1a, implying that the same 25 per cent reduction in tariffs leads to significantly higher levels of world trade under MFN liberalization than if only Asia-Pacific countries liberalize. However, for Asia-Pacific countries, total exports grow by almost 1 per cent under scenario 1a compared with 1.4 per cent under scenario 3. Therefore, more than two-thirds of the export growth expected under MFN liberalization may be achieved when Asia-Pacific countries alone reduce tariffs by the same amount intraregionally.<sup>14</sup>

<sup>14</sup> A further unreported simulation reducing intra-ASEAN tariffs by 25 per cent suggests that this alone would increase world exports by 0.24 per cent and intra-Asia-Pacific exports by 0.62 per cent.

**Table 4. Changes in intraregional exports**

|             |              | (Unit: Per cent) |      |         |       |
|-------------|--------------|------------------|------|---------|-------|
| To          | From         | Asia-Pacific     | WTO  | ASEAN+6 | Total |
| Scenario 1a | Asia-Pacific | 3.57             | 0.83 | 3.52    | 0.97  |
|             | WTO          | 1.52             | 0.32 | 1.69    | 0.33  |
|             | ASEAN+6      | 3.77             | 0.89 | 3.75    | 1.04  |
|             | Total        | 1.57             | 0.33 | 1.71    | 0.34  |
| Scenario 1b | Asia-Pacific | 17.69            | 4.72 | 17.29   | 5.39  |
|             | WTO          | 7.86             | 1.79 | 8.55    | 1.86  |
|             | ASEAN+6      | 18.55            | 5.03 | 18.28   | 5.78  |
|             | Total        | 8.08             | 1.82 | 8.68    | 1.90  |
| Scenario 2  | Asia-Pacific | 11.67            | 3.75 | 15.49   | 3.62  |
|             | WTO          | 5.84             | 1.44 | 7.90    | 1.39  |
|             | ASEAN+6      | 15.73            | 5.03 | 20.91   | 4.87  |
|             | Total        | 5.60             | 1.39 | 7.61    | 1.34  |
| Scenario 3  | Asia-Pacific | 1.69             | 1.46 | 1.98    | 1.40  |
|             | WTO          | 2.23             | 1.12 | 2.62    | 1.09  |
|             | ASEAN+6      | 1.91             | 1.73 | 2.23    | 1.67  |
|             | Total        | 2.09             | 1.08 | 2.48    | 1.04  |

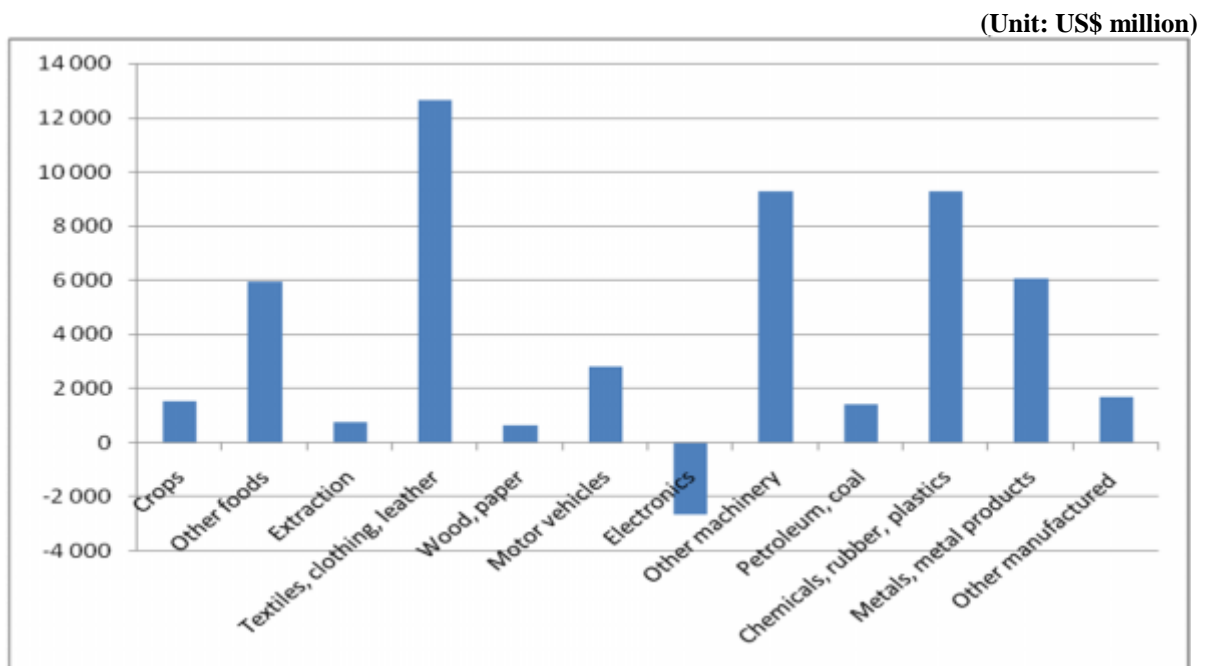
## D. Sectoral impacts

This section examines the impact of liberalization on specific sectors in terms of trade flows and outputs. Table decomposes the aggregate data presented in table 4 to show the impacts by sector for each region under the scenarios modelled. As shown, looking only at the overall change in exports may mask significant changes at the sectoral level. Looking at the final row of results for each scenario, it can be seen that world exports of textiles and clothing, crops and other foods tend to experience a relatively high impact under most scenarios. This is perhaps not surprising, given that these sectors currently face the highest average tariffs. Average tariffs are more than 9.5 per cent for the crops and foods sector, and 8.5 per cent for the textile, clothing and leather products sector, compared with average tariffs across all sectors of approximately 3 per cent (see annex table 4).

Turning to focus specifically on sectoral export results for Asian and Pacific countries, again the crop, other foods and textiles, clothing and leather sectors tend to experience particularly strong percentage increases. For example, under scenario 1a, exports of crops from Asia-Pacific are projected to increase by 3.2 per cent, other foods by 5 per cent, and textiles, clothing and leather by 2.8 per cent. These increases are much greater under scenario 2b, with full removal of pan-Asia-Pacific tariffs. However, as indicated in Figure , while the largest percentage increase in exports is for the other foods sector, the greatest value increase occurs in the much larger textile, leather and wearing apparel sector (and more than half of the projected US\$ 12.6 billion increase in exports is due to textiles alone). Other large manufacturing sectors, including other machinery, chemicals, rubber and plastics as well as metals and metal products also experience larger increases in export value than do the smaller agricultural and food sectors. Large countries such as China are particularly

important in determining overall export results. For example, more than 40 per cent of the increase in pan-Asia-Pacific textile, clothing and leather exports, more than 30 per cent of the other machinery exports and approximately 20 per cent of region's increase in exports of chemicals, rubber and plastics together with metals and metal products are due to China. Also notable is that while Asia-Pacific regional exports of electronics are projected to reduce by approximately US\$ 2.6 billion, exports of this sector from China are expected to increase by US\$ 3.8 billion under scenario 1a. However, reduced exports from ASEAN, Japan and other high-income Asian countries fall significantly, leading to the overall decline in exports from this sector for Asian and the Pacific countries.

**Figure 6. Change in Asia-Pacific exports, scenario 1a**



**Table 5. Changes in sectoral exports**

(Unit: Per cent)

| Scenario    | Region       | Crops | Other foods | Extracts | Textiles, clothing, leather | Wood, paper | Motor vehicles | Electronics | Other mach. | Petroleum, coal products | Chemicals, rubber, plastics | Metals, metal products | Other manuf. products | Total* |
|-------------|--------------|-------|-------------|----------|-----------------------------|-------------|----------------|-------------|-------------|--------------------------|-----------------------------|------------------------|-----------------------|--------|
| Scenario 1a | Asia-Pacific | 3.18  | 4.98        | 0.21     | 2.76                        | 0.72        | 1.23           | -0.29       | 1.61        | 1.59                     | 2.48                        | 1.99                   | 0.74                  | 0.97   |
|             | WTO          | 0.35  | 0.74        | 0.13     | 1.39                        | 0.19        | 0.21           | 0.04        | 0.50        | 0.34                     | 0.47                        | 0.45                   | 0.27                  | 0.33   |
|             | ASEAN+6      | 3.58  | 5.27        | 0.73     | 2.41                        | 0.50        | 1.15           | 0.03        | 1.40        | 2.23                     | 2.18                        | 2.06                   | 0.65                  | 1.04   |
|             | World        | 0.38  | 0.76        | 0.09     | 1.41                        | 0.19        | 0.21           | 0.04        | 0.50        | 0.36                     | 0.49                        | 0.54                   | 0.28                  | 0.34   |
| Scenario 1b | Asia-Pacific | 40.62 | 33.14       | 1.87     | 13.71                       | 3.24        | 7.80           | -1.58       | 7.41        | 7.13                     | 11.20                       | 8.94                   | 5.26                  | 5.39   |
|             | WTO          | 6.88  | 5.10        | 0.94     | 7.31                        | 0.94        | 1.38           | 0.05        | 2.29        | 1.58                     | 2.20                        | 2.11                   | 1.73                  | 1.86   |
|             | ASEAN+6      | 44.10 | 33.23       | 5.79     | 12.22                       | 2.12        | 7.44           | -0.27       | 6.58        | 9.88                     | 9.92                        | 9.12                   | 4.82                  | 5.78   |
|             | World        | 6.95  | 5.44        | 0.71     | 7.42                        | 0.94        | 1.39           | 0.06        | 2.33        | 1.65                     | 2.32                        | 2.53                   | 1.69                  | 1.90   |
| Scenario 2  | Asia-Pacific | 29.06 | 23.39       | 1.99     | 7.82                        | 1.01        | 4.30           | -0.21       | 4.57        | 4.80                     | 6.83                        | 5.23                   | 2.69                  | 3.62   |
|             | WTO          | 5.43  | 4.06        | 0.76     | 4.44                        | 0.56        | 1.02           | 0.44        | 1.60        | 1.48                     | 1.56                        | 1.69                   | 1.12                  | 1.39   |
|             | ASEAN+6      | 41.14 | 28.78       | 5.62     | 11.12                       | 1.09        | 4.85           | -0.76       | 5.64        | 9.17                     | 9.88                        | 7.87                   | 2.96                  | 4.87   |
|             | World        | 5.28  | 3.95        | 0.66     | 4.42                        | 0.54        | 1.01           | 0.44        | 1.59        | 1.20                     | 1.50                        | 1.56                   | 1.10                  | 1.34   |
| Scenario 3  | Asia-Pacific | 2.38  | 4.02        | 0.53     | 5.80                        | 0.33        | 2.72           | 0.01        | 1.40        | 1.16                     | 2.25                        | 1.61                   | 1.98                  | 1.40   |
|             | WTO          | 2.08  | 3.32        | 0.41     | 3.72                        | 0.81        | 0.94           | 0.31        | 1.26        | 1.29                     | 1.23                        | 1.48                   | 1.24                  | 1.09   |
|             | ASEAN+6      | 3.21  | 4.40        | 1.02     | 5.92                        | 0.19        | 2.77           | 0.38        | 1.29        | 2.27                     | 2.33                        | 2.04                   | 1.88                  | 1.67   |
|             | World        | 1.94  | 3.20        | 0.38     | 3.68                        | 0.78        | 0.93           | 0.30        | 1.24        | 1.05                     | 1.18                        | 1.34                   | 1.22                  | 1.04   |

\* Including services.

**Table 6. Changes in output**

(Unit: Per cent)

| Scenario    | Region       | Crops | Other foods | Extracts | Textiles, clothing, leather | Wood, paper | Motor vehicles | Electronics | Other mach. | Petroleum, coal products | Chemicals, rubber, plastics | Metals, metal products | Other manuf. products | Total* |
|-------------|--------------|-------|-------------|----------|-----------------------------|-------------|----------------|-------------|-------------|--------------------------|-----------------------------|------------------------|-----------------------|--------|
| Scenario 1a | Asia-Pacific | -0.30 | 0.10        | -0.05    | 0.36                        | -0.13       | 0.07           | -0.28       | 0.09        | 0.13                     | 0.08                        | 0.15                   | 0.00                  | 0.03   |
|             | WTO          | -0.19 | -0.01       | -0.01    | 0.03                        | -0.02       | 0.01           | 0.07        | 0.03        | 0.03                     | -0.03                       | 0.01                   | 0.02                  | 0.01   |
|             | ASEAN+6      | -0.33 | 0.13        | -0.07    | 0.15                        | -0.15       | 0.12           | -0.04       | -0.01       | 0.09                     | -0.08                       | 0.08                   | 0.03                  | 0.03   |
|             | World        | -0.19 | -0.01       | -0.01    | 0.00                        | -0.02       | 0.00           | 0.06        | 0.03        | 0.03                     | -0.02                       | 0.03                   | 0.01                  | 0.01   |
| Scenario 1b | Asia-Pacific | -3.90 | 1.09        | -0.11    | 2.00                        | -0.53       | 0.93           | -1.31       | 0.49        | 0.60                     | 0.46                        | 0.79                   | 0.26                  | 0.14   |
|             | WTO          | -2.30 | 0.07        | 0.01     | 0.35                        | -0.06       | 0.17           | 0.29        | 0.16        | 0.12                     | -0.07                       | 0.13                   | 0.14                  | 0.03   |
|             | ASEAN+6      | -4.53 | 1.28        | -0.18    | 1.10                        | -0.61       | 1.18           | -0.32       | 0.09        | 0.41                     | -0.27                       | 0.50                   | 0.42                  | 0.11   |
|             | World        | -2.21 | 0.09        | 0.01     | 0.24                        | -0.07       | 0.12           | 0.27        | 0.14        | 0.13                     | -0.05                       | 0.22                   | 0.07                  | 0.03   |
| Scenario 2  | Asia-Pacific | -3.65 | 0.84        | -0.07    | 1.07                        | -0.50       | 0.07           | -0.41       | 0.00        | 0.25                     | -0.01                       | 0.41                   | 0.05                  | 0.05   |
|             | WTO          | -2.06 | 0.12        | -0.03    | 0.22                        | -0.05       | 0.04           | 0.29        | 0.04        | 0.09                     | -0.07                       | 0.13                   | 0.07                  | 0.02   |
|             | ASEAN+6      | -4.42 | 1.12        | -0.13    | 2.04                        | -0.62       | 0.10           | -0.86       | 0.07        | 0.59                     | 0.38                        | 0.44                   | 0.01                  | 0.08   |
|             | World        | -1.99 | 0.11        | -0.02    | 0.22                        | -0.05       | 0.05           | 0.29        | 0.04        | 0.06                     | -0.09                       | 0.12                   | 0.07                  | 0.01   |
| Scenario 3  | Asia-Pacific | -0.53 | -0.25       | -0.09    | 2.10                        | -0.28       | 0.44           | -0.10       | -0.33       | 0.00                     | -0.23                       | -0.16                  | 0.25                  | 0.04   |
|             | WTO          | -0.37 | -0.04       | -0.03    | 0.23                        | -0.03       | 0.04           | 0.07        | 0.03        | 0.06                     | -0.04                       | 0.01                   | 0.03                  | 0.01   |
|             | ASEAN+6      | -0.56 | -0.26       | -0.17    | 2.03                        | -0.31       | 0.50           | 0.15        | -0.46       | 0.02                     | -0.36                       | -0.21                  | 0.23                  | 0.04   |
|             | World        | -0.37 | -0.05       | -0.02    | 0.22                        | -0.03       | 0.04           | 0.07        | 0.03        | 0.04                     | -0.04                       | 0.00                   | 0.02                  | 0.01   |

\* Including services.



Changes in sectoral output will also result from the trade liberalization scenarios modelled. It may be surprising to see that sectors such as crops are projected to decline in output in each scenario, despite significant projected increases in exports. However, it must be remembered that in the presence of fixed factor endowments for an economy, as large sectors expand they will draw resources from other resources. Therefore, while exports by the crop sector are expanding, the size of the sector is generally small relative to the large manufacturing sectors that are increasing exports by a smaller percentage but greater value. It must also be remembered that imports of crops are increasing for most regions, given the reduction in the relatively high tariffs in this industry.

## **E. Conclusion**

This chapter examines a range of possible trade liberalization scenarios involving Asian and Pacific region countries. Broader reforms do lead to larger overall gains (although with varying results for individual countries); however, a significant proportion of gains from multilateral reform appear to be possible from comprehensive regional liberalization. Focusing on a broad and comprehensive regional agreement may therefore be a useful way forward; such an agreement should, however, be carefully constructed to contribute a path that can later lead to the comprehensive multilateral liberalization that will bring the greatest long-term global gains.

## Annex

**Annex table 1. Regional aggregation**

| Aggregated regions                  | Country/area/region                      | Description  |
|-------------------------------------|--|--|
| China                               | <sup>a</sup> China                       | China  |
| Japan                               | <sup>a</sup> Japan                       | Japan  |
| High-income Asia                    | <sup>a</sup> Hong Kong, China            | Hong Kong, China   |
|                                     | <sup>a</sup> Taiwan Province of China    | Taiwan Province of China                                     |
|                                     | <sup>a</sup> Republic of Korea           | Republic of Korea  |
| ASEAN                               | <sup>a</sup> Cambodia                    | Cambodia   |
|                                     | <sup>a</sup> Indonesia                   | Indonesia  |
|                                     | <sup>a, b</sup> Lao PDR                  | Lao PDR  |
|                                     | <sup>a</sup> Malaysia                    | Malaysia   |
|                                     | <sup>a</sup> Myanmar                     | Myanmar  |
|                                     | <sup>a</sup> Philippines                 | Philippines  |
|                                     | <sup>a</sup> Singapore                   | Singapore  |
|                                     | <sup>a</sup> Thailand                    | Thailand   |
|                                     | <sup>a</sup> Viet Nam                    | Viet Nam   |
|                                     | <sup>a</sup> Rest of South-East Asia     | Brunei Darussalam, Timor-Leste                               |
| India                               | <sup>a</sup> India                       | India  |
| Rest South Asia                     | <sup>a</sup> Bangladesh                  | Bangladesh   |
|                                     | <sup>a</sup> Pakistan                    | Pakistan   |
|                                     | <sup>a</sup> Sri Lanka                   | Sri Lanka  |
|                                     | <sup>a</sup> Rest of South Asia          | Afghanistan, Bhutan, Maldives, Nepal                         |
| United States                       | United States                            | United States  |
| EU_27                               | European Union_27                        | European Union 27 members                                    |
| Russian Federation and Central Asia | <sup>a, b</sup> Russian Federation       | Russian Federation   |
|                                     | <sup>a, b</sup> Kazakhstan               | Kazakhstan   |
|                                     | <sup>a</sup> Kyrgyzstan                  | Kyrgyzstan   |
|                                     | <sup>a</sup> Armenia                     | Armenia  |
|                                     | <sup>a, b</sup> Azerbaijan               | Azerbaijan   |
|                                     | <sup>a</sup> Georgia                     | Georgia  |
|                                     | <sup>a, b</sup> Rest of FSU              | Tajikistan, Turkmenistan, Uzbekistan                         |
| Australasia                         | <sup>a</sup> Australia                   | Australia  |
|                                     | <sup>a</sup> New Zealand                 | New Zealand  |
| ROW                                 | Rest of Europe                           | Rest of Europe   |
|                                     | Rest of North America                    | Rest of North America  |
|                                     | Latin America                            | Latin America  |
|                                     | <sup>a</sup> Rest of East Asia           | Mongolia, Democratic People's Rep. of Korea and Macau, China |
|                                     | <sup>a</sup> Oceania                     | Rest of Oceania  |
|                                     | <sup>a, b</sup> Islamic Republic of Iran | Islamic Republic of Iran                                     |

|                     |                              |
|---------------------|------------------------------|
| <sup>a</sup> Turkey | Turkey                       |
| MENA                | Middle East and North Africa |
| SSA                 | Sub-Saharan Africa           |

<sup>a</sup> Included in Asia-Pacific liberalization scenarios. (Regions with ESCAP members are generally included; however, the United States and European ESCAP members are excluded).

<sup>b</sup> Not included in WTO.

## Annex table 2. Sectoral aggregation

| Aggregated sectors             | Sector                      | Description                             |
|--------------------------------|-----------------------------|---|
| Crops                          | Rice                        | Paddy and processed rice                |
|                                | Wheat                       | Wheat                                   |
|                                | Grains, crops               | Grains and crops                        |
| Other foods                    | Meat, livestock             | Livestock and meat products             |
|                                | Processed food              | Processed food                          |
| Extraction                     | Extraction                  | Mining and extraction                   |
|                                | Forestry, fisheries         | Forestry and fisheries                  |
| Textiles and clothing          | Textiles                    | Textiles                                |
|                                | Wearing apparel             | Wearing apparel                         |
|                                | Leather products            | Leather products                        |
| Wood and paper products        | Wood, paper products        | Wood and paper products                 |
| Motor vehicles                 | Motor vehicles              | Motor vehicles and parts                |
| Electronics                    | Electronics                 | Electronic equipment                    |
| Other machinery                | Other machinery             | Other machinery                         |
| Petroleum and coal products    | Petrol, coal products       | Petroleum, coal products                |
| Chemicals, rubber and plastics | Chemicals, rubber, plastics | Chemicals, rubber, plastic products     |
| Metals and metal products      | Metals                      | Metals                                  |
|                                | Metal products              | Metal products                          |
| Other manufac. products        | Other manufacturing         | Other manufacturing                     |
| Services                       | Utilities (services)        | Utilities                               |
|                                | Construction (services)     | Construction                            |
|                                | TransComm (services)        | Transport and communication             |
|                                | BusinessSvs (services)      | Financial, insurance, business services |
|                                | HsEdHealth (services)       | Housing, health, education, recreation  |

**Annex table 3. Cumulative changes in real GDP, labour and capital, 2004-2010****(Unit: Per cent)**

|                                     | <b>GDP</b> | <b>Population</b> | <b>Unskilled<br/>Labour</b> | <b>Skilled<br/>Labour</b> | <b>Capital</b> |
|-------------------------------------|------------|-------------------|-----------------------------|---------------------------|----------------|
| Australasia                         | 17.1       | 6.6               | 8.9                         | 6.1                       | 26.1           |
| China                               | 83.1       | 3.7               | 5.9                         | 24.9                      | 75.8           |
| Japan                               | 12.2       | -0.5              | 1.7                         | -3.6                      | 18.0           |
| High-income Asia                    | 35.5       | 3.1               | 4.7                         | 16.7                      | 35.8           |
| ASEAN                               | 40.8       | 7.6               | 10.2                        | 34.5                      | 30.2           |
| India                               | 65.5       | 7.9               | 10.4                        | 31.4                      | 44.7           |
| Rest of South Asia                  | 44.4       | 12.1              | 16.0                        | 29.6                      | 33.2           |
| United States                       | 15.4       | 5.1               | 8.2                         | 6.7                       | 28.1           |
| EU_27                               | 13.6       | 0.0               | 1.6                         | 1.7                       | 17.4           |
| Russian Federation and Central Asia | 49.7       | -1.9              | 0.6                         | 3.8                       | 25.3           |
| ROW                                 | 28.0       | 10.2              | 10.2                        | 21.4                      | 23.3           |

*Sources:* Walmsley, 2006 and update, and World Bank 2009.

**Annex table 4. Average tariffs imposed, trade weighted**

(Unit: Per cent)

| Sector                         | China | Japan | High-income Asia | ASEAN | India | Rest South Asia | United States | EU27 | Russian Federation and Central Asia | Australasia | Rest of the World | Total |
|--------------------------------|-------|-------|------------------|-------|-------|-----------------|---------------|------|-------------------------------------|-------------|-------------------|-------|
| Crops                          | 3.1   | 29.5  | 30.5             | 9.7   | 32.6  | 11.0            | 3.3           | 5.8  | 5.4                                 | 0.4         | 10.9              | 9.6   |
| Other foods                    | 10.6  | 22.4  | 16.8             | 14.2  | 75.9  | 23.3            | 4.8           | 4.1  | 12.0                                | 2.5         | 15.2              | 10.0  |
| Extraction                     | 0.4   | 0.1   | 4.1              | 0.6   | 11.5  | 7.4             | 0.2           | 0.1  | 0.5                                 | 0.0         | 1.5               | 1.4   |
| Textiles, clothing and leather | 13.1  | 9.2   | 5.2              | 12.8  | 15.8  | 16.0            | 9.6           | 4.5  | 14.9                                | 14.4        | 11.8              | 8.5   |
| Wood and paper products        | 4.2   | 1.0   | 2.2              | 6.8   | 13.2  | 15.9            | 0.2           | 0.1  | 9.9                                 | 2.9         | 5.0               | 2.0   |
| Motor vehicles                 | 22.9  | 0.0   | 14.8             | 22.2  | 24.2  | 40.6            | 1.1           | 1.1  | 11.9                                | 8.2         | 6.4               | 3.9   |
| Electronics                    | 2.0   | 0.0   | 0.6              | 1.1   | 2.6   | 12.2            | 0.3           | 0.9  | 6.9                                 | 0.8         | 3.6               | 1.3   |
| Other machinery                | 7.0   | 0.1   | 3.7              | 3.8   | 14.1  | 11.4            | 1.0           | 0.5  | 5.8                                 | 3.2         | 4.7               | 2.9   |
| Petroleum and coal products    | 6.5   | 2.0   | 3.7              | 5.0   | 11.8  | 18.8            | 1.4           | 0.6  | 2.7                                 | 0.5         | 6.3               | 3.7   |
| Chemicals, rubber and plastics | 9.8   | 0.9   | 3.9              | 4.5   | 14.4  | 12.1            | 1.4           | 0.5  | 8.2                                 | 2.7         | 4.3               | 3.0   |
| Metals and metal products      | 5.1   | 0.6   | 2.5              | 5.0   | 15.8  | 12.4            | 1.0           | 0.4  | 6.6                                 | 2.9         | 4.5               | 2.9   |
| Other manufactured products    | 7.9   | 0.5   | 3.1              | 4.4   | 12.7  | 13.7            | 1.3           | 0.8  | 10.6                                | 2.2         | 5.3               | 2.9   |
| Services                       | 0.0   | 0.0   | 0.0              | 0.0   | 0.0   | 0.0             | 0.0           | 0.0  | 0.0                                 | 0.0         | 0.0               | 0.0   |
| Total                          | 5.3   | 3.0   | 3.7              | 4.1   | 12.6  | 12.6            | 1.6           | 1.0  | 6.5                                 | 3.1         | 5.0               | 3.0   |

Source: Baseline 2010 GTAP database.

**Annex table 5. Average tariffs faced, trade-weighted**

(Unit: Per cent)

| Sector                         | China | Japan | High-income Asia | ASEAN | India | Rest South Asia | United States | EU27 | Russian Federation and Central Asia | Australasia | Rest of the World | Total |
|--------------------------------|-------|-------|------------------|-------|-------|-----------------|---------------|------|-------------------------------------|-------------|-------------------|-------|
| Crops                          | 30.4  | 11.4  | 8.7              | 19.0  | 12.4  | 17.0            | 11.4          | 3.5  | 5.7                                 | 11.3        | 9.1               | 9.6   |
| Other foods                    | 12.5  | 15.9  | 16.0             | 15.9  | 8.4   | 12.0            | 15.9          | 5.3  | 8.0                                 | 17.3        | 12.9              | 10.0  |
| Extraction                     | 2.6   | 4.1   | 3.6              | 1.3   | 0.8   | 3.6             | 1.4           | 2.5  | 0.4                                 | 2.1         | 1.5               | 1.4   |
| Textiles, clothing and leather | 11.2  | 12.4  | 13.1             | 9.1   | 8.5   | 5.8             | 6.0           | 3.5  | 5.1                                 | 7.6         | 5.3               | 8.5   |
| Wood and paper products        | 2.3   | 4.8   | 5.5              | 3.3   | 5.5   | 6.6             | 1.9           | 1.7  | 2.5                                 | 2.6         | 1.4               | 2.0   |
| Motor vehicles                 | 4.6   | 10.4  | 10.7             | 7.5   | 9.4   | 7.0             | 2.8           | 2.3  | 4.7                                 | 5.4         | 1.8               | 3.9   |
| Electronics                    | 1.6   | 2.1   | 1.3              | 1.0   | 3.7   | 2.5             | 1.0           | 1.1  | 2.9                                 | 1.9         | 1.0               | 1.3   |
| Other machinery                | 3.7   | 4.3   | 5.7              | 3.2   | 3.9   | 4.3             | 2.5           | 2.2  | 3.1                                 | 3.0         | 1.9               | 2.9   |
| Petroleum and coal products    | 4.5   | 4.7   | 4.9              | 4.6   | 5.5   | 4.7             | 3.8           | 2.4  | 4.6                                 | 2.8         | 3.8               | 3.7   |
| Chemicals, rubber and plastics | 4.7   | 5.5   | 7.3              | 5.1   | 5.1   | 4.5             | 3.3           | 1.6  | 3.9                                 | 3.6         | 2.8               | 3.0   |
| Metals and metal products      | 4.3   | 5.2   | 5.0              | 3.1   | 4.9   | 7.4             | 2.1           | 1.7  | 2.8                                 | 4.8         | 2.8               | 2.9   |
| Other manufactured products    | 4.7   | 5.8   | 5.3              | 3.7   | 2.0   | 4.9             | 1.9           | 2.0  | 1.9                                 | 2.8         | 2.3               | 2.9   |
| Services                       | 0.0   | 0.0   | 0.0              | 0.0   | 0.0   | 0.0             | 0.0           | 0.0  | 0.0                                 | 0.0         | 0.0               | 0.0   |
| Total                          | 5.3   | 5.2   | 4.4              | 3.7   | 4.3   | 5.5             | 2.7           | 1.8  | 1.6                                 | 5.6         | 2.7               | 3.0   |

Source: Baseline 2010 GTAP database.

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