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A Free Trade Area of the Asia Pacific (FTAAP): Is It Desirable?*

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ABSTRACT

This paper evaluates whether the proposed FTAAP is a desirable policy option for APEC member economies and the world economy. More specifically, this paper quantitatively investigates whether the FTAAP satisfies conditions for a trade bloc to generate positive and sufficient net trade creation effect. In addition, this paper estimates the likely impact of the FTAAP by using a CGE model analysis. Based on statistical data analysis, this paper strongly argues that the FTAAP can be a desirable regional trade bloc able to generate positive gains from freer trade. From the ex-ante scenario analysis using both static and capital accumulation CGE Models, this paper concludes that the FTAAP has great potential for improving welfare of participating APEC economies and will boost economic growth in the region. In particular, the FTAAP would be even better if it can be linked with liberalization of trade in services and enhanced trade facilitation.

Keywords: Regional Trade Agreement (RTA), APEC, FTAAP, Computable General Equilibrium (CGE), Trade in Services, Trade Facilitation

JEL Classification: F13, F15

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I. INTRODUCTION

Since its inception in 1989, the Asia-Pacific Economic Cooperation (APEC) has long strived to nurture the initially fledgling vision of building the Asia-Pacific economic community to maturity under the principle of ‘open regionalism.’ However, with its 20th anniversary, APEC appears to be adrift in the midst of formidable challenges that demand major changes and reforms. Among others, challenges posed by the organization’s unique characteristics, suffused with dynamism and diversity, is worth further examination. While the growing interdependence in the region as a result of economic dynamism heightened the need for the APEC to strengthen regional economic integration; the organization’s very diversity is, in effect, has led to a heterogeneity of economic interests and political stances that makes it very difficult to construct a proper architecture for the region as a whole.

Regional trade agreements (RTAs) currently proliferating around the world, especially, in the East Asia region,¹ have made APEC consider the preferential liberalization approach as an attractive policy alternative. More specifically, considering (i) the sluggish pace of negotiation for multilateral trade and investment liberalization under the WTO’s DDA (Doha Development Agenda) round, (ii) the failure of the APEC’s EVSL (Early Voluntary Sectoral Liberalization), (iii) the slow progress of the Bogor Goals, (iv) the loss of vitality of APEC economic activities after the East Asian financial crisis of 1997, (v) the spaghetti bowl phenomenon² expected from a complicated web of overlapping RTAs in the Asia-Pacific region, (vi) deepening interdependence among APEC member economies, and (vii) strong positive welfare effects expected from RTAs;³ the revival and the promotion of the regional economic dynamism became top priority of APEC.

Consequently, on the recognition of the potential negative impact caused by overlapping regional trade agreements, APEC has recently began searching for comprehensive and high-

¹ For proliferating RTAs in East Asia, see JETRO (2003), Lu (2003), Kawai (2004), Feridhanusetyawan (2005), Lee and Park (2005), Park (2006), Kawai and Wignaraja (2008), and ADB (2008).

² See Bhagwati, Greenaway, and Panagariya (1998) and Panagariya (1999) for the spaghetti bowl phenomenon caused by overlapping RTAs.

³ See Scollay and Gilbert (2000), Scollay (2004, 2005, 2007), ABAC (2006), APEC (2007), Bergsten (2007), and Park (2008) for the economic effects of an RTA in APEC.

level RTAs in order to supplement Bogor Goals through a harmonized integration of small-scale regional free trade agreements in the region. For this purpose, the establishment of a Free Trade Area of the Asia Pacific (FTAAP) is now being discussed with a long term perspective among APEC member economies as one of possible options to deepen regional economic integration.

Under these circumstances, this paper attempts to provide an economic implication of an FTAAP as a catalyst to promote APEC's vision of creating a single, unified economic community. In order to serve this purpose, we endeavor (i) to examine a more concrete rationale for APEC member economies discussing a possible FTAAP by assessing conditions for a desirable FTAAP and (ii) to analyze the economic impacts of an FTAAP.

More specifically, we test whether the FTAAP satisfies necessary conditions for a trade bloc to generate positive and sufficient net trade creation effect by calculating trade-related indices representing market size, geographical proximity, tariff structure, trade volume, competitiveness, complementarity, and development level of member and nonmember economies. Moreover, to provide policy makers with a more realistic and practical forecast, the benefits linked to the core FTA chapters (liberalization for trade in goods) are analyzed in addition to the economic impact of trade facilitation and reduction of barriers in service trade by adopting both static and capital accumulation CGE models.

The paper is organized as follows. Section II characterizes briefly the existing RTAs in the APEC region, outlines conditions for a trade bloc to generate significant and sufficient net trade creation effects of RTAs, and evaluates whether the FTAAP satisfies these conditions. Section III proposes feasible policy options for member economies to consider as scenarios. Section IV describes data used and model specified, and summarizes simulation results estimated for both welfare and growth effect of the FTAAP. Section V concludes this research.

II. REGIONAL ECONOMIC INTEGRATION AND FTAAP

1. Regional Economic Integration in the APEC Region

The APEC's stance on multilateralism has been deeply influenced by the proliferating

RTAs around the world, and especially in the Asia-Pacific region. Both intra- and inter-regional trade agreements are proliferating in the Asia-Pacific region as shown in Table 1. As of May 2010, 40 RTAs have been implemented, 3 RTAs have been signed, and more than two dozen RTAs are being negotiated or considered by APEC member economies.

There are some distinguishing characteristics that we may derive from RTAs between APEC member economies. First, the trend of regional economic cooperation between APEC members is a relatively new one. Most of the East Asian members of APEC, especially countries in Northeast Asia (China, Japan, Korea, and Chinese Taipei), have been known to prefer nondiscriminatory multilateral liberalization efforts rather than a discriminatory regional liberalization policy. However, after realizing the importance of regional economic cooperation from the East Asian financial crisis of 1997, the Northeast Asian members have changed their policy stance from favoring a global approach to favoring a regional approach. As in Table 1, among the 43 RTAs implemented or signed, 38 RTAs have been implemented after the crisis. Second, most RTAs in the Asia-Pacific region have taken a form of bilateral negotiation similar to the world-wide trend of seeking a lower and easier negotiation cost even though the gains from resulting freer trade are limited. Third, there has been no distinction between intra- and inter-regional partnerships. Recent innovations in information and communication technology have significantly saved transaction costs and made geographical distance relatively less important. As Bergsten (2007) emphasizes, it can be a very important to avoid the risk of ‘drawing a line down the middle of the Pacific’. Fourth, considering the partnership issue of RTAs again, most sub-regional RTAs within APEC have created a complicated web of hub-and-spoke type of overlapping RTAs which may result in a spaghetti bowl phenomenon. In particular, ASEAN, Singapore, and Chile have been very aggressive in their pursuit to become a hub. Fifth, progress has been slow in taking an expansionary path of RTAs, which may trigger a domino effect of regionalism.⁴

As a response to the world-wide movement towards RTAs; and carefully considering the stalled multilateral DDA negotiations under the WTO, limitations of the unilateral approach under the Bogor Goals, and expected gains from the regional approach; APEC has decided to study the possibility of implementing the best RTAs since the leaders’ meeting in Santiago,

⁴ See Baldwin (1993) for the domino effect of regionalism.

Chile, in 2004. Since then, APEC has been examining the feasibility and desirability of an FTAAP as a long-term prospect for both APEC economies and the world economy.

Acknowledging that the successful completion of WTO/DDA negotiations is the primary policy option to be pursued, Hatakeyama (2007), Stoler (2007), and Brilliant (2008) initiated by Bergsten (2007), argue that the FTAAP would be the best available insurance policy. In particular, Bergsten (2007) highlights that the FTAAP will (i) create positive and sufficient gains from free trade induced by the largest single trade bloc, (ii) become a stepping stone towards global free trade by inducing the WTO and excluded nonmembers like EU to resume the multilateral DDA negotiations, (iii) become the best available “Plan B” alternative to the DDA,⁵ (iv) prevent competitive liberalizations in the Asia-Pacific region and mitigate the negative effects⁶ of the proliferating hub-and-spoke type of overlapping RTAs by consolidating the sub-regional trade blocs into a large umbrella, (v) revitalize APEC, (vi) ameliorate the China-US economic conflict, caused mainly by trade imbalance between the two nations, and (vii) maintain US engagement in Asia.

2. Conditions for a Desirable FTAAP

Will the proposed FTAAP be a desirable RTA for APEC economies and the world economy as a whole? In order to be a ‘good’ RTA, the RTA should create a significant and sufficient positive welfare (trade creation) effect on all participating member countries and on the world as a whole, which will provide an incentive for RTAs to aim for a nondiscriminatory global free trade area. Otherwise, the RTA could easily stall and be ineffective as time passes. In addition to positive gains to members and the world economy, the negative welfare (trade diversion) effect on nonmembers should be minimized or avoided. That is, the RTA would be more desirable provided that the Pareto efficiency holds.⁷

⁵ The DDA negotiations in Geneva in July 2008 had been failed to agree on a package deal for multilateral liberalization under the WTO.

⁶ See Kawai (2007) and Park (2006) for the problems caused by the overlapping RTAs.

⁷ The Pareto efficiency is achieved when no further Pareto improvements is possible. The Pareto improvement refers to resource reallocation that can make someone better off without making someone else worse off. We may evaluate the Pareto improvement for member economies (economies participating in the FTAAP) and nonmember economies

How can we maximize the trade creation effect and minimize the trade diversion effect? In order to answer the question, we outline following conditions that need to be fulfilled.⁸

- ① Market size of the union: larger the better
- ② Pre-union intra-regional tariff: higher the better
- ③ Pre-union extra-regional tariff: lower the better
- ④ Pre-union intra-regional trade volume: deeper the better
- ⑤ Competitive pre-union industrial structure: tougher the better
- ⑥ Complementary post-union industrial structure: stronger the better
- ⑦ Pre-union level of economic development gap: narrower the better
- ⑧ Geographical proximity: closer the better

Overall, APEC economies satisfy most of the conditions for the positive welfare effects expected. Table 2 figures key economic indicators of APEC economies to be used for evaluating the above-mentioned conditions required for measuring the welfare effect of an RTA. The consolidated market size (40% of the world population and 53% of the world GDP) is large enough to create a positive trade creation effect. The pre-union tariff structure is a controversial factor but a relatively higher deviation of tariffs among APEC member economies and lower tariff rates of the APEC economies (5.0% and 6.4%) than that of the world as a whole (7.1% and 9.8%) may guarantee significant net trade creation effect as APEC successfully launches its regional trade bloc. As shown in Table 3, the strong interdependence among APEC member economies in terms of intra-regional trade share of

(economies excluded from the FTAAP). The APEC's basic principle of the open regionalism has been designed to achieve the Pareto efficiency by avoiding the harmful effect of the discriminatory regional trade liberalization on nonmember economies.

⁸ Salvatore (2007) lists some critical factors that maximize the trade creation effect and minimize the trade diversion effect of customs unions. Larger union size, higher pre-union tariff structure between members, lower pre-union tariff structure between members and nonmembers, higher pre-union intra-regional trade, greater substitutability of production structures between members and nonmembers, and geographical proximity will all create larger trade gains. See Lee and Park (2005) and Park, Park, and Estrada (2008) for more detailed information about the conditions.

over 65% is the most promising factor in expecting a large trade creation effect.

Considering the large number of membership (21 nations) in FTAAP, we know that the pre-union industrial structure of the potential members is competitive and may expect significant efficiency gains from the regional free trade. In addition, Table 4 estimates the complementarity index of 14 APEC economies. It takes a value between 0 and 100, with 0 indicating no overlap and 100 indicating perfect overlap. The simple averaged complementarity index of APEC is 53.7, a figure not excessively high or low. We may also expect a significant net trade creation effect from economies of scale after the establishment of a single market in the APEC region.

By contrast, the expected welfare effect of the last two conditions will not be positive due to the diversity in the level of economic development among the 21 APEC member economies. Relatively larger number of membership covering wider areas in APEC may lead to higher cost of transaction. The welfare effect of the FTAAP on individual member economy will depend on the membership combination, and the overall effect on APEC as a whole will be heavily affected by the bilateral combination of membership. Thus it may not be possible to evaluate the welfare effect without a rigorous method of quantifying the likely effect of an RTA in APEC. We need to adopt economic modeling methodologies such as an ex-ante computable general equilibrium (CGE) simulation analysis.

III. FEASIBLE SCENARIOS FOR THE BEST PRACTICED FTAAP

The welfare effect of the FTAAP on an individual member economy and APEC as a whole will depend on not only the economic linkages of the members analyzed in Section II but also the scope of the agreement. Following scopes are necessary conditions for the FTAAP to be a comprehensive and high-quality RTA. The selected conditions as scenarios will be quantitatively investigated in the following chapter with static and capital accumulation CGE models.

First, a desirable RTA should include some essential elements for deeper integration. As summarized in Elek (2005, p. 99), desirable RTAs in APEC should satisfy the following contents: WTO-plus approach, comprehensive in scope by liberalization of all sectors and minimization of any phase-out periods for sensitive products, compatible with multilateral

liberalization, simple rules of origin (RoO), transparency, and openness. Soesastro (2003) also emphasizes open accession; MFN based multilateral liberalization approach, and harmonization of RoO. In particular, Plummer (2007) proposes the 'Ten Commandments' of the best practice FTAs; such as comprehensive coverage within a reasonable period of time, low and symmetrical RoO, progress in trade facilitation such as customs procedures, intellectual property protection, nondiscriminatory foreign direct investment-related provisions, transparent anti-dumping procedures and dispute resolution, open and nondiscriminatory government procurement, competition policy, and low and standardized technical barriers to trade.

Second, because this research is an empirical investigation of the likely impact of the FTAAP, the selected conditions for the deeper integration of desirable RTAs should be quantitatively evaluated. Thus, some of the above-mentioned conditions will be excluded because they are not suitable for specification into a CGE model for quantitative analysis.

Third, fully feasible scenarios should be envisioned. As mentioned earlier, better ways for promoting the FTAAP can be addressed, including support for small-scale regional free trade agreements in the Asia-Pacific region compatible with WTO's multilateralism and accommodating APEC's fundamental principles such as open regionalism and non-binding voluntarism.

In this light, trade liberalization through tariff reduction or elimination in trade of goods needs to be prioritized for implementation of comprehensive and specific measures. The quantitative analysis on the liberalization of trade in services is another aspect of interest in addressing the increasing importance of the industry. Considering APEC's ongoing efforts to reduce trade cost, combined effect of trade liberalization through traditional tariff reduction and trade facilitation is strongly suggested as a test scenario. In sum, the following three elements of a desirable and feasible RTA are introduced for deeper integration in APEC.

1. Comprehensive Application of Tariff Elimination in Goods Trade

According to the Gravity model estimation with fixed effects by Park and Park (2009a), positive trade-enhancing effect is expected when GATT Article XXIV⁹ is strictly applied, which can be observed. It was found that RTAs under GATT Article XXIV create more intra-bloc trade (8.2%) and divert less extra-bloc trade (-8.1%) than RTAs in general (3.5% and -11.6%, respectively). The trade creation effect under the Enabling Clause is negative (-7.1%), and trade diversion effect is somewhat stronger (-8.6%) than that under GATT Article XXIV.¹⁰ In accordance with the outcomes, it is strongly suggested that FTAAP should be promoted across the all tradable sectors.

2. Liberalization of Trade in Services

With innovations in telecommunication and information technology, deregulations in public sectors, liberalization of capital flows, and facilitation of services trade through proliferating FTAs; more non-tradable services have become tradable. The world's total amount of trade in services increased 10 times from 387 billion US\$ in 1980 to 3,730 billion US\$ in 2008. In addition, the proportion of services trade shows sluggish increase from 16.0% in 1980 to 18.8% in 2008. The proportion of service industry in total GDP of some of the developed economies has increased as well. In particular, in recognition of the fact that the service industry is believed to play a key role in producing final consumption goods and in enhancing productivity in manufacturing industry for intermediate goods, the liberalization of services trade is expected to create enormous economic welfare effect through the overall enhancement of productivity.

Brown, et al (1996) estimates the effects of services trade liberalization in Uruguay Round by using the multi-economy Michigan CGE model. Dee and Hanslow (2001) quantify the effects of eliminating all post-Uruguay trade barriers and find that there are still considerable gains from trade liberalization in agriculture and manufacturing, but larger gains would come from trade liberalization in services. In particular, Konan and Maskus (2006)

⁹ The most important requirements stipulated in GATT Article XXIV are that members (i) do not raise external trade barriers against nonmembers and (ii) eliminate duties and other restrictive regulations of commerce with respect to 'substantially all trade' within a reasonable length of time.

¹⁰ Park and Park (2009a).

compare the impacts of goods versus services liberalization in a developing economy. Employing a CGE model, they show that trade liberalization in goods yields a modest gain in aggregate welfare, while reducing service barriers generate relatively large welfare gains. These results imply the potential importance of services liberalization for economic development. Park and Park (2009b) also estimate the impact of RTAs under General Agreement on Trade in Services (GATS) Article V on intra- and extra-bloc membership by using a gravity regression analysis. They find that the intra-bloc membership experiences a 20.8 percent increase in imported services and induces significant cumulative effects on trade in service.

3. Enhancing Trade Facilitation

Trade facilitation improves the welfare of importing economies by narrowing the gap between the world market price and domestic price of imported goods, leading to an increase in the volume of world trade. As Kim et al. (2006) mentioned, APEC has chosen TILF (Trade and Investment Liberalization and Facilitation) and ECOTECH (Economic and Technical Cooperation) as core cooperation measures, and improved the environment for trade facilitation to achieve sustainable expansion of market in the Asia-Pacific region, contributing to the establishment of the infrastructure for its sustainable development and increasing economic welfare in the region. Analysis on economic effects from the trade-facilitating efforts as a supplementary measure for trade liberalization and from improvements in the trade facilitation in conformity with the APEC's open regionalism, are required. The welfare effects of enhanced trade facilitation on APEC member economies by Kim et al. (2006) are estimated as significantly positive, which is comparable to that of the tariff-reducing trade liberalization.

4. Feasible Scenarios for the FTAAP

Considering the above-mentioned necessary scopes to be tested for a desirable FTAAP by applying a CGE model estimation in Section IV, this research establishes the following 3 scenarios.

A. Scenario I: Basic Scenario for Trade Liberalization through Tariff Elimination

B. Scenario II: (I) + Liberalization of Trade in Services

C. Scenario III: (II) + Trade Facilitation

A. Scenario I: Basic Scenario for Trade Liberalization through Tariff Elimination

APEC (2005) assessed that average applied tariffs of APEC economies have been reduced significantly since APEC's inception, from 16.9 percent in 1989 to 5.5 per cent in 2004. It also reports that almost half of all APEC economies' tariff lines are at less than 5 percent, and tariffs on many goods are now set at zero or negligible levels. As tariffs decreased, the focus of free trade agreements diversified. If an FTAAP is defined as a comprehensive and high-quality, large scale FTA in this analytical exercise, it is reasonable to assume a full elimination of tariffs in trading goods. That is, in order to analyze the effects of FTAAP on the economies of members and nonmembers in general as a reference value, it is assumed that the FTAAP member economies in the Asia-Pacific region join the free trade area and completely eliminate tariffs in agricultural and manufacturing sectors with no excluded sectors.

B. Scenario II: (I) + Liberalization of Trade in Services

Recent FTAs adopt comprehensive clauses including investment, service, intellectual property, competition, government procurement, and E-commerce that go beyond the scope of traditional FTAs. Accordingly, in addition to Scenario I, we assume that the FTAAP member economies liberalize trade in services by reducing the tariff-equivalent barrier (see Table 5) by 10 percent in construction, distribution, transportation and telecommunication, and business and financial service.¹¹ The tariff-equivalent barrier in the service sectors of this

¹¹ Trade liberalization in services can be applied in principle to all services sectors. However, in reality, there are some services that are provided at non-market conditions. Article I (3) of the General Agreement on Trade in Services (GATS) excludes "services supplied in the exercise of governmental authority". Thus, the public service sector has been excluded.

research are adopted from Hoekman (1995).¹²

C. Scenario III: (II) + Trade Facilitation

In addition to Scenario II, enhanced trade facilitation is addressed by saving five percent of trade costs, for example, in four areas of trade facilitation¹³ among the FTAAP member economies.

IV. MEASURING THE IMPACT OF FTAAP

1. CGE Model

A. Static and Capital Accumulation CGE Models

In order to provide a quantitative assessment on the effects of an FTAAP on both member and nonmember economies, the following two CGE models have been adopted. The first is the standard CGE model, in which the gains from trade liberalization stem mainly from the increased efficiency of resource allocation. It refers to the static CGE model. In particular, the Global Trade Analysis Project (GTAP) model, which has been extensively used in existing literature to examine a wide variety of trade policy issues, has been employed. The GTAP model is based on assumptions such as constant returns to scale, perfect competition and a global bank designed to mediate between world savings and investment. The Constant Difference of Elasticities (CDE) consumer demand system is designed to identify the differential prices and income responsiveness across economies.¹⁴

The second model is designed to capture not only the static effects, but also the capital accumulation effects. It refers to the capital accumulation CGE model. This model takes into

¹² As Hoekman (1995) does not supply information on trade barriers of Vietnam, this research replaces the trade barriers of Vietnam with the trade barriers of Indonesia.

¹³ Based on the APEC's Shanghai Accord in 2001, the four areas of trade facilitation are customs procedures, standard and conformity, business mobility, and electronic commerce.

¹⁴ See Hertel (1997) about the structure of the GTAP model.

account for the positive relationship between trade, investment and growth (so called trade-induced investment-led growth) that is fairly well-established in a number of empirical studies. The standard GTAP model has been modified in order to identify medium-run growth effects of trade liberalization. Baldwin (1989, 1992) suggests that the static efficiency gains induce higher savings and investment, which in turn yield more output. Francois et al. (1999) present a useful approach capturing the capital accumulation effects of trade liberalization in the context of the neoclassical growth model. Following Francois et al. (1999) it is assumed that economies are initially in a steady state even though it is not realistic. Under this assumption, the magnitudes of changes in the capital stock and output can be obtained by comparing them in two steady states. The relationship between capital stock (K) and investment (I) is given:

$$K = \frac{I}{\delta} \tag{1}$$

where δ is the depreciation rate.

Incorporating the equation (1) into the CGE model gives a description of the relationship between capital stock and investment, and controls the closure according to the equation (1) so that the change in capital stock and investment converge. That is, this second CGE model is constructed to take into account possible changes in capital formation that may be generated by an FTAAP.

B. Specification for Trade in Services

An FTAAP is expected to be the comprehensive agreement, which involves not only bilateral liberalization and facilitation of trade in agricultural and manufactured goods through reduction of tariff and non-tariff barriers, but also liberalization of trade in services, establishment of an investment agreement, increased collaboration on intellectual property and so on. In particular, there is now greater recognition of the fact that liberalization of trade in services will be beneficial, as we have mentioned earlier.

In order to capture the effects of trade liberalization in services, the methods of Hertel et

al. (2000) and Anderson et al. (2000) have been used. Brown et al. (1996) suggested a modeling method that constructs the base data to include the tariff equivalents. In this model, trade liberalization in services generates tariff revenue; although, in reality, there are no tariffs. Hertel et al. (2000) and Anderson et al. (2000) assume instead that barriers to trade in services reduce the actual volume of service trade that can be delivered at a given cost. In contrast, trade liberalization in services leads to the increase of the amount of services and reduction of price of imported services in the domestic market. These effects can be captured by introducing a services import-augmenting component into the CGE model.

C. Specification for Trade Facilitation

To estimate the effects of trade facilitation, the standard CGE model has been modified to adopt the simple “iceberg” model of trading costs, introduced by Samuelson (1954). Some units of the good “melt” in transit, which can be thought of as a cost of trading that good. Then, an effective price of the good i imported from economy r at domestic prices is introduced in destination economy s : P_{irs}^* . This is associated with the observed price, P_{irs} , as following:

$$P_{irs}^* = \frac{P_{irs}}{A_{irs}} \quad (2)$$

where A_{irs} reflects the trade facilitation costs for the good i . An increase in A_{irs} by enhanced trade facilitation means a fall in the effective price of the good i imported from r to s , thus encouraging an expansion of imports. To ensure a balanced data set, a quantity adjustment equation is required. Similar to the definition of the effective price, the adjusted effective quantity is as follows.

$$Q_{irs}^* = Q_{irs} \cdot A_{irs} \quad (3)$$

Incorporating equations (2) and (3) into the standard CGE model, the effects of trade facilitation, which reduces trade costs, can be estimated.

2. Data

The world economy is organized into 15 sectors, 19 APEC economies and 2 regions (EU, ROW) hereafter for the CGE model analysis (All of the above are listed in Table 6). Social accounting data are based on the GTAP version 7 database. Initial protection data are representative of the world as of 2004. Among APEC member economies, relevant data set for Brunei Darussalam and Papua New Guinea are missing. Thus, the two member economies are excluded from this study.

As the importance of services in global trade increases, economists have recently begun to pay more attention to this issue. However, it is not easy to analyze the effects of liberalization of the services industry because of the relative lack of information and the lack of availability of cross-economy data on trade barriers. Impediments to trade in services do not take the form of import tariffs, but rather of a complex variety of quantitative restrictions, prohibitions and regulations. Quantitative restrictions may control the number of foreign providers or limit their market share. For this reason, it is very difficult to obtain systematic information on trade barriers in the service industry. Given the absence of detailed data on trade barriers, a CGE approach is not applicable to assess the impact of services trade.

In such circumstances, economists rely on indirect methods. There have been several attempts to measure trade barriers in services. Deardorff and Stern (2001) classify the methodologies for measuring three types of barriers: frequency measures, quantity-based measures and price-based measures. The first approach, followed by Hoekman (1995), is to construct 'guesstimates' of relative restrictiveness across economies based on the assumption that each economy has revealed its policy stance in the commitments made in GATS. To quantify trade barriers in services across economies and industry levels, frequency ratios are constructed based on the number of commitments scheduled in GATS in each economy. After that, tariff equivalent benchmarks are assigned to each sector to reflect the degree of restriction with respect to market access. A benchmark tariff equivalent of 200 percent is assigned to sectors in which market access is most restricted (that is, maritime, air transport, postal services and etc.). Benchmark tariff equivalents between 20 percent and 50 percent are designated for the remaining sectors. Hoekman (1995) then multiplies each coverage index by the tariff equivalent benchmark guesstimates to obtain a sector-specific tariff equivalent.

The guesstimates have some limitations. Hardin and Holmes (1997) indicate that

Hoekman's estimates may not reflect the actual impediments because these measures are based on information contained in each economy's schedule of GATS commitments. However, a lack of commitment to a GATS schedule does not necessarily mean that an economy imposes heavy restrictions. Many developing economies simply do not have available details that are required to meet the complexities of the GATS scheduling process and so leaves many industries unbounded, some of which may be quite open. Furthermore, Hoekman (1995) treats all commitments with equal weights and does not distinguish between barriers according to their economic impact, with minor impediments receiving the same weighting as an almost complete refusal of access. In summary, the guesstimates are very crude and rely on assumptions about the level of prohibitive benchmark tariff equivalents, which are arbitrarily determined by the researcher. In spite of these limitations of Hoekman's approach, this paper uses the modified Hoekman's guesstimates for the analysis on the economic effects of an FTAAP, since they provide worldwide trade barriers in services. In fact, Hoekman's guesstimates cover 15 of APEC's member economies.

3. Simulation Results

It should be noted that the estimated results of CGE simulations are sensitive to the assumptions made in the modeling. One should be cautious in the interpretation of the results of CGE simulations. The relative effects of different agreements or different policy experiments are more important than the absolute size of estimated effects. Thus this paper focuses on the relative effects gained by estimating three different scenarios under the same CGE model (see Table 10).

First one is the results of Scenario I in which tariffs between FTAAP members are removed. Table 7 presents the economy-wide effects of the FTAAP under the assumption of a fixed capital stock. These involve changes in real GDP, welfare, exports, and imports. It is expected that real GDP increases in developed economies such as the United States, Japan, Canada, Australia and Singapore are relatively smaller than in developing economies, yet an FTAAP will be beneficial to all economies. However, the welfare of Canada, Chile, Indonesia, Russia and Peru, though small, would decrease. We also find that the tariff eliminating regional FTA expands intra-regional trade and contracts extra-regional trade.

The results of the policy experiment Scenario II are reported in Table 8, which presents

the economic effects of tariff elimination and reduction in tariff equivalents of services by 10 percent. These effects are estimated also by using a static CGE model. Compared to Scenario I, the FTAAP according to Scenario II yields higher economic gains for APEC individual member as well as economies as a whole in terms of real GDP and welfare. All member economies of an FTAAP would experience positive growth in real GDP and welfare. Moreover, the magnitude of these positive effects is larger than those of Scenario I as compared in Table 10. These results imply that service liberalization has significant impacts on GDP as well as the welfare of each member economy. In this respect, we also may argue that liberalization in services leads to increased efficiency in service sectors. Since services are basic inputs or intermediates for industrial production, the competitiveness of manufacturing sectors would also be improved.

This study also discusses the results of the policy experiment Scenario III that includes Scenario II and 5% reduction in trade cost by trade facilitation. The economic effects of an FTAAP according to Scenario III are reported in Table 9. Comparing these results with those of Scenario I and II, the magnitude of increases in real GDP and welfare of all member economies has been found to expand. The relative additional gains to APEC economy as a whole are shown in Table 10. This implies that trade facilitation is one of the most important catalysts of economic growth and its impacts on GDP and welfare are significant.

The capital accumulation effects of an FTAAP, which captures not only static gains but also mid to medium-run growth bonus suggested by Baldwin (1989, 1992), has also been analyzed. The effects on the economic welfare and GDP of economies stem from the traditional efficiency gains from resource allocation and additional gains from capital accumulation. Table 9 also shows that medium-run effects of the FTAAP according to Scenario III for the member economies, estimated with the capital accumulation CGE model, would be larger compared to the effects on GDP and welfare estimated with the static CGE model as compared in Table 10 for APEC as a whole. Moreover, the results indicate that the overall economic outcome is more favorable than any of the other Scenarios. More specifically, the outcome reports the highest welfare gains among other scenarios as it estimates welfare gain by 3.08 percentages for all APEC member economies. In addition, the outcome also yields relatively higher growth gains for some developing economies including Thailand, Vietnam and Malaysia. We have interpreted this outcome as follows: 1) as GTAP data base initially reports relatively high tariff rates for these economies, the size of the

impact will be greater and 2) the unique methodology for estimating capital accumulation CGE model and assumptions used in this scenario may result in favorable outcome for those economies having a large demand for capital.

In fact, evidence of high quality and medium-run growth bonus of trade liberalization is found if the results estimated by the static model were compared with those estimated by the capital accumulation model. It is expected that real GDP for APEC members as a whole would increase by 3.31 percentage (Capital Accumulation under Scenario III), whereas only 0.13 percentage (Static under Scenario I) increase in real GDP for APEC economies would result from the static CGE model. Furthermore, the gains for Thailand and Vietnam in terms of real GDP are higher than other member countries. This implies that traditional trade liberalization in market access still has important and significant impacts on real GDP and welfare in those countries.

Economic Effects of three sub-regional RTAs are also estimated and shown in Tables 11, 12, and 13. Table 11 suggests that formation of a TPP does not produce significant trade diversion effect for non-participating members. We also may argue that non-participating members, except Russia, will also enjoy the benefit of free trade if the medium-run growth bonus effect is taken into account. However, with some minor exceptions, formation of East Asian sub-regional RTAs, ASEAN+3 and ASEAN+6, will produce negative effects on the GDP and welfare of non-participating members, while positive economic effects on GDP and welfare are shown for participating member economies.

V. CONCLUDING REMARKS

The formation of an FTAAP is a challenge to and an opportunity for the reformation of APEC. The positive gains from a larger free trade bloc are expected to be significant enough to invite all APEC members to join. At the same time, however, the trade and investment liberalization of APEC through the second-best policy may encounter strong obstacles incurred by diversified interests of member economies as a group or as an individual economy, lack of political will, and problems of compatibility with multilateralism and basic principles of APEC.

Acknowledging these difficulties involved in the formation of the FTAAP, this study tested whether the proposed FTAAP may satisfy necessary conditions for positive net trade creation effects of an RTA and found that the FTAAP can be a desirable RTA for members. In addition, we designed a desirable FTAAP with following three policy options: 1) comprehensive application of tariff elimination in goods trade under the legal provision of GATT Article XXIX without any excluded sectors, 2) liberalization of trade in services, 3) enhancing trade facilitation. If we summarize the expected gains from each scenario, the overall welfare gain for all subject economies range from US\$55 billion to US\$ 284 billion and US\$ 149 billion to US\$ 636 billion under static and capital accumulation models, respectively.

Although it is too early to outline an FTAAP as the research is still at an early stage, the results so far indicate that APEC should pursue a high-quality and comprehensive agreement for maximum economic output. Particularly in this paper, trade facilitation and liberalization of service trade have been found to contribute significantly towards increases in real GDP and trade volume. This fact, aligned with the mandates from Leaders and Ministers as reflected in various declaration of past years including those from the 2005 Busan Roadmap and 2007 Report on Strengthening Regional Economic Integration, implies that FTAAP should be a high-quality and comprehensive agreement.

In terms of regional institutional architecture, the break-up of the APEC into East Asian region and Pacific region may be realized with insufficient trans-regional cooperation. So as to avoid easily foreseeable and enormous negative effects, an FTAAP to integrate the Asia-Pacific region becomes critical. In this light, a Trans-Pacific Partnership Agreement (TPP) including P4 and P8 is also believed to have potential to become a stepping-stone to promote high-quality, comprehensive RTAs on a global scale. Moreover, in recognition of outcomes from the successful Uruguay Round and AFTA, the establishment of the FTAAP is expected to trigger a China-Japan-Korea FTA, an ASEAN+3 FTA, an ASEAN+6 FTA, and a TPP, which is also expected to become a stepping stone, ultimately, to the creation of a global free trade environment.

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Table 1. Major RTAs between APEC Member Economies as of May 2010

| Implemented (year into force) | Signed (year of signing) | Under Negotiation | Under Consideration |
|--|---|---|---|
| <p><i>Bilateral and Intra-Regional</i> Australia-PNG(1977) Australia-New Zealand(1983) Chile-Canada(1996) Mexico-Chile(1998) Singapore-Japan(2002) China-Hong Kong(2004) Chile-US(2004) Singapore-Korea(2006) Japan-Malaysia(2006) Japan-Thailand(2007) Japan-Indonesia(2008) Japan-Brunei(2008) Japan-Philippines(2008) China-Singapore(2009) US-Peru(2009) Chile-Peru(2009) Canada-Peru(2009) Japan-Vietnam(2009)</p> | | <p>Japan-Korea China-Korea</p> | <p>China-Thailand</p> |
| <p><i>Bilateral and Inter-Regional</i> Singapore-New Zealand(2001) Singapore-Australia(2003) Chile-Korea(2004) US-Australia(2005) Chile-China(2005) Singapore-US(2005) Malaysia-Australia(2005) Mexico-Japan(2005) Thailand-New Zealand(2005) Thailand-Australia(2005) Japan-Chile(2007) China-New Zealand(2008) Australia-Chile(2009) Singapore-Peru(2009) Peru-China(2010)</p> | <p>Thailand-Peru (2005) Korea-US (2007) Hong Kong-New Zealand (2010)</p> | <p>Singapore-Mexico Canada-Singapore Thailand-US Australia-Malaysia China-Australia Korea-Malaysia Korea-Canada Korea-Mexico Malaysia-Chile US-Indonesia US-Philippines Japan-Australia Japan-Peru New Zealand-Korea</p> | <p>Korea-Australia Thailand-Chile Indonesia-Australia</p> |
| <p><i>Plurilateral and Intra-Regional</i> AFTA (1993) ASEAN-China(2005) ASEAN-Korea(2007) ASEAN-Japan(2008) NAFTA(1994)</p> | | | <p>ASEAN+3 ASEAN+6 ASEAN-Chinese Taipei</p> |
| <p><i>Plurilateral and Inter-Regional</i> P4(2006) Australia-ASEAN-New Zealand(2010)</p> | | | <p>FTAAP ASEAN-US</p> |

Source: Compiled based mainly on data from the WTO Website and <http://www.bilaterals.org>.

Table 2. Key Economic Indicators of APEC Economies in 2008

| | Population (Million) | GDP (Current Billion US\$) | Per Capita GDP (Current US\$) | Simple Mean Applied Tariff Rate (%) | Simple Mean MFN Applied Tariff Rate (%) |
|--------------------|-------------------------|-------------------------------------|--|---|--|
| Australia | 21.4 | 1,015.2 | 47,370 | 3.9 | 3.4 |
| Brunei Darussalam | 0.4 | 14.6* | 37,053* | 3.1** | 3.7** |
| Canada | 33.3 | 1,501.3 | 45,070 | 3.6 | 3.6 |
| Chile | 16.8 | 169.5 | 10,084 | 1.4 | 6.0 |
| China | 1,324.7 | 4,327.0 | 3,267 | 8.6 | 9.6 |
| Hong Kong, China | 7.0 | 215.4 | 30,863 | 0.0 | 0.0 |
| Indonesia | 227.3 | 510.7 | 2,247 | 5.8** | 6.9** |
| Japan | 127.7 | 4,910.8 | 38,455 | 2.6 | 3.1 |
| Korea | 48.6 | 929.1 | 19,115 | 8.3** | 12.1** |
| Malaysia | 27.0 | 221.8 | 8,209 | 5.9** | 7.2** |
| Mexico | 106.4 | 1,088.1 | 10,232 | 6.4 | 12.5 |
| New Zealand | 4.3 | 129.9 | 30,439 | 2.8 | 2.2 |
| Papua New Guinea | 6.6 | 8.2 | 1,253 | 4.5 | 4.8 |
| Peru | 28.8 | 129.1 | 4,477 | 3.8 | 6.1 |
| Philippines | 90.3 | 166.9 | 1,847 | 5.0** | 6.3** |
| Russian Federation | 142.0 | 1,679.5 | 11,832 | 8.2 | 8.8 |
| Singapore | 4.8 | 181.9 | 37,597 | 0.0 | 0.0 |
| Chinese Taipei | 23.0 | 391.4* | 16,988* | 6.5 | 6.1 |
| Thailand | 67.4 | 272.4 | 4,043 | 10.8*** | 11.9*** |
| United States | 304.1 | 14,093.3 | 46,350 | 3.0 | 3.7 |
| Vietnam | 86.2 | 90.6 | 1,051 | 11.7** | 16.8** |
| APEC (A) | 2,698.1 | 32,047.0 | 11,878 | 5.0 | 6.4 |
| World (B) | 6,697.3 | 60,557.0 | 9,042 | 7.1 | 9.8 |
| A/B (%) | 40.3 | 52.9 | 131.0 | 71.2 | 65.4 |

Notes: * - data from Department of Foreign Affairs and Trade, Australian Government,

<http://www.dfat.gov.au/geo/index.html>

** - year 2007

*** - year 2006

Source: World Bank, World databank,

<http://databank.worldbank.org/ddp/home.do?Step=1&id=4>

Table 3. Intraregional Trade Share: 2000-2008 (%)

| Region | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| ASEAN | 23.0 | 22.3 | 22.7 | 24.7 | 24.9 | 25.3 | 24.9 | 25.2 | 25.4 |
| NAFTA | 55.7 | 55.5 | 56.6 | 56.1 | 55.9 | 55.7 | 53.9 | 51.3 | 49.5 |
| MERCOSUR | 20.0 | 17.1 | 11.5 | 11.9 | 12.7 | 12.9 | 13.5 | 15.0 | 15.4 |
| EU | 67.7 | 67.3 | 67.4 | 68.3 | 68.1 | 67.4 | 67.7 | 67.9 | 67.2 |
| APEC | 73.1 | 72.6 | 73.3 | 72.7 | 72.1 | 70.8 | 69.4 | 67.4 | 65.7 |

Source: UNCTAD, *Handbook of Statistics*, 2009.

Table 4. Complementarity of APEC Economies in 2007

| Source Destination | Australia | China | Hong Kong, China | Indonesia | Japan | Korea | Malaysia | New Zealand | Philippines | Russia | Singapore | Thailand | US | Vietnam |
|-----------------------|-----------|-------|------------------------|-----------|-------|-------|----------|----------------|-------------|--------|-----------|----------|-------|---------|
| Australia | | 61.91 | 33.37 | 49.36 | 67.91 | 65.54 | 64.04 | 32.22 | 57.62 | 29.15 | 62.03 | 70.55 | 76.35 | 42.65 |
| China | 38.20 | | 36.77 | 47.05 | 67.84 | 74.59 | 66.55 | 29.74 | 61.58 | 27.91 | 66.21 | 67.15 | 71.42 | 33.40 |
| Hong Kong China | 29.31 | 67.78 | | 34.06 | 58.31 | 65.31 | 67.89 | 26.30 | 72.96 | 16.64 | 75.85 | 62.21 | 58.32 | 30.73 |
| Indonesia | 43.47 | 63.94 | 36.76 | | 63.79 | 67.79 | 68.40 | 31.22 | 56.70 | 37.17 | 69.33 | 70.15 | 70.56 | 44.14 |
| Japan | 61.20 | 55.12 | 34.67 | 69.96 | | 51.27 | 60.07 | 34.74 | 55.38 | 47.08 | 58.51 | 59.29 | 62.17 | 54.07 |
| Korea | 46.33 | 64.36 | 35.46 | 53.18 | 63.78 | | 69.02 | 31.55 | 59.19 | 38.61 | 69.51 | 65.63 | 68.15 | 43.79 |
| Malaysia | 34.93 | 71.19 | 35.85 | 44.02 | 66.31 | 73.02 | | 30.95 | 75.56 | 28.44 | 81.03 | 68.30 | 64.79 | 36.36 |
| New Zealand | 41.07 | 57.22 | 31.46 | 50.87 | 60.91 | 63.61 | 60.34 | | 53.80 | 30.48 | 58.41 | 66.59 | 74.45 | 43.99 |
| Philippines | 38.45 | 64.66 | 36.68 | 43.67 | 59.38 | 69.89 | 70.55 | 31.40 | | 28.47 | 74.89 | 64.60 | 62.54 | 37.23 |
| Russia | 32.65 | 66.93 | 36.91 | 41.84 | 66.61 | 59.58 | 51.75 | 33.69 | 59.30 | | 49.83 | 67.60 | 71.66 | 39.56 |
| Singapore | 41.00 | 68.53 | 34.54 | 49.89 | 63.73 | 70.83 | 81.36 | 27.87 | 66.99 | 34.50 | | 64.46 | 61.45 | 43.06 |
| Thailand | 39.66 | 69.36 | 37.86 | 43.83 | 71.90 | 72.20 | 72.08 | 30.80 | 64.80 | 33.99 | 72.77 | | 73.06 | 35.95 |
| US | 44.67 | 64.03 | 36.81 | 54.09 | 64.47 | 67.71 | 66.44 | 30.98 | 59.72 | 32.86 | 65.64 | 70.11 | | 48.33 |
| Vietnam | 43.99 | 54.29 | 35.30 | 52.98 | 53.46 | 60.89 | 61.09 | 33.45 | 49.40 | 39.50 | 58.67 | 61.52 | 65.18 | |

Notes: 1)

$$\left(1 - \left(\sum_i \left| \frac{\sum_w m_{iwd}}{\sum_w M_{wd}} - \frac{\sum_w X_{isw}}{\sum_w X_{sw}} \right| \right) \div 2 \right) \times 100$$

where d is the importing country of interest, s is the exporting country of interest, w is the set of all countries in the world, i is the set of industries, x is the commodity export flow, X is the total export flow, m the commodity import flow, and M the total import flow. In words, we take the sum of the absolute value of the difference between the sectoral import shares of one country and the sectoral export shares of the other. Dividing by 2 converts this to a number between 0 and 1, with zero indicating all shares matched and 1 indicating none did. Subtracting from one reverses the sign, and multiplying by 100 puts the measure in percentage terms. It takes a value between 0 and 100, with zero indicating no overlap and 100 indicating a perfect match in the import/export pattern (UNESCAP, Trade Statistics in Policymaking: A Handbook of Commonly Used Trade Indices and Indicators).

2) * indicates a simple average of all the complementarity indices in the table.

3) Brunei Darussalam, Canada, Chile, Mexico, Papua New Guinea, Peru, and Chinese Taipei are excluded because the data source does not report the index of these countries.

Source: APTIAD (Asia-Pacific Research and Training Network on Trade) Interactive Trade Indicators, http://www.unescap.org/tid/artnet/artnet_app/index_rca_fm.aspx

Table 5. Tariff-equivalent Barrier in Service Sectors in APEC

| | Construction | Distribution | Transportation/ Telecommunications | Business/ Finance |
|------------------|--------------|--------------|---------------------------------------|----------------------|
| Australia | 12.0 | 7.4 | 183.4 | 24.8 |
| Canada | 6.0 | 9.0 | 117.7 | 25.9 |
| Chile | 40.0 | 34.4 | 82.2 | 45.2 |
| China | 25.0 | 35.5 | 191.1 | 39.8 |
| Hong Kong, China | 32.0 | 31.5 | 149.8 | 39.0 |
| Indonesia | 16.0 | 34.8 | 190.4 | 43.1 |
| Japan | 5.0 | 4.6 | 142.0 | 28.9 |
| Korea | 16.0 | 21.4 | 184.9 | 36.3 |
| Malaysia | 10.0 | 34.8 | 175.8 | 36.1 |
| Mexico | 24.0 | 21.3 | 152.3 | 40.9 |
| New Zealand | 5.0 | 13.4 | 181.5 | 30.5 |
| Peru | 40.0 | 30.3 | 190.9 | 48.7 |
| Philippines | 40.0 | 32.8 | 110.2 | 41.7 |
| Singapore | 12.0 | 34.4 | 138.8 | 35.9 |
| Thailand | 28.0 | 32.5 | 189.6 | 42.2 |
| USA | 5.0 | 4.6 | 111.4 | 21.7 |
| Vietnam | 16.0 | 34.8 | 190.4 | 43.1 |

Note: As Hoekman does not provide tariff equivalents for Vietnam, tariff equivalents of Indonesia have been used for Vietnam as proxy.

Source: Hoekman (1995)

Table 6. Model Aggregation

| Economies | Sectors |
|-------------------|------------------------------|
| Australia | Agriculture/Fishery |
| Canada | Food products |
| Chile | Textile |
| China | Chemical products |
| Hong Kong, China | Steel and metal products |
| Indonesia | Vehicle |
| Japan | Other Transport equipments |
| Korea | Electronic products |
| Malaysia | Machinery |
| Mexico | Other manufactures |
| New Zealand | Construction |
| Peru | Trade |
| Philippines | Transportation/Communication |
| Russia | Business/Financial services |
| Singapore | Other services |
| Thailand | |
| Chinese Taipei | |
| United States | |
| Viet Nam | |
| EU 25 | |
| Rest of the World | |

**Table 7. Effects of an FTAAP: Scenario I (% deviations from the Base)
Tariff Elimination with Static Model**

| | Real GDP | Welfare | Welfare (mil. US\$) | Export | Import |
|--------------------------|--------------|--------------|------------------------|--------------|--------------|
| 19 APEC Economies | 0.13 | 0.25 | 55,424 | 4.88 | 6.56 |
| Australia | 0.09 | 0.25 | 1,401 | 4.54 | 4.88 |
| Canada | 0.04 | -0.07 | -627 | 1.07 | 0.93 |
| Chile | 0.07 | 0.00 | -2 | -0.20 | 0.09 |
| China | 0.27 | 0.38 | 5,733 | 10.11 | 13.05 |
| Hong Kong | 0.00 | 1.67 | 2,419 | 4.03 | 4.15 |
| Indonesia | 0.17 | -0.16 | -378 | 5.08 | 6.79 |
| Japan | 0.14 | 0.37 | 14,887 | 6.41 | 8.39 |
| Korea | 0.86 | 1.36 | 8,109 | 6.79 | 9.97 |
| Malaysia | 2.45 | 2.69 | 3,029 | 3.73 | 7.22 |
| Mexico | 0.25 | 0.07 | 402 | 0.86 | 2.17 |
| New Zealand | 0.16 | 1.45 | 1,252 | 6.19 | 7.91 |
| Peru | 0.01 | -0.25 | -151 | 3.75 | 5.40 |
| Philippines | 0.26 | 0.69 | 519 | 3.69 | 4.86 |
| Russia | -0.08 | -0.09 | -489 | 1.23 | 3.05 |
| Singapore | 0.03 | 1.16 | 1,098 | 0.05 | 0.01 |
| Thailand | 1.23 | 6.18 | 7,414 | -0.03 | 23.09 |
| Chinese Taipei | 0.54 | 1.52 | 4,301 | 5.56 | 7.08 |
| USA | 0.01 | 0.03 | 3,520 | 3.63 | 1.91 |
| Viet Nam | 5.05 | 8.02 | 2,987 | 25.71 | 39.25 |
| EU25 | -0.04 | -0.13 | -14,346 | -0.74 | -1.48 |
| ROW | -0.05 | -0.48 | -18,619 | -1.72 | -2.71 |

**Table 8. Effects of an FTAAP: Scenario II (% deviations from the Base)
Tariff Elimination + Reduction in Tariff Equivalents of Services by 10%
with Static Model**

| | Real GDP | Welfare | Welfare (mil. US\$) | Export | Import |
|--------------------------|--------------|--------------|------------------------|--------------|--------------|
| 19 APEC Economies | 0.20 | 0.36 | 75,621 | 5.12 | 6.88 |
| Australia | 0.23 | 0.44 | 2,501 | 5.26 | 5.69 |
| Canada | 0.17 | 0.09 | 769 | 1.31 | 1.27 |
| Chile | 0.19 | 0.14 | 117 | -0.02 | 0.29 |
| China | 0.34 | 0.45 | 6,793 | 10.23 | 13.18 |
| Hong Kong | 0.60 | 2.65 | 3,848 | 5.07 | 5.54 |
| Indonesia | 0.47 | 1.84 | 1,590 | 6.98 | 9.01 |
| Japan | 0.21 | 0.45 | 18,097 | 6.71 | 8.89 |
| Korea | 1.17 | 1.68 | 10,023 | 6.93 | 10.18 |
| Malaysia | 2.70 | 3.00 | 3,373 | 3.84 | 7.39 |
| Mexico | 0.34 | 0.17 | 1,051 | 1.06 | 2.37 |
| New Zealand | 0.47 | 1.84 | 1,590 | 6.98 | 9.01 |
| Peru | 0.10 | -0.14 | -83 | 4.18 | 5.94 |
| Philippines | 0.35 | 0.82 | 615 | 3.78 | 4.99 |
| Russia | 0.03 | 0.03 | 147 | 1.42 | 3.36 |
| Singapore | 0.79 | 2.17 | 2,051 | -0.07 | -0.05 |
| Thailand | 1.45 | 6.63 | 7,948 | -0.12 | 23.65 |
| Chinese Taipei | 0.73 | 1.75 | 4,950 | 5.71 | 7.25 |
| USA | 0.04 | 0.08 | 8,816 | 3.99 | 2.21 |
| Viet Nam | 5.29 | 8.30 | 3,093 | 25.74 | 39.37 |
| EU25 | -0.04 | -0.14 | -16,254 | -0.82 | -1.62 |
| ROW | -0.05 | -0.50 | -19,662 | -1.84 | -2.89 |

**Table 9. Effects of an FTAAP: Scenario III (% deviations from the Base)
Tariff Elimination + Reduction in Tariff Equivalents of Services by 10%
+ 5% Reduction in Trade Cost by Trade Facilitation**

| | STATIC MODEL | | | | | CAPITAL ACCUMULATION MODEL | | | | |
|--------------------------|--------------|--------------|---------------------|--------------|--------------|----------------------------|--------------|---------------------|--------------|--------------|
| | Real GDP | Welfare | Welfare (mil. US\$) | Export | Import | Real GDP | Welfare | Welfare (mil. US\$) | Export | Import |
| 19 APEC Economies | 1.13 | 1.38 | 284,844 | 8.53 | 10.91 | 3.31 | 3.08 | 636,009 | 14.73 | 15.89 |
| Australia | 1.18 | 1.55 | 8,829 | 7.09 | 8.41 | 3.20 | 3.29 | 18,778 | 10.79 | 10.57 |
| Canada | 1.73 | 2.10 | 18,481 | 3.62 | 5.33 | 3.70 | 3.55 | 31,282 | 6.12 | 6.59 |
| Chile | 1.61 | 1.95 | 1,611 | 0.75 | 0.95 | 4.90 | 4.89 | 4,055 | 3.88 | 4.17 |
| China | 2.24 | 2.41 | 36,529 | 16.20 | 19.76 | 7.68 | 6.96 | 105,509 | 21.11 | 26.59 |
| Hong Kong | 3.09 | 6.68 | 9,696 | 6.30 | 7.52 | 11.39 | 13.28 | 19,263 | 13.07 | 13.36 |
| Indonesia | 1.73 | 1.60 | 3,736 | 8.46 | 11.31 | 6.22 | 5.70 | 13,288 | 13.65 | 15.56 |
| Japan | 0.74 | 1.05 | 42,037 | 10.30 | 14.03 | 1.78 | 1.86 | 74,021 | 12.98 | 15.71 |
| Korea | 2.99 | 3.76 | 22,440 | 9.93 | 14.23 | 9.47 | 8.76 | 52,299 | 17.07 | 20.09 |
| Malaysia | 7.34 | 9.56 | 10,795 | 5.64 | 10.22 | 19.97 | 17.96 | 20,382 | 17.04 | 18.78 |
| Mexico | -0.06 | -0.19 | -1,132 | -0.76 | -2.77 | 6.53 | 5.94 | 35,959 | 10.24 | 10.51 |
| New Zealand | 1.77 | 3.49 | 3,017 | 8.54 | 12.00 | 7.55 | 8.42 | 7,284 | 15.52 | 16.30 |
| Peru | 0.92 | 0.79 | 482 | 8.04 | 10.96 | 1.78 | 1.48 | 903 | 9.92 | 12.11 |
| Philippines | 3.16 | 4.25 | 3,207 | 3.56 | 6.69 | 16.80 | 15.32 | 11,597 | 19.41 | 19.88 |
| Russia | 1.26 | 1.41 | 7,635 | 3.67 | 6.31 | 3.87 | 3.92 | 21,298 | 6.00 | 9.26 |
| Singapore | 7.20 | 10.56 | 9,963 | 3.97 | 4.82 | 20.55 | 18.82 | 17,765 | 16.25 | 16.59 |
| Thailand | 4.69 | 12.19 | 14,637 | -4.28 | 30.64 | 34.13 | 27.74 | 33,409 | 47.18 | 50.47 |
| Chinese Taipei | 3.47 | 5.14 | 14,515 | 8.32 | 10.43 | 11.54 | 11.56 | 32,674 | 16.32 | 17.88 |
| USA | 0.70 | 0.69 | 73,020 | 9.12 | 6.15 | 1.30 | 1.19 | 126,355 | 10.93 | 7.40 |
| Viet Nam | 10.50 | 14.34 | 5,346 | 28.16 | 45.10 | 33.52 | 26.49 | 9,886 | 63.84 | 66.65 |
| EU25 | -0.09 | -0.19 | -22,142 | -0.84 | -2.37 | -0.11 | -0.09 | -10,297 | -1.54 | -1.56 |
| ROW | -0.06 | -0.43 | -16,930 | -1.67 | -3.36 | -0.38 | -0.50 | -19,414 | -2.36 | -2.43 |

**Table 10. Effects of an FTAAP on APEC as a whole:
Comparison by Models and Scenarios**

| | | Real GDP | Welfare (Million US \$) | Export | Import |
|--|--------------|-------------|-------------------------------|--------|--------|
| <i>Absolute Effects (% deviations from the Base)</i> | | | | | |
| Static CGE Model | Scenario I | 0.13 | 55,424 | 4.88 | 6.56 |
| Static CGE Model | Scenario II | 0.20 | 75,621 | 5.12 | 6.88 |
| Static CGE Model | Scenario III | 1.13 | 284,844 | 8.53 | 10.91 |
| Capital Accumulation CGE Model | Scenario III | 3.31 | 636,009 | 14.73 | 15.89 |
| <i>Relative Effects to Scenario III with Static CGE Model (Ratio)</i> | | | | | |
| Static CGE Model | Scenario III | 1.00 | 1.00 | 1.00 | 1.00 |
| Capital Accumulation CGE Model | Scenario III | 2.93 | 2.23 | 1.73 | 1.46 |
| <i>Relative Effects to Scenario I with Static CGE Model (Ratio)</i> | | | | | |
| Static CGE Model | Scenario I | 1.00 | 1.00 | 1.00 | 1.00 |
| Static CGE Model | Scenario II | 1.54 | 1.36 | 1.05 | 1.05 |
| Static CGE Model | Scenario III | 8.69 | 5.14 | 1.75 | 1.66 |
| Capital Accumulation CGE Model | Scenario III | 25.46 | 11.48 | 3.02 | 2.42 |

Notes: Scenario I-Tariff elimination

Scenario II-Tariff elimination + Reduction in tariff equivalents of services by 10%

Scenario III-Tariff elimination + Reduction in tariff equivalents of services by 10% +
5% reduction in trade cost by trade facilitation

**Table 11. Effects of TPP: Scenario III (% deviations from the Base)
Tariff Elimination + Reduction in Tariff Equivalents of Services by 10%
+ 5% Reduction in Trade Cost by Trade Facilitation**

| | STATIC MODEL | | | | | CAPITAL ACCUMULATION MODEL | | | | |
|----------------|--------------|---------|---------------------|--------|--------|----------------------------|---------|---------------------|--------|--------|
| | Real GDP | Welfare | Welfare (mil. US\$) | Export | Import | Real GDP | Welfare | Welfare (mil. US\$) | Export | Import |
| Australia | 0.92 | 1.15 | 6,553 | 2.33 | 4.19 | 2.10 | 2.05 | 11,697 | 4.76 | 4.69 |
| Canada | 0.02 | 0.39 | 3,403 | 1.15 | 1.33 | 0.38 | 0.69 | 6,078 | 1.66 | 1.72 |
| Chile | 1.47 | 1.77 | 1,484 | 0.93 | 1.10 | 3.88 | 3.83 | 3,218 | 3.17 | 3.11 |
| China | 0.01 | 0.13 | 2,016 | 0.44 | 0.21 | 0.09 | 0.24 | 3,708 | 0.51 | 0.52 |
| Hong Kong | 0.00 | 0.16 | 231 | 0.04 | -0.09 | 0.23 | 0.44 | 634 | 0.29 | 0.27 |
| Indonesia | 0.00 | 0.07 | 170 | 0.31 | 0.10 | 0.24 | 0.39 | 910 | 0.90 | 0.94 |
| Japan | 0.00 | 0.02 | 731 | 0.88 | -0.09 | 0.01 | 0.06 | 2,338 | 0.40 | 0.42 |
| Korea | -0.01 | 0.08 | 495 | 0.27 | 0.06 | 0.08 | 0.21 | 1,222 | 0.28 | 0.28 |
| Malaysia | 0.00 | 0.54 | 607 | 0.26 | 0.00 | 0.78 | 1.38 | 1,550 | 1.34 | 1.35 |
| Mexico | 0.13 | 0.46 | 2,798 | 1.21 | 1.67 | 0.78 | 1.02 | 6,190 | 2.21 | 2.23 |
| New Zealand | 1.54 | 1.78 | 1,557 | 2.14 | 4.17 | 4.47 | 4.17 | 3,654 | 5.55 | 5.97 |
| Peru | 0.83 | 0.87 | 531 | 6.64 | 10.09 | 1.57 | 1.41 | 863 | 8.54 | 10.14 |
| Philippines | -0.01 | 0.06 | 43 | -0.03 | -0.16 | 0.32 | 0.43 | 326 | 0.40 | 0.39 |
| Russia | 0.00 | 0.05 | 281 | 0.06 | -0.10 | -0.02 | 0.05 | 269 | 0.10 | 0.09 |
| Singapore | 6.67 | 8.00 | 8,211 | 4.12 | 4.80 | 16.10 | 12.98 | 13,332 | 12.74 | 13.10 |
| Thailand | -0.01 | 0.11 | 133 | 0.09 | 0.03 | 0.41 | 0.49 | 585 | 0.73 | 0.75 |
| Chinese Taipei | 0.00 | 0.15 | 425 | 0.14 | 0.05 | 0.15 | 0.33 | 931 | 0.40 | 0.39 |
| USA | 0.67 | 0.58 | 61,766 | 4.52 | 4.19 | 1.04 | 0.83 | 87,676 | 6.07 | 4.09 |
| Viet Nam | 6.08 | 9.05 | 3,373 | 6.64 | 14.92 | 13.96 | 13.05 | 4,861 | 18.86 | 19.61 |
| EU25 | -0.02 | -0.01 | -965 | 0.14 | -0.21 | 0.00 | 0.04 | 4,890 | 0.08 | 0.07 |
| ROW | 0.00 | 0.05 | 1,974 | 0.19 | -0.09 | 0.05 | 0.13 | 4,969 | 0.23 | 0.21 |

**Table 12. Effects of ASEAN+3: Scenario III (% deviations from the Base)
Tariff Elimination + Reduction in Tariff Equivalents of Services by 10%
+ 5% Reduction in Trade Cost by Trade Facilitation**

| | STATIC MODEL | | | | | CAPITAL ACCUMULATION MODEL | | | | |
|----------------|--------------|---------|--------------------|--------|--------|----------------------------|---------|--------------------|--------|--------|
| | Real GDP | Welfare | Welfare (mil.US\$) | Export | Import | Real GDP | Welfare | Welfare (mil.US\$) | Export | Import |
| Australia | -0.03 | -0.21 | -1,220 | -0.66 | -2.02 | 0.09 | 0.06 | 368 | -0.93 | -0.81 |
| Canada | -0.01 | -0.02 | -198 | -0.30 | -0.81 | 0.1 | 0.09 | 818 | -0.63 | -0.6 |
| Chile | -0.01 | -0.12 | -99 | -0.60 | -0.91 | 0.17 | 0.13 | 111 | -0.45 | -0.41 |
| China | 1.81 | 1.80 | 27,319 | 11.58 | 14.09 | 5.72 | 5.05 | 76,597 | 15.08 | 18.77 |
| Hong Kong | 0.00 | 0.07 | 101 | -0.55 | -0.84 | 1.12 | 1.44 | 2,091 | 0.35 | 0.29 |
| Indonesia | 1.59 | 1.62 | 3,787 | 6.97 | 9.69 | 5.81 | 5.46 | 12,744 | 12.05 | 13.57 |
| Japan | 0.59 | 0.86 | 34,165 | 7.11 | 11.44 | 1.52 | 1.53 | 60,939 | 10.03 | 12.18 |
| Korea | 2.70 | 3.35 | 19,989 | 8.45 | 12.42 | 8.39 | 7.67 | 45,788 | 14.82 | 17.34 |
| Malaysia | 5.10 | 7.22 | 8,150 | 4.49 | 9.08 | 16.28 | 14.66 | 16,603 | 14.84 | 16.74 |
| Mexico | 0.01 | -0.03 | -180 | 0.14 | -0.71 | -0.11 | -0.1 | -621 | -0.56 | -0.68 |
| New Zealand | -0.03 | -0.16 | -137 | -0.49 | -1.28 | 0.2 | 0.18 | 160 | -0.45 | -0.38 |
| Peru | 0.00 | -0.04 | -24 | -0.25 | -1.25 | 0.04 | 0.04 | 26 | -0.5 | -0.46 |
| Philippines | 3.08 | 3.87 | 2,925 | 2.50 | 5.47 | 15.23 | 13.69 | 10,360 | 16.7 | 17.06 |
| Russia | -0.02 | -0.07 | -382 | -0.70 | -1.03 | 0.14 | 0.14 | 744 | -0.45 | -0.43 |
| Singapore | 6.68 | 10.34 | 9,760 | 4.66 | 5.68 | 19.65 | 18.02 | 17,016 | 16.67 | 17.04 |
| Thailand | 4.18 | 11.24 | 13,496 | -4.43 | 27.28 | 28.91 | 24.14 | 29,058 | 40.11 | 42.72 |
| Chinese Taipei | -0.13 | -0.65 | -1,843 | -1.33 | -1.66 | -0.53 | -0.82 | -2,320 | -1.92 | -1.93 |
| USA | 0.00 | -0.05 | -5,392 | 0.23 | -1.41 | 0.05 | 0.06 | 6,457 | -0.49 | -0.44 |
| Viet Nam | 7.09 | 10.20 | 3,801 | 17.68 | 31.30 | 22.75 | 18.52 | 6,904 | 42.21 | 43.89 |
| EU25 | -0.05 | -0.09 | -10,527 | -0.37 | -1.04 | 0.11 | 0.1 | 11,227 | -0.59 | -0.54 |
| ROW | -0.03 | -0.18 | -6,980 | -0.63 | -1.37 | 0.09 | 0.05 | 2,078 | -0.68 | -0.66 |

**Table 13. Effects of ASEAN + 6: Scenario III (% deviations from the Base)
Tariff Elimination + Reduction in Tariff Equivalents of Services by 10%
+ 5% Reduction in Trade Cost by Trade Facilitation**

| | STATIC MODEL | | | | | CAPITAL ACCUMULATION MODEL | | | | |
|----------------|--------------|---------|--------------------|--------|--------|----------------------------|---------|--------------------|--------|--------|
| | Real GDP | Welfare | Welfare (mil.US\$) | Export | Import | Real GDP | Welfare | Welfare (mil.US\$) | Export | Import |
| Australia | 1.14 | 1.94 | 11,068 | 8.22 | 11.29 | 3.47 | 3.84 | 21,954 | 13.02 | 12.94 |
| Canada | -0.02 | -0.04 | -325 | -0.43 | -1.05 | 0.02 | 0.03 | 227 | -0.86 | -0.87 |
| Chile | -0.01 | -0.18 | -152 | -0.91 | -1.26 | -0.03 | -0.10 | -81 | -0.94 | -0.92 |
| China | 1.83 | 1.85 | 28,009 | 12.02 | 14.61 | 5.80 | 5.14 | 78,010 | 15.60 | 19.38 |
| Hong Kong | 0.00 | -0.05 | -68 | -0.71 | -1.09 | 0.92 | 1.23 | 1,780 | 0.06 | -0.04 |
| Indonesia | 1.61 | 2.48 | 2,144 | 5.42 | 8.53 | 6.87 | 8.61 | 20,097 | 19.17 | 19.76 |
| Japan | 0.60 | 0.86 | 34,103 | 7.81 | 12.11 | 1.51 | 1.51 | 60,268 | 10.66 | 12.91 |
| Korea | 2.76 | 3.42 | 20,397 | 8.77 | 12.84 | 8.54 | 7.81 | 46,616 | 15.27 | 17.87 |
| Malaysia | 5.16 | 7.79 | 8,790 | 4.81 | 9.38 | 16.74 | 15.54 | 17,615 | 15.63 | 17.36 |
| Mexico | -0.02 | -0.06 | -336 | -0.08 | -0.93 | -0.17 | -0.16 | -973 | -0.81 | -0.93 |
| New Zealand | 1.61 | 2.48 | 2,144 | 5.42 | 8.53 | 6.24 | 6.42 | 5,547 | 11.07 | 11.81 |
| Peru | -0.01 | -0.05 | -29 | -0.42 | -1.58 | -0.02 | -0.01 | -4 | -0.81 | -0.81 |
| Philippines | 3.10 | 3.80 | 2,873 | 2.60 | 5.56 | 15.18 | 13.57 | 10,268 | 16.73 | 17.10 |
| Russia | -0.01 | -0.08 | -408 | -0.95 | -1.33 | 0.00 | 0.00 | -24 | -0.81 | -0.85 |
| Singapore | 6.72 | 10.54 | 9,946 | 4.59 | 5.58 | 19.79 | 18.38 | 17,351 | 16.75 | 17.08 |
| Thailand | 4.27 | 11.31 | 13,576 | -4.25 | 27.97 | 29.60 | 24.53 | 29,528 | 41.27 | 44.03 |
| Chinese Taipei | -0.13 | -0.72 | -2,032 | -1.46 | -1.84 | -0.67 | -1.00 | -2,821 | -2.19 | -2.22 |
| USA | -0.01 | -0.06 | -6,906 | 0.18 | -1.77 | 0.01 | 0.02 | 2,277 | -0.70 | -0.74 |
| Viet Nam | 7.15 | 10.29 | 3,834 | 17.95 | 31.61 | 22.93 | 18.69 | 6,969 | 42.67 | 44.34 |
| EU25 | -0.06 | -0.11 | -12,881 | -0.56 | -1.36 | 0.01 | 0.01 | 1,403 | -0.90 | -0.89 |
| ROW | -0.04 | -0.27 | -10,494 | -1.04 | -1.96 | -0.10 | -0.17 | -6,613 | -1.30 | -1.32 |