Benefits of Trade and Investment Liberalization and Facilitation

APEC Economic Committee
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FOREWORD

The Bogor Goals of free and open trade and investment provide a reference point to encourage APEC member economies to continue efforts to reduce trade and investment barriers. One of the most important developments in the APEC region during the past decade has been the significant reduction of tariffs on trade in goods, which in fact contributed to the expansion of trade flows among member economies. At the same time, it has also been well demonstrated that trade facilitation and investment liberalization/facilitation can generate similar or even greater benefits than tariff reduction (EC, *The Impact of Trade Liberalization in APEC*, 1997).

The Benefits of TILF in APEC is a project carried out in response to instructions from the APEC Ministers and Leaders. It is also in response to the strong demand from the business sectors regarding the need for APEC to place more emphasis on works related to trade facilitation and investment liberalization/facilitation in order to promote a free and open environment when conducting business. APEC's work on trade facilitation and investment liberalization/facilitation has emerged as an important engine expanding intra-regional trade and investment towards achieving the Bogor Goals.

Japan and Korea led this two-year project to estimate the benefits of TILF in APEC. The project emphasizes the important positive effects of trade facilitation and investment liberalization/facilitation that are as important as or even more important than trade liberalization. With a concrete target for trade facilitation set forth in the Shanghai Accord—the reduction in trade related transaction costs, through increased trade facilitation efforts, by 5 percent over the next five years—the project attempts to measure the economic impact of trade facilitation and the impact of investment liberalization/facilitation.

This project illustrates that if all the APEC economies will enhance trade facilitation by reducing trade costs by 5 percent in five years from 2002, APEC's GDP will increase by 0.98 percent (US$154 billion). The study also found that trade facilitation results in more gains to the APEC economy than liberalization. In addition to trade facilitation, if the APEC regional economy successfully implements its free trade arrangement, the additional gains from free and open trade are expected to be remarkable. This research strongly supports the assertion that the trade facilitation effect is greater than that of trade liberalization through tariff reduction.

The objective of the *Impact of APEC's Investment Liberalization and Facilitation* was to

analyze the economic effects of investment liberalization and facilitation in a quantitative manner, employing a Computable General Equilibrium (CGE) model of global trade to estimate those economy-wide impacts. The quantification of investment barriers in the APEC member economies was based on the descriptions in each member economy's Individual Action Plan (IAP). The study found that all member economies will benefit from investment liberalization and that the level of benefit liberalization brought to each economy is expected to be, generally speaking, larger for less developed economies. Moreover, the findings show that the growth in FDI spurred by liberalization has a complementary relationship with growth in trade volume.

I would like to express my deepest appreciation to both the Korea and Japan research teams for producing such an important piece of research to advance trade in the APEC region. Special thanks goes to Drs. In Won Park, Kenichi Kawasaki, Sangkyom Kim and Yu Cheul Song for their leadership in bringing the various contributions together. Thanks also go to Mr. Akio Ikemori, Ms. Kaori Ikeda, Ms. Aramaki Tomoko, Mr. Goushi Kataoka, Mr. Arata Kuno, Mr. Masaki Oda, Mr. Kyuntae Kim and Ms. Yumi Cho for their contributions. And, last but not least, a special appreciation to Mr. Charles Jose, Director (Program) at the APEC Secretariat, for seeing this report through to publication.

Choong Yong Ahn
Chair, APEC Economic Committee
Seoul, October 2001

CHAPTER I

GENERAL INTRODUCTION

1. BACKGROUND

At the Leaders' Meeting in Bogor, Indonesia, in 1994, the APEC Leaders committed themselves to achieving free and open trade and investment in the region by the year 2020. Following the Leaders' agreement to expand intra-regional trade and investment to achieve the Bogor goals, the APEC Ministers instructed their Senior Officials to develop concrete actions and measures to prepare the APEC trade facilitation principles as a complementary way to achieve these goals. Moreover, developing these principles to accomplish these goals, the APEC Leaders instructed the Ministers to realize a significant reduction in the transaction costs by endeavoring to reduce them by 5 percent across the region over the next five years at the Leaders' Meeting in Shanghai, China in 2001. Since then, the Trade and Investment Liberalization and Facilitation (TILF) project has been carried out as the flagship project of the APEC Economic Committee (EC) for 2001–2002 and the accomplishment of the project has become an important factor in the drive to achieve the Bogor Goals.

The Bogor goal of free and open trade and investment provides a reference point to encourage APEC member economies to engage in continuing efforts to reduce trade barriers. One of the most important developments in the APEC region during the past decade has been the significant reduction of tariffs on trade in goods, which contributed to the expansion of trade flows among member economies. At the same time, it has also been demonstrated that trade and investment facilitation can generate similar, or even greater, benefits than tariff reduction. It is noticeable that as the marginal cost for further tariff reduction increases the benefits of addressing facilitation measures become more salient. In this respect, complementary action on trade liberalization via investment liberalization (facilitation) and other facilitation measures enhances the effectiveness of TILF.

Responding to APEC's movements toward freer and more open trade, investment, and better facilitation, at the last EC meeting (February 2001), Japan and Korea both volunteered to lead a project analyzing the possible impact of TILF. The Japan-Korea Joint TILF Project is a two-year project to be completed by the 2002 Ministers' Meeting. Japan examined the impact of investment liberalization, whereas Korea took the lead in measuring the impact of trade facilitation. These two economies have had several project meetings in these two years. The first meeting was held in Seoul, Korea, on 12 July 2001 and the second was held in Tokyo, Japan, on 18 January 2002. Each side presented their research plans for discussion and comments. This volume is the final product of the research cooperation between Japan and Korea.

2. TRADE LIBERALIZATION AND FACILITATION

While complementing the successful completion of the Uruguay Round, trade facilitation is considered a route to achieve economic prosperity, along with increases in welfare, by continuously liberalizing trade and investment. The TILF project is a response to the strong demand from the business sector for APEC to place more emphasis on trade facilitation as a means of promoting a free and open business environment.

Although APEC has emphasized trade liberalization and facilitation from the onset of its establishment in 1989, it appears that much time and many resources have been spent unproductively with little progress in trade liberalization through lowering tariff barriers. According to the Korean Ministry of Foreign Affairs and Trade (2000) and APEC (1997, 1999), the positive effects of trade facilitation far outweigh the gains from trade liberalization by lowering tariff barriers.

It is clear that trade facilitation reduces trade costs. In fact, there have been many attempts to analyze the cost reduction effect of facilitation using the gravity and CGE (Computable General

Equilibrium) model analyses. However, as evidenced by past experience, the identification and measurement of economic effects driven by trade facilitation is very limited and, in most cases, maybe impossible, due to their cross-cutting and non-numeral nature. In order to overcome these problems, the Korean team is attempting to estimate the effect of APEC trade facilitation on bilateral trade costs between APEC member economies. The first step in the study is to conduct a survey, analysis of which will assess the benefits of trade facilitation in the APEC region. The team has targeted businesses within APEC economies engaged in trade with APEC other economies, in order to gather their views on the effects of trade facilitation on trade costs. They will examine three areas: customs procedures, standards and conformity, and mobility of business people, and the research team expects to find reference figures for describing the functional relationship between trade costs and trade facilitation.

For the second step of the research, a CGE model analysis is conducted by applying the estimates from the survey analysis to measure the possible impact of APEC trade facilitation on the APEC economy as a whole and on the participating APEC economies. By doing some scenario analyses with the CGE model, the research aims to find a reasonable quantification of the impact and compare the impact with those of trade liberalization. The empirical findings from the Korean team based on its survey and CGE analysis, are carefully described in Chapter 2.

3. INVESTMENT LIBERALIZATION AND FACILITATION

The experience from the Asian financial crisis taught us that sustainable growth of developing economies in the region requires long-term funds, that is, growth in foreign direct investment (FDI) through liberalized investment, rather than speculative investment that can be withdrawn in a short period of time. On the other hand, investment liberalization continues to face persistent resistance especially among advocates of protection of domestic industries in developing economies. In order to eradicate such anxieties, it is necessary to demonstrate empirically and quantitatively, the economic effects of investment liberalization and facilitation and continue to promote its necessity.

In addition, solid growth in FDI requires, along with broader measures in transparency and stability in relevant legal schemes, foreseeability in FDI, an assurance of business latitude for activities of foreign corporations, and other measures to reduce investment barriers and to develop relevant laws. In view of the fact that “Strengthening the Functioning of Markets” has become one of the principal themes in restructuring of the APEC region since 1999, quantitative analysis of the economic effects brought on by investment liberalization through restructuring is vitally important in promoting structural changes in the region.

The Economic Committee presented “The Impact of Investment Liberalization in APEC” in 1997. However, the report, based on case studies on investment policy in a number of APEC member economies, does not attempt to provide a quantitative assessment of investment liberalization effects in the region.

The objective of this study is to analyze quantitatively the economic effects of investment liberalization and subsequent economic restructuring. The economic impact on recipient of FDI economies as a result of reduced investment barriers and legislation to stimulate FDI, is to be assessed quantitatively. At the same time, it is intended to present viable recommendations on effective investment liberalization policy.

One of the distinguished contributions of by this study compared with earlier studies is its attempt to quantify the magnitudes of investment liberalization and facilitation measures. Investment barriers in APEC member economies are quantified by their frequency and coverage. This is the first attempt to quantify investment barriers based on descriptions of investment-area activities in the Individual Action Plans (IAPs) of the APEC member

economies. The estimated barriers are used as key inputs to economic model simulations to assess the economy-wide impact of investment liberalization and facilitation.

In addition, the study employs the CGE model analysis to simulate the impact of investment liberalization and facilitation among several tools of economic analysis in general- and economic models in particular. The CGE model provides a framework for assessing the effects of policy and structure changes such as trade and investment policies on resource allocation by clarifying "who gains and who loses". The study is based on the most recently updated global trade database, however, the standard version of the CGE model has been modified to meet the particular application, where necessarily and appropriate.

4. STRUCTURE OF THE CHAPTER

Following this introductory chapter, chapter II will present the Korean team's findings on the impact of APEC trade liberalization and facilitation on APEC economies. Chapter III follows with a discussion on outcome of the Japanese team's research on the impact of investment liberalization. Chapter IV summarizes both teams' research findings and proposes some policy options for APEC member economies.

CHAPTER II

MEASURING THE IMPACT OF APEC TRADE FACILITATION ON APEC ECONOMIES: A CGE ANALYSIS

EXECUTIVE SUMMARY

While complementing the successful completion of the Uruguay Round, trade facilitation is considered a way to achieve economic prosperity along with increases in welfare resulting from continuously liberalizing trade. In particular, APEC's efforts to enhance trade facilitation have become an important engine for expanding regional trade to achieve the Bogor Goals. At the same time, this policy coincides with the WTO's movement toward globalization. This has led to a preference for trade facilitation amongst the APEC member economies that support open regionalism.

With this background, this study attempts to measure the effects of trade facilitation in the APEC region on the APEC economies. We mainly apply two different methodological approaches to conduct this research—a survey analysis and a CGE model analysis.

According to the most conservative figures found in the survey, a 50 percent improvement in trade facilitation will result in an average trade cost reduction effect of between 2.9 percent, in the case of industrialized (Australia; Canada; Japan; New Zealand; the United States) and newly industrialized APEC economies (Hong Kong, China; Korea; Mexico; Singapore; Chinese Taipei), and 3.5 percent, in the case of industrializing APEC economies (Chile; China; Indonesia; Malaysia; Peru; the Philippines; Thailand; Viet Nam; and Russia). If we take the most optimistic opinion, the reduced trade costs incurred by trade facilitation will range from 5.8 percent in the case of industrialized APEC economies, 6.2 percent in the case of newly industrialized APEC economies, and 7.7 percent in the case of industrializing APEC economies.

We used the survey results to measure the macroeconomic effects of trade facilitation, on the APEC economy as a whole and the individual participating member economies, by using a CGE model analysis. From the CGE model analysis we found that both trade liberalization through a free trade area in the APEC region, and all possible reductions in trade costs through trade facilitation in the region, produce beneficial effects for the APEC regional economy as a whole by creating positive GDP growth and increasing the income of representative agents, which in turn results in expanded private consumption.

Moreover, gains from trade facilitation are more beneficial to the APEC economy than gains from trade liberalization. In particular, the effect of the Shanghai Accord on APEC's GDP growth will be 0.98 percent (US$154 billion), on average, with Singapore enjoying the biggest gain (7.65 percent) and the US getting the smallest gain (0.32 percent). In addition, the optimistic case of APEC's regional trade facilitation multiplies the beneficial effect on APEC's GDP by 1.3 percent (US$204 billion).

In terms of achieving GDP growth, regional trade facilitation, that is, trade facilitation limited to the APEC member economies, is a better policy option than global trade facilitation, (trade facilitation open to members and non-members alike). However, global trade facilitation under the principle of open regionalism is better than regional trade facilitation in terms of consumer welfare since it results in more private consumption and lower output prices, although there exists a free-rider problem.

The distribution of gains from trade liberalization over the different levels of economic development in APEC is quite typical. Relatively less developed APEC economies that have relatively smaller domestic markets and are more dependent on the regional export market take bigger gains from the freer trade. On the other hand, the distribution of the beneficial effects of trade facilitation over the APEC member economies depends on the intra-APEC trade share and trade dependency. The higher intra-APEC trade share an economy has and the higher its trade dependency, the bigger gains it will enjoy in terms of GDP growth from trade facilitation among the APEC economies.

In conclusion, this research shows that the effects of trade facilitation are far superior to and more practical than, the effects of trade liberalization through eliminating or lowering of import tariffs. As traditional trade barriers such as import tariffs come down, trade facilitation will become increasingly important. According this research, the benefits of trade facilitation can be quite significant. With the current facilitation covering much broader areas, the potential benefits are much higher. Thus, emphasizing and accelerating trade facilitation will be an important objective for APEC.

1. INTRODUCTION

While complementing the successful completion of the Uruguay Round, trade facilitation is considered a way to achieve economic prosperity along with increases in welfare resulting from continuously liberalizing trade. The Trade and Investment Liberalization and Facilitation (TILF) project, carried out as the flagship project of the Economic Committee for 2001–2002, is a response to the strong demand from the business sector for APEC to place more emphasis on trade facilitation as a means of promoting a free and open business environment. APEC's efforts to enhance trade facilitation have emerged as an important engine for expanding regional trade to achieve the Bogor Goals. At the same time, this policy coincides with the WTO's movement toward globalization. This has led to a preference for trade facilitation amongst APEC member economies that support open regionalism.[1]

Although APEC has emphasized trade liberalization and facilitation from the onset of its establishment in 1989, it appears that much manpower and time has been spent rather unproductively, producing little progress in lowering tariffs. After failing to reach an agreement in the Early Voluntary Sectoral Liberalization (EVSL) project, APEC tried to avoid sensitive issues such as tariff reduction in its efforts to liberalize trade and instead sought alternative means to achieve its goal. At the 11th Ministerial Meeting, in 1999, the need to speed up the process of trade facilitation in the areas of customs procedures, standards and conformity, and business mobility was stressed. During the following APEC Leaders' Meeting, the Leaders approved facilitating trade and called for a more detailed plan on how to achieve the objective. At the 8th APEC Leaders' Meeting in Brunei Darussalam in November 2000, the Leaders re-confirmed their commitment to promoting trade facilitation. They also agreed that reducing international transaction costs would be their highest priority. Responding to the Leaders' agreement, many researchers expressed an interest in undertaking studies to estimate the possible impact of trade facilitation on the regional economy. Among these was the Korean research team currently leading the trade facilitation research in APEC. This is a preliminary report on the outcomes of their study.

According to the Korean Ministry of Foreign Affairs and Trade (2000) and APEC (1997, 1999), the positive effects of trade facilitation far outweigh the gains from trade liberalization by lowering tariff barriers. Due to the difficulty in confirming this argument, research can only be carried out on a normative basis. In addition, the empirical evidence obtained through existing quantitative analyses is out of date, as the global economic environment has changed since the conclusion of the Uruguay Round. More specifically, there have been huge developments in information and communication technology resulting in a new trade environment in the world market. Consequently, researchers need to have new and updated data that accurately reflects the present international trading environment. Providing such information is another objective of this study.

It is clear that trade facilitation reduces trade costs. In fact, there have been many attempts to analyze the cost reduction effect of facilitation with the gravity and Computable General Equilibrium (CGE) model analyses. However, as evidenced by past experience, the identification and measurement of economic effects driven by trade facilitation is very limited and, in most cases, maybe impossible due to their cross-cutting and non-numeral nature. More specifically, in order to quantify the economic input of trade facilitation more accurately, the following concerns need to be cleared in advance.

- How much would trade facilitation reduce trade costs? In other words, is it possible to quantify the efficiency gains?

[1] See Woo and Wilson (2000).

- Is it possible to measure the macroeconomic impact of trade facilitation? How much change can one expect compared to the impact of trade liberalization?

In order to answer these questions, we attempt to estimate the effect of APEC trade facilitation on bilateral trade costs between APEC member economies by adopting the same survey analysis as Kim and Park (2001). Then, we apply the estimates to measure the possible impact of APEC trade facilitation on the APEC economy as a whole and the individual participating APEC economies by using a CGE model analysis.

Following this introductory section, section 2 briefly explains the theoretical relationship between trade facilitation, trade costs, and gains or losses from freer trade through trade facilitation. In section 3, we summarize APEC's efforts to enhance trade facilitation and empirical findings from previous research attempts. Section 4 estimates the effect of trade facilitation on trade costs in the APEC region by analyzing the survey we conducted in 2002. Section 5 specifies the CGE model used in this research and explains the scenarios we have designed to measure the impacts of trade facilitation and trade liberalization. Finally in section 6, we evaluate the empirical results from the CGE model analysis at the macro-aggregate level and summarize our findings in section 7.

2. TRADE FACILITATION AND TRADE LIBERALIZATION: GAINS FROM TRADE

In this section, we attempt to formalize the concept of trade facilitation, which strongly complements trade liberalization, and theoretically examine the linkage between trade facilitation and gains from trade.

2. 1 Concept of Trade Facilitation

Tariffs and non-tariff measures (NTMs) are barriers impeding international trade. The NTMs can be classified as direct barriers (i.e., import quotas) and indirect barriers (i.e., complex customs procedures). These barriers, along with transportation, insurance and other physical transaction costs, affect the price of domestically produced goods and imports, thereby restricting the flow of international transactions. The restrictions result in a loss of efficiency in terms of resource allocation, social welfare and economic development.

Trade facilitation can be defined as an effort to pursue greater 'convenience' in international trade through the simplification of economic activities such as the movement of goods and services across borders.[2] In a broad sense it can be defined as the lowering or elimination of non-tariff barriers. More specifically, it is an attempt to lower the costs of administration, standardization, technology, information, transaction, labor, communication, insurance, and financing, as well as reduce the time costs related to these procedures.[3] The administration costs arise during customs procedures, the technology costs are involved during standards procedures, and the information costs arise while importing or exporting goods and services. These costs result in the loss of economic efficiency and reduce gains from trade.

[2] See WTO (2001).
[3] We focus mainly on three main areas of trade facilitation in this study: customs procedures, standards and conformance, and mobility of business people.

2.2 Trade Costs and International Trade

Assuming that total costs related to international trade are equivalent to the price difference between world market price of imported goods and domestic consumer price, we can define this as trade costs. In this context trade costs can be divided into three categories. First, there are transaction costs that consist of transport and insurance costs. Second, there are policy costs that are mainly incurred by protection policies like tariff and non-tariff barriers. Finally, there are trade costs due to the lack of trade facilitation. Therefore, trade costs incurred by the movement of goods and services across borders can be summarized by the following equation (1).

(1) Trade Costs = Transaction Costs + Policy Costs + Facilitation Costs

We deduce from the above equation that the reduction in trade costs resulting from better trade facilitation has an identical effect as a reduction of tariffs or non-tariffs, both resulting in an increase in social welfare through the gains from freer trade. More specifically, we can apply the iceberg method, which is a traditional method of explaining transaction costs involved in international trade, to the above equation (1).[4]

Let us assume that γ ($0<\gamma<1$) represents the transport costs' percentage in a single unit of exportable and only $(1-\gamma)$ arrives at the importing country. Then γ represents direct transaction costs. If we apply this iceberg method to define the trade costs related to trade facilitation, out of the $(1-\gamma)$ of imports received, τ ($0<\tau<1$) percent will additionally be discarded due to inefficient customs procedures in the importing country. Therefore only $(1-\gamma)(1-\tau)$ of the exportable will enter the domestic market. With these assumptions we can interpret τ as the facilitation cost.

Therefore, according to the equation (2), trade facilitation improves importing economies' welfare by narrowing the gap between the world market price (p_w) and domestic price (p_c) of the imported goods which leads to an increase in the volume of world trade. This implies that the closer τ is to 0, the difference between the two prices will narrow and therefore one can expect higher welfare gains. In equation (2), t represents policy costs, where γ represents transaction costs and τ represents facilitation costs respectively.

$$(2) \qquad p_c = \left[\frac{(1+t)}{(1-g)(1-t)}\right] p_w$$

2.2.1 Trade Costs and Social Welfare: Trade Facilitation vs Trade Liberalization

According to equations (1) and (2), both trade liberalization and trade facilitation directly reduce trade costs. Trade facilitation can be perceived as a trade enhancing service leading to gains in social welfare. Then, we may apply the theoretical analysis of trade liberalization presented in Deardorff (2000). Deardorff (2000) compares the gains in social welfare due to a reduction in transaction costs caused by the liberalization of trade-related services with that of lowering tariffs. The comparison is as follows:

Figure 1 illustrates the traditional welfare effect of trade liberalization.[5] The welfare gains from the reduced tariffs are represented by [c+e]. Before we imposed an import tariff, the world market price of the importable was p_w^0. The domestic consumer price of the importable

[4] See page 157-163 of Frankel (1997) for the relationship between the traditional "iceberg" method and transaction costs and tariffs. This section extends Frankel's idea and applies it to the facilitation costs.
[5] Quoted from the Appendix in Deardorff (2000).

increases to p_c^0 with the imposition of an import tariff, t_0. The market equilibrium is reached at point E. In this situation consumer surplus is represented by [a] and the tariff revenue is represented by [b+d]. Assuming that all the tariff revenue is redistributed to the consumers, the social welfare is represented by [a+b+d]. If the tariff is reduced to t_1 from t_0 ($t_1 < t_0$), the domestic price of the importable falls to p_c^1 and the new equilibrium will be at the point E´. Taking into account the redistribution effect of the tariff revenue, social welfare will be represented by [a+b+c+d+e] and the welfare net gains will be [c+e].

Assuming that the change in the domestic consumer price of the importable by a reduction in trade costs through trade facilitation is equivalent to the reduction incurred by the lower tariffs, figure 1 summarizes the welfare effect of trade facilitation. Unlike trade liberalization, however, the cost of trade facilitation cannot be redistributed to the customers. Similar to the iceberg type of transaction costs, it leads to a waste of real resources. Thus, the welfare without trade facilitation is estimated to be [a-b-d]. If trade costs drop from t_0 to t_1 due to trade facilitation, social welfare increases to [a+b+c-d-e] and the gains in welfare are represented by [2b+c-e]. The difference in welfare gains from the reduced trade costs by the two different sources (Δu = welfare effect of trade facilitation – welfare effect of trade liberalization) is indicated by [2b+c-e-c-e = 2b-2e = 2(b-e)]. It is determined by the price elasticity of import demand, the degree of the enhanced trade facilitation (Δt), and the degree of change in tariffs (Δt).

Figure 1: Tariff Reduction and Social Welfare Increment Effect of Trade Facilitation (Elastic Case)

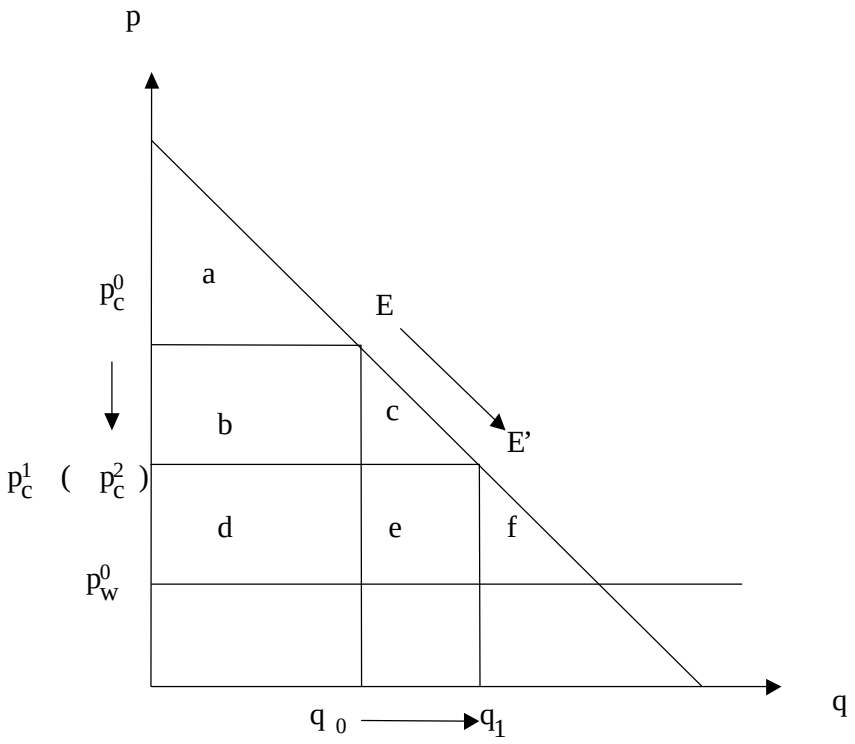


Figure 2: Tariff Reduction and Social Welfare Increment Effect of Trade Facilitation (Inelastic Case)

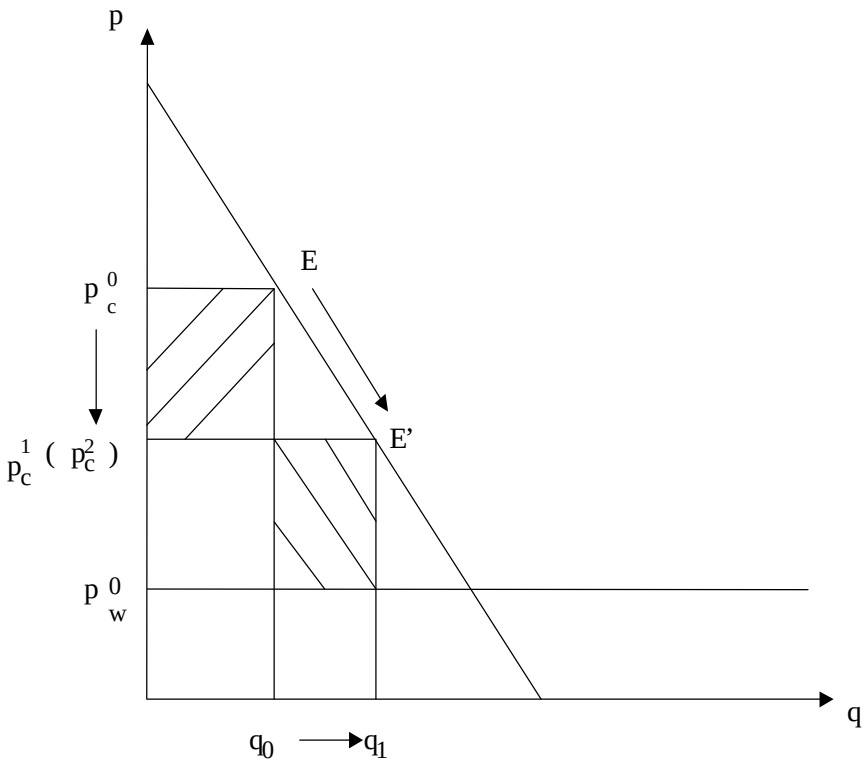
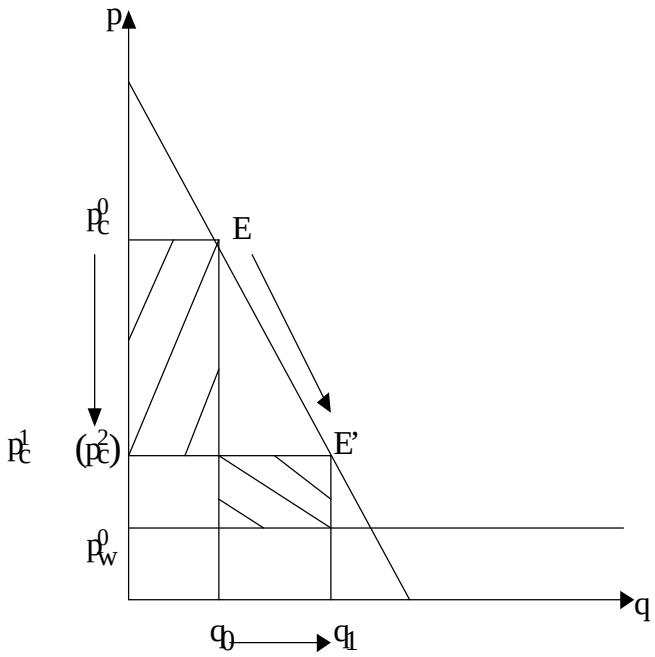


Figure 3: Tariff Reduction and Social Welfare Increment Effect of Trade Facilitation (Inelastic and Large Decline of Trade Cost)



Figures 1, 2, and 3 illustrate that the change in welfare depends on the price elasticity of import demand and the degree of change in trade costs where the domestic consumer prices of the importable are defined as the following equations.

$$p_c^0 = [\frac{(1+t_0)}{(1-g_0)(1-t_0)}] \quad P_w^0$$

$$p_c^1 = [\frac{(1+t_1)}{(1-g_0)(1-t_0)}] \quad P_w^0$$

$$p_c^2 = [\frac{(1+t_0)}{(1-g_0)(1-t_1)}] \quad P_w^0$$

where, $t_0 > t_1$ and $\tau_0 > \tau_1$

As in equation (2), t, γ, and τ represent policy costs, transaction costs, and facilitation costs, respectively. The subscripts w and c represent the world market price and the consumer price of the importable, respectively and superscripts 0 and 1 represent figures before and after the trade costs have changed.

Then, the welfare effects are estimated to be[6]

① An increase in welfare by tariff reduction

$$\left[p_c^0 \rightarrow p_c^1\right] = \left[a+b+c+d+e\right] - \left[a+b+d\right] = \left[c+e\right] > 0$$

② An increase in welfare by trade facilitation

$$\left[p_c^0 \rightarrow p_c^2\right] = \left[a+b+c-d-e\right] - \left[a-b-d\right] = \left[2b+c-e\right] > 0$$

③ ② - ① $= \Delta u = \left[b-e\right] \begin{matrix} \leq \\ \geq \end{matrix} 0$

The change in welfare resulting from trade facilitation is typically positive. In order for the welfare gains through trade facilitation to exceed those of tariff reduction, the price elasticity of import demand (σ) should be inelastic and the reduction in trade costs arising from trade facilitation should be large. That is, "the more inelastic the import demand ($\sigma \rightarrow 0$) and the bigger the reduction in facilitation costs ($\tau \rightarrow 0$), the greater the welfare gains (Δu) from trade facilitation are than from trade liberalization." Therefore, equation (3) can be derived where f_1 and f_2 represent the first derivatives.

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[6] Different from the case when tariffs are fully eliminated, the assumption that all trade related costs become 0 due to perfect trade facilitation is excluded because it does not reflect reality. If we compare the case when tariffs are eliminated (t=0) with the case of perfect trade facilitation (τ=0), domestic consumer price of the importable is equal to the world market price at p_w^0 in both cases. The welfare gains due to the elimination of tariffs are represented by (c+e+f) and the gains from trade facilitation are represented by [2(b+d)+c+e+f]. Irrespective of the price elasticity of import demand, the welfare gains from trade facilitation always exceed of trade liberalization by [2(b+d)]. This is an obvious result. However, it is not a realistic case to be considered in this research.

(3) $\Delta u = f(\Delta\tau, \sigma)$, $f_1 < 0$, $f_2 < 0$

2.2.2 Trade Facilitation as a Supplement to Trade Liberalization

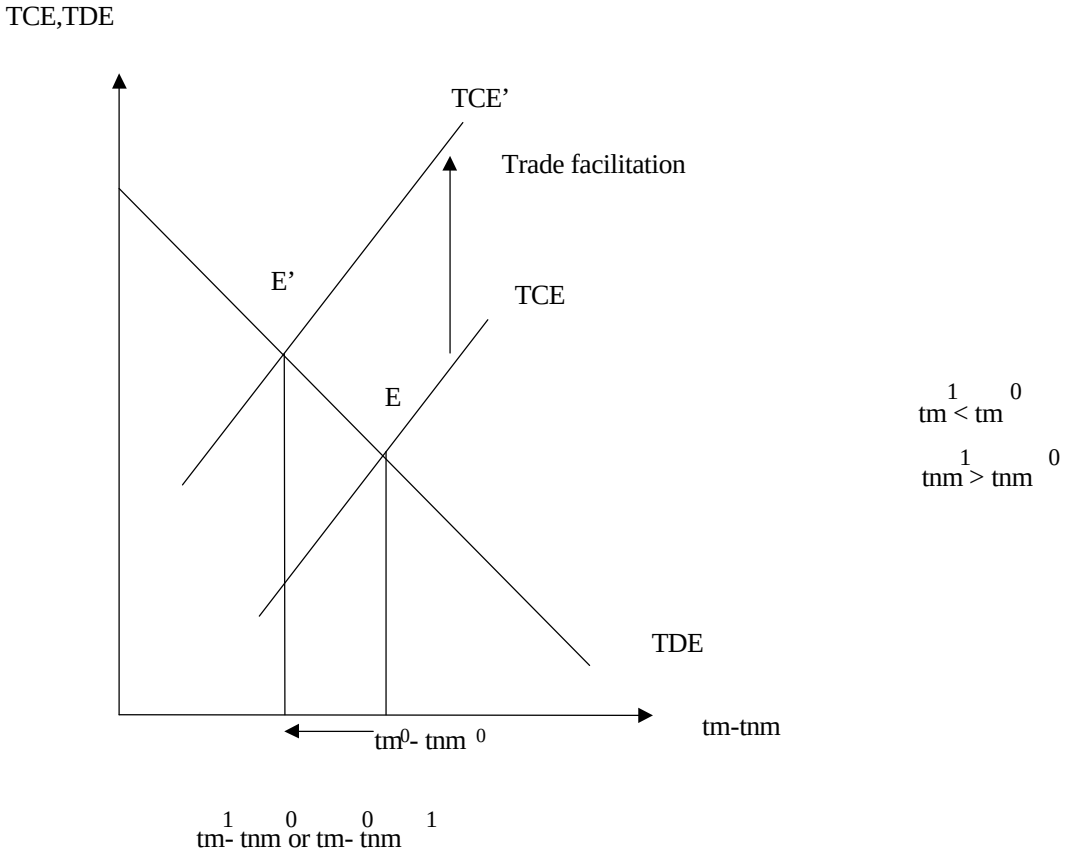
It is of great importance that not only does trade facilitation increase welfare but it also complements trade liberalization. The complementary relationship between trade facilitation and trade liberalization is illustrated in figure 4. In general, other variables being constant, it is expected that the trade creation effect (TCE) will exceed the trade diversion effect (TDE) if import tariffs *(t_m)* between members were high and those *(t_{nm})* against non-members were low before the tariffs against members are lowered as shown in the following equation (4).

(4) $TCE = g(t_m)$, $g' > 0$ and $TDE = h(t_{nm})$, $h' < 0$

Trade facilitation increases the competitiveness of goods and services from the member economies that previously faced difficulty entering the other members' markets despite tariffs being equal for both members and non-members. The additional trade creation effect incurred by trade facilitation shifts the TCE curve upward to TCE'. Moreover, if we apply this type of trade facilitation to public goods, trade facilitation may even benefit non-members without exclusion. Then, the TDE curve would not be affected. Therefore, trade facilitation acts as a supplement that further accelerates gains from trade liberalization by increasing the gap between the benefits created by trade creation and the losses created by trade diversion.

This policy has the advantage of being compatible with APEC's principles of non-exclusive trade liberalization. The policy also has the benefit of promoting regional economic cooperation by giving member economies a greater incentive to create a free trade area. On the other hand, the welfare gains from trade liberalization will be greater when there is a high level of interdependence between prospective members in terms of labor, investment and trade before a creation of the free trade area. Aside from the analysis above, the transaction costs will be more greatly reduced in general if economies are more dependent on each other. Therefore, if trade facilitation occurs exclusively, it increases the dependence between member economies and results in more gains from trade liberalization.

Figure 4:Trade Facilitation as a Supplement to Trade Liberalization



2.2.3 Overall Gains from Trade Facilitation

The development of information and communication technology (ITC) along with great efforts to liberalize trade has brought about a considerable reduction in transaction (γ) and policy *(t)* costs. At the same time, due to developments in information and communication technology, increases in e-commerce as well as efforts[7] to increase efficiency in customs procedures, facilitation costs (τ) have also fallen. However, this reduction in facilitation costs has been highlighted recently and is only a small fraction of the reduction in transaction and policy costs. It is believed that there is still plenty more room for additional reductions in facilitation costs which could lead to a remarkable improvement in the world trade environment.

The anticipated effects, either positive or negative, of trade facilitation on the world economy can be summarized as follows:

7 See Ministry of Foreign Affairs and Trade (2000).

A. Expected Gains from Trade Facilitation

- Reduced or eliminated non-tariff barriers through trade facilitation supplement the lowering of tariffs and result in an increase in the world trade volume, enabling the world economy and participating economies to be better off. As with tariff reduction, trade facilitation induces a fall in trade costs. It creates more trade and increases gains from freer and easier trade.

- Trade facilitation will reduce the opportunity costs of international specialization. This will result in more intra-firm trade through the vertical integration of multi-national corporations. This will directly lead to an increase in trade of intermediary goods and services and, indirectly, lead to an increase in foreign investment,[8] which will improve welfare and produce economic growth. In short, trade facilitation will increase outsourcing opportunities and expand the fragmentation of production activities across borders. Welfare will improve through this process. In particular, the expansion of outsourcing and transfer of technology across borders will assist in the industrialization of developing economies.

- Trade facilitation may improve a government's efficiency in administration and may enhance transparency. In addition to these anticipated benefits, government revenue from customs procedure related activities may increase.

- Trade facilitation will reduce the possibility of international disputes between developed and developing economies arising from differences in customs procedures and operating systems. This will reduce the costs of resolving disputes and lead to an increase in world trade.

- The automation of transactions and the adoption of electronic payment systems create more gains because of reduced transaction costs and enhanced competition in the world market.

- Trade facilitation will help small and medium enterprises (SMEs), especially in developing countries, to be more quickly and actively exposed to the global market. This will in turn produce more gains from trade, promising economic growth in developing economies.

- Another gain in welfare may be achieved by developing economies through trade-related regulatory reforms which lead to improvements in health and safety related areas.

- Further economic development is expected from the facilitation of trade-related labor force movements through improvements in working environments and the accumulation of human capital in developing economies.[9]

- Trade facilitation can be easily pushed forward since it has the characteristics of a public good and if applied non-exclusively, it satisfies the fundamental ideas of the World Trade Organization (WTO) and is consistent with the APEC's open regionalism.

B. Expected Problems Accompanying Trade Facilitation

- Higher implementing costs are expected. Legal and structural infrastructures must be set up prior to carrying out trade facilitation; the amount of skilled labor must be enlarged through continuous education and training; there is also a huge fixed cost involved in obtaining capital and facilities, which are required when improving the system.

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[8] International specialization and trade facilitation will promote capital movement across borders. This will in turn produce a substantial amount of dynamic benefits by enhancing the efficient use of resources and thus increasing the marginal efficiency of the capital.

[9] See Assanie, Hardy, and Mailletet (2000).

- A discrepancy in standards among the participating economies is expected. In reality, it will be very difficult to harmonize the differences in customs procedures, systems, infrastructure, labor standard, safety, technology, etc., when each economy is in a different phase of development.

- Measuring the effectiveness of trade facilitation is difficult. Unlike trade liberalization, there are limitations[10] in obtaining statistical evidence of trade facilitation on trade costs. This makes it difficult to carry out a cost-benefit analysis, thus creating a political burden for policy makers who wish to push any trade facilitation related policy forward without having a quantitative estimation of the expected effect.

- The free-rider problem exists in open regionalism. Therefore, with trade facilitation, the free-rider problem seems inevitable.

3. EXISTING EMPIRICAL STUDIES ON TRADE FACILITATION

The importance of trade facilitation to achieving a freer and easier trade environment has been one of the hottest issues in international organizations since the WTO's Ministerial Meeting held in Singapore in 1996. It finally started to take shape during the WTO's Trade Facilitation Symposium in March 1998. As a result of these various efforts, the effect of trade facilitation on international trade has been carefully examined but most studies are thought to be either too focused on a specific aspect of trade liberalization or inadequate as a quantitative macro-economic analysis.

In general, there are four different methods of analyzing the effect of trade facilitation. The most widely used method is investigative analysis based on surveys.[11] Aside from this there are empirical analyses, which use gravity model analysis,[12] partial equilibrium model analysis,[13] and computable general equilibrium model (CGE) analysis.[14]

Trade facilitation leads to a reduction in trade costs which leads to an increase in the volume of world trade. This results in an increase in real GDP and welfare. The most important factor in determining the relationship between trade facilitation and macro-aggregate variables such as GDP is the trade costs. Until now, the survey results by Cecchini (1988) and UNCTAD (1992) were used as a reference value to represent the relationship. However the results obtained by these studies failed to take into account the rapid development in information and communication technology in recent years and the movement towards globalization after the establishment of the WTO. Addressing these weaknesses of the existing studies, Kim and Park (2001) attempted to investigate the quantitative relationship between trade costs and trade facilitation in the case of the Korean economy. In this research, we apply the survey analysis in Kim and Park (2001) to most APEC member economies[15] in order to derive a reference value

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[10] See Wilson (2000).

[11] See Cecchini (1988), Schiavo-Campo (1999), OECD (2000), APFC (2000) and Woo and Wilson (2000).

[12] See Baier and Bergstrand (2001) for corroborated research on the theoretical basis of the use of a gravity model and research on transaction costs. Also see Moenius (1999) and Maskus, Wilson, and Otsuki (2001) on cases of trade facilitation.

[13] See Maskus, Wilson, and Otsuki (2001).

[14] For the CGE analysis, see Maskus, Wilson, and Otsuki (2001), APEC (1997, 1999), Dee (1998). Maskus, Wilson, and Otsuki (2001) is based on the collection of empirical estimations from many of previous studies. It emphasizes the importance of trade facilitation on standards and technical barriers.

[15] We received 25 responses from Chile, Indonesia, Malaysia, Papua New Guinea, Peru, the Philippines, and Thailand, 63 responses from Korea and Mexico, and 37 responses from Japan.

of the efficiency gains from APEC's trade facilitation efforts on regional trade costs and resulting effects on participating economies in the region.

There have been quite a few studies elaborating the importance of trade facilitation. However, the quantitative analyses of the economic effects at the aggregate macro-economic level are still limited. In APEC (1997, 1999) and Dee (1998), the effects on macro-aggregate variables based on the CGE model are estimated based on the assumption of a fall in import price as well as in imports of 2 to 3 percent and 5 percent respectively. However, these studies failed to reflect the current changes in the trading environment as we mentioned earlier. This is another objective of the CGE analysis in this research. The following sections will summarize estimates from the survey analysis and the CGE model analysis to measure the impact of APEC trade facilitation on the APEC economy as a whole, as well as on the participating economies in the region.

Table 1 briefly explains the results of corroborated analyses of the trade cost reductions resulting from trade facilitation, according to the analytical method used. Table 1 indicates that, in all cases, the positive economic effects arising from reduced trade costs through trade facilitation outweigh the benefits generated by reduced tariffs through trade liberalization.[16]

[16] Later, we also confirmed the previous empirical findings based on our estimations from the CGE model analysis.

Table 1: Corroborated Analyses on the Economic Benefits of Trade Facilitation

A. Corroborated Analyses Based on the Investigative Survey Method

Research object	Itemized trade facilitation	Abstract of corroborated analysis
Cecchini (1998)	Non-tariff barriers like various restrictions and border restriction costs incurred by customs between EU members	▪ Trade cost is estimated to be 5 percent of total trade value ▪ Benefits from trade facilitation: 4.3 percent to 6.4 percent of the EU's total GDP
UNCTAD (1994)*	Transaction costs incurred by trade facilitation	▪ 7 to 10 percent of total trade value
Schiavo-Campo (1999)	Japan's time cost for freight loading	▪ In the case of air freight, improved by 70 percent from 2.3 hours in 1991 to 0.7 hours in 1998
Schiavo-Campo (1999)	Philippine's time cost for freight loading	▪ from 6–8 days before implementing automation to 4–6 days after automation in the case of green lane, ▪ the reduction by 48 hours in the case of yellow and red lane
OECD (2000)	The technology standard and approval regulations of telecommunication, dairy products, and car component industries in the US, Japan, the UK, and Germany	▪ 0 percent to 10 percent increase in total production costs
APFC (2000)	In the case of the 21 APEC members, the qualitative analysis of customs procedures, standards and conformance, and mobility of business people	▪ Out of the previously mentioned three obstacles in facilitating trade, complex customs procedures and regulations are assessed to be the biggest problem equivalent to the tariff barriers.

* recited from APEC (1999).

B. Econometric Analyses Based on the Gravity Model.

Research object	Itemized trade facilitation	Abstract of corroborated analysis
Swann et al. (1996)**	Regression analysis to estimate trade creation effect of standardization in Britain between 1985 and 1991	▪ Imports increased by 34 percent and exports increased by 48 percent.
Moenius (1999)	Regression analysis to estimate trade creation effect of standardization in 12 economies between 1980 and 1995	▪ It is estimated that when the accumulated rate of standardization between all economies exceeds 1 percent of trade volume, total trade increases by 0.32 percent

C. Partial Equilibrium Analyses

Research object	Itemized trade facilitation	Abstract of corroborated analysis
Thilmany and Barret (1997)**	Technology restrictions on US dairy products imported into NAFTA member economies	▪ Similar to the effect of tariffs, domestic consumers' welfare falls
Calvin and Krissoff (1988)**	Health restrictions on US apples imported into Japan	▪ Equivalent to the imposition of tariffs by 27.2 percent
Guasch and Spiller (1999)***	Monopolistic operation of harbors by Latin American economies and the regulations applied	▪ Equivalent to an export tax of 5 percent to 15 percent
Staples (1998)***	Paperwork for import customs	▪ An extra 7 percent to 10 percent costs on top of the world's total trade amount
WTO (2000)***	Transport restrictions when crossing borders between middle and eastern Europe	▪ 6 percent of total transportation time
Gasiorek *et al.* (1992)**	Standardization in the EU	▪ 2.5 percent reduction in trade costs
Harrison *et al*. (1996)**	Expansion of Gasiorek *et al*.'s (1992) research	▪ In the short run, the welfare gain is 0.5 percent of the GDP ▪ In the long run, due to the increase in ROI (Return on Investment), the welfare gain becomes 2.4 percent of the GDP

** Cited from Maskus, Wilson, and Otsuki (2001).
*** Cited from Messerlin and Zarrouk (2000).

D. CGE model analyses

Research object	Itemized trade facilitation	Abstract of corroborated analysis
Dee (1998)	Trade facilitation brings about an increase in real income by 5 percent of the total trade	For APEC as a whole, an increase in real income of US$216 billion.
APEC (1997)	Assumes that out of the APEC members industrialized economies will see a 2 percent fall in import prices and less developed economies, a 3 percent drop	For APEC as a whole, an increase in real income of US$45 billion (0.26 percent of the total GDP; in the case of tariff reductions, the increase in real income is 0.14 percent of the total GDP)
APEC (1999)	Assumes that out of the APEC members industrialized economies will see a 2 percent fall in import prices and less developed economies, a 3 percent drop	For APEC as a whole, an increase in real income of US$46 billion (0.25 percent of the total GDP; in the case of tariff reductions, the increase in real income is 0.16 percent of the total GDP)

4. TRADE FACILITATION AND TRADE COSTS: SURVEY ANALYSIS

As previously explained, it is difficult to analyze the costs and benefits of trade facilitation using existing data mainly due to facilitation's cross cutting and non-numeral nature. In an attempt to carry out a standardized empirical analysis on the effects of trade facilitation, a survey was carried out. In this section, we first analyze the results of the survey to examine the factors that APEC firms perceive to be barriers to trade within APEC. Then, based on the survey responses, we construct and introduce the effects of trade facilitation on transaction costs, consumer prices, and domestic demand for imported products.

4. 1 Background

The barriers distorting international trade can be studied through various sources including the annual *Foreign Trade Barriers* published by the United States Trade Representative (USTR), national reports such as the *Foreign Trading Environments* published by the Republic of Korea's Ministry of Foreign Affairs and Trade (MOFAT), the WTO's Trade Policy Review (TPR), etc. However, the reports published by individual economy's trade-related departments tend to concentrate mostly on trade barriers related to their own interests. Also the WTO's TPR does not provide a comparative analysis of the various trade barriers reported. Therefore it may be somewhat inappropriate to utilize data from these sources to identify and analyze the barriers in the APEC region. One of few exceptions is the survey on trade barriers performed by the APEC Business Advisory Council (ABAC) and Canada's Asia Pacific Foundation targeting businesses that operate within the APEC region. The results from this survey were reported during the Trade Ministers' Meeting in Brunei in June 2000. The results were very useful in identifying the perceived difficulties of APEC businesses when they engage in trade activities with APEC trading partners. However, the survey did not produce statistical data that could be used to measure the effect of trade liberalization.

In order to focus mainly on identifying trade barriers and quantifying the effects of trade facilitation on APEC, a survey was conducted under the auspices of the APEC Economic Committee, collaborating closely with ABAC. In order to increase the effectiveness of the survey, it targeted APEC businesses that are engaged in trade activities with APEC trading partners. Unlike past surveys, this twenty-eight question survey form has two sections: a section analyzing existing trade barriers within APEC; and a section measuring the reduction of transaction costs due to trade facilitation.[17]

Two hundred and fourteen firms in APEC responded; however, the results from 83 firms were not usable due to insufficient information. Therefore, the results from the 131 firms[18] that provided all the relevant information were combined and analyzed to determine their views on the effects of trade facilitation in three areas—customs procedures, standards and conformity and mobility of business people—on the reduction of transaction costs.

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[17] To obtain more realistic results, survey participants were given a more detailed description of the survey and APEC's trade facilitation policy through the ABAC website. Also in questions 19, 20, 21, 22 and 23 of the survey (see Appendix), participants were given a wide range of choices for the positive effects of trade facilitation. This was to encourage firms who were not familiar with the impact of trade facilitation on their individual firms to participate in the survey. However this survey does not take into account the characteristics (degree of trade facilitation, geographical distance) of each firm's trading partners. This is likely to be a limiting factor when analyzing the specific characters of each industry or economy.

[18] Number of usable respondents categorized by economy are as follows: Chile (3), Indonesia (1), Japan (37), Korea (56), Malaysia (1), PNG (1), Peru (9), Philippines (1), Thailand (9), Mexico (7), Chinese Taipei (3), Singapore (2), and U.S.A. (1).

4.2 Analysis of Trade Impediment

Table 2 illustrates the degree to which import restrictions and quotas, tariffs, and complex customs and administration procedures, standards and business mobility restrictions impede trade with APEC member economies. When the responses of "Strongly Agree" and "Agree" are set as the criteria for judging trade impediments, table 2 illustrates the level of trade impediments when APEC firms transact with each other across borders. According to the responses, high tariffs (32.1%) are the biggest impediment to trade, followed by complex customs and administration (29.8%), trade restrictions and quotas (28.2%), business mobility (23.7%), standards (16.0%) and licenses (13.0%).

4.2.1 High Tariffs

Since the conclusion of the Uruguay Round agreement, tariffs have been significantly reduced by either individual or collective efforts to accelerate global trade liberalization. However the survey revealed that tariff related measures are believed to be the highest trade barriers *vis-à-vis* non-tariff measures that increase trade costs through administration procedures and technological sanctions. A more detailed examination illustrates that respondents perceived that tariff discrimination (32.8%) distorts trade more than unfair treatment (22.9%).

4.2.2 Complex Customs and Trade Administration

Close to 30 percent (29.8%) of respondents revealed that the biggest impediment out of the five categories of non-tariffs in the survey is measures related to customs procedures.[19] Further analysis of the results shows that delays in procedures (36.6%) are the biggest customs-related impediment followed by customs valuation (31.3%), rules of origin (28.2%), sanitary and phytosanitary measures (25.2%), pre-shipment inspection (20.6%) and price verification (15.3%).[20] Delays in customs, which have been reported as the biggest trade impediment, seem to be caused by the importing/exporting firm's lack of information on the customs laws and regulations of their APEC trading partners, importing economy's administrative backwardness and lack of professionalism. The reduction of these barriers can be achieved by making continuous efforts to simplify customs procedures, expand information sharing, enhance transparency and create more opportunities for training and education.

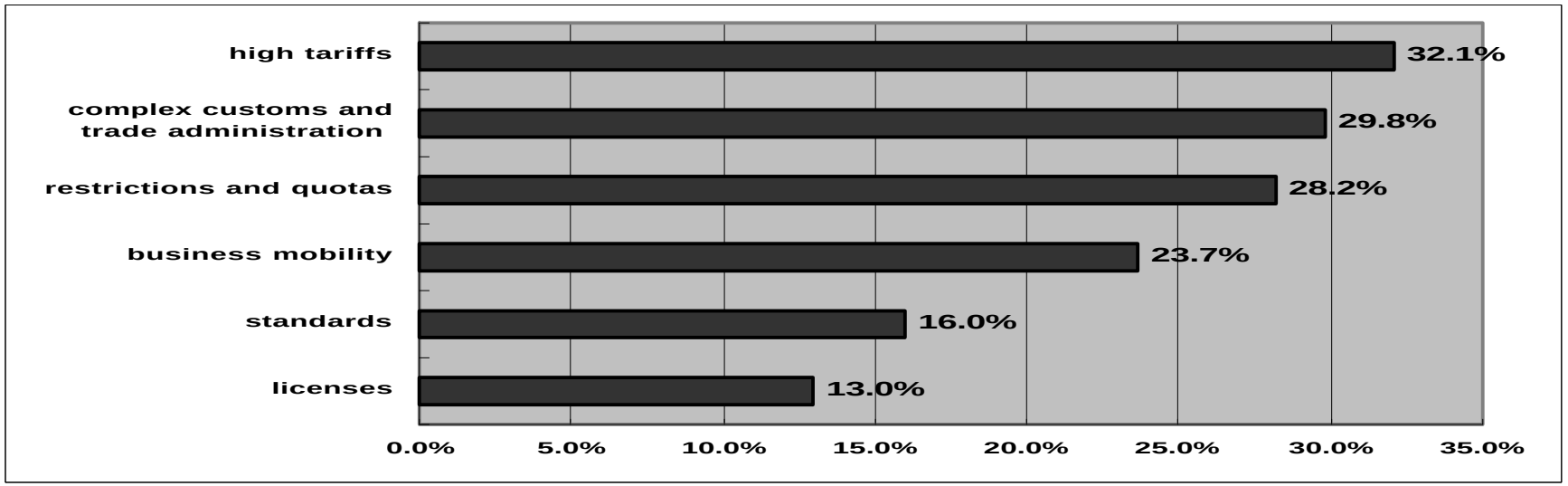
[19] In a survey carried out in 2000 by the Asia Pacific Foundation of Canada to examine the current existing impediments in trade, 53 percent of the respondents (the highest) replied that customs procedures was the biggest impediment in trade. For more detailed information see APFC (2000).

[20] 30.5% and 28.2% of respondents answered that inspection prior to shipping and price inspection does not cause a serious problem (Strongly Disagree + Disagree). These figures are higher than the percentage of respondents who answered that they did cause problems.

Table 2: Trade Impediments

category \ answer	strongly agree	agree	neither agree nor disagree	disagree	strongly disagree	n/a
restrictions and quotas	3	34	28	10	6	50
high tariffs	10	32	23	16	2	48
complex customs and trade administration	8	31	37	10	2	43
standards	4	17	37	18	5	50
business mobility	1	30	30	22	2	46
licenses	5	12	15	14	2	83

Figure 5: Trade Impediments in APEC Economies



4.2.3 Import Restrictions and Quotas

Among the three survey items included in this category, APEC firms believe that unreasonable institutions (33.6%) are the biggest concern, followed by unfair coverage (30.5%) and lack of quotas (17.6%). However the percentage of firms who responded that lack of quotas does not impede trade (38%) is significantly higher than those who answered that they do impede trade.

4.2.4 Business Mobility

Almost forty-four percent (43.5%) of the participating firms pointed out that complex application processes and time consuming procedures for business visas/work permit applications are the biggest factors obstructing business mobility, followed by overly stringent requirements for business visas, work permits, and temporary residence permits (37.4%), inefficient port of entry procedures (26%), and inadequate access to information on travel documentation requirements (16%).[21]

4.2.5 Standards

While 16 percent of APEC firms considered standards as a major impediment to trade, almost 18 percent did not consider it an impediment. However, it is more noticeable that standards related measures, along with a complicated regulation and delayed verification process are becoming one of the major non-tariff impediments. Analyzing in more detail, technical barriers (22.1%) are believed to cause the biggest impediment, followed by conformity assessment procedures (19.8%) and conformity assessment institutions (17.6%).

4.2.6 Licenses

The percentage of firms who responded that licenses impede trade (13%) is almost the same as those who answered that they do not impede trade (12%). However, the rate of no response to this particular item (63%) was significantly higher than the rate of those who responded either way. Among those who did answer, the complexity in acquisition (36.5%) followed by inconsistency of administrative discretion (29%) and discrimination (16.8%) were regarded as major impediments to trade related to licenses. However, the latter two are regarded as not being such serious impediments. Therefore, they should be taken less seriously than the problem of complexity in acquisition.

4. 3 Effects of Trade Facilitation

In order to quantify the CGE model more effectively, we divide APEC member economies into three groups: industrialized economies (Australia; Canada; Japan; New Zealand; the US), newly industrialized economies (Hong Kong, China; Korea; Mexico; Singapore; Chinese Taipei) and industrializing economies (Chile; China; Indonesia; Malaysia; Peru; the Philippines; the former Soviet Union; Thailand; Viet Nam).[22]

[21] Significant signs of improvements are expected in these areas. The improvements are taking place through APEC's joint and individual efforts by CAP and IAP. That is, simplification of member economy's immigration control procedures, conditions for short-term residence, and developing training programs to educate the work force and provide them with additional skills are currently being implemented through CAP under the auspices of IEGBM.

[22] Brunei Darussalam and Papua New Guinea could not be included due to insufficient data.

Tables 3, 4, and 5 report the weighted averaged minimum, maximum and median percentage changes in transaction costs, in consumer prices of imports and in import demand caused by trade facilitation for each group.[23] According to the outcome of the survey, upon an improvement of 50 percent in trade facilitation in each of the three areas, the resulting transaction cost reduction effect ranged from 1.4 percent the lowest in the area of the standard for newly industrialized economies to 14.8 percent the highest in the area of customs procedures for industrializing economies.

Applying the same assumptions as before, the maximum reduction of import price (9.2 percent for industrializing economies) is realized in the area of customs procedures at, whereas the minimum effect (1.0 percent for industrialized economies) is expected in the area of business mobility. On the contrary, the expected maximum and minimum increase in demand for imports is taking place in the case of industrializing economies. As in the previous results, the facilitation of customs procedures causes the largest increase in demand for imports (13.8%). However, the effects of facilitating standards produce a minimum increase in imports (0.7%).

Table 3: Effects of Trade Facilitation: Industrialized APEC Economies

<Table A> Reduction of Transaction Cost through Trade Facilitation			
	MIN	MAX	MED
customs procedure	2.9%	7.4%	5.2%
standards	2.2%	5.9%	4.1%
business mobility	3.6%	4.1%	4.1%

<Table B>Reduction of Consumer Price on Import Products through Trade Facilitation			
	MIN	MAX	MED
customs procedure	1.9%	4.0%	2.9%
standards	2.4%	4.1%	3.3%
business mobility	1.8%	3.1%	2.4%

<Table C> Increase in Consumer Demand on Import Products through Trade Facilitation			
	MIN	MAX	MED
customs procedure	1.7%	3.4%	2.2%
standards	1.5%	3.3%	2.4%
business mobility	1.8%	3.7%	2.7%

[23] For the purpose of overcoming data insufficiency and enhancing statistical significance, the survey outcome of the representing economy or economies in each group is utilized to produce the effects of the trade facilitation in three areas: i.e. Industrialized Economies (Japan), Newly Industrialized Economies (Korea and Mexico), Industrializing Economies (Chile, Indonesia, Malaysia, PNG, Peru, the Philippines, Thailand)

Table 4: Effects of Trade Facilitation: Newly Industrialized APEC Economies

<Table A> Reduction of Transaction Cost through Trade Facilitation			
	MIN	MAX	MED
customs procedure	5.3%	10.7%	7.8%
standards	1.4%	3.5%	2.6%
business mobility	1.9%	4.4%	3.2%

<Table B>Reduction of Consumer Price on Import Products through Trade Facilitation			
	MIN	MAX	MED
customs procedure	3.2%	8.5%	5.8%
standards	1.1%	3.1%	2.1%
business mobility	1.7%	3.7%	2.7%

<Table C> Increase in Consumer Demand on Import Products through Trade Facilitation			
	MIN	MAX	MED
customs procedure	2.5%	7.1%	4.8%
standards	0.9%	2.6%	1.8%
business mobility	1.5%	3.2%	2.4%

Table 5: Effects of Trade Facilitation: Industrializing APEC Economies

<Table A> Reduction of Transaction Cost through Trade Facilitation			
	MIN	MAX	MED
customs procedure	6.6%	14.8%	10.7%
standards	1.5%	3.5%	2.5%
business mobility	2.4%	4.8%	3.6%

<Table B> Reduction of Consumer Price on Import Products through Trade Facilitation			
	MIN	MAX	MED
customs procedure	4.0%	9.2%	6.7%
standards	1.8%	3.4%	2.6%
business mobility	1.0%	3.4%	2.2%

<Table C> Increase in Consumer Demand on Import Products through Trade Facilitation			
	MIN	MAX	MED
customs procedure	7.7%	13.8%	10.7%
standards	0.7%	1.7%	1.2%
business mobility	2.9%	5.2%	4.0%

APPENDIX TO SECTION 4

TILF Survey Questionnaire

Attributes

1. Name of the Organization

2. Location of Headquarter

3. Number of Employees:_____ persons

4. Annual Transaction Value:_____ US Dollars

5. Your Business Sector (please select one)

   a. Agriculture, Forestry, and Fishery
   b. Mining
   c. Food and Beverage
   d. Textiles
   e. Chemicals
   f. Metals
   g. Transport Equipment
   h. General Machinery
   i. Electrical Machinery
   j. Other Manufacturing
   k. Private Services
   l. Public Services
   m. Financial Services
   n. Other (please specify_____)

6. Main products and activities (please select one)

   a. Primary commodities
   b. Manufacturing products
   c. Trading
   d. Wholesale and retail
   e. Other (please specify _____)

7. Does your enterprise mainly export products?

   a. Yes
   b. No

8. Does your enterprise mainly import products?

   a. Yes
   b. No

- ✧ **If you answered "b. No" to both of above question 7 and 8, there are no more questions. Thank you for your cooperation.**
- ✧ **If you answered "a. Yes" to either of above question 7 or 8, please answer below questions.**

9. Does your enterprise trade with APEC economies[24]?

   a. Yes
   b. No

10. Percentage of the trade with APEC economies out of total trade by your enterprise, in terms of amount (Select one)

    a. Below 25%(including zero)
    b. Between 25% and 50%
    c. Between 50% and 75%
    d. Above 75%

Listed below are various institutional factors you may face in trading with APEC economies. Circle one number for each factor to show whether you agree or disagree. If there are additional questions (a. b. etc.) to supplement the main question, please answer those questions too.

1.	**Strongly Agree**
2.	**Agree**
3.	**Neither Agree Nor Disagree**
4.	**Disagree**
5.	**Strongly Disagree**

11. Port and Airport	1	2	3	4	5
a. Insufficient port/airport infrastructures as a main problem	1	2	3	4	5
b. Ineffective cargo handling at port/airport as a main problem	1	2	3	4	5
12. Restrictions and Quotas	1	2	3	4	5
a. Unreasonable institutions as a main problem	1	2	3	4	5

[24] APEC economies include Australia, Brunei Darussalam, Canada, Chile, People's Republic of China, Hong Kong, China, Indonesia, Japan, Republic of Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, the Philippines, Peru, Russia, Singapore, Chinese Taipei, Thailand, the United States, Vietnam.

b.	Unfair coverage as a main problem	1	2	3	4	5
c.	Lack of quotas as a main problem	1	2	3	4	5
13.	High Tariffs	1	2	3	4	5
a.	Tariff discrimination as a main problem	1	2	3	4	5
b.	Unfair treatment as a main problem	1	2	3	4	5
14.	Complexity of Customs and Trade Administration	1	2	3	4	5
a.	Customs valuation as a main problem	1	2	3	4	5
b.	Pre-shipment inspection as a main problem	1	2	3	4	5
c.	Price verification as a main problem	1	2	3	4	5
d.	Procedures as a main problem	1	2	3	4	5
e.	Rules of origin as a main problem	1	2	3	4	5
f.	Sanitary and phytosanitary measures as a main problem	1	2	3	4	5
15.	Standards	1	2	3	4	5
a.	Technical barriers to trade	1	2	3	4	5
b.	Conformity assessment procedures as a main problem	1	2	3	4	5
c.	Conformity assessment institutions as a main problem	1	2	3	4	5
16.	Business Mobility	1	2	3	4	5
a.	Inadequate access to information on travel documentation requirements	1	2	3	4	5
b.	Application process too complex and time-consuming for business visas/work permits	1	2	3	4	5
c.	Overly stringent requirements for, and/or restrictions on, business visa/work permits/ temporary residence permits	1	2	3	4	5
d.	In efficient port of entry procedures	1	2	3	4	5
17.	Licenses	1	2	3	4	5
a.	Non-automatic system to receive licenses as a main problem	1	2	3	4	5
b.	Discrimination as a main problem	1	2	3	4	5
c.	Administrative discretion as a main problem	1	2	3	4	5
18.	Trade-Related Private Sector Procedures	1	2	3	4	5
a.	Inefficient trade-related private sector, such as forwarder, customs broker as a main problem	1	2	3	4	5
a.	Delay of necessary documents as a main problem	1	2	3	4	5
b.	Cumbersome of procedures among relevant private sectors as a main problem	1	2	3	4	5

What percentage of the total transaction cost of moving your commodities from production site to market place will be saved if APEC economies enhance trade facilitation[25] by 50% in each of the following areas?

19. Customs Procedure (excluding customs tariff)

    a. none
    b. 0-5%
    c. 5-10%
    d. 10-20%
    e. 20-30%
    f. please specify if more than 30% (%)

20. Standards

    a. none
    b. 0-5%
    c. 5-10%
    d. 10-20%
    e. 20-30%
    f. please specify if more than 30% (%)

21. Business Mobility

    a. none
    b. 0-5%
    c. 5-10%
    d. 10-20%
    e. 20-30%
    f. please specify if more than 30% (%)

22. Port and Airport Procedure

    a. none
    b. 0-5%
    c. 5-10%
    d. 10-20%
    e. 20-30%
    f. please specify if more than 30% (%)

23. Trade-Related Private Sector Procedure

    a. none
    b. 0-5%
    c. 5-10%
    d. 10-20%

[25] The term generally refers to the simplification of procedural and administrative impediments to trade, such as customs administration, standards and technical regulations, and barriers to the mobility of business people.

e. 20-30%
f. please specify if more than 30% (%)

Suppose that you are an importer in an APEC economy and your government improves trade facilitation by 50% in each of the following area. For example, the custom procedure can be shortened from 2 days to 1 day. By what percentage can the consumer price of the importable be reduced?

19-1.Customs Procedure (excluding customs tariff)

a. none
b. 0-2.99%
c. 3-4.99%
d. 5-7.99%
e. 8-9.99%
f. please specify if more than 10% (%)

20-1. Standards

a. none
b. 0-2.99%
c. 3-4.99%
d. 5-7.99%
e. 8-9.99%
f. please specify if more than 10% (%)

21-1. Business Mobility

a. none
b. 0-2.99%
c. 3-4.99%
d. 5-7.99%
e. 8-9.99%
f. please specify if more than 10% (%)

22-1. Port and Airport Procedure

a. none
b. 0-2.99%
c. 3-4.99%
d. 5-7.99%
e. 8-9.99%
f. please specify if more than 10% (%)

23-1. Trade-Related Private Sector Procedure

a. none
b. 0-5%
c. 5-10%
d. 10-20%

e. 20-30%
f. please specify if more than 30% (%)

Suppose that you are an importer in an APEC economy and your government improves trade facilitation by 50% in each of the following areas. What will be the likely impact of the reduced cost on the demand for the importable? By what percentage will consumers' demand for the importable rise in terms of volume?

19-2.Customs Procedure (excluding customs tariff)

a. none
b. 0-2.99%
c. 3-4.99%
d. 5-7.99%
e. 8-9.99%
f. please specify if more than 10% (%)

20-2. Standards

a. none
b. 0-2.99%
c. 3-4.99%
d. 5-7.99%
e. 8-9.99%
f. please specify if more than 10% (%)

21-2 Business Mobility

a. none
b. 0-2.99%
c. 3-4.99%
d. 5-7.99%
e. 8-9.99%
f. please specify if more than 10% (%)

22-2 Port and Airport Procedure

a. none
b. 0-2.99%
c. 3-4.99%
d. 5-7.99%
e. 8-9.99%
f. please specify if more than 10% (%)

23-2 Trade-Related Private Sector Procedure

a. none
b. 0-5%
c. 5-10%
d. 10-20%
e. 20-30%

f. please specify if more than 30% (%)

Please answer the following questions if your enterprise engages in investment activities in the APEC region.

24. Please specify the relative size (in percentage) of the existing investment barriers (i.e. administrative cost and other costs such as insurance) equivalent to interest rate.
(%)

On the whole, do you think you should plan to…

1. Definitely
2. Probably
3. No Idea
4. Probably Not
5. Definitely Not

25.	Continue or expand business with APEC economies	1	2	3	4	5
a.	But feel the need quality improvement	1	2	3	4	5
b.	But feel the need to secure price competitiveness	1	2	3	4	5
c.	But feel the need more attractive marketing	1	2	3	4	5
d.	But feel the need to improve your relationship with the partner economy's government	1	2	3	4	5
e.	But feel the need the support of the partner economy's government	1	2	3	4	5
26.	Reduce business with APEC economies	1	2	3	4	5
a.	Because of the size of the market	1	2	3	4	5
b.	Because of increasing in cost	1	2	3	4	5
c.	Because of political vulnerability	1	2	3	4	5
d.	Because of institutional inertia (including finance)	1	2	3	4	5
27.	Advance to other market instead of APEC economies	1	2	3	4	5

28. Your further suggestions on promoting the trade development among APEC economies are:

_____
_____
_____
_____

Thank you for your helpful responses.

5. CGE MODEL STRUCTURE AND SCENARIOS

5.1. CGE Model Structure

We adopt a static CGE (computable general equilibrium) model experiment in this study for a quantitative analysis of APEC's effort to enhance trade facilitation in the region. Because the impact of commercial policies depends on complicated micro-economic relationships and inter-sectoral and inter-economy linkages, the CGE model analysis is preferable to econometric and partial equilibrium methods that have difficulty in capturing the variety of micro-economic relationships and complicated feedback effects. The CGE model analysis not only represents various microeconomic optimizing behavioral characteristics and complete feedback effects, it also has the advantage of maintaining internal model consistency.

The CGE model used in this research is a modified version of the GTAP5inGAMS model developed by Rutherford and Paltsev (2000).[26] The model is theoretically based on Mathiesen (1985). The model solution is calibrated using 1997 as the base year by using Global Trade, Assistance, and Production (GTAP): The GTAP 5 Database[27] and is implemented with the Generalized Algebraic Modeling System (GAMS).[28]

As seen in Tables 6 and 7, we reset the GTAP5inGAMS model[29] to a multi-economy trade-linked CGE model for 19 APEC member economies[30] with 21 trading partners[31] and 20 production sectors. The model has three economic agents: producer, representative consumer (private and public), and trading partners. As described in Rutherford and Paltsev (2000), the GTAP5inGAMS model is a traditional static Arrow-Debreu type of equilibrium model in which the zero profit condition and the market clearance define the equilibrium.

We briefly describe the structural specifications of the GTAP5inGAMS model as follows.[32]

A. Consumption

A representative household (both private and public, i.e., government) maximizes its utility from demands for composite goods (domestically produced and imported)[33] subject to its budget. The private household receives taxable factor income from a producer in exchange for its factor services. The government levies proportional taxes on outputs, intermediate inputs, the factor incomes of the private household, private and government demand, and exports. The government also imposes proportional tariffs on the consumers of imported goods.

The representative household's budget constraint (income) is adjusted to satisfy the macro-closure rule (total savings equal total investments). Therefore, the macro-closure rule effects upon the economy should be spread across the private and public sector. However, because the public sector output, which is assumed to be a Cobb-Douglas aggregation of commodities, is

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[26] We decided to adopt the multi-economy, multi-sector CGE model with a GTAP data set because it is easy for the public to use. By using the standard model with standard data set, modelers and policy makers in each of the APEC member economies can easily modify and apply our experiment in this research to better and more detailed experiments focusing more on their own economic specifications.
[27] See Dimaranan and McDougall, (2002).
[28] GAMS 20.7 Version developed in 2002. For details of the program, see Brook et al. (1998).
[29] GTAP5inGAMS has 57 production sectors, 1 investment composite good, and 66 economies.
[30] Brunei, Papua New Guinea, and Russia are not classified as an independent region because of data problem. We include the former Soviet Union as an independent region in the model as a proxy for Russia.
[31] 18 other APEC economies, other economies in America, western European economies, and the rest of the world
[32] For detailed information about the GTAP5inGAMS, see http://debreu.colorado.edu/gtap5
[33] The model adopts a Cobb-Douglas utility function and Armington aggregation of composite demand.

exogenously given, the macro-closure rule effect is mainly absorbed by private sector consumption and investment. The composition of public sector demand is still an endogenous variable of relative prices and taxes.

Table 6: Regional Classification

Region	Economies in GTAP Version 5
APEC (Industrialized Economies)	Australia (AUS), Canada (CAN), Japan (JPN), New Zealand (NZ), the United States of America (USA) *As an independent economy in the model*
APEC (Newly Industrialized Economies)	Hong Kong, China (HKC), Korea (KOR), Mexico (MEX), Singapore (SG), Chinese Taipei (CT) *As an independent economy in the model*
APEC (Industrializing Economies)	Chile (CHL), China (CHN), Indonesia (INA), Malaysia (MAS), Peru (PE), Philippines (RP), Thailand (THA), Viet Nam (VN), The former Soviet Union (XSU) *As an independent economy in the model*
Other Countries in America (LAT)	Central America and the Caribbean, Colombia, Venezuela, Rest of Andean Pact, Argentina, Brazil, Uruguay, Rest of South America *As a group of economies*
Western European Countries (WEU)	Austria, Belgium, Denmark, Finland, France, Germany, UK, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal, Spain, Sweden, Switzerland, Rest of EFTA *As a group of economies*
Rest of the World (ROW)	Bangladesh, India, Sri Lanka, Rest of South Asia, Hungary, Poland, Rest of Central Eastern European Association, Turkey, Rest of Middle East, Morocco, Rest of North Africa, Botswana, Rest of South African Customs Union, Malawi, Mozambique, Tanzania, Zambia, Zimbabwe, Rest of Southern Africa, Uganda, Rest of Sub Saharan Africa, Rest of the World *As a group of economies*

Note: The 19 APEC economies which are included have been classified into three different categories based on the level of economic development, namely, industrialized APEC economies, newly industrialized APEC economies, and industrializing APEC economies. For the CGE analysis in this research, we needed to assign a coefficient to each APEC economy to represent the reduced trade costs created by trade facilitation. The coefficients are provided by survey analysis in Section IV. For the survey analysis in Section IV, we classified all the APEC economies into three groups because we had a difficulty to have enough survey responses from each of the APEC economies as we mentioned earlier.

Table 7: Sectoral Classification

Sector	Sectors in GTAP Version 5
Agriculture (AGR)	Paddy rice, wheat, cereal grains nec., vegetables, fruit, nuts, oil seeds, sugar cane, sugar beet, plant-based fibers, crops nec., bovine cattle, sheep and goats, horses, animal products nec., raw milk, wool, silk-worm cocoons
Forestry (FRS)	Forestry
Fishery (FSH)	Fishing
Mining (MNG)	Coal, oil, gas, minerals nec.
Processed Food and Beverage (PFD)	Bovine meat products, meat products nec., vegetable oils and fats, dairy products, processed rice, sugar, food products nec., beverages and tobacco products
Textiles and Apparel (TXL)	Textiles, clothing apparel
Chemicals (CHM)	Petroleum, coal products, chemical, rubber, plastic products, mineral products nec.
Metals (MTL)	Ferrous metals, metals nec., metal products
Transport Equipment (TRN)	Motor vehicles and parts, transport equipment nec.
Other Machinery and Equipment (OME)	Electronic equipment, machinery and equipment nec.
Other Manufacturing (OMF)	Leather products, wood products, paper products, publishing manufactures nec.
Electricity, Gas, and Water (EGW)	Electricity, gas manufacture, distribution water
Construction (CNS)	Construction
Trade (TRD)	Trade
Transport (TSP)	Transport nec., water transport, air transport
Communication (CMN)	Communication
Finance, Insurance, and Business Services (FAB)	Financial services nec., insurance, business services nec.
Other Private Services (OSP)	Recreational and other services, dwellings
Other Government Services (OSG)	Public administration, defense, education, health
Investment (CGD)	Investment composite

B. Production

A representative producer produces two types of commodities, one for domestic markets and another for export markets. These two goods are joint products and distributed with an infinite elasticity of transformation between domestic and export markets. The producer combines four exogenously given endowment factor inputs—land, labor, capital, and natural resources—and intermediate commodities to produce outputs in each of the 19 sectors we set. An assumption of a perfectly competitive market determines the quantity of output supplied to each commodity market by the zero profit condition (unit cost function). The firms' minimizing of the cost of production determines input demands for intermediate goods and endowment factors subject to their technology.

Leontief type of production technology (fixed input-output coefficients) determines the input demands for intermediate commodities. The intermediate demand is divided into two different sources, imported and domestic goods as imperfect substitutes, following Armington (1969). The

cost minimization process with a Cobb-Douglas production function determines activity level and factor input demands.

C. Bilateral Trade and Trade Costs

The CGE model of each independent economy is linked through its trade sector. The Armington Assumption[34] is adopted for trade between countries and regions. APEC member economies and other regions determine their import demand by country of origin in order to minimize the CES expenditure function subject to the given total import volume.

For the quantitative analysis of trade liberalization and trade facilitation in this research, we modify the bilateral trade relationship in the GTAP5inGAMS model. The original model defines two different trade costs, import tariffs (policy costs) and transportation costs, applied on bilateral trade between economies and regions. Unfortunately, the model excludes any trade costs related to the quality of trade facilitation. We include the cost caused by the inefficient trade facilitation. Therefore, the consumer price of imports at a domestic market is determined by export price of the goods including export taxes, transportation costs from the country of origin to import country, import tariffs imposed on importables, and an iceberg type of facilitation costs incurred in.

That is, the domestic consumer price of imported commodity *i* from country *s* to country *r* is defined as the following equation (5):

$$(5) \qquad P^{M}_{i,r} = \sum_{s} \left[P^{X}_{i,s}(1+t^{X}_{i,s,r}) + t_{i,s,r} V^{T}_{i,s,r}\right] \quad (1+t^{M}_{i,s,r}) \quad (1-tf^{M}_{i,s,r})$$

where

$P^{M}_{i,r}$	import price of commodity *i* in country *r*
$P^{X}_{i,s}$	export price of commodity *i* in country *s*
$t^{X}_{i,s,r}$	export tax
$t_{i,s,r}$	unit transport cost coefficient of commodity *i* from country *s* to *r*
$V^{T}_{i,s,r}$	value of transport services in commodity *i* from country *s* to country *r*
$t^{M}_{i,s,r}$	import tariffs imposed on commodity *i* imported from country *s* to country *r*
$tf^{M}_{i,s,r}$	efficiency coefficient representing gains from enhanced trade facilitation in commodity *i* imported from country *s* to country *r*; $tf^{M}_{i,s,r} = 0$ for the base solution.

Thus, the import price of a commodity *i* is determined by two different sets of variables, exogenously-determined policy variables and market-determined endogenous variables. The policy variables are the factors determining trade costs such as export tax rates, the unit transport cost coefficient, import tariff rates, and the efficiency coefficient of trade facilitation. The market-determined endogenous variables are export prices and the value of transport services employed.

5.2 Scenarios

Three sets of simulation analyses are designed to evaluate the possible gains or losses from APEC's effort to achieve freer and easier trade through trade liberalization and trade facilitation in the region.

[34] Intra-industry trade by the assumption of product differentiation; see Armington (1969).

A. Trade Liberalization

APEC Free Trade Area (APEC FTA): 50 percent reduction in import tariff rates by APEC member economies against imports from its members.

For trade liberalization, we assume a 50 percent reduction of import tariffs between member economies in the APEC region because it is not reasonable to assume a perfect elimination of tariffs at this time. In addition, we want to compare the results with those of trade facilitation, for which there is also an assumption of improved trade facilitation by 50 percent in the survey we have done in section IV.

B. Trade Facilitation

We assume two different APEC efforts for trade facilitation, regional and global, as illustrated in Figure 6. For the reduction of trade costs—moderate (median), maximum, and minimum case—produced by trade facilitation in any of the three areas, namely, customs procedure, standards, and business mobility, we use the estimated values from our survey analysis described in section IV. We calculate a simple average of the three facilitation services from the figures representing the reduction of transaction cost through trade facilitation in Tables 3, 4, and 5 in section IV.[35]

Shanghai Accord I (SA I): 5 percent reduction of trade costs by intra-APEC trade in APEC member economies

Shanghai Accord II (SA II): 5 percent reduction of trade costs by intra-APEC and inter-regional trade in APEC member economies

Regional Trade Facilitation I (RTF I): Moderate reduction[36] of trade costs by intra-APEC trade in APEC member economies

Regional Trade Facilitation II (RTF II): Maximum reduction[37] of trade costs by intra-APEC trade in APEC member economies

Regional Trade Facilitation III (RTF III): Minimum reduction[38] of trade costs by intra-APEC trade in APEC member economies

Global Trade Facilitation I (GTF I): Moderate reduction of trade costs by intra- and inter-

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[35] The reason why we take a simple average is partly because we assume a 50% improvement in trade facilitation in customs procedures, standards, or business mobility and partly because we are going to use a CGE model in which the three different facilitation services are not identified. If we successfully specify the independent functional relationship of each trade facilitation area into the CGE model framework, we may analyze the effect of each of the three areas on the APEC economies separately. Unfortunately, we could not find a reasonable way to identify the three different sources of trade facilitation costs in the model. In addition, we may assume that there is a 50% improvement in all the three areas of trade facilitation at the same time. If it is the case, we should combine the reduced effect on trade costs incurred by the three areas instead of taking an average. However, in this research, we conservatively assume that the trade facilitation caused by the APEC's regional cooperation can happen in any one of the three areas.

[36] Specifically, the reductions were 4.5%, 4.5%, and 5.6% in the case of industrialized APEC members, newly industrialized APEC members, and industrializing APEC members, respectively.

[37] Specifically, the reductions were 5.8%, 6.2%, and 7.7% in the case of industrialized APEC members, newly industrialized APEC members, and industrializing APEC members, respectively.

[38] Specifically, the reductions were 2.9%, 2.9%, and 3.5% in the case of industrialized APEC members, newly industrialized APEC members, and industrializing APEC members, respectively.

APEC trade in APEC member economies

Global Trade Facilitation II (GTF II): Maximum reduction of trade costs by intra- and inter-APEC trade in APEC member economies

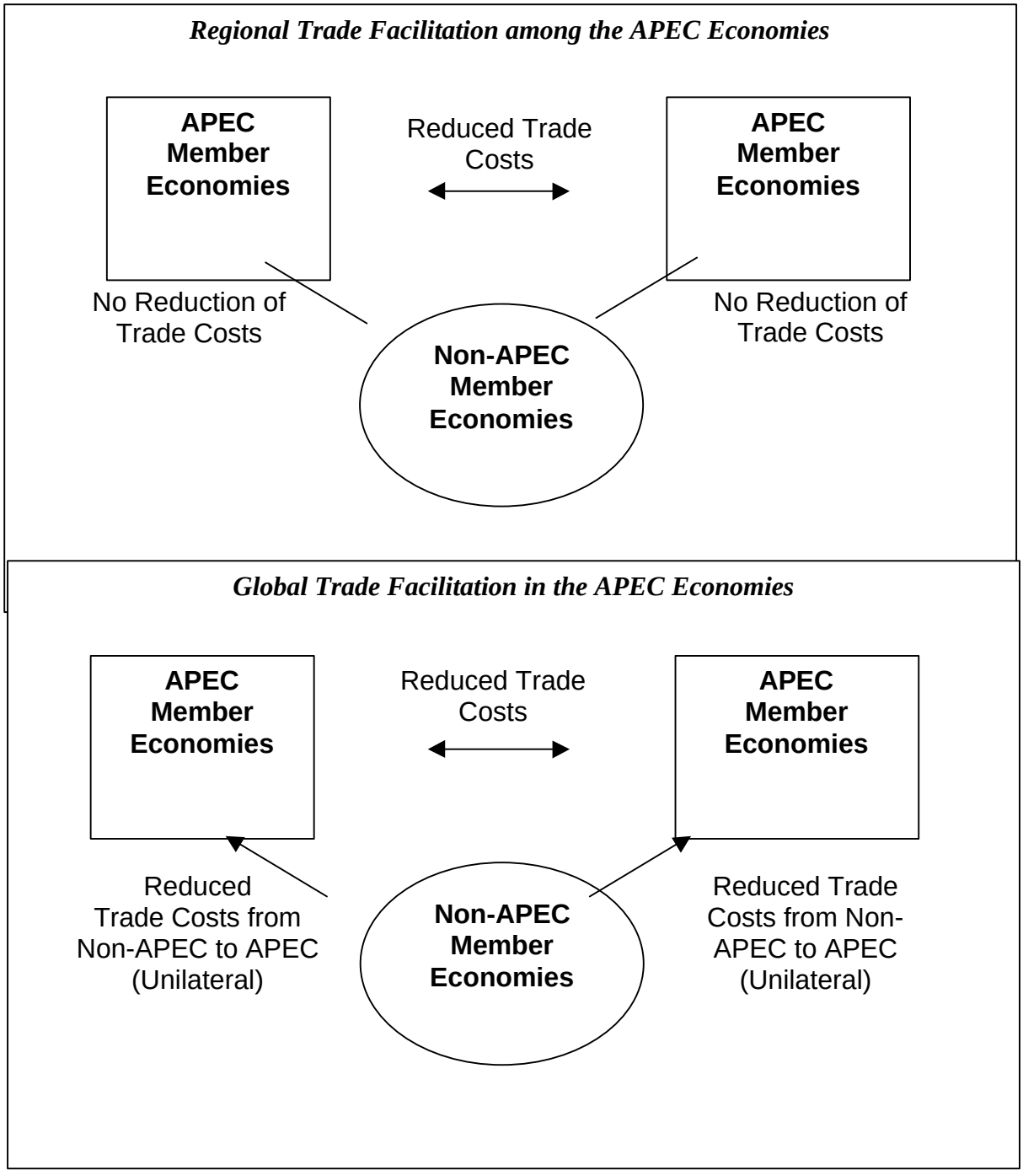
Global Trade Facilitation III (GTF III): Minimum reduction of trade costs by intra- and inter-APEC trade in APEC member economies

C. Trade Liberalization and Facilitation

TLTF (APEC FTA + SA I): 50 percent reduction of import tariff rates by APEC member economies against imports from its members and a 5 percent reduction of trade costs by intra-APEC trade in APEC member economies

For the benchmark equilibrium values, the base solution of the model economy, we run the CGE model without any change in its initial condition and derive general equilibrium values for each of the APEC economies. As a next step, we re-run the model under different scenarios and recalculate the equilibrium values for each case. Then we compare the different equilibrium values with the initial base solution to evaluate the experimental impacts of each scenario on each APEC economy and on APEC as a whole.

Figure 6. Trade Facilitation: Regional vs. Global



6. SIMULATION RESULTS AND POLICY IMPLICATIONS

6.1 Overall Evaluation

Table 8 and figures 7 and 8 compare the average effects of the policy options we have implemented on the APEC economy as a whole. Figures 7 and 8 illustrate the effect of the APEC Free Trade Area on the APEC regional economy in terms of GDP growth, increase in private consumption, and output price inflation. In figure 7 (8), the effect marked on the far southeastern (northeastern) point from the origin implies the largest positive gains from the freer and easier trade, that is, the highest GDP growth rate and the biggest expansion of private consumption (the lowest inflation rate of output price, respectively).

If other economic conditions remain the same, we find that all the policy options we have designed are beneficial to the APEC regional economy as a whole, creating positive GDP growth and expansion of private consumption. However, the freer and easier trade in the APEC region brings a soft inflationary pressure to the regional economy by raising the output price in most cases (excluding the case of the global minimum trade facilitation scenario).

As summarized in Table 8, among the three different policy sets—trade liberalization, trade facilitation, and trade liberalization and facilitation—we find that trade facilitation is more beneficial to the APEC economy than trade liberalization through the establishment of a free trade area. In addition to trade facilitation, if the economy successfully implements a free trade arrangement, the positive effect is expected to be enormous. These results clearly show that the maximum trade facilitation policy is the most beneficial policy for the APEC regional economy as a whole.

When we compare regional trade facilitation with global trade facilitation, we derive an unclear evaluation. In terms of achieving GDP growth, regional trade facilitation (trade facilitation limited within the APEC member economies) is a better policy option than global trade facilitation (trade facilitation opened to members and non-members alike). However, for consumers in the APEC economies, global trade facilitation, which is a similar concept to open regionalism, is better, as it results in more private consumption and lower output price.

Table 8: Effect of Policy Options on the APEC Regional Economy

	GDP		Income		Private Consumption	Output Price
	% *	$ **	% *	$ **	% *	% *
APEC Free Trade Area (A)	0.58	91.0	0.84	89.2	2.21	0.91
Shanghai Accord Regional (B)	0.98	154.0	1.73	184.9	4.83	0.83
Shanghai Accord Global	0.91	141.7	1.77	188.7	5.54	0.49
Moderate Trade Facilitation Regional	0.94	147.6	1.65	176.5	4.84	0.90
Moderate Trade Facilitation Global	0.77	120.0	1.59	170.0	5.57	0.23
Maximum Trade Facilitation Regional	1.30	203.5	2.29	244.4	6.64	1.29
Maximum Trade Facilitation Global	1.16	181.3	2.29	244.2	7.71	0.29
Minimum Trade Facilitation Regional	0.64	100.9	1.06	112.9	2.87	0.58
Minimum Trade Facilitation Global	0.27	42.0	0.71	75.7	2.95	-0.54
Combination of (A) and (B)	1.75	274.0	2.89	308.7	7.23	2.01

Notes: * Percentage deviation from the base value
** Deviation from the base value in billions of US dollars

Figure 7. Effects of Policy Options on the APEC Economy I

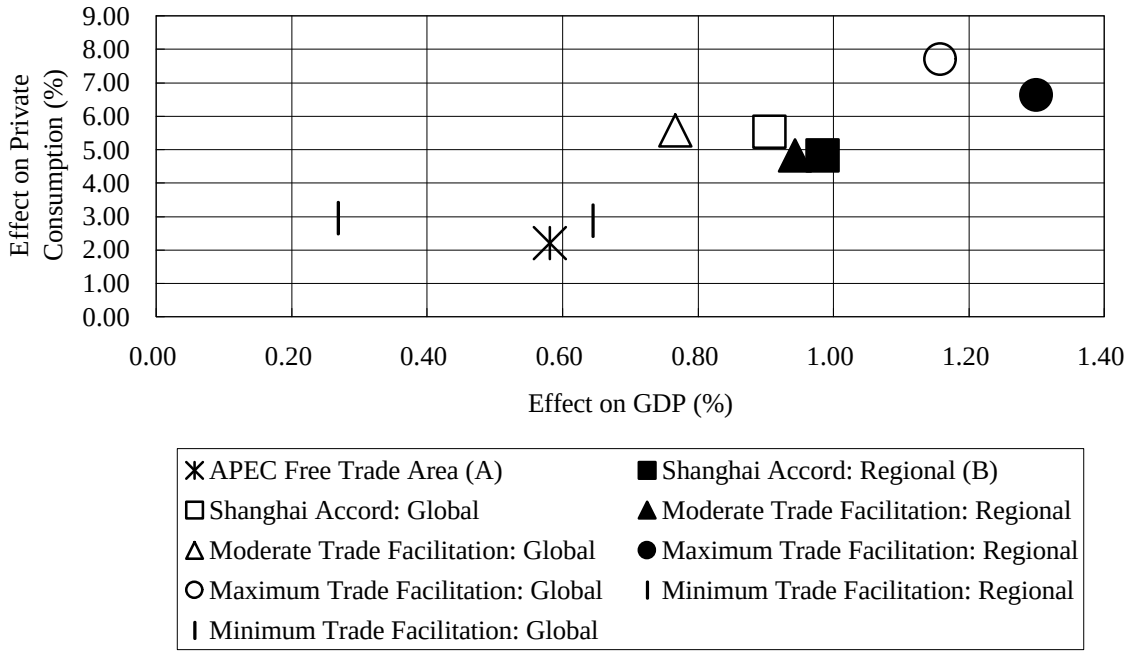
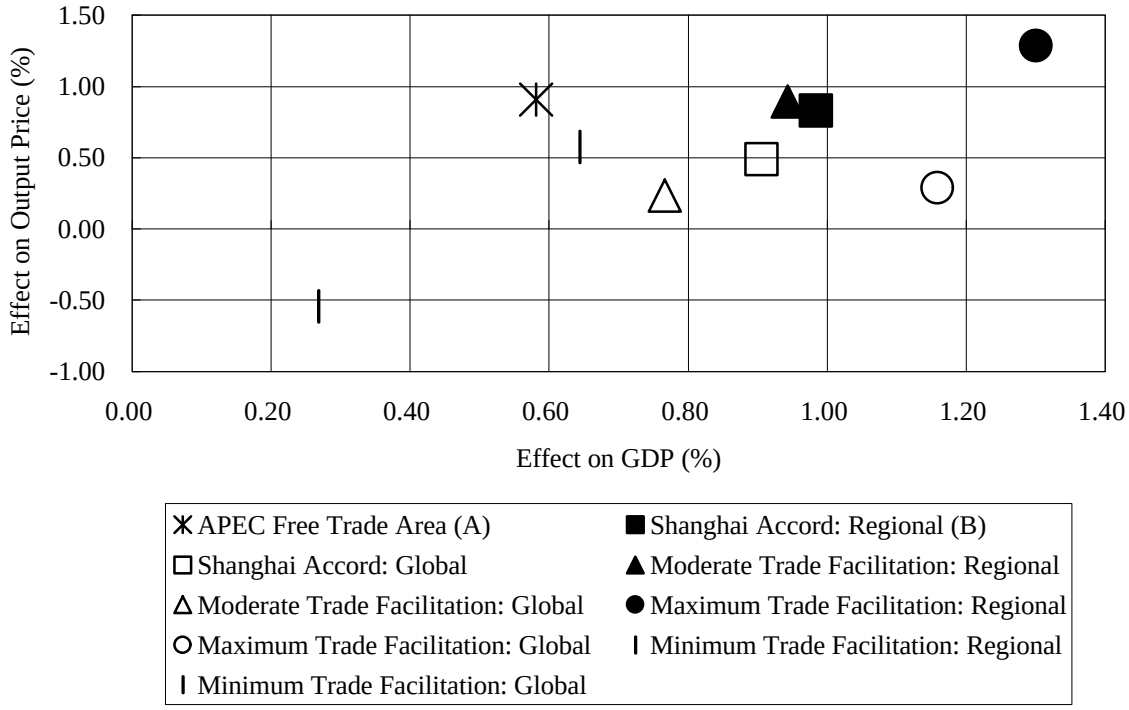


Figure 8. Effects of Policy Options on the APEC Economy II



The effects of APEC's trade liberalization and trade facilitation on each APEC economy are illustrated in Figures 9, 10, and 11. As seen in Figure 9, APEC's trade liberalization efforts have the most beneficial effects on the economy of Viet Nam. If we evaluate the economic effect in terms of GDP growth and stabilizing output price, the newly industrialized APEC economies like Hong Kong, China; Korea; Singapore; and Chinese Taipei and the industrializing APEC economies like China; Indonesia; Malaysia; the Philippines; and Thailand are receiving relatively bigger gains from the freer trade, while the already industrialized APEC economies like Australia; Canada; Japan; and the United States are receiving relatively smaller gains. However, the industrialized economies are better off in terms of inflationary pressure.

Figure 10 estimates the macro-economic effects of the Shanghai Accord on the APEC economies. If all the APEC economies enhance trade facilitation by reducing trade costs by 5 percent in 5 years since 2002, APEC's GDP will increase by 0.98 percent (US$154 billion) ranging from the biggest gain to Singapore of 7.65 percent to the smallest gain to the US of 0.32 percent. More detailed information is figured in Table 12. Figure 11 also illustrates the macroeconomic effects of the most optimistic scenario on the effect of trade facilitation in the APEC region. The optimistic case multiplies the beneficial effect on APEC's GDP by 1.3 percent (US$204 billion) that is estimated to be 132.6 percent of the Shanghai Accord case.

The distribution of gains from trade liberalization over the different levels of economic development in APEC economies is quite typical with a few exceptional cases as illustrated in Figure 9. Relatively less developed APEC economies with relatively smaller domestic markets that are more dependent on the regional export market gain more from freer trade.

However, we fail to find consistent regularity in the distribution of gains from trade facilitation over the economies in APEC. The level of economic development may not explain the uneven distribution of the gains as seen in Figures 10 and 11. Regardless of the group to which each APEC economy belongs, the effects of trade facilitation are irregularly distributed.

The beneficial effects of trade facilitation are distributed over the APEC member economies depending on their intra-APEC trade share and the trade dependency of each economy. Table 9 compares the intra-APEC trade shares and trade dependencies of the APEC economies in the GTAP 5 data set in the base year 1997. The higher an intra-APEC trade share and trade dependency an economy has, the bigger its gains from trade facilitation in terms of GDP growth.

Figure 9. Effects of APEC FTA on APEC Economies

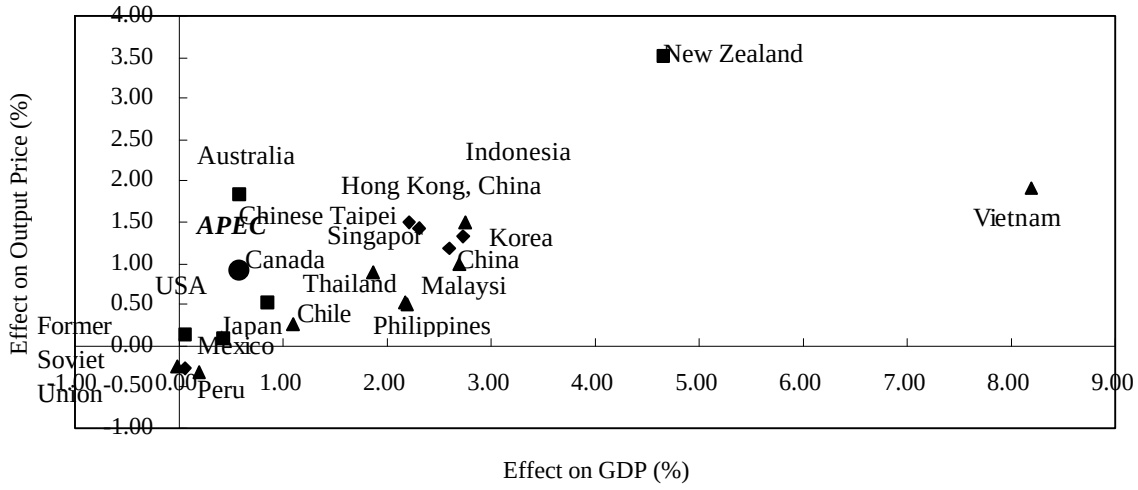


Figure 10. Effects of Shanghai Accord on APEC Economies

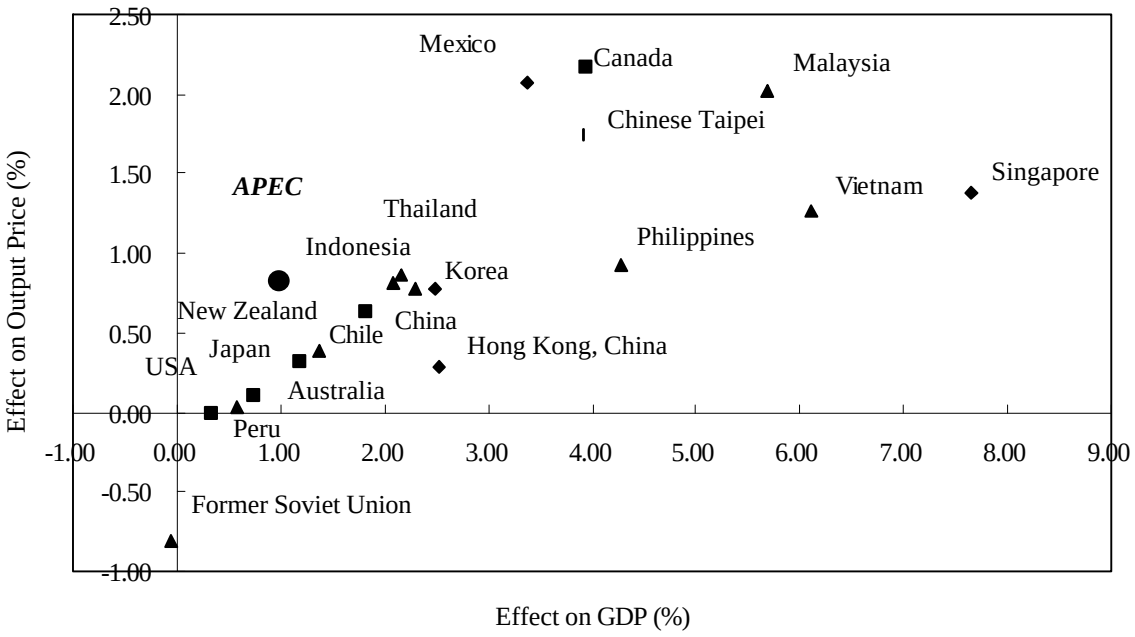


Figure 11. Effects of Maximum Trade Facilitation on APEC Economies

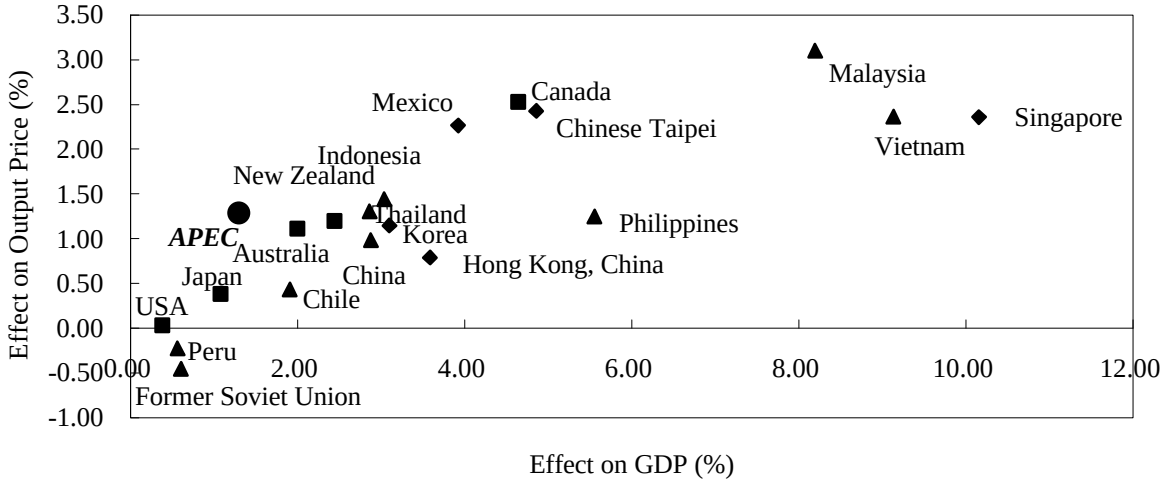


Table 9: Intra-APEC Trade Shares and Trade Dependency

	Intra-APEC Trade Share (%)			Trade Dependency (%)
	Trade	Import	Export	
APEC Total	66.2	66.6	65.9	39.6
Industrialized APEC Economies				
Australia	66.1	62.5	69.7	42.8
Canada	81.6	78.8	84.2	83.8
Japan	66.5	62.8	69.8	26.2
New Zealand	67.0	66.1	67.8	61.8
USA	59.3	62.5	55.3	24.3
Newly Industrialized APEC Economies				
Hong Kong, China	68.7	73.1	61.2	106.7
Korea	65.9	64.3	67.7	83.4
Mexico	82.6	80.6	84.5	64.3
Singapore	70.4	72.0	68.7	363.7
Chinese Taipei	77.5	76.9	78.0	94.4
Industrializing APEC Economies				
Chile	52.8	51.1	54.8	65.3
China	71.4	76.0	67.1	72.7
Indonesia	68.2	65.6	70.9	58.9
Malaysia	74.4	75.8	73.0	198.8
Peru	52.8	50.6	55.7	31.0
Philippines	68.3	70.1	66.0	140.7
Russia	45.1	44.5	45.8	54.8
Thailand	68.7	68.6	68.7	106.6
Viet Nam	74.9	82.2	63.9	130.5

6.2 Liberalization vs. Facilitation and Global vs. Regional

Table 10 shows the best policy scenario among the policy options available for each of the APEC member economies. A regional trade liberalization policy with the formation of the APEC Free Trade Area is the most preferable policy option for Australia and New Zealand but trade facilitation is much more preferable for most of the APEC member economies. In particular, trade facilitation limited to the APEC member economies is the best policy option for most of the APEC economies. However, highly trade dependent economies like Hong Kong, China; Singapore; Malaysia; and the Philippines, may prefer global trade facilitation, which provides equal treatment to non-members, to regional trade facilitation. For economies like the US that have a relatively lower intra-APEC trade share and lower trade dependency, global trade facilitation could be the most favorable policy option.

From Table 11 to Table 21, we summarize the effects of all the trade liberalization and facilitation policy options for the APEC economies in terms of carefully selected macro-economic variables.

Table 10: Choice of Policy Options for GDP Growth

Free Trade Area or Trade Facilitation (Maximum Case)?
Global Trade Facilitation or Regional Trade Facilitation?

	Most Preferable Policy
APEC as a whole	Regional Trade Facilitation
Industrialized APEC Economies	
Australia	APEC Free Trade Area
Canada	Regional Trade Facilitation
Japan	Regional Trade Facilitation
New Zealand	APEC Free Trade Area
The United States	Global Trade Facilitation
Newly Industrialized APEC Economies	
Hong Kong, China	Global Trade Facilitation
Korea	Regional Trade Facilitation
Mexico	Regional Trade Facilitation
Singapore	Global Trade Facilitation
Chinese Taipei	Regional Trade Facilitation
Industrializing APEC Economies	
Chile	Regional Trade Facilitation
China	Regional Trade Facilitation
Indonesia	Regional Trade Facilitation
Malaysia	Global Trade Facilitation
Peru	Regional Trade Facilitation
Philippines	Global Trade Facilitation
Former Soviet Union	Regional Trade Facilitation
Thailand	Regional Trade Facilitation
Viet Nam	Regional Trade Facilitation

Table 11: Effects of APEC Free Trade Area: 50% Reduction of Tariff Rates among the APEC Economies

	Quantities (% Deviation from Base)		Prices (% Deviation from Base)		International Trade (Deviation from Base)		
	GDP	Private Consumption	Output Price	Import Price	Trade Deficit (TD) (Tens of Billion US$)	TD over GDP (%)	Intra-APEC Trade Share (%)
APEC Total	0.58	2.21	0.91	-1.85			
Industrialized APEC Economies							
Australia	2.36	0.83	1.83	-0.82	0.08	0.22	3.05
Canada	0.85	0.81	0.54	-1.13	-0.69	-1.22	0.48
Japan	0.41	0.80	0.10	-2.17	1.88	0.52	2.70
New Zealand	4.66	2.50	3.51	-0.38	0.08	1.46	4.20
The United States	0.06	0.02	0.15	-0.67	4.19	0.53	1.08
Newly Industrialized APEC Economies							
Hong Kong, China	2.22	1.76	1.50	-0.07	0.08	-0.04	0.58
Korea	2.73	7.94	1.33	-3.28	1.42	3.51	4.26
Mexico	0.06	0.36	-0.26	-1.58	-0.27	-0.77	0.64
Singapore	2.60	5.63	1.18	-0.20	-1.48	-20.03	-0.09
Chinese Taipei	2.31	1.32	1.42	-2.29	0.09	0.57	2.33
Industrializing APEC Economies							
Chile	1.10	0.62	0.26	-2.29	-0.07	-1.12	4.98
China	2.69	1.89	0.99	-3.22	-0.61	-0.69	5.38
Indonesia	2.74	1.48	1.49	-1.83	0.42	1.99	3.62
Malaysia	2.18	4.99	0.54	-1.72	-0.39	-3.69	1.43
Peru	0.19	0.31	-0.32	-3.57	-0.08	-1.40	6.85
The Philippines	2.19	0.82	0.50	-1.40	0.06	0.45	2.65
Former Soviet Union	-0.03	0.19	-0.26	-1.60	0.05	0.10	3.87
Thailand	1.87	3.55	0.88	-3.39	-0.33	-2.21	4.32
Viet Nam	8.19	6.19	1.92	-3.46	-0.08	-5.53	4.87
Non APEC Regions							
Other Economies in America	-0.61	-0.03	-0.67	-1.05	-0.74	-0.53	
Western European Economies	-0.79	-0.01	-0.80	-0.75	-4.38	-0.60	
Rest of the World	-0.37	0.01	-0.43	-0.66	0.78	0.38	

Table 12: Effects of Shanghai Accord: 5% Reduction of Trade Costs by Regional Trade Facilitation across APEC Region

	Quantities (% Deviation from Base)		Prices (% Deviation from Base)		International Trade (Deviation from Base)		
	GDP	Private Consumption	Output Price	Import Price	Trade Deficit (TD) (Tens of Billion US$)	TD over GDP (%)	Intra-APEC Trade Share (%)
APEC Total	0.98	4.83	0.83	-4.21			
Industrialized APEC Economies							
Australia	1.17	1.87	0.33	-4.35	-0.19	-0.53	4.91
Canada	3.93	4.06	2.17	-4.35	0.19	0.46	4.17
Japan	0.73	1.07	0.11	-4.12	-1.41	-0.37	4.68
New Zealand	1.81	2.71	0.64	-4.24	-0.01	-0.07	4.29
The United States	0.32	0.64	-0.01	-2.94	7.86	0.98	4.88
Newly Industrialized APEC Economies							
Hong Kong, China	2.53	4.74	0.28	-4.63	-0.55	-4.54	4.53
Korea	2.49	4.53	0.77	-4.24	-0.61	-1.51	4.62
Mexico	3.37	2.68	2.07	-4.22	0.40	1.25	3.76
Singapore	7.65	17.70	1.38	-4.26	-0.72	-9.66	5.28
Chinese Taipei	3.91	4.57	1.75	-4.76	-0.40	-0.99	3.83
Industrializing APEC Economies							
Chile	1.38	2.42	0.39	-3.58	0.03	0.39	5.90
China	2.30	4.36	0.77	-4.14	-0.49	-0.56	4.25
Indonesia	2.07	2.86	0.82	-4.48	-0.27	-1.25	4.34
Malaysia	5.69	15.72	2.02	-4.19	-0.66	-5.89	4.45
Peru	0.57	1.35	0.03	-3.72	-0.04	-0.63	6.10
Philippines	4.27	5.58	0.93	-4.26	-0.59	-8.67	5.53
Former Soviet Union	-0.05	1.62	-0.81	-4.48	-0.73	-1.37	6.01
Thailand	2.15	6.20	0.87	-4.31	-0.15	-1.00	4.40
Viet Nam	6.12	6.86	1.26	-4.78	-0.10	-6.02	2.77
Non APEC Regions							
Other Economies in America	-1.77	-0.19	-1.77	-1.50	-0.07	0.00	
Western European Economies	-1.88	-0.09	-1.92	-1.86	-0.42	-0.08	
Rest of the World	-2.10	-0.44	-2.06	-1.81	-1.07	-0.45	

Table 13: Effects of Shanghai Accord: 5% Reduction of Trade Costs by Global Trade Facilitation in APEC Region

	Quantities (% Deviation from Base)		Prices (% Deviation from Base)		International Trade (Deviation from Base)		
	GDP	Private Consumption	Output Price	Import Price	Trade Deficit (TD) (Tens of Billion US $)	TD over GDP (%)	Intra-APEC Trade Share (%)
APEC Total	0.91	5.54	0.49	-5.69			
Industrialized APEC Economies							
Australia	0.86	2.22	-0.06	-5.57	0.02	0.04	0.93
Canada	3.46	4.06	1.77	-5.46	1.78	3.26	2.33
Japan	0.47	1.18	-0.20	-5.47	0.11	0.04	1.34
New Zealand	1.41	3.15	0.13	-5.70	0.02	0.35	0.57
The United States	0.40	0.80	-0.04	-3.91	15.46	1.94	1.33
Newly Industrialized APEC Economies							
Hong Kong, China	2.56	5.54	-0.15	-6.15	-0.57	-4.71	1.04
Korea	2.18	4.98	0.35	-5.62	-0.06	-0.16	1.15
Mexico	3.04	2.88	1.82	-5.41	0.94	2.75	1.76
Singapore	7.85	19.20	1.11	-5.58	-0.41	-5.71	2.11
Chinese Taipei	3.93	5.24	1.43	-6.20	-0.54	-1.47	1.47
Industrializing APEC Economies							
Chile	1.54	3.40	0.10	-5.59	-0.07	-1.03	1.36
China	2.00	4.90	0.37	-5.83	-0.32	-0.34	1.84
Indonesia	1.88	3.40	0.42	-5.83	-0.32	-1.50	1.37
Malaysia	6.15	18.47	1.91	-5.68	-0.95	-8.67	2.04
Peru	0.21	1.87	-0.57	-5.85	-0.11	-1.75	2.03
Philippines	4.40	6.43	0.66	-5.75	-0.71	-10.32	2.69
Former Soviet Union	-0.23	2.74	-1.30	-6.67	-1.45	-2.71	1.17
Thailand	1.94	7.09	0.57	-5.85	-0.04	-0.20	1.16
Viet Nam	6.15	7.67	1.03	-6.03	-0.08	-5.07	0.45
Non APEC Regions							
Other Economies in America	0.63	0.29	0.49	-0.91	-0.94	-0.72	
Western European Economies	0.14	0.49	-0.21	-1.54	-8.53	-1.13	
Rest of the World	0.39	0.37	0.12	-1.23	-3.23	-1.55	

Table 14: Effects of Regional Trade Facilitation: Moderate Reduction of Trade Costs among the APEC Economies

	Quantities (% Deviation from Base)		Prices (% Deviation from Base)		International Trade (Deviation from Base)		
	GDP	Private Consumption	Output Price	Import Price	Trade Deficit (TD) (Tens of Billion US$)	TD over GDP (%)	Intra-APEC Trade Share (%)
APEC Total	0.94	4.84	0.90	-4.09			
Industrialized APEC Economies							
Australia	1.38	1.83	0.67	-3.64	-0.16	-0.45	4.65
Canada	3.60	3.76	1.83	-4.27	-0.55	-0.85	3.58
Japan	0.70	0.93	0.18	-3.88	-1.78	-0.47	3.99
New Zealand	1.70	2.47	0.75	-3.58	0.01	0.17	3.78
The United States	0.29	0.57	-0.12	-2.37	7.47	0.93	4.38
Newly Industrialized APEC Economies							
Hong Kong, China	2.76	4.44	0.63	-4.35	-0.54	-4.52	4.08
Korea	2.25	4.00	0.80	-3.97	-0.41	-1.02	4.11
Mexico	2.95	2.57	1.58	-3.98	-0.33	-0.79	3.46
Singapore	7.76	17.27	1.83	-3.49	-0.81	-10.73	4.71
Chinese Taipei	3.63	4.13	1.82	-4.41	-0.12	-0.04	3.48
Industrializing APEC Economies							
Chile	1.39	2.70	0.22	-4.39	-0.11	-1.65	6.86
China	2.14	4.41	0.75	-4.01	0.87	1.33	4.38
Indonesia	2.27	3.01	1.11	-4.38	0.06	0.31	5.31
Malaysia	5.87	16.47	2.29	-4.08	-0.39	-3.23	4.49
Peru	0.32	1.47	-0.35	-4.74	-0.10	-1.70	7.39
Philippines	4.22	5.62	1.02	-4.28	-0.45	-6.79	5.44
Former Soviet Union	0.21	1.78	-0.57	-4.24	-0.65	-1.20	7.00
Thailand	2.20	6.57	0.92	-4.18	-0.01	0.00	4.74
Viet Nam	6.44	7.75	1.66	-5.44	-0.01	-1.38	4.07
Non APEC Regions							
Other Economies in America	-2.02	-0.22	-2.10	-2.01	-0.88	-0.60	
Western European Economies	-1.67	-0.06	-1.68	-1.17	-0.17	-0.04	
Rest of the World	-1.90	-0.42	-1.84	-1.58	-0.97	-0.41	

Table 15: Effects of Global Trade Facilitation: Moderate Reduction of Trade Costs in the APEC Economies

	Quantities (% Deviation from Base)		Prices (% Deviation from Base)		International Trade (Deviation from Base)		
	GDP	Private Consumption	Output Price	Import Price	Trade Deficit (TD) (Tens of Billion US$)	TD over GDP (%)	Intra-APEC Trade Share (%)
APEC Total	0.77	5.57	0.23	-6.04			
Industrialized APEC Economies							
Australia	0.52	1.99	-0.36	-5.47	-0.12	-0.34	0.62
Canada	3.46	3.93	1.79	-5.20	0.85	1.61	2.25
Japan	0.30	1.11	-0.34	-5.43	-1.11	-0.30	1.25
New Zealand	1.18	3.01	-0.10	-5.65	-0.04	-0.65	0.19
The United States	0.32	0.68	-0.06	-3.64	17.88	2.24	1.09
Newly Industrialized APEC Economies							
Hong Kong, China	2.12	5.14	-0.41	-6.12	-0.62	-4.91	1.05
Korea	1.84	4.55	0.13	-5.61	-0.13	-0.32	0.89
Mexico	2.80	2.68	1.65	-5.06	0.58	1.73	1.58
Singapore	7.98	19.47	1.10	-5.51	-0.97	-12.85	1.87
Chinese Taipei	3.39	4.66	1.09	-6.05	-0.38	-1.00	1.25
Industrializing APEC Economies							
Chile	1.34	3.66	-0.14	-6.27	-0.02	-0.31	0.99
China	1.78	5.28	-0.08	-6.92	-1.48	-1.96	1.57
Indonesia	1.57	3.56	-0.02	-6.79	-0.46	-2.20	0.99
Malaysia	5.65	18.65	1.36	-6.63	-0.76	-6.93	1.67
Peru	0.01	1.99	-0.75	-6.32	-0.08	-1.30	1.76
Philippines	4.63	6.95	0.38	-6.75	-0.77	-11.19	2.42
Former Soviet Union	-0.37	3.00	-1.54	-7.41	-1.39	-2.60	1.34
Thailand	1.62	7.44	0.12	-6.84	-0.14	-0.89	0.86
Viet Nam	6.50	8.11	0.58	-7.12	-0.15	-8.70	-0.61
Non APEC Regions							
Other Economies in America	0.66	0.28	0.54	-1.04	-0.39	-0.31	
Western European Economies	0.12	0.48	-0.26	-1.34	-7.08	-0.94	
Rest of the World	0.22	0.29	-0.06	-1.55	-3.22	-1.54	

Table 16: Effects of Regional Trade Facilitation: Maximum Reduction of Trade Costs among the APEC Economies

	Quantities (% Deviation from Base)		Prices (% Deviation from Base)		International Trade (Deviation from Base)		
	GDP	Private Consumption	Output Price	Import Price	Trade Deficit (TD) (Tens of Billion US$)	TD over GDP (%)	Intra-APEC Trade Share (%)
APEC Total	1.30	6.64	1.29	-5.41			
Industrialized APEC Economies							
Australia	2.00	2.47	1.11	-4.59	0.00	-0.01	5.60
Canada	4.64	4.91	2.53	-5.38	-0.21	-0.22	4.62
Japan	1.08	1.28	0.38	-4.91	-1.50	-0.38	5.88
New Zealand	2.44	3.29	1.20	-4.59	0.04	0.64	4.79
The United States	0.38	0.76	0.03	-3.46	10.79	1.35	5.67
Newly Industrialized APEC Economies							
Hong Kong, China	3.58	6.05	0.79	-5.38	-0.60	-5.15	5.64
Korea	3.10	5.42	1.15	-5.04	0.19	0.46	6.31
Mexico	3.92	3.47	2.27	-5.84	-0.15	-0.26	4.40
Singapore	10.16	22.58	2.36	-4.74	-0.55	-7.40	6.77
Chinese Taipei	4.86	5.56	2.43	-5.53	0.62	2.64	5.28
Industrializing APEC Economies							
Chile	1.91	3.71	0.43	-5.58	-0.04	-0.65	8.88
China	2.88	6.37	0.98	-5.69	1.41	2.10	6.78
Indonesia	3.04	4.21	1.44	-5.91	0.11	0.54	7.05
Malaysia	8.19	23.18	3.10	-5.75	-0.56	-4.54	6.60
Peru	0.56	2.12	-0.22	-6.18	-0.11	-1.82	9.33
Philippines	5.55	7.79	1.25	-5.92	-0.43	-6.68	8.16
Former Soviet Union	0.61	2.80	-0.45	-6.01	-0.62	-1.14	9.36
Thailand	2.86	9.09	1.30	-5.65	0.26	1.86	6.67
Viet Nam	9.13	10.77	2.37	-6.55	-0.02	-2.18	5.48
Non APEC Regions							
Other Economies in America	-2.63	-0.26	-2.61	-2.47	-1.48	-1.04	
Western European Economies	-2.72	-0.09	-2.63	-2.57	-5.40	-0.77	
Rest of the World	-2.48	-0.37	-2.42	-2.21	-1.74	-0.77	

Table 17: Effects of Global Trade Facilitation: Maximum Reduction of Trade Costs in the APEC Economies

	Quantities (% Deviation from Base)		Prices (% Deviation from Base)		International Trade (Deviation from Base)		
	GDP	Private Consumption	Output Price	Import Price	Trade Deficit (TD) (Tens of Billion US$)	TD over GDP (%)	Intra-APEC Trade Share (%)
APEC Total	1.16	7.71	0.29	-8.19			
Industrialized APEC Economies							
Australia	0.64	2.56	-0.49	-7.00	-0.04	-0.12	0.12
Canada	3.79	4.68	1.81	-6.95	2.75	4.97	2.15
Japan	0.86	1.65	-0.17	-7.33	-4.07	-1.09	2.61
New Zealand	1.46	3.92	-0.32	-7.47	-0.06	-1.05	0.31
The United States	0.54	1.03	-0.11	-5.21	14.79	1.85	1.94
Newly Industrialized APEC Economies							
Hong Kong, China	4.71	8.54	0.66	-8.28	-1.86	-14.03	-0.44
Korea	2.77	6.36	0.37	-7.35	1.45	3.59	2.25
Mexico	3.30	3.58	1.74	-8.04	1.16	3.39	1.93
Singapore	10.81	26.01	1.63	-7.41	-0.28	-4.04	3.25
Chinese Taipei	4.21	6.01	1.46	-8.18	1.10	4.26	2.11
Industrializing APEC Economies							
Chile	1.54	5.02	-0.60	-8.86	-0.08	-1.25	0.86
China	2.20	7.13	-0.10	-8.82	1.20	1.79	1.69
Indonesia	1.68	4.45	-0.19	-8.83	0.12	0.60	0.71
Malaysia	8.91	27.93	2.43	-8.98	-1.56	-13.96	2.53
Peru	-0.42	2.77	-1.52	-9.22	-0.13	-2.08	1.58
Philippines	5.72	9.10	0.35	-8.82	-0.42	-6.54	3.26
Former Soviet Union	-0.38	4.55	-2.14	-10.09	-2.48	-4.65	-0.05
Thailand	2.26	10.34	0.26	-9.18	0.21	1.49	1.61
Viet Nam	8.61	10.86	0.44	-9.66	-0.22	-12.20	-0.75
Non APEC Regions							
Other Economies in America	0.44	0.31	0.21	-1.84	-1.06	-0.80	
Western European Economies	0.01	0.57	-0.12	-1.70	-7.90	-1.05	
Rest of the World	0.34	0.33	0.02	-1.58	-2.62	-1.26	

Table 18: Effects of Regional Trade Facilitation: Minimum Reduction of Trade Costs among the APEC Economies

	Quantities (% Deviation from Base)		Prices (% Deviation from Base)		International Trade (Deviation from Base)		
	GDP	Private Consumption	Output Price	Import Price	Trade Deficit (TD) (Tens of Billion US$)	TD over GDP (%)	Intra-APEC Trade Share (%)
APEC Total	0.64	2.87	0.58	-2.65			
Industrialized APEC Economies							
Australia	0.86	1.06	0.40	-2.46	-0.09	-0.24	2.98
Canada	2.10	2.31	1.00	-3.07	-0.57	-0.96	2.23
Japan	0.55	0.57	0.20	-2.30	-0.85	-0.22	2.46
New Zealand	1.16	1.50	0.52	-2.33	-0.01	-0.09	2.29
The United States	0.22	0.40	-0.06	-1.77	0.39	0.05	2.64
Newly Industrialized APEC Economies							
Hong Kong, China	1.74	2.74	0.46	-2.87	-0.47	-3.76	2.83
Korea	1.54	2.50	0.59	-2.53	-0.37	-0.93	2.70
Mexico	1.65	1.54	0.84	-2.97	-0.24	-0.61	2.14
Singapore	4.81	10.32	1.17	-2.22	-0.36	-4.97	2.97
Chinese Taipei	2.28	2.52	1.13	-3.02	-0.16	-0.33	2.07
Industrializing APEC Economies							
Chile	0.86	1.64	0.08	-2.91	-0.12	-1.78	4.07
China	1.32	2.54	0.42	-2.49	0.03	0.12	2.11
Indonesia	1.27	1.72	0.56	-2.86	-0.08	-0.38	2.82
Malaysia	3.67	9.83	1.39	-2.72	-0.46	-4.23	2.69
Peru	0.10	0.85	-0.33	-3.08	-0.08	-1.35	4.13
Philippines	2.75	3.40	0.73	-2.66	-0.30	-4.65	3.28
Former Soviet Union	0.61	0.97	0.23	-1.97	0.27	0.50	4.97
Thailand	1.39	3.80	0.60	-2.74	-0.08	-0.50	2.63
Viet Nam	4.02	4.62	1.03	-3.40	-0.03	-2.17	1.74
Non APEC Regions							
Other Economies in America	-1.31	-0.15	-1.38	-1.46	-1.37	-0.99	
Western European Economies	-0.60	-0.06	-0.63	-0.42	4.86	0.64	
Rest of the World	-1.00	-0.37	-0.92	-0.75	0.09	0.07	

Table 19: Effects of Global Trade Facilitation: Minimum Reduction of Trade Costs in the APEC Economies

	Quantities (% Deviation from Base)		Prices (% Deviation from Base)		International Trade (Deviation from Base)		
	GDP	Private Consumption	Output Price	Import Price	Trade Deficit (TD) (Tens of Billion US$)	TD over GDP (%)	Intra-APEC Trade Share (%)
APEC Total	0.27	2.95	-0.54	-3.99			
Industrialized APEC Economies							
Australia	0.08	1.12	-0.46	-3.08	0.03	0.08	-0.77
Canada	-0.04	0.70	-0.39	-2.64	7.94	14.53	-0.02
Japan	-0.17	0.74	-0.68	-3.46	-2.85	-0.79	-1.29
New Zealand	0.56	1.94	-0.23	-3.60	-0.11	-1.83	-1.26
The United States	0.52	0.92	-0.33	-3.22	-16.90	-2.13	0.58
Newly Industrialized APEC Economies							
Hong Kong, China	2.15	4.82	-0.25	-5.77	-1.91	-14.07	-1.97
Korea	0.07	1.73	-0.95	-3.38	1.43	3.64	0.26
Mexico	-0.29	0.80	-0.34	-2.74	4.94	14.28	-1.00
Singapore	2.37	6.09	-0.28	-2.48	2.50	33.37	0.86
Chinese Taipei	0.37	2.15	-0.63	-4.80	1.32	4.80	-0.71
Industrializing APEC Economies							
Chile	0.47	2.20	-0.60	-4.38	-0.05	-0.70	0.47
China	-0.33	2.26	-1.34	-4.11	-1.28	-1.85	-2.44
Indonesia	0.14	1.76	-0.65	-4.13	-0.01	-0.03	-0.68
Malaysia	4.17	13.08	0.99	-3.91	-1.47	-14.24	0.16
Peru	-0.35	1.22	-0.92	-4.40	-0.02	-0.32	0.26
Philippines	1.63	3.49	-0.72	-4.29	-0.11	-1.77	0.97
Former Soviet Union	-0.57	1.79	-1.74	-5.04	-2.18	-4.09	-2.46
Thailand	0.42	3.97	-0.40	-3.92	0.14	1.01	-0.65
Viet Nam	5.15	5.41	-0.38	-6.56	-0.39	-21.09	-3.71
Non APEC Regions							
Other Economies in America	0.00	0.12	-0.24	-1.11	0.94	0.70	
Western European Economies	0.12	0.02	0.10	0.23	6.17	0.82	
Rest of the World	0.16	0.05	-0.06	-0.03	1.87	0.89	

Table 20. Effects of Trade Liberalization and Facilitation: APEC FTA and Shanghai Accord (Regional)

	Quantities (% Deviation from Base)		Prices (% Deviation from Base)		International Trade (Deviation from Base)		
	GDP	Private Consumption	Output Price	Import Price	Trade Deficit (TD) (Tens of Billion US$)	TD over GDP (%)	Intra-APEC Trade Share (%)
APEC Total	1.75	7.23	2.01	-6.03			
Industrialized APEC Economies							
Australia	4.46	3.09	3.03	-5.17	-0.06	-0.16	7.78
Canada	4.51	4.87	2.43	-5.71	-0.56	-0.82	4.30
Japan	1.46	2.19	0.51	-6.35	0.65	0.21	7.85
New Zealand	7.59	5.82	5.05	-4.28	0.12	1.99	8.29
The United States	0.45	0.74	0.16	-3.91	7.89	0.98	5.99
Newly Industrialized APEC Economies							
Hong Kong, China	4.71	6.56	1.87	-4.75	-0.66	-5.81	5.72
Korea	6.14	15.39	2.77	-7.39	1.45	3.44	9.27
Mexico	3.21	3.07	1.44	-6.29	0.01	0.17	4.08
Singapore	8.59	19.70	2.16	-4.53	-0.33	-4.64	5.73
Chinese Taipei	6.24	5.84	3.40	-6.98	0.32	1.72	6.10
Industrializing APEC Economies							
Chile	3.09	3.46	1.02	-6.05	-0.09	-1.33	10.60
China	5.23	6.06	2.07	-7.07	2.00	2.98	9.66
Indonesia	5.25	4.42	2.73	-5.86	0.29	1.38	7.59
Malaysia	8.65	22.07	3.01	-5.63	-1.23	-10.90	5.85
Peru	0.93	1.80	-0.21	-7.72	-0.12	-2.03	12.11
Philippines	6.54	6.14	1.50	-5.46	-0.39	-6.15	8.12
Former Soviet Union	0.48	2.13	-0.55	-6.05	-0.45	-0.84	9.08
Thailand	4.30	10.21	2.15	-7.49	-0.21	-1.32	8.81
Viet Nam	15.41	13.77	3.58	-7.86	-0.16	-9.89	7.62
Non APEC Regions							
Other Economies in America	-2.68	-0.18	-2.81	-3.22	-2.28	-1.65	
Western European Economies	-2.89	-0.17	-2.66	-2.44	-3.09	-0.46	
Rest of the World	-2.54	-0.34	-2.59	-2.91	-3.09	-1.43	

Table 21: Effects of Trade Liberalization and Facilitation: APEC FTA and Shanghai Accord (Global)

	Quantities (% Deviation from Base)		Prices (% Deviation from Base)		International Trade (Deviation from Base)		
	GDP	Private Consumption	Output Price	Import Price	Trade Deficit (TD) (Tens of Billion US$)	TD over GDP (%)	Intra-APEC Trade Share (%)
APEC Total	1.72	7.36	1.20	-6.99			
Industrialized APEC Economies							
Australia	3.23	2.85	1.64	-6.77	0.35	0.94	2.53
Canada	3.96	4.89	1.69	0.00	1.03	1.94	1.51
Japan	1.77	2.57	0.51	-8.03	0.13	0.08	3.84
New Zealand	6.36	5.74	3.69	-6.19	0.20	3.31	3.55
The United States	0.62	0.89	0.01	-8.98	12.35	1.54	1.53
Newly Industrialized APEC Economies							
Hong Kong, China	4.17	6.20	0.96	-6.05	0.16	-0.02	2.69
Korea	5.74	14.62	2.08	-8.99	3.28	7.87	3.43
Mexico	2.96	3.21	1.08	-7.11	1.15	3.35	0.40
Singapore	8.80	20.80	2.00	-7.09	0.34	3.83	2.54
Chinese Taipei	6.62	6.22	3.00	0.00	1.09	4.37	2.64
Industrializing APEC Economies							
Chile	3.04	4.02	0.19	-7.47	-0.13	-1.95	2.25
China	4.40	6.51	1.17	-9.44	3.06	4.40	4.48
Indonesia	3.98	4.13	1.36	-8.51	0.52	2.45	2.64
Malaysia	8.55	22.76	2.49	-7.84	-1.07	-9.33	2.67
Peru	-0.11	2.01	-1.66	-5.70	-0.14	-2.24	3.58
Philippines	5.95	6.00	0.94	-7.59	0.10	0.44	4.19
Former Soviet Union	-1.01	2.81	-2.77	-10.99	-2.15	-4.06	0.60
Thailand	3.71	10.23	1.59	-5.88	0.99	6.91	3.51
Viet Nam	14.48	13.54	2.89	-10.20	-0.06	-5.18	3.38
Non APEC Regions							
Other Economies in America	2.17	0.76	1.57	-8.75	-0.05	-0.11	
Western European Economies	0.25	0.81	-0.44	0.00	-17.30	-2.30	
Rest of the World	0.44	0.39	-0.08	-10.55	-3.82	-1.83	

7. CONCLUDING REMARKS

At the 1994 APEC Leaders' Meeting in Bogor, Indonesia, the APEC Leaders committed to achieve the goals of free and open trade and investment in the Asia-Pacific region by the year 2020—with the developed economies achieving these goals no later than the year 2010. With less than ten years remaining to meet this deadline, the issue of implementing free and open trade and investment has become APEC's principal policy concern. In October 1999, the Ministers instructed the Senior Officials to develop concrete actions and measures to prepare the APEC Trade Facilitation Principles in order to revive the momentum after the failure of Early Voluntary Sectoral Liberalization (EVSL). At the 2001 Leaders' Meeting in Shanghai, China, the Leaders instructed the Ministers in the Shanghai Accord to reduce transaction costs by 5 percent across the APEC region over the next five years.

Against this background, this study tried to quantitatively measure the effects of trade facilitation in the APEC region on the APEC economies and to suggest alternative ways to achieve the Bogor goals. As we highlighted earlier, we attempted to answer the following questions: How much would trade facilitation reduce trade costs and what would be the likely gains in macro-economic aggregates created by the reduced trade costs? Furthermore, how much change could be expected compared to the impact of trade liberalization?

In order to estimate the reduction in transaction costs resulting from trade facilitation, a survey was conducted for this research. The survey targeted business sectors that are engaged in trade activities to gather their views on the effects of trade facilitation on trade costs in three areas: customs procedures, standards and conformity, and mobility of business people.

According to the most conservative figures found through the survey, a 50 percent improvement in trade facilitation will result in an average trade cost reduction effect of between 2.9 percent, in the case of industrialized and newly industrialized APEC economies, and 3.5 percent, in the case of industrializing APEC economies. If we take the most optimistic opinion, the reduced trade costs incurred by trade facilitation will range from 5.8 percent in the case of industrialized APEC economies, 6.2 percent in the case of newly industrialized APEC economies, and 7.7 percent in the case of industrializing APEC economies.

We applied the survey results to measure the macroeconomic effects of trade facilitation on the APEC economy as a whole and on the participating member economies by using a CGE model analysis. From the CGE model analysis, we found the following policy implications.

Both trade liberalization through a free trade area in the APEC region and all possible reductions in trade costs through trade facilitation in the region produce beneficial effects for the APEC regional economy as a whole by creating positive GDP growth, and increasing the income of representative agents, which in turn results in expanded private consumption.

Gains from trade facilitation are more beneficial to the APEC economy than gains from trade liberalization. In addition to trade facilitation, if the APEC regional economy successfully implements its free trade arrangement, the additional gains from trade are expected to be remarkable.

In particular, the effect of the Shanghai Accord on APEC's GDP growth will be 0.98 percent (US$154 billion), on average, Singapore enjoying the biggest gain of 7.65 percent and the US getting the smallest gain of 0.32 percent. Moreover, the optimistic case of APEC's regional trade facilitation multiplies the beneficial effect on APEC's GDP by 1.3 percent (US$204 billion).

In terms of achieving GDP growth, regional trade facilitation, i.e., trade facilitation limited to the APEC member economies, is a better policy option than global trade facilitation, i.e., trade

facilitation open to members and non-members alike. However, global trade facilitation under the principle of open regionalism is better than regional trade facilitation in terms of consumer welfare since it results in more private consumption and lower output prices, although there exists a free rider problem.

The distribution of gains from trade liberalization over the different levels of economic development in APEC is quite typical. Relatively less developed APEC economies which have relatively smaller domestic markets and more dependent on the regional export market take bigger gains from the freer trade.

The beneficial effects of trade facilitation are distributed over the APEC member economies depending on the intra-APEC trade share and trade dependency of each economy. The higher the intra-APEC trade share an economy has and the higher its trade dependency, the bigger gains it will enjoy in terms of GDP growth from trade facilitation among the APEC economies.

Regional trade liberalization through the formation of the APEC Free Trade Area may be a more preferable policy option for Australia and New Zealand than trade facilitation, but trade facilitation is much more preferable for most APEC economies. In particular, trade facilitation limited to the APEC member economies is the most ideal policy option for majority of the APEC economies. However, highly trade dependent economies like Hong Kong, China, Singapore, Malaysia, and the Philippines may prefer global trade facilitation to regional trade facilitation, since it provides equal treatment to non-members. For an economy like the US, which has a relatively lower intra-APEC trade share and lower trade dependency, global trade facilitation is likely to be the most favorable policy option.

As a conclusion, this research shows that the effects of trade facilitation are far superior and more practical than the effects of reduced import tariffs. As traditional trade barriers such as import tariffs come down, trade facilitation will become increasingly important. According to this research, the benefits of trade facilitation can be quite significant. With the current facilitation covering much broader areas, the potential benefits are higher. Thus, emphasizing and accelerating trade facilitation will be an important objective for APEC.

Finally, we would like to highlight some weaknesses in this experiment. This research is an experimental attempt to measure the macro-economic impact of trade facilitation. We aimed at providing a theoretical basis and methodology for conducting a quantitative analysis. Lots of fine-tuning is necessary at the individual economy level and at the APEC economy level. For example, the survey analysis to find a functional relationship between trade costs and trade facilitation in the APEC region was incomplete in terms of sample size. We also failed to find the functional relationship for each individual APEC economy because of insufficient responses. In addition, the CGE model we adopted was a very simplified and standardized one. This means that the model does not fully reflect the unique characteristics of each of the APEC economies. The model assumes same specifications and functional relations for all the APEC economies. These problems can be easily corrected if the APEC member economies cooperate on future research projects.

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CHAPTER III

THE IMPACT OF APEC INVESTMENT LIBERALIZATION AND FACILITATION

EXECUTIVE SUMMARY

The experience of the Asian crisis in 1997 taught us that what is required for sustainable growth is long-term capital such as foreign direct investment (FDI) rather than speculative investment that can be withdrawn quickly. However, investment liberalization continues to face persistent resistance especially among advocates of protection of domestic industries. In order to eradicate such anxieties, it is necessary to demonstrate empirically and quantitatively the economic effects of investment liberalization and facilitation.

The main objective of this study is to analyze the economic effects of investment liberalization and facilitation in a quantitative manner. The study employs a Computable General equilibrium (CGE) model of global trade to estimate those economy-wide impacts. At the same time, it intends to present viable recommendations on effective investment liberalization policy.

It is found that all APEC member economies will benefit from investment liberalization. Those gains in real GDP range from 3.1 percent in Indonesia to virtually zero in Japan. The benefit of investment liberalization is expected to be larger for economies with steeper investment barriers. However, this is also dependent on inward and outward FDI stock prior to investment liberalization. All in all, the impact on developing economies in the APEC region is expected to be relatively large.

Moreover, it is shown that the increases in FDI are in a complementary relationship with trade. Trade volume of both imports and exports will expand as a result of investment liberalization. The real GDP of the APEC member economies as a whole would increase by 0.3 percent mainly supported by capital formation, which expands by 0.5 percent. While, APEC's trade would be boosted by 0.5 percent.

One of the achievements in this study is the quantification of investment barriers in APEC member economies. This is the first attempt to quantify investment barriers based on descriptions of investment-area activities in the Individual Action Plans (IAP) of the APEC member economies, which is vital in showing the progress made in APEC toward the goals announced at Bogor. The estimated barriers are utilized as key inputs to economic model simulations to assess the economy-wide impact of investment liberalization and facilitation.

However, each IAP is developed voluntarily by each APEC member economy and they lack comprehensiveness and standardization with other economies. The presented quantification may not exactly reflect the reality in some areas. Developing IAPs with greater comprehensiveness and in adjustment with the various economies will clarify where we stand *vis-à-vis* the Bogor goals. Such IAP data will be extremely useful in economic analysis, as well as for investors making investment decisions.

IAPs are updated and improved continually. Therefore, it is important to undertake periodic follow-up assessments of the anticipated impacts of APEC actions in terms of evaluating the current state of investment liberalization and facilitation in the region.

1. INTRODUCTION

Since the Economic Committee (EC) was established in November 1994 at the 6th APEC Ministerial Meeting in Jakarta, Indonesia, the EC has been involved in a broad range of research and analysis in support of APEC's work on both trade and investment liberalization and facilitation, the principal goal of APEC's activities.

This chapter focuses in particular on the impact of investment liberalization and facilitation and has been written to confirm that the investment liberalization that APEC strives to achieve will bring tremendous benefits to member economies and to confirm that growth of investment spurred by liberalization does not replace trade volume but is in a complementary relationship with it.

The experience of the Asian financial crisis taught us that sustainable growth of developing economies in the region requires long-term funds, that is, growth in FDI through liberalized investment, rather than speculative investment that can be withdrawn quickly. On the other hand, investment liberalization continues to face persistent resistance, especially among advocates of protection of domestic industries in developing economies. In order to eradicate such anxieties, it is necessary to demonstrate empirically and quantitatively the economic effects of investment liberalization and facilitation and continue to promote its necessity.

In addition, solid growth in FDI requires, along with border measures, transparency and stability in relevant legal schemes, foreseeability in FDI, assurance of business latitude for activities of foreign corporations, and other measures to reduce investment barriers and develop relevant laws. In view of the fact that "Strengthening the Functioning of Markets" has become one of the principal themes in the restructuring of the APEC region since 1999, a quantitative analysis of the economic effects brought on by investment liberalization through restructuring is vitally important in promoting structural changes in the region.

In 1997 the EC presented "The Impact of Investment Liberalization in APEC". The report dealt with investment liberalization, which is one of the most important themes at APEC and shed light the following two points. One is the fact that APEC member economies across the spectrum of stages of development have gradually moved toward more open investment regimes. The other is that investment liberalization has been approached in a more cautious and generally less thoroughgoing fashion than has trade liberalization. The report was based on case studies on investment policy in a number of APEC member economies and does not attempt to provide quantitative assessment of investment liberalization effects in the region.

The objective of this chapter is to analyze quantitatively the economic effects of economic restructuring and subsequent investment liberalization. The economic impact of FDI on recipient countries brought on by reduced investment barriers and legislation to stimulate FDI is to be assessed quantitatively, with attention to analytic findings in past research reports. At the same time, it is intended to present viable recommendations on effective investment liberalization policy by means of simulation analysis of an economic model.

The structure of this chapter is as follows. Presentation on the significance of this research in this section will be followed by an overview in section 2 of investment flow in the APEC region and the current state of investment barriers. Based on the information presented, the logical mechanism behind the economic effects of FDI will be presented systematically, along with empirical analysis of the economic effects realized by investment liberalization. Section 3 proceeds into the description of the framework of analysis. This examines into the framework of the CGE model employed in the analysis, the method used in the quantification of investment barriers, and estimates based on the model. Section 4 presents conclusion of the analytic study and issues that must be addressed in the future.

2. DEVELOPMENTS OF INTERNATIONAL INVESTMENT IN APEC

2.1 FDI Trends in the APEC Economies

2.1.1 Worldwide trends in FDI

The stock of FDI[39] worldwide exceeded US$6 trillion in 2000 (on an inward FDI basis), reaching a level about 10 times that of just 20 years earlier, as it is shown in Table 3-2-1. Examining the respective shares of developed and developing economies, one discovers that around 90 percent of the investor countries and about 70 percent of the host economies are developed economies; FDI between developed economies clearly continues to account for the majority of worldwide FDI.

Table 3-2-1 Trend of FDI Stock, 1980-2000

FDI outward stock (US$ Million)

	1980	1985	1990	1995	2000
World	615,805	893,567	1,888,672	2,937,539	6,314,271
Developed Economies	374,968	546,281	1,397,983	2,051,739	4,210,294
Developed Share of world	60.9%	61.1%	74.0%	69.8%	66.7%

FDI inward stock (US$ Million)

	1980	1985	1990	1995	2000
World	523,854	707,786	1,717,444	2,879,380	5,976,204
Developed Economies	507,366	675,215	1,637,265	2,621,165	5,248,522
Developed Share of world	96.9%	95.4%	95.3%	91.0%	87.8%

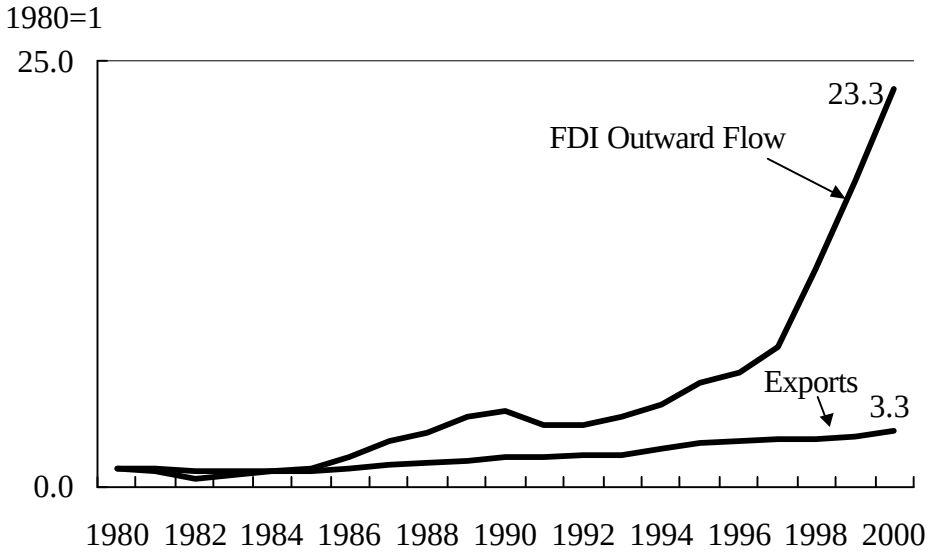
Source: UNCTAD (2001)

On the other hand, examining the changes in FDI on a flow basis, one finds in Chart 3-2-1 that such investment has since 1999 exceeded US$1 trillion annually,[40] an expansion in scale of nearly 23 times the level of two decades ago and one far surpassing the pace of increase (3 times over the past 20 years) in worldwide trade volume. In light of this, the importance of FDI within individual economies' investment has also risen sharply in recent years, with the ratio of FDI to domestic gross capital formation increasing from 5.3 percent in 1995 to 16.3 percent in 1999 (inward FDI basis, worldwide).

[39] The IMF defines FDI as "the category of international investment that reflects the objective of obtaining a lasting interest by a resident entity in one economy in an enterprise resident (subsidiary, affiliated company, etc.) in another economy." The two broad classifications of FDI are cross-border M&A (acquisition by a foreign investor of 10 percent or more of the issued shares of a company in the target economy) and greenfield investment (establishment of a company by investors through new investment in plant and equipment).

[40] Inward FDI worldwide in 2000 amounted to approximately US$1.3 trillion, while outward FDI reached about US$1.1 trillion according to UNCTAD (2001).

Chart 3-2-1: Trend of FDI Flow and Trade in Goods



Source: IMF *International Financial Statistics*

The first factor that can be seen as contributing to the rapid expansion of FDI from the latter half of the 1990s is the increase in cross-border mergers and acquisitions (M&As)[41]. Internationalization, technological innovation, and shrinking product life cycles have exposed companies to even stronger competitive pressures, requiring even greater efficiency in their investment activities as well. As a result, investor companies have come to place strategic emphasis not on greenfield investment, i.e., brand-new investment in plant and equipment in the host countries, but more on cross-border M&A, where they can promptly make use of the tangible and intangible assets that local companies already hold (manufacturing lines, human resources, sales and distribution networks, and other know-how).

The second factor contributing to the expansion of FDI is the worldwide drive to liberalize trade and investment. At the multilateral level, several agreements related to investment have taken effect under the WTO system created in 1995 through the Uruguay Round negotiations. Among these are the Trade-Related Investment Measures (TRIM)[42] Agreement setting out provisions on investment measures related to trade in goods and the General Agreement on Trade in Services (GATS) covering FDI in the service sectors.[43]

Efforts at the bilateral level to protect or liberalize FDI have also accelerated since 1990, with the number of bilateral investment treaties (BITs) climbing from 165 in 1979 and 385 in 1989 to 2,096 by the end of 2001.[44] There has also been a surge in treaties concluded to avoid double taxation[45] as well as in free trade agreements (FTAs) that provide for the protection and liberalization of investment. At the same time, progress in autonomous deregulation and privatization in individual countries, typified by China's moves towards a market economy,

[41] See JETRO (2001)
[42] Among the provisions are, for example, a prohibition on performance requirements such as local procurement requirements and foreign exchange controls.
[43] In addition to requiring most favored nation (MFN) status and transparency in the service sectors, this agreement stipulates that national treatment and market access be ensured in accordance with the terms and conditions given in the schedule of specific commitments.
[44] As of the end of 2001, 174 economies had concluded BITs. One local effort to promote investment was the Framework Agreement on the ASEAN Investment Area. See UNCTAD (2002).
[45] As of the end of 2000, 2,118 such treaties had been concluded according to UNCTAD (2001).

have enhanced the predictability, transparency, and stability of markets and contributed to the expansion of FDI.

2.1.2 FDI trends in the APEC economies

- APEC as a host economy

The APEC economies, too, have enjoyed a steady expansion in the amount of inward FDI (on a flow basis), which reached approximately US$520 billion in 2000, as it is shown in Table 3-2-2A. This amount corresponds to about 41 per cent of the inward FDI worldwide and is second only in scope to the inward FDI in EU economies (about US$620 billion, approximately 49 percent); the Asia-Pacific region can thus be said to play an important role today as a highly profitable target for investment.

Receiving the largest single share of investment among the APEC economies is the United States, which accounts for approximately 54 percent of the investment directed toward the APEC economies as a whole. Hong Kong, China (12.4 percent) and Canada (12.2 percent) rank next after the United States as principal host economy, while China (7.8 percent), which has accelerated its moves towards the adoption of a market economy by such steps as accession to the WTO, has become the region's fourth largest host economy.

Table III-2-2A Trend of Inward FDI Flows in APEC Economies

(Million US dollars)

	1990	1995	1996	1997	1998	1999	2000
United States of America	47,918	58,772	84,455	103,398	174,434	294,976	281,115
Hong Kong, China	1,728	6,213	10,460	11,368	14,776	24,591	64,448
Canada	7,855	9,257	9,635	11,525	22,575	25,150	63,335
China	3,487	35,849	40,180	44,237	43,751	40,319	40,772
Mexico	2,549	9,526	9,902	13,841	11,612	11,915	13,162
Australia	7,077	11,970	6,110	7,670	5,983	6,355	11,675
Korea	788	1,776	2,325	2,844	5,412	10,598	10,186
Japan	1,753	39	200	3,200	3,268	12,741	8,187
Singapore	5,575	8,788	10,372	12,967	6,316	7,197	6,390
Malaysia	2,333	5,816	7,296	6,513	2,700	3,532	5,542
Chinese Taipei	1,330	1,559	1,864	2,248	222	2,926	4,928
Chile	590	2,956	4,633	5,219	4,638	9,221	3,674
Russia		2,016	2,479	6,638	2,761	3,309	2,704
Thailand	2,444	2,004	2,271	3,627	5,143	3,562	2,448
Viet Nam	16	2,336	2,519	2,824	2,254	1,991	2,081
Philippines	530	1,459	1,520	1,249	1,752	737	1,489
New Zealand	1,686	3,659	2,231	2,624	1,191	1,410	1,477
Peru	41	2,048	3,242	1,697	1,880	1,969	556
Papua New Guinea	155	455	111	29	110	296	200
Brunei Darussalam	3	13	? 69	2	? 20	? 38	? 19
Indonesia	1,093	4,346	6,194	4,677	? 356	? 2,745	? 4,550
APEC	88,951	170,857	207,930	248,397	310,402	460,012	519,800
World	203,812	331,068	384,910	477,918	692,544	1,075,049	1,270,764
APEC Share of World	43.6%	51.6%	54.0%	52.0%	44.8%	42.8%	40.9%

Source: UNCTAD *World Investment Report* .

- APEC as an investor

The APEC economies play an important role not only as host economies but also as investor economies. Investment originating from the APEC economies in 2000 (on a flow basis) came to approximately US$320 billion, accounting for about 27 percent of the world's outward FDI[46] as it is shown in Table 3-2-2B. The largest investor economy among the APEC economies is the United States, the source of about 44 percent of the total FDI from APEC, followed by Hong Kong, China (20.0%), Canada (14.0%), and Japan (10.4%).

Table 3-2-2B Trend of Outward FDI Flows in APEC Economies

(Million US dollars)

	1990	1995	1996	1997	1998	1999	2000
United States of America	27,175	92,074	84,426	95,769	131,004	142,551	139,257
Hong Kong, China	2,448	25,000	26,531	24,407	16,973	19,339	63,036
Canada	4,725	11,464	13,097	23,066	34,584	18,415	44,047
Japan	48,024	22,508	23,442	26,059	24,152	22,743	32,886
Chinese Taipei	5,243	2,983	3,843	5,243	3,836	4,420	6,701
Australia	186	3,284	7,086	6,449	3,381	? 2,906	5,231
Chile	8	751	1,188	1,866	2,797	4,855	4,778
Singapore	2,034	3,442	6,827	9,360	555	4,011	4,276
Korea	1,056	3,552	4,670	4,449	4,740	2,550	3,697
Russia		358	771	2,597	1,011	1,963	3,050
Malaysia	532	2,488	3,768	2,626	785	1,640	2,919
China	830	2,000	2,114	2,563	2,634	1,775	2,324
Mexico	224	? 263	38	1,108	1,363	1,214	1,600
New Zealand	2,365	? 337	? 1,533	? 45	928	803	1,342
Indonesia	? 11	1,319	600	178	44	72	150
Peru		8	? 17	85	24	220	110
Philippines	? 5	98	182	136	160	128	95
Thailand	140	835	816	447	124	344	59
Brunei Darussalam		20	40	10	10	20	13
Viet Nam							
Papua New Guinea							
APEC	94,974	171,584	177,889	206,373	229,105	224,157	315,571
World	240,253	355,284	391,554	466,030	711,914	1,005,782	1,149,903
APEC Share of World	39.5%	48.3%	45.4%	44.3%	32.2%	22.3%	27.4%

Source: UNCTAD *World Investment Report* .

2.2 Foreign Direct Investment: Theory and Empirical Analysis

The economic impact of FDI on host economies will be examined below. First the static impact of capital transfer on economic welfare (efficiency effect and terms of trade effect) will be classified in accordance with conventional theory, and then the focus turned to other benefits of FDI such as capital accumulation and technology transfer so that the impact of these on the host economies can be reviewed.

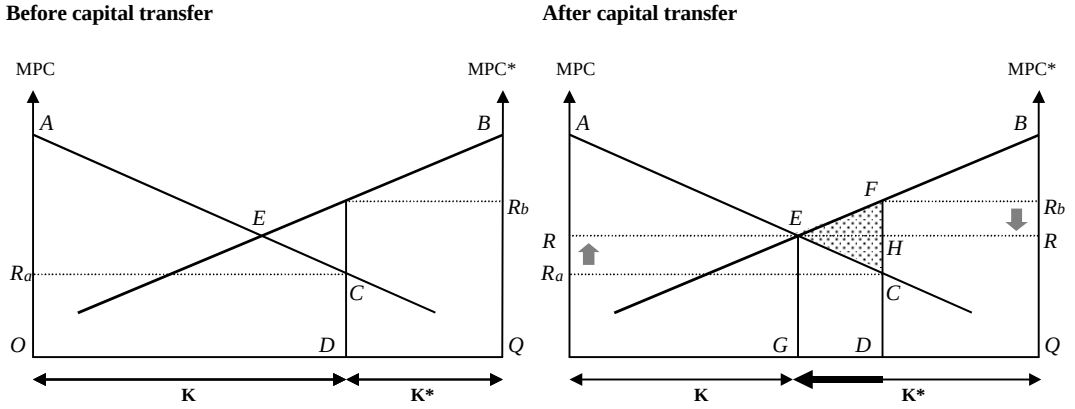
[46] Investment by the EU economies accounted for approximately 67 percent (about US$770 billion) of the outward FDI worldwide.

2.2.1 Welfare changes derived from international capital movement

According to the conventional theory of capital movement, which presupposes perfect competition and small economy, capital moves from capital-rich economies to capital-poor countries in search of a higher rate of return because the marginal productivity (rate of return) of capital is relatively lower in capital-rich economies than in capital-poor economies.

When capital moves, the investor economy (capital-rich economy) gains greater returns on its capital from the new target of investment and the holders of capital enjoy expanding surpluses (EHC of Chart 3-2-2), while the host economy (capital-poor economy) sees a rise in the relative value of labor as capital increases (a drop in the relative value of capital) and a resulting increase in wages and expanding surplus of workers (EFH).

Chart 3-2-2 Welfare Changes Derived from Capital Movement



MPC: marginal productivity of capital in Economy A
MPC*: marginal productivity of capital in Economy B
K: capital stock in Economy A
K*: capital stock in Economy B

From the perspective of resource allocation efficiency, therefore, the international capital movement enhances the economic welfare of both the investor economy and the host economy (EFC). This rise in the welfare levels of both economies derived from the movement of capital is termed the "efficiency effect."[47]

In case of a large economy[48], however, the conclusions reached on the impacts of international capital movement will differ from those reached above. Take, for example, a large labor-rich country that produces and exports mainly labor-intensive goods. With capital flowing into this country from capital-rich economies due to a difference in the marginal productivity of capital, there will be an expansion in the production of labor-intensive goods, thus lowering the export prices of those goods and worsening the terms of trade (reducing the purchasing power) for that country. Consequently, when analyzing the effects of international capital movement in the case of a large economy, consideration must be given to the effects of both efficiency effect and terms of trade effect.

This conventional model of international capital movement only explains the static impact, focusing on one-shot changes in economic welfare, and does not take into account the dynamic impact that capital movement has on improved productivity and economic growth in the host

[47] See Kimura and Kohama (1994).
[48] The actions of large economies, unlike those of small economies, have an impact on the international prices of goods and capital.

country. At the same time, international capital movement in the form of FDI aimed at long-term involvement in the management of a business would seem to differ both in motive and in impact on the economy of the host country from the purchase of a company's shares as part of short-term asset management, but the aforementioned model fails to take these distinctions into account. The focus below will therefore be on FDI and its impact on the host economy.[49]

2.2.2 Impact of FDI on a host economy

Characteristic of FDI aimed at long-term involvement in the management of a business is that the capital held by the investor economy does not travel to the host economy on its own but rather crosses national borders together with new technology and business know-how. Consequently, it is necessary to consider that FDI stimulates economic growth in the host economy along two channels: expanded production due to an increase in capital stock, and increased productivity and a higher growth rate due to the transfer and diffusion of new technology and business know-how.

- Increase in capital stock

Investment and the capital accumulation are essential elements for an economy to achieve economic growth. If international capital movement were restricted, all of a economy's investments would have to be financed through domestic savings alone. In an open economy, on the other hand, receiving capital from abroad enables investment beyond the level of domestic savings and contributes to economic growth by expanding the economy's future production capacity. Comparing greenfield investment, which entails starting a business from scratch in the host economy through new investment in plant and equipment, with M&A of local companies, the former will have a greater impact on the increase in capital stock within the host economy in the short run, but, over the long term, M&As can also directly and indirectly induce new domestic investment.

Among the channels other than FDI for the inflow of foreign capital is indirect investment such as a portfolio investment or loan, where the intent is not to be directly involved in management of the business, but UNCTAD (1999, 2000) has noted three advantages to receiving capital through FDI.

First, FDI for the purpose of long-term involvement in the management of a business, unlike portfolio investment, enables companies in the host economy to engage efficiently in difficult operations for which they do not possess the requisite know-how.

Second, unlike short-term speculative capital shifted across national borders in response to day-to-day moves by the market, FDI is a source of relatively stable capital for the host country because such investment is made on the basis of the long-term and potential growth capabilities of the host country. When the currency crises in Mexico and the Asian countries grew worse in the 1990s, short-term capital streamed out of the country, while those parties engaged in FDI exhibited behavior characteristic of a relatively long-term perspective.[50]

Third, investment profits derived from business results can be paid abroad, with the further possibility that some of these investment returns will be reinvested in the host country. However, a loan from a commercial bank, for instance, will obligate a company in the host

[49] Representative of the theories explaining the "motives" behind the FDI of multinational corporations is the eclectic theory of international production put forth by Dunning (1979). In this theory, multinational corporations consider three factors when choosing a method (export, licensing, FDI) for expanding into markets overseas: (1) the firm's ownership-specific advantages, (2) internalization incentive advantages, and (3) location specific variables.
[50] See UNCTAD (2000).

country to repay a set amount of interest abroad regardless of the fluctuations in its business fortunes.

- Rise in productivity

Technology transfer[51]

A decisive factor in a multinational corporation choosing to make a FDI is whether or not it will enjoy an advantage in terms of technology and business know-how (hereinafter collectively referred to as "technology") over potential competitors in the market under consideration.[52] The truth of the matter, however, is that many of the multinational corporations that have actually made FDI by establishing a new subsidiary company or through M&A appear to have advanced technology that gives them a competitive advantage over local companies in the host economy.[53] It is expected that the technology that such a multinational corporation possesses will be transferred in one form or another to its subsidiary in the host country, thereby contributing to greater productivity in that company.[54]

Naturally there will be times when the technology owned by a multinational corporation may be transferred to the host country through means other than FDI, including licensing to local companies, subcontracting agreements, sales of capital goods, and strategic technology tie-ups with local companies. For the following reasons, however, FDI makes possible more efficient transfer and diffusion of technology than licensing and subcontracting agreements.[55]

First, there is little likelihood that a corporation will license out its most strategically valuable commercial technology to companies in which it does not hold a controlling interest or to local companies that could become potential competitors.[56] On the other hand, more valuable technology and know-how could very well be transferred to a local subsidiary of the multinational corporation established through greenfield investment or a M&A.

Second, for a local company in the host country to be willing to pay for a license, it must have the basic knowledge and skills to use the technology. Especially in developing countries, though, it can be assumed that local companies lack the skills and knowledge to use the licensed technology efficiently. With FDI, on the other hand, the know-how needed to enable managers and employees of the subsidiary to use the technology efficiently is transferred alongside the capital through training programs or OJT.

Third, FDI enables a company to transfer to its local subsidiary a variety of know-how such as management skills and marketing methods.

Technology diffusion

[51] Surveys on the technology transfer effects of FDI have been conducted by Caves (1982) and others.
[52] See Dunning (1993).
[53] See UNCTAD (1999).
[54] This includes not only the rise in productivity stemming from technology transfer in the form of capital goods, but also that arising from the transfer of production, management, and marketing know-how and techniques. As for the degree to which, and the process by which, a multinational corporation transfers its technology and business know-how to a subsidiary in the host economy, the more developed the host country's economy, the more likely it is in general that a higher level of technology and know-how will be transferred, though this will also depend on the wage levels, the quality of labors, and the scale of the market in the host economy, as well as the strategies of individual companies. See UNCTAD (1999).
[55] See UNCTAD (1999).
[56] It is quite possible that cutting-edge technology available for licensing will be high in price and/or its use subject to restrictions. If technological innovation moves ahead at a rapid pace as it does today, local companies will face a dramatic rise in costs for frequent licensing.

It can be expected that technology transferred to a subsidiary within the host country will be diffused to other companies and other industries through various channels, thereby contributing to an improvement in overall productivity in the host country.[57] Among these channels for spreading technology might be a local subcontractor company doing business with the subsidiary company of a multinational corporation, a local user company utilizing goods and services provided by the subsidiary company, and former employees of the subsidiary company who go to work for other local companies.[58] If the host country achieves increased productivity as a result of this transfer and diffusion of technology, it can expect feedback in the form of a higher anticipated rate of return that encourages yet more FDI.

Demonstrative analyses of the effects of technology diffusion have been offered by, for example, Caves (1974) and Blomstrom (1986), who used sector-specific data to show a positive correlation between FDI stock and productivity. Aitken and Harrison (1999) also proved a positive correlation between foreign capital participation and plant productivity among small and medium-sized companies in Venezuela. This suggests the possibility of the aforementioned "technology transfer effect." Then again, inward FDI was also shown to have an adverse impact on the productivity of local companies having no foreign capital participation, leading to the conclusion that there was very little apparent spillover of technology to other local companies.[59]

Despite attempts in recent years to verify quantitatively the impact of technology transfer and technology diffusion in a host country, convincing research results have not been forthcoming due to data constraints and methodological limitations, and this is a field of research in which future progress can be anticipated.

Promotion of competition

Competitive pressures generally rise in a host country when foreign companies expand into its domestic markets. This increase in competitive pressure provides local companies with an incentive to improve their productivity and pursue technological innovation, which in turn plays a major role in enhancing the productivity and export competitiveness of the industry as a whole.

Increasingly fierce competition will force uncompetitive local companies out of the market, creating the potential for an essentially oligopolistic market structure dominated by multinational corporations. As long as the country ensures a sufficient liberalization of trade and investment and a contestable market,[60] however, multinational corporations that could have considerable sway over prices will be obliged to pursue efficient production and rational pricing.[61] Once FDI is accepted, therefore, the potential competitiveness of local companies, the degree of openness in trade and investment, and the sound competition policy will determine whether competition is promoted or inhibited in the host economy. Nevertheless, as pointed out by Markusen and Venables (1999), competition could bring about lower prices as well as benefits for other industries even if local companies within a particular industry are hurt by greater competition.

[57] The technology diffusion effect of FDI has been pointed out by Teece (1977) and others.
[58] In addition, there will likely be instances of technology being spread to other companies through reverse engineering and copying.
[59] When a highly competitive multinational corporation enters the market, one can expect an increase in the productivity of the local subsidiary on the one hand, and a decline in the demand for goods supplied by uncompetitive local companies on the other. It has been noted that local companies with a high fixed-cost structure may face higher average cost and lower productivity in the short term.
[60] A market into which new competitors, both domestic and foreign, can enter at any time.
[61] See UNCTAD (1997).

- Other impacts of FDI

Impact on domestic investment

Whether domestic investment by local companies is "crowded in" or "crowded out" once a multinational corporation has entered a country remains an open question. The former occurs when a multinational corporation introduces new goods and services into the country, prompting local companies to start up businesses in related industries, while the latter occurs when a multinational corporation enters a market to compete in sectors of goods and services in which domestic companies are already active and when multinational corporations can access local capital markets as easily as can local companies.

Fry (1993), for example, demonstrated that an increase in FDI in Asia boosted domestic savings and investment rates. Conversely, UNCTAD (1999) conducted an econometric analysis of the impact of FDI on domestic investment of 39 developing economies and reached the conclusion that the economies of Asia experienced a "crowding in" of domestic investment, while the countries of Central and South America experienced a "crowding out".

Impact on employment

There is no clear answer to the question of whether FDI ultimately expands or reduces employment in the host country. In fact, FDI both expands and reduces employment in the host economy.

Among the ways in which FDI expands employment are the hiring of new employees when a new local subsidiary company is established or an existing subsidiary expanded and the creation of jobs at local companies when a local subsidiary begins or expands its transactions with these local companies.

In contrast, FDI becomes a factor for reducing employment when restructuring is carried out at a company acquired through merger/acquisition by a foreign company and indirectly when workers are dismissed by uncompetitive local companies cutting back or abandoning a particular line of business because of foreign companies entering the market.

There are also concerns that job creation cannot be expected when the FDI takes the form of M&A and not greenfield investment. However, when a company that if ignored would be forced to contract its business scope or declare bankruptcy is rescued through a merger or acquisition by a foreign company, workers facing possible dismissal will be able to remain with the company if its business can be rebuilt through efficient management.[62]

Impact on exports

With multinational companies now building production networks that transcend national boundaries, intra-company trade by multinational corporations has come to play a very important role within international trade. Hence, accepting FDI is an effective means for the host country to expand exports of intermediate goods. At the same time, the host country can export finished goods to even more markets utilizing the brand strength of the multinational

[62] See UNCTAD (2000). Even if FDI were not accepted at all, demand towards specific companies and industries would shrink due to technical innovations and changes in the tastes of domestic consumers, with the result being that workers in the companies and industries in question would be dismissed. Consequently, a more fundamental matter in resolving the employment question is not restricting mergers and acquisitions by multinational corporations but rather ensuring flexibility in the labor market so that workers dismissed as surplus labor can move smoothly to other companies and industries.

corporation.[63] It is also possible that the export competitiveness of goods produced by local companies in the same or peripheral industries will rise when, as described earlier, technologies and business know-how are transferred to or diffused in the host country as a result of accepting FDI.

Using examples in Mexico, Aitken, Hanson and Harrison (1997) revealed a positive correlation between the geographic proximity of the subsidiaries of multinational corporations and local companies and the possibility of local companies engaging in export operations, and pointed out the possibility of know-how and information on exports being diffused from multinational corporations to local companies.

3. IMPACT OF INVESTMENT LIBERALIZATION AND FACILITATION

The purpose of this section is to discuss quantitative analyses on the impact of the APEC investment liberalization and facilitation, in particular those conducted by means of CGE (computable general equilibrium) model simulations.

This section is organized into three main sub-sections. In the first sub-section, an outline of the fundamental structure of a CGE model is presented. In the second sub-section, an attempt to build a model for the specific purpose of analyzing FDI developments is discussed. This includes i) estimation of the FDI data, ii) quantification of investment barriers, and iii) adjustment of model equations to incorporate FDI behavior. In the third sub-section, estimates on the impact of investment liberalization and facilitation are presented. Several limitations in current modeling studies are also discussed.

3.1 CGE Model

A CGE model numerically simulates the general equilibrium structure of the economy. It is built on the Walrasian general equilibrium system, in which the central idea is that market demand equals supply for all commodities at a set of relative prices. As well, a CGE model has solid micro-foundations that are theoretically transparent. Functional forms are specified in an explicit manner, and interdependencies and feedback are incorporated. Therefore, the model provides a framework for assessing the effects of policy and structural changes on resource allocation by clarifying “who gains and who loses.”

These characteristics differentiate it from the partial equilibrium model, which is not economy-wide, the macro-economic model, which is not multisectoral; and the input-output model, in which agents do not respond to changes in prices. Moreover, the multieconomy model is required to analyze international economic affairs such as trade and investment policies, which affects not just one but a number of economies.

To set a CGE model for particular applications, there are several key issues to be chosen and designed. Specific issues on modeling methodology are discussed below.

[63] See UNCTAD (1999). However, multinational corporations that enter a market to acquire a cheap labor force may, as the wage levels in the host country gradually rise, shift their manufacturing points to countries with even lower wage levels. To maintain and expand exports in such cases, host countries will need to enhance their appeal as a manufacturing location for technology-intensive high value-added goods, rather than as one for labor-intensive goods, by improving the educational levels and capabilities of workers.

3.1.1 Database

The database for the project is constructed on the basis of the Global Trade Analysis Project (GTAP) Version 5 database, which was published in summer 2001 and describes the most updated state of the world economy. Compared with the earlier studies, our database is the most updated, although its base year is 1997. The GTAP database is one of the most comprehensive global databases available for the analysis of Asia-Pacific economies. It has also been utilized in studies carried out by the APEC EC[64] during the past several years.

The GTAP database consists of bilateral trade, transport, and protection data characterizing economic linkages among regions, together with an individual economy input-output (I-O) database that accounts for intersectoral linkages within each economy. It should be noted that the procedure followed to produce the data set involves extensions, modifications, and redefinition of concepts for portions of the national account data in general and reconciliation for the reported exports and imports in particular.

The protection data is expressed in the form of *ad valorem* equivalent, tariff, and non-tariff barriers. The best-quality data is that relating to tariffs. Non-tariff information[65] is most complete in the cases of agriculture and textiles/wearing apparel. Data for subsidies is also available, distinguishing those for factor-based, intermediates and ordinary output. However, the data is not comprehensive. Protection of the service sector is especially difficult to quantify and is mostly neglected in the current database.

The CGE model employed for this APEC/EC study is built on the basis of the GTAP model[66] Version 4.1. Sensitivity of model properties to key parameters is one essential aspect of model development. There are four types of behavior parameters in the GTAP model: elasticities of substitution (in both demand and production), transformation elasticities that determine the degree of mobility of primary factors across sectors, the flexibilities of regional investment allocation, and consumer demand elasticities. All these parameters are set as they are derived from the GTAP Version 5 database for this analysis.

[64] See, for example, APEC (1997), which analyzed the impact of trade liberalization and facilitation in accordance with the Manila Action Plan (MAPA).
[65] In the earlier version of the GTAP database, data on antidumping duties were incorporated for Canada, the United States and the EU. Also, the export restraining effects of EU price undertakings were included.
[66] See Hertel (1997) for details of the GTAP model.

3.1.2 Dimension of aggregation

Table 3-3-1: Regional and Commodity Aggregation

	Economies		Commodities/Industries
AUS	Australia	AGR	Agriculture, Forestry and Fishery
CDA	Canada	MNG	Mining
CHL	Chile	PFD	Food and Beverage
PRC	China	TXL	Textiles
HKC	Hong Kong, China	CHM	Chemicals
INA	Indonesia	MTL	Metals
JPN	Japan	TRN	Transport Equipment
ROK	Korea	ELE	Electronic Machinery
MAS	Malaysia	OME	Other Machinery and Equipment
MEX	Mexico	OMF	Other Manufacturing
NZ	New Zealand	EGW	Electricity, Gas and Water
PE	Peru	CNS	Construction
RP	Philippines	T_T	Transportation
RUS	Russia	CMN	Communication
SIN	Singapore	FSI	Financial Services and Insurance
CT	Chinese Taipei	OSP	Other Business Services
THA	Thailand	PUB	Public Services
USA	United States of America		
VN	Viet Nam		
SAS	Rest of Asia		
LTN	Rest of America		
WEU	Europe		
ROW	Rest of the World		

The GTAP database currently consists of 57 disaggregated sectors and 66 economies, which are aggregated to the appropriate version for simulations. The APEC member economies will be mainly concerned about the effects on their own individual economies. In this study, economies are aggregated into 23 areas, and 19 areas are allocated to APEC economies. The APEC member economies are disaggregated individually where data is available (Data for Brunei Darussalam and Papua New Guinea is not available). Industries/commodities are aggregated to 17[67] following a standard classification in the national accounts, taking into consideration the importance of industries in the economy as a whole. Compared with earlier studies, like Petri (1997) and the FTAP model[68] used in Dee and Hanslow (2000), the industries are disaggregated in more detail by the APEC economies individually.[69]

3.1.3 Macro-economic assumption

The GTAP model is a standard CGE model, which depicts the behavior of households, governments, and global sectors across each economy in the world. It is composed of regional models, which are linked through international trade. Prices and quantities are simultaneously determined in factor markets and commodity markets by the accounting relationships, the equilibrium conditions specified by the behavior of economic agents, and the structure of

[67] Further disaggregation in industries is limited by computational capacities.

[68] See Hanslow, Phamduc and Verikios (2000) for the description of the FTAP model, which is a version of GTAP with FDI.

[69] Regions are aggregated to six in Petri (1997) and 19 in the FTAP model. However, industries are aggregated to three (primary, secondary and tertiary) in both models.

international trade. The model includes three main factors of production, which are labor, capital and land. Labor and capital are used by all industries, but land is used only in agricultural sectors. Capital and intermediate inputs are traded, while labor and land is not traded between regions.

A standard version of the GTAP model includes several key assumptions. First, perfect competition, therefore a constant return to scale, is assumed. Second, imperfect substitution in goods and services between the home economy and abroad and those among different origins of economies are assumed by Armington parameters.[70] Third, the amount of total labor, which is one of the factor endowments, is fixed. This means that the model assumes full employment and no unemployment. The amount of total capital is also fixed in the standard GTAP model.

However, a standard version of the GTAP model can be modified dealing with capital formation. Important "dynamic" effects of capital accumulation are introduced[71] into the standard static model. According to the growth theory, a medium-run growth or accumulation effect induces additional savings and investment. The induced savings and investment (larger capital stock) in turn links to the production capacities and causes a further increase in income.

In general, a permanent shock to the GDP is translated into a shock to the steady state level of capital. The magnitude of this effect crucially depends on the assumed underlying saving behavior. Under the assumption of a fixed saving ratio, the change in steady state capital stock is proportional to the change in the steady state level of GDP. In contrast, with endogenous saving ratio—which is determined by the condition that the opportunity cost of postponed consumption should equal the net marginal return of capital—the medium-run impact can differ quite substantially from the static impact. The latter "dynamic" decision of saving to an infinite horizon is incorporated[72] in the current model.

3.2 FDI Model

The earlier studies of incorporating FDI behavior into a CGE model are classified into three groups. The first group does not model FDI explicitly, but when examining the impact of services trade liberalization they may implicitly include the reduction of FDI barriers. The second group does not explicitly model FDI or the reduction of investment barriers. Investment liberalization is assumed to affect certain variables, such as the extent of capital mobility, and the effects of this are then simulated. The third group explicitly models FDI and captures many of the important economic characteristics of FDI.

The standard GTAP model does not incorporate the behavior of FDI in an explicit manner. In order to assess the impact of investment liberalization and facilitation, the model must be significantly extended. The work of building such a model of the third group is composed of three parts. The first is to estimate FDI data. The FDI stock matrix, which describes bilateral outflows and inflows of FDI stock among the economies, is constructed. The second is to quantify barriers of investment. Those will be utilized for model simulations as for exogenous shock variables in order to analyze the impact of investment liberalization. The third is to adjust the model equations to incorporate FDI behavior. The activities of domestic and foreign-owned firms in both production and demand are distinguished.

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[70] See Armington (1969).

[71] See Francois, McDonald and Nordstrom (1996) for the methodology to implement this mechanism into the GTAP model.

[72] With the endogenous saving ratio, international capital movement would be irrelevant to national capital formation. The rate of return on capital would not necessarily be equalized across the economies through international capital movements. Therefore, it is assumed that the external balance remains unchanged in the model simulations.

3.2.1 FDI data

Outward and inward FDI stocks of selected economies in 1997 are shown in Table 3-3-2. The United States and Europe are the main sources of, and destinations for, FDI. Japan is much more important as a source than as a destination. Inward FDI exceeds outward FDI in most of the other APEC economies except in Hong Kong, China; and Chinese Taipei. Among the APEC member economies, Hong Kong, China; New Zealand; Singapore and Viet Nam have had high inward FDI stock over GDP ratios.

Table 3-3-2: Outward and Inward FDI Stocks

(Billion US dollars)

	Outward		Inward	
Australia	56.6	(14.4)	110.4	(28.1)
Canada	143.9	(22.8)	150.8	(23.9)
Chile	5.9	(7.8)	28.1	(36.9)
China	20.5	(2.4)	236.3	(27.6)
Hong Kong, China	136.1	(97.2)	103.6	(74.0)
Indonesia	2.1	(1.0)	67.3	(32.2)
Japan	609.4	(14.3)	41.4	(1.0)
Korea	16.8	(3.8)	16.8	(3.8)
Malaysia	12.7	(12.0)	40.8	(38.5)
Mexico	5.3	(1.4)	55.4	(14.2)
New Zealand	5.6	(8.7)	34.5	(53.0)
Peru	0.2	(0.4)	8.0	(12.3)
Philippines	1.5	(1.9)	9.2	(11.8)
Russia	6.4	(1.1)	15.7	(2.7)
Singapore	44.5	(55.8)	86.2	(107.9)
Chinese Taipei	34.2	(11.4)	21.7	(7.3)
Thailand	2.0	(1.2)	25.3	(16.0)
United States of America	860.7	(10.8)	746.8	(9.4)
Viet Nam	0.0	0.0	12.1	(55.2)
Rest of Asia	0.9	(0.2)	14.4	(2.7)
Rest of America	32.2	(2.2)	287.5	(19.9)
Europe	1,554.1	(17.9)	1,442.1	(16.6)
Rest of the World	209.2	(13.6)	206.5	(13.4)

Note: The figures in the parenthesis show the ratio over the GDP in per cent.

Sources: *World Investment Report 1999*, United Nations
International Direct Investment Yearbook 1998, OECD
Annual Foreign Direct Investment Statistics of Japan 1999, Ministry of Finance of Japan
Foreign Direct Investments in the USA 1999, Bureau of Economic Analysis of the USA
GTAP Version 5 database

The FDI stock data were used to estimate the output of FDI employing the methodology in Petri (1997). FDI output was estimated multiplying capital incomes associated with FDI and ratios of output to capital income in the GTAP database. These output estimates are shown in Table 3-3-3, which compare the output of outward FDI with conventional exports, and the output of inward FDI with conventional imports. The magnitudes of FDI output and international trade indicate that these two are equally important in the world economy.

Table 3-3-3: FDI Output and Trade

(Billion US dollars)

	Outward FDI output	Exports	Inward FDI output	Imports
Australia	39.0	71.9	72.6	73.0
Canada	101.2	234.9	106.1	216.9
Chile	3.7	19.8	26.1	21.3
China	12.8	241.4	252.9	215.2
Hong Kong, China	84.8	54.7	75.1	94.1
Indonesia	1.3	56.9	55.5	57.0
Japan	403.8	506.3	20.6	418.2
Korea	12.3	162.5	12.7	158.5
Malaysia	8.0	96.9	36.2	87.6
Mexico	3.9	115.3	32.6	101.8
New Zealand	3.8	17.4	26.1	16.5
Peru	0.1	7.9	5.0	9.4
Philippines	1.0	41.5	6.9	53.6
Russia	4.0	147.6	8.7	138.8
Singapore	28.4	131.6	73.0	135.5
Chinese Taipei	21.7	138.4	25.1	111.3
Thailand	1.2	71.8	12.9	69.0
United States of America	546.1	872.6	589.8	1,023.1
Viet Nam	0.0	9.3	8.3	12.3
Rest of Asia	0.6	69.0	11.9	75.7
Rest of America	22.7	183.3	194.7	228.7
Europe	1,207.6	2,743.5	879.9	2,645.6
Rest of the World	141.7	414.6	117.2	445.9

Sources: GTAP Version 5 database and author's estimates

Moreover, the FDI stock matrix is estimated for the year 1997. It is currently estimated from the limited sources of FDI data. The figures of total inward and outward FDI are sourced from the United Nations (UN). The data for the decomposition of outward FDI by destination are available for only six APEC economies.[73] For Australia, Canada, Korea and New Zealand, OECD databases provide such distinction, whereas national data is available for the United States from the US Bureau of Economic Analysis database and for Japan from the Japanese Ministry of Finance statistical reports.

[73] Those data for the EU economies is also available in *European Union Direct Investment Yearbook 1999*, Eurostat, which is utilized in the following estimates.

In calculation of FDI outward stock data for economies, where such decomposition is not available, it is assumed that those economies invest into each other in the same proportion as the above six economies on average. Specifically, the "guestimated" weighted average, which is shown by the formula below, was applied to the total amount of outward FDI from those economies.

$$FDI_N^A = W_N * FDI_{Total}^A$$

$$W_N = \frac{FDI_N^{AUS} + FDI_N^{CAN} + FDI_N^{JPN} + FDI_N^{KOR} + FDI_N^{NZL} + FDI_N^{USA} + FDI_N^{WEU}}{FDI_{Total}^{AUS} + FDI_{Total}^{CAN} + FDI_{Total}^{JPN} + FDI_{Total}^{KOR} + FDI_{Total}^{NZL} + FDI_{Total}^{USA} + FDI_{Total}^{WEU}}$$

where

FDI_N^A is outward FDI stock of the economy A into N

Lastly, the estimated FDI stock matrix is adjusted by the RAS procedure so that the total outward and inward FDI of each economy meet those published by the UN.

The estimated bilateral FDI stock matrix is shown in Table 3-3-4. The current estimate indicates that there are strong bilateral, bi-directional ties between neighboring economies, such as Australia and New Zealand, and the United States and Canada, and among certain Asian economies.

3.2.2 Quantification of FDI barriers

An FDI barrier or impediment is any governmental policy measure, which distorts decisions about where to invest and in what form. According to the UNCTAD, those FDI barriers are classified by what aspect of the investment they most affect—establishment, ownership and control, or operations—as follows.

Table 3-3-4: FDI Stock Matrix

(Million US dollars)

	Australia	Canada	Chile	China	Hong Kong, China	Indonesia	Japan	Korea	Malaysia	Mexico	New Zealand	Peru	Philippines	Russia	Singapore	Chinese Taipei	Thailand	USA	Viet Nam	Rest of Asia	Rest of America	Europe	Rest of the World	WORLD
Australia	0	732	123	385	2,542	614	183	72	576	127	5,116	55	47	18	917	49	156	13,200	21	222	4,380	24,076	3,012	56,624
Canada	1,974	0	2,560	308	1,815	1,375	2,046	120	117	1,339	1,355	139	93	436	1,558	166	185	61,363	54	421	8,378	52,578	5,568	143,948
Chile	32	51	0	10	16	11	22	4	6	13	6	6	4	2	15	4	8	22	2	42	835	4,231	587	5,928
China	226	159	45	0	54	38	75	14	22	46	21	20	13	6	51	14	26	297	8	142	2,792	14,467	1,944	20,479
Hong Kong, China	680	2,098	295	229	0	250	1,221	92	147	305	777	132	88	43	340	92	174	1,775	51	892	15,972	99,938	10,502	136,094
Indonesia	35	18	5	3	5	0	8	1	2	5	2	2	1	1	5	1	3	255	1	13	253	1,275	179	2,073
Japan	11,162	5,476	580	16,174	15,024	17,829	0	4,568	7,529	3,276	967	696	2,673	142	12,118	4,745	7,955	43,822	1,063	2,250	34,734	396,664	19,961	609,408
Korea	276	279	14	3,253	377	1,207	359	0	290	136	12	16	280	116	120	29	352	362	6	68	1,346	6,908	943	16,750
Malaysia	764	113	28	21	34	23	46	9	0	29	13	12	8	4	32	9	16	297	5	83	1,640	8,390	1,148	12,725
Mexico	29	222	11	9	14	10	19	4	6	0	5	5	3	2	13	4	7	3,307	2	12	236	1,192	167	5,278
New Zealand	2,960	1,425	58	10	0	10	52	1	62	13	0	5	4	2	102	1	2	162	2	6	114	575	81	5,647
Peru	1	2	1	0	1	0	1	0	0	1	0	0	0	0	1	0	0	17	0	2	31	158	22	239
Philippines	8	13	3	3	4	3	6	1	2	3	2	1	0	0	4	1	2	91	1	10	203	1,022	143	1,527
Russia	35	55	14	11	17	12	23	4	7	14	7	6	4	0	16	4	8	223	2	44	872	4,419	613	6,410
Singapore	1,520	149	97	75	117	82	162	30	48	100	1,441	43	29	14	0	30	57	3,200	17	271	5,255	28,163	3,620	44,522
Chinese Taipei	186	106	74	58	90	63	125	23	37	77	17	33	22	11	86	0	44	2,699	13	222	4,330	22,898	2,995	34,209
Thailand	17	17	4	3	5	4	7	1	2	4	2	2	1	1	5	1	0	151	1	13	254	1,277	179	1,951
USA	22,244	34,459	7,611	4,953	16,311	6,177	14,719	4,495	6,057	17,242	5,761	1,970	2,302	2,108	15,201	4,183	3,812	0	15	3,324	31,518	634,081	22,179	860,723
Viet Nam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rest of Asia	26	36	7	56	25	16	10	4	10	13	8	2	2	4	20	5	6	177	3	0	68	343	49	890
Rest of America	1,016	1,388	260	2,175	955	621	382	155	377	511	319	74	85	146	795	201	233	6,680	112	132	0	13,752	1,857	32,225
Europe	61,632	96,675	14,776	197,928	60,893	35,440	19,706	6,281	23,300	29,150	16,803	4,291	3,057	11,772	50,259	10,996	10,878	591,575	9,984	5,423	162,499	0	130,783	1,554,103
Rest of the World	5,578	7,339	1,556	10,598	5,295	3,562	2,241	922	2,240	2,970	1,886	452	507	910	4,492	1,208	1,387	17,105	708	792	11,769	125,658	0	209,176
WORLD	110,402	150,811	28,120	236,262	103,593	67,349	41,413	16,800	40,840	55,374	34,520	7,964	9,225	15,738	86,151	21,744	25,312	746,781	12,072	14,381	287,481	1,442,065	206,534	3,760,929

Classification of FDI Barriers

Restrictions on market entry
Bans on foreign investment in certain sectors
Quantitative restrictions (e.g. limit of 25 percent foreign ownership in a sector)
Screening and approval (sometimes involving national interest or net economic benefits tests)
Restrictions on the legal form of the foreign entity
Minimum capital requirements
Conditions on subsequent investment
Conditions on location
Admission taxes
Ownership and control restrictions
Compulsory joint ventures with domestic investors
Limits on the number of foreign board members
Government appointed board members
Government approval required for certain decisions
Restrictions on foreign shareholders' rights
Mandatory transfer of some ownership to locals within a specified time (e.g. 15 years)
Operational restrictions
Performance requirements (e.g. export requirements)
Local content restrictions
Restrictions on imports of labor, capital and new materials
Operational permits or licenses
Ceiling on royalties
Restrictions on repatriation of capital and profits

Conceptually, it is possible to identify price or rate of return wedges, or tariff equivalents, for FDI restrictions.[74] However, it is very difficult to isolate the effects of FDI barriers, or to identify an appropriate benchmark or what the return would be in the absence of FDI barriers. On the other hand, frequency and coverage measures provide useful insights into the extent of restrictions across economies and sectors over time. However, they do not provide any information about the likely impacts of barriers on prices or rates of return, which are key factors to input into the general equilibrium modeling of the impacts of FDI barriers.

In this study, new tariff equivalent estimates are adopted. Several shortcomings of earlier frequency and coverage approach[75] are addressed, applying the methodology in Hardin and Holmes (1997) concerning the following points: which impediments to include as separate components of the index, the weights to assign to each type of barrier, and the weights to assign when aggregating across sectors or economies. Those weights applied to individual FDI barriers are presented in the Annex.

[74] Earlier studies that estimated FDI barriers have concentrated on service sectors. See Kaleeswaran *et al*. (2000) for the estimates of barriers to trade in banking services, and Warren (2000) for those in telecommunications sectors, which are the basis of the *ad valorem* equivalents of FDI barriers in Hanslow *et al*. (2000).

[75] See, for example, Hoekman (1995) for earlier attempt.

The information on existing FDI restrictions is primarily collected[76] from "Individual Action Plans (IAPs) 2001 of APEC Member Economies," *APEC IAPS database*. The investment barriers are up to date and are quantified both by the sectors and by the economies in detail.

Quantified FDI barriers are shown in Chart 3-3-1[77]. Most economies have at least some significant barriers to FDI. The only economies where barriers are low across the board are Hong Kong, China; New Zealand; and the United States. Calculating the FDI output weighted average of those barriers over the sectors by the economies, it is suggested in Chart 3-3-2 that there may be significant differences in the degree of FDI barriers among APEC economies.

[76] In addition, further information can be found in: *Guide to Investment Regimes of the APEC Member Economies 1999*, APEC, APEC Committee on Trade and Investment; *Market Access Sectoral and Trade Barriers Database*, European Commission, GD Trade Database; *Country Commercial Guides: Fiscal Year 2001*, US Department of State, Bureau of Economic and Business Affairs; *The Asia-Europe Investment Promotion Action Plan (IPAP)*, European Commission, The Asia-Europe Meeting (ASEM) Database; and "OECD Member Countries: Reservations to the Code of Liberalization of Capital Movements", OECD, *Foreign Direct Investment and Capital Movements*, Documentation.

[77] The definition of FDI barriers in this paper covers, inter alia, those measures such as import and export licensing arrangements which do not discriminate between foreign and domestic investments, and which are put in place to protect health and environment; to meet conservation, safety, and security needs; and to fulfill obligations under multilateral agreements.

Chart 3-3-1: Quantification of FDI Barriers

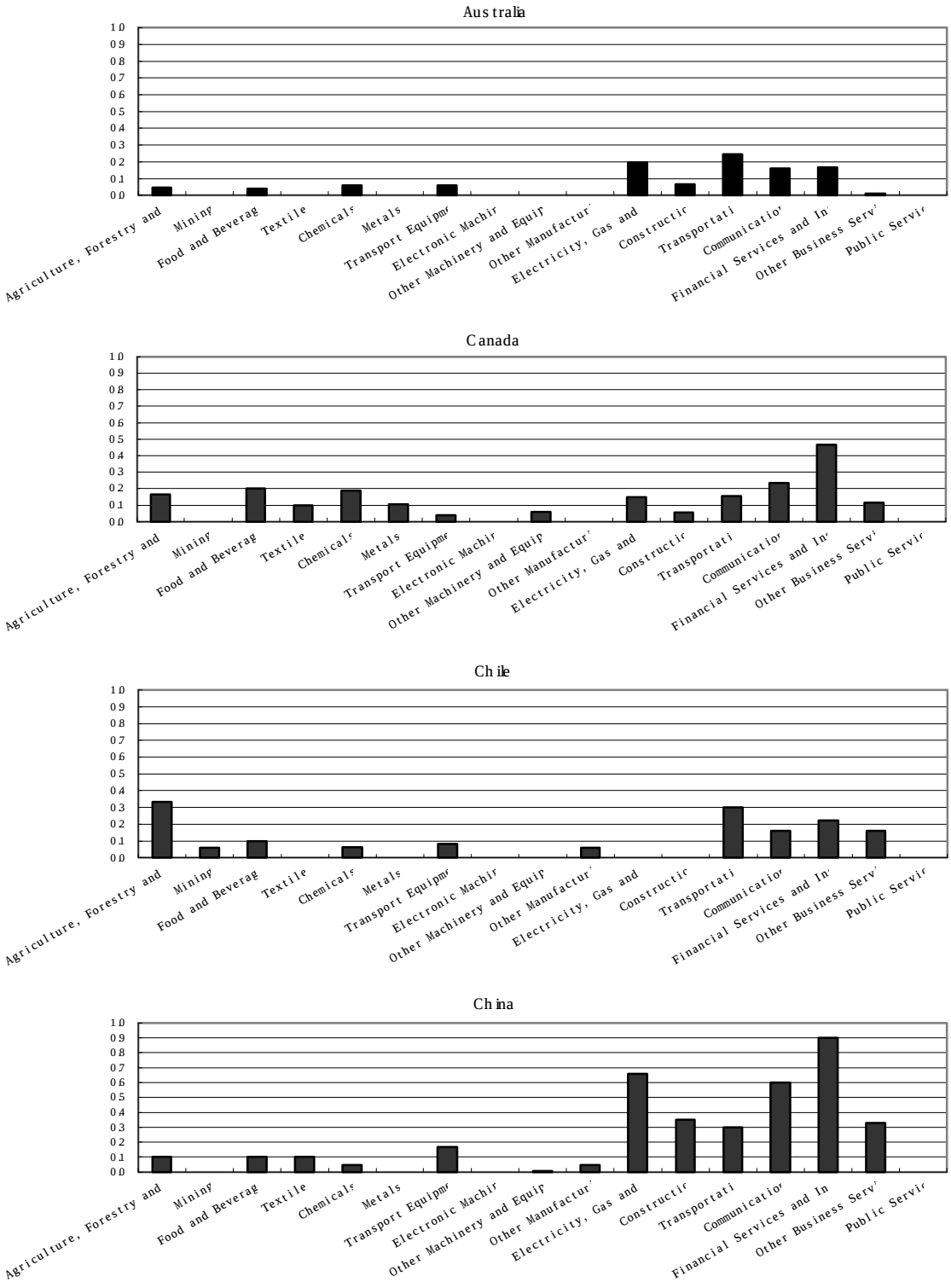


Chart 3-3-1: Quantification of FDI Barriers (Cont.)

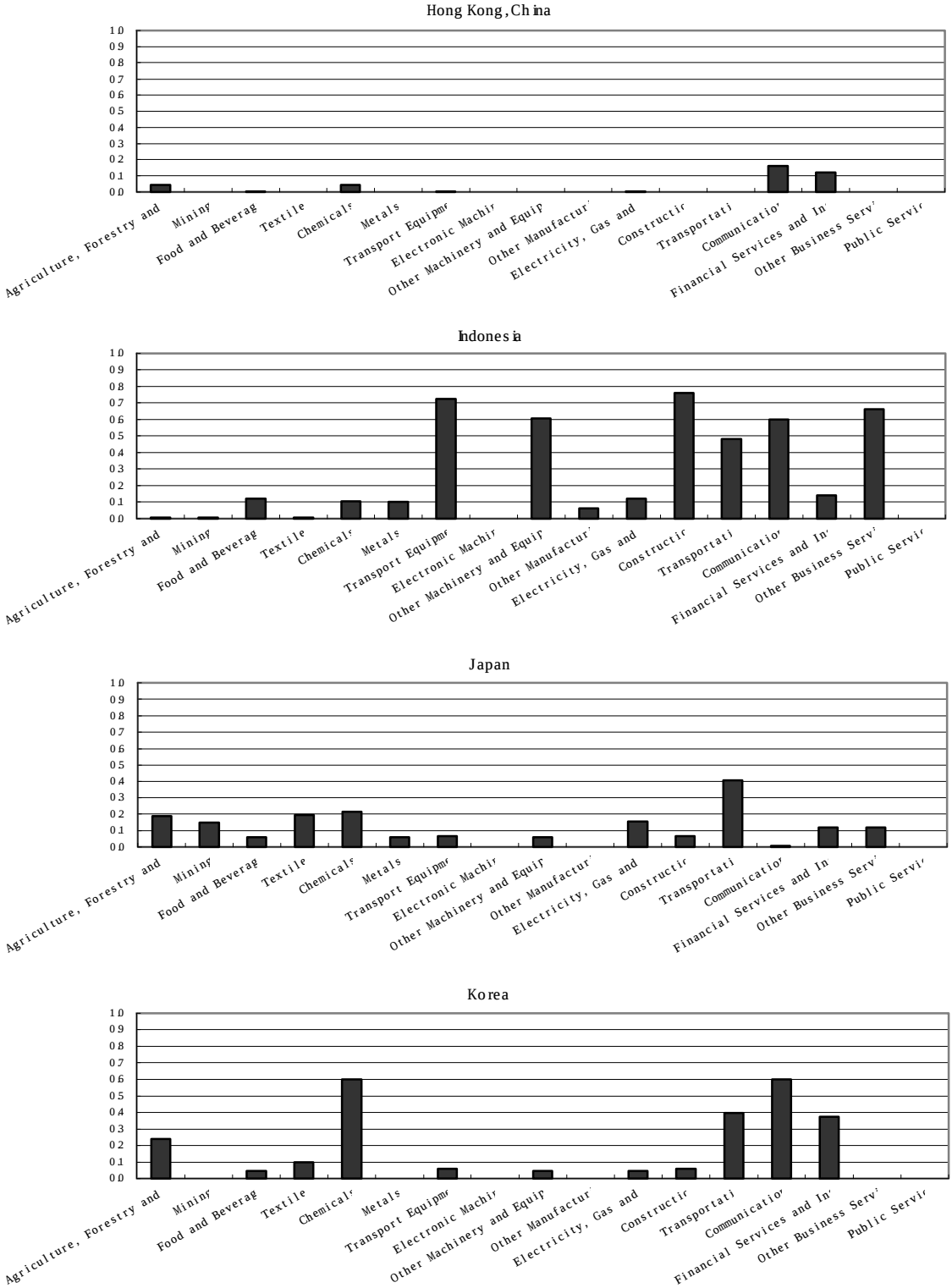


Chart III-3-1: Quantification of FDI Barriers (Cont.)

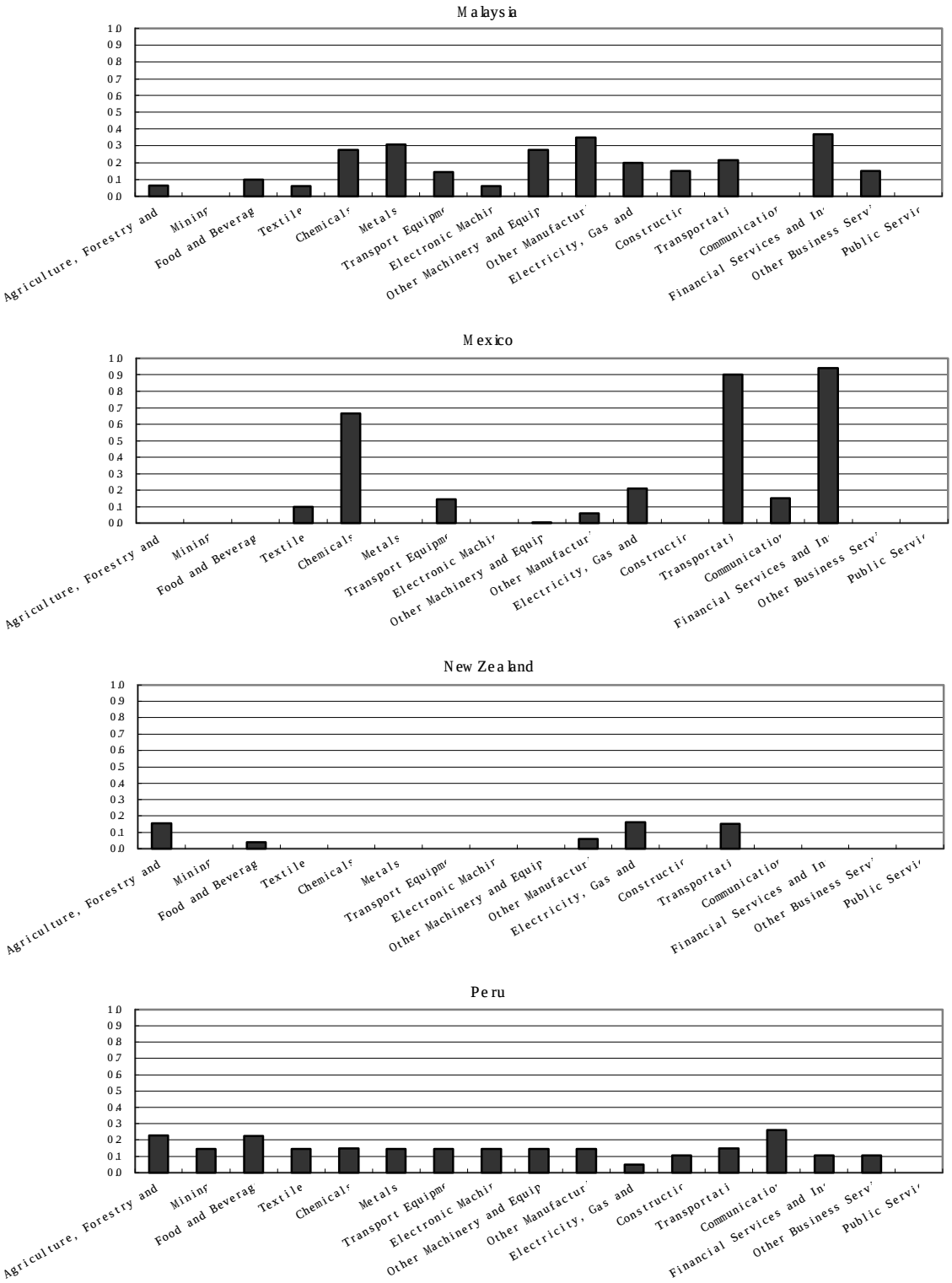


Chart 3-3-1: Quantification of FDI Barriers (Cont.)

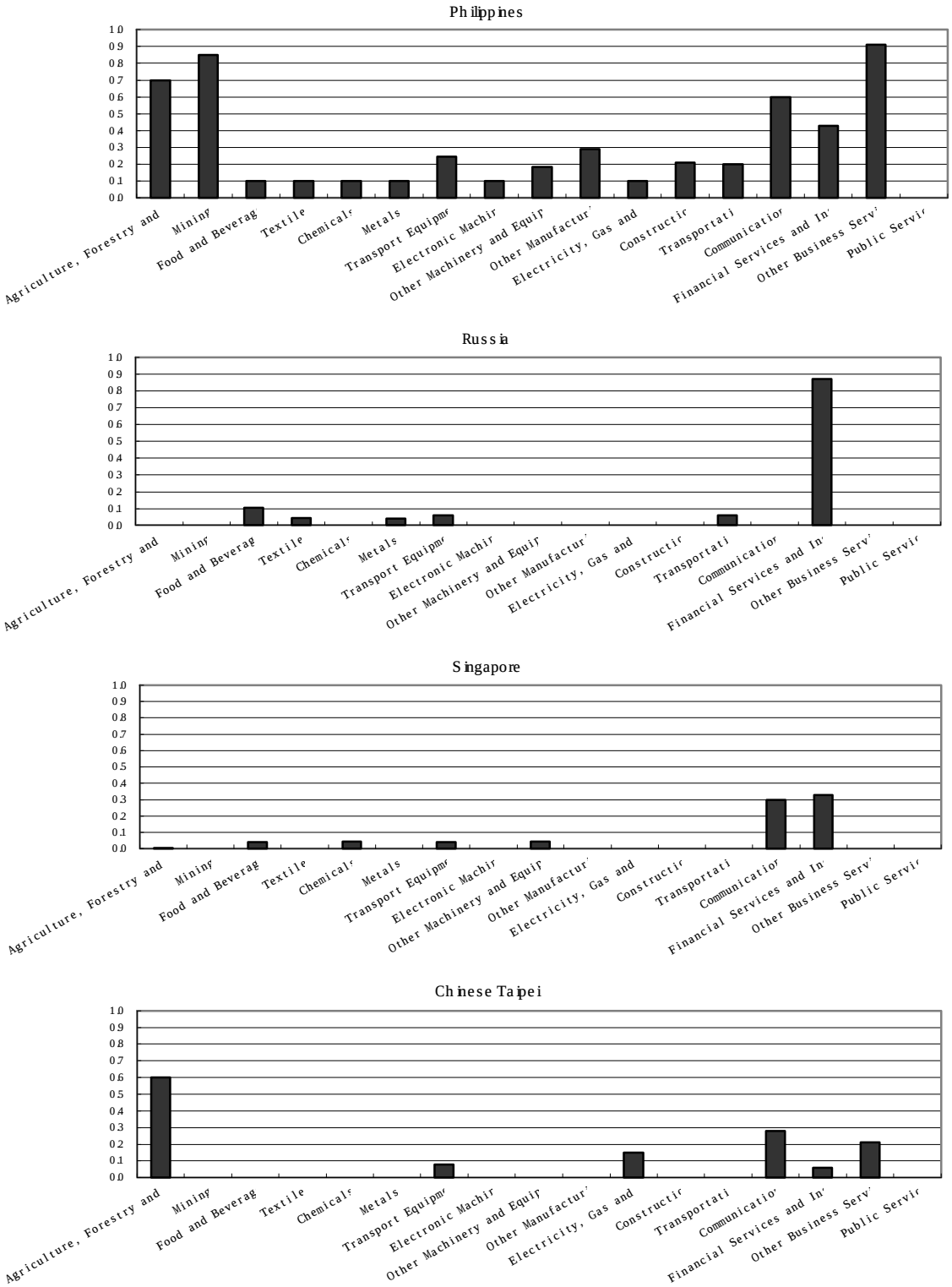
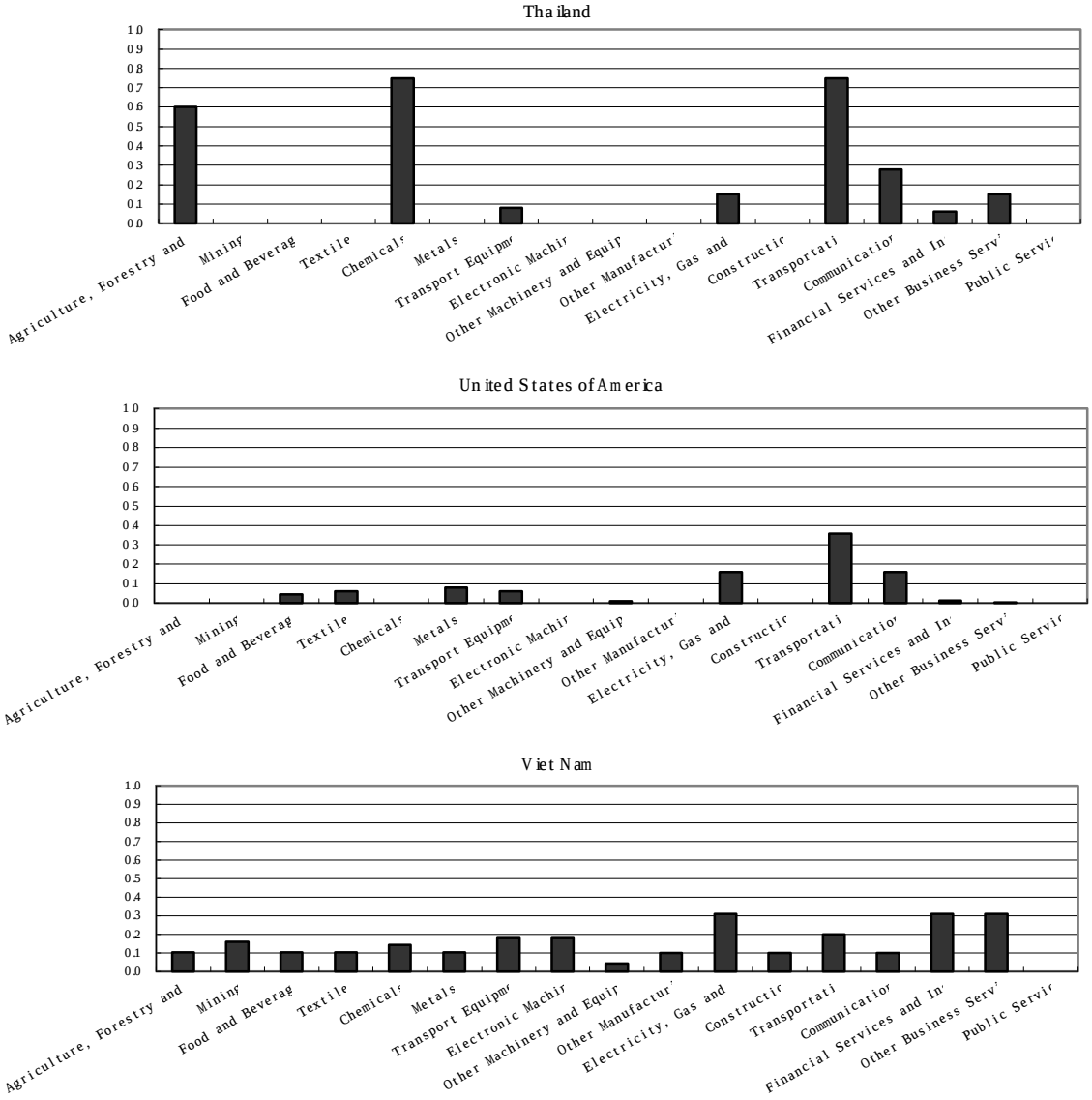
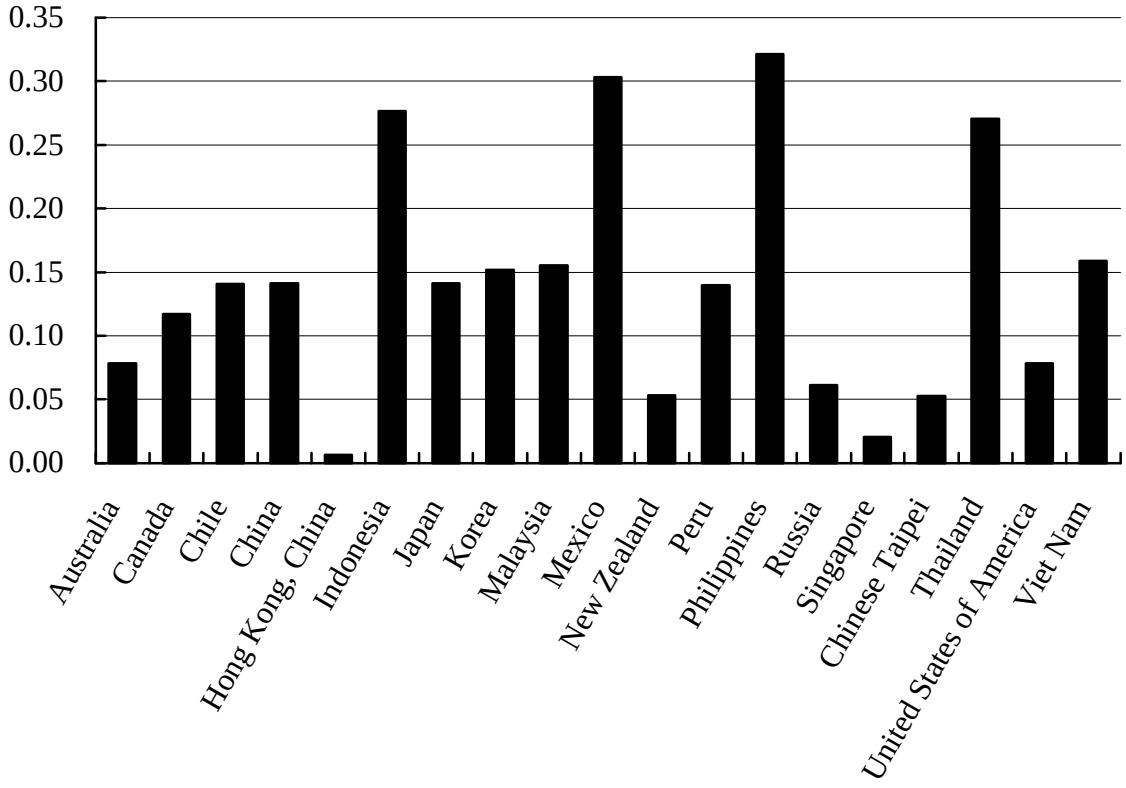


Chart 3-3-1: Quantification of FDI Barriers (Cont.)



Source: Aothor's calculation based on "Individual Action Plans (IAPs) 2001 of APEC Member Economies," *APEC IAPS database* and other informations noted in the footnote 13 of the text.

Chart 3-3-2: Degree of FDI Barriers



3.2.3 FDI behavior equations

In order to explicitly model FDI and capture many of the important economic characteristics of FDI, it must be recognized that there are links between parent companies and foreign affiliates and that foreign and domestic firms within a given region are different. In this regard, the activities of domestic and foreign-owned firms are distinguished. The Armington assumption is replaced with the assumption that product varieties are differentiated by both economy of ownership and place of production. The allocation of capital between sectors and between domestic and foreign investors is based on less than perfect substitutability. Barriers to FDI are modeled as a tax on FDI profits.

One important aspect of extending the basic Armington structure is the choice of the order for nesting of demand. This means choosing the allocation of expenditures, whether among locations first and then among ownership or vice versa. In earlier studies such as Petri (1997), expenditures were allocated among ownership first. However, in later studies such as Dee and Hanslow (2000), the opposite order was adopted.

It can be argued that the order of the latter demand nesting is in accordance with reality, particularly in services. Foreign firms in any given location provide services to meet the needs of domestic consumers. Services provided by domestic and foreign-owned firms in a certain location may appear to be closer substitutes than those provided by firms owned in the same location but placed in different locations. However, the extent to which goods rather than

services are tailored to meet the needs of individual consumers is questionable. The choice of the order for demand nesting is an issue for future empirical studies.

On the other hand, the dimension of the FDI model is significantly larger than the standard CGE model, which does not explicitly incorporate such behavior and the model simulations would be subject to computational capacity. In fact, we have been forced to face just such a serious problem in the current framework of modeling. Therefore, FDI-specific equations were simply not incorporated in the current simulation in order to allow detailed description of the outcomes by higher disaggregation both by regions and sectors.

3.3 Simulation Results

We have carried out experiments on the APEC investment liberalization in the case when FDI barriers are eliminated in the APEC member economies. The assumptions on the reduction in capital costs are shown in Table 3-3-5. The FDI barriers quantified in Chart 3-3-1 are translated assuming that the levels of FDI barriers are on average as high as import protection given by the GTAP database.[78]

[78] The FDI output weighted average of FDI barriers in the APEC economies shown in Chart 3-3-1 is approximately 0.11. Meanwhile, the average rate of import protection in the APEC economies derived by the difference between the import prices in the world market and those in individual domestic markets is 5.1 percent.

Table 3-3-5: Reductions in Capital Costs
(Percent of Sectoral Capital Prices)

	AGR	MNG	PFD	TXL	CHM	MTL	TRN	ELE	OME	OMF	EGW	CNS	T_T	CMN	FSI	OSP	PUB
Australia	0.174	0.000	0.201	0.000	0.384	0.000	0.403	0.000	0.000	0.000	0.746	0.316	1.057	0.577	0.760	0.045	0.000
Canada	0.589	0.000	1.025	0.556	0.877	0.412	0.110	0.000	0.287	0.000	0.405	0.218	0.619	1.077	2.792	0.511	0.000
Chile	1.189	0.214	0.418	0.000	0.579	0.000	2.103	0.000	0.000	0.483	0.000	0.000	2.317	1.601	2.761	1.944	0.000
China	0.151	0.000	0.463	0.112	0.132	0.000	1.191	0.000	0.015	0.149	3.498	1.376	2.518	4.569	9.876	6.118	0.000
Hong Kong, China	1.115	0.000	0.110	0.000	0.887	0.000	0.143	0.000	0.000	0.000	0.086	0.000	0.000	1.959	1.971	0.000	0.000
Indonesia	0.008	0.007	0.388	0.021	0.699	1.161	15.083	0.000	9.538	0.311	0.834	3.487	3.159	6.794	1.678	8.812	0.000
Japan	0.044	0.156	0.008	0.052	0.030	0.006	0.006	0.000	0.008	0.000	0.016	0.006	0.047	0.001	0.021	0.015	0.000
Korea	0.110	0.000	0.025	0.021	0.222	0.000	0.023	0.000	0.015	0.000	0.030	0.030	0.384	0.426	0.303	0.000	0.000
Malaysia	0.185	0.000	0.547	0.265	1.600	2.842	1.347	0.073	2.040	1.957	1.393	0.785	1.611	0.000	6.459	2.061	0.000
Mexico	0.000	0.000	0.000	0.111	1.135	0.000	0.253	0.000	0.010	0.114	0.695	0.000	1.540	0.373	3.785	0.000	0.000
New Zealand	0.698	0.000	0.225	0.000	0.000	0.000	0.000	0.000	0.000	0.497	1.506	0.000	1.247	0.000	0.000	0.000	0.000
Peru	0.171	0.161	0.211	0.104	0.320	0.320	0.382	0.899	0.408	0.188	0.138	0.167	0.461	0.530	0.290	0.410	0.000
Philippines	0.273	2.106	0.069	0.142	0.212	0.387	2.899	0.067	0.739	0.632	0.148	0.626	0.446	2.697	3.219	2.377	0.000
Russia	0.000	0.000	0.039	0.014	0.000	0.011	0.034	0.000	0.000	0.000	0.000	0.000	0.024	0.000	0.308	0.000	0.000
Singapore	0.147	0.000	1.060	0.000	0.513	0.000	1.087	0.000	0.410	0.000	0.000	0.000	0.000	5.066	7.150	0.000	0.000
Chinese Taipei	1.032	0.000	0.000	0.000	0.000	0.000	0.218	0.000	0.000	0.000	0.255	0.000	0.000	0.780	0.114	0.619	0.000
Thailand	0.531	0.000	0.000	0.000	1.163	0.000	0.161	0.000	0.000	0.000	0.223	0.000	1.700	1.254	0.338	0.761	0.000
United States of America	0.000	0.000	0.118	0.140	0.000	0.211	0.122	0.000	0.020	0.000	0.243	0.000	0.667	0.227	0.015	0.009	0.000
Viet Nam	0.328	0.309	0.707	0.680	1.504	2.142	5.315	2.298	0.864	0.517	1.813	0.556	3.016	2.037	9.668	2.685	0.000

3.3.1 Macroeconomic impact

The macroeconomic impact of the APEC investment liberalization is shown in Table 3-3-6. The real GDP of the APEC member economies as a whole would increase by 0.3 percent mainly supported by capital formation, which expands by 0.5 percent. World real GDP would increase by 0.1 percent. APEC trade would be boosted by 0.5 percent. Also, APEC economic welfare measured by equivalent variation would be improved by around US$30 billion. It may be noted that these estimated gains are much smaller than, namely around a tenth of, those in past studies. One of the significant reasons for this difference is that the FDI barriers in certain economies used in the current model simulation may be biased downward.

Table 3-3-6: Macro-economic Impact of APEC Investment Liberalization (Rate of Changes in Percent)

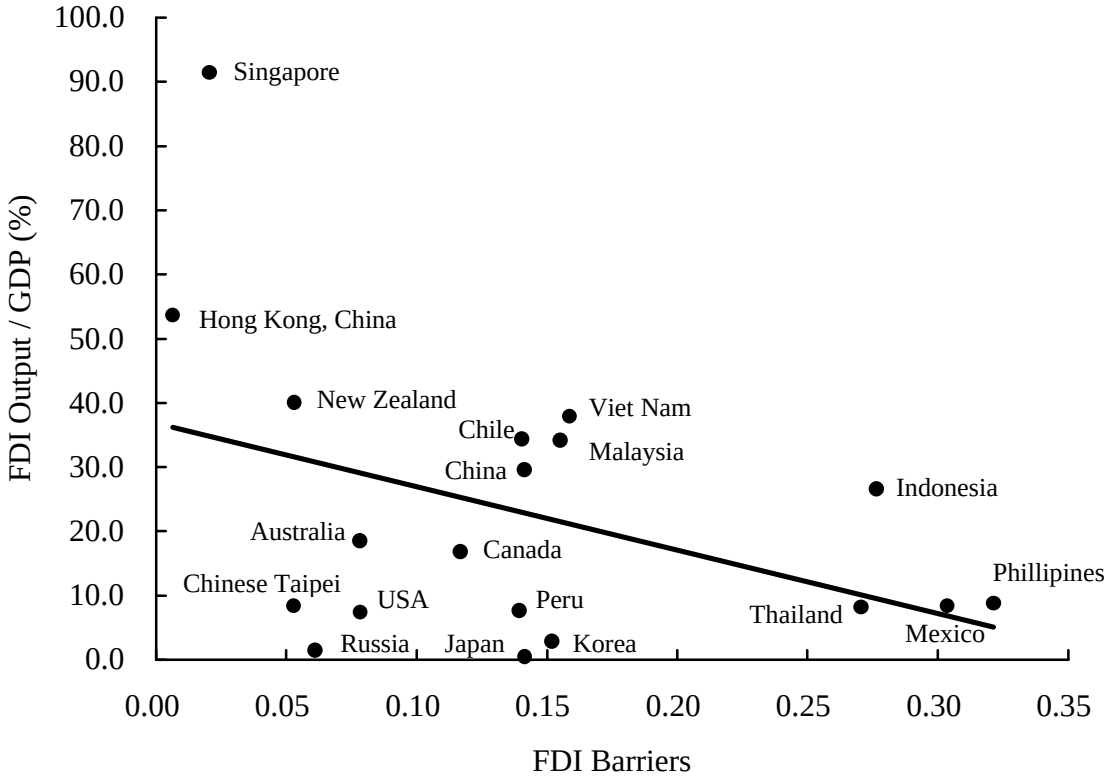
	Real GDP	Capital Stock	Exports	Imports	EV *
Australia	0.5	1.0	0.5	0.5	1.4
Canada	0.4	1.0	0.3	0.3	1.7
Chile	2.1	3.9	2.4	1.8	1.2
China	1.0	2.8	0.9	0.8	5.6
Hong Kong, China	0.1	0.2	0.2	0.1	0.1
Indonesia	3.1	6.7	3.8	3.1	4.3
Japan	0.0	0.0	0.1	0.2	0.5
Korea	0.1	0.2	0.2	0.2	0.3
Malaysia	1.7	3.1	1.4	1.3	1.1
Mexico	1.9	2.9	1.7	1.6	5.6
New Zealand	0.4	0.9	0.5	0.5	0.2
Peru	0.9	1.3	0.8	0.6	0.4
Philippines	0.9	1.8	1.1	0.6	0.4
Russia	0.0	0.0	0.0	0.1	0.1
Singapore	0.5	1.0	0.6	0.6	0.3
Chinese Taipei	0.1	0.4	0.1	0.2	0.4
Thailand	2.4	3.0	2.5	2.0	2.6
United States of America	0.1	0.2	0.2	0.2	6.0
Viet Nam	1.5	3.2	2.0	1.3	0.2
Rest of Asia	-0.1	-0.1	-0.1	0.0	-0.2
Rest of America	-0.1	-0.1	0.0	0.0	-0.4
Europe	0.0	-0.1	0.0	0.0	-1.2
Rest of the World	0.0	-0.1	0.0	0.1	0.1
APEC Total	0.3	0.5	0.5	0.5	32.6
World	0.1	0.2	0.2	0.2	30.8

Note: Changes in Equivalent Variation in billion US dollars

All the APEC member economies would gain in real GDP from investment liberalization. Those gains range from 3.1 percent in Indonesia to virtually zero in Japan. On balance, the impact on real GDP is larger in developing APEC economies both in Asia and central/south America when it is seen in percentage changes. These real GDP effects of investment liberalization depend on the magnitude of initial FDI barriers and the share of FDI output in total output,[79] which is shown in Chart 3-3-3. However, it may be noted that these two may have a trade-off relationship.

[79] It must be noted that neither income receipts from outward FDI nor income payments to inward FDI are counted in the current simulation. The initial level of outward FDI stock relative to inward FDI stock is another key factor to distinguish economic gains among the economies.

Chart 3-3-3: FDI Barriers and Output



The magnitudes of real GDP gains among the economies are parallel to the expansion of capital stock at a macro level. The rates of change in real GDP are approximately half of those in capital stock.

As far as welfare improvements are seen in terms of absolute changes, it is shown that outstanding gains would be suggested in the four economies of the United States, Mexico, China and Indonesia. The gains in these four economies cover two thirds of that of the world economy as a whole.

The theoretical literature indicates that FDI and trade can be either substitutes or complements depending on the assumptions. Empirical evidence such as Petri (1997) finds that FDI and trade are likely to be complements at the economy-wide level in the APEC economies. The current simulation result suggests that FDI and trade exhibit a complementary relationship. It is shown that investment liberalization results in an expansion of imports and therefore also exports.

3.3.2 Sectoral impact

The impact of investment liberalization is much more significant when it is looked at on a sectoral basis. These variations are indicated not just in terms of the magnitude of the adjustments but also in their direction. Sectoral adjustments in output, capital stock and trade due to the APEC investment liberalization are shown in Table 3-3-7A through to Table 3-3-7D.

Investment liberalization would expand output in most of the sectors in the APEC member economies. These expansions are larger in manufacturing sectors than in primary and services

sectors, with few exceptions. It may be suggested that sectors that benefit from investment liberalization are the capital-intensive sectors in general. However, such differences in sectoral gains are much less important than the sectoral adjustments caused by trade liberalization, in which case, winners and losers resulting from the reallocation of production endowments in line with the relative competitive scenario are quite apparent.

Table 3-3-7A: Sectoral Output Adjustments
(Rate of Changes in Percent)

	AGR	MNG	PFD	TXL	CHM	MTL	TRN	ELE	OME	OMF	EGW	CNS	T_T	CMN	FSI	OSP	PUB
Australia	0.32	0.27	0.18	0.14	0.55	0.69	1.05	0.68	0.75	0.44	0.46	0.97	0.56	0.47	0.51	0.40	0.21
Canada	0.47	0.16	0.39	0.23	0.50	0.39	0.22	0.16	0.42	0.18	0.41	0.84	0.29	0.42	0.46	0.48	0.17
Chile	0.67	2.29	0.98	2.01	2.45	2.81	5.37	3.06	3.22	2.82	2.22	3.61	2.79	2.36	2.14	2.27	0.74
China	0.01	1.34	-0.02	0.38	1.35	1.94	2.27	1.14	1.82	1.01	1.05	2.67	1.14	1.53	1.47	1.35	0.61
Hong Kong, China	0.16	0.24	0.14	0.06	0.32	0.33	0.18	0.46	0.55	0.14	-0.04	0.23	0.05	0.45	0.42	0.08	0.06
Indonesia	0.68	1.41	0.85	5.16	3.34	8.01	18.76	5.08	6.28	3.67	3.07	6.43	3.99	5.05	2.51	4.14	2.62
Japan	0.03	0.18	-0.02	-0.09	-0.01	0.04	-0.17	-0.03	0.13	-0.06	-0.01	-0.03	-0.02	-0.03	-0.02	-0.02	0.00
Korea	0.02	0.39	-0.03	-0.10	0.14	0.20	0.01	0.11	0.20	0.02	0.07	0.18	0.13	0.11	0.06	0.03	0.03
Malaysia	0.35	0.51	-0.25	0.54	1.50	3.63	3.66	1.01	4.06	1.88	1.52	2.97	1.82	1.55	2.30	3.33	0.77
Mexico	0.33	0.70	0.73	1.86	2.17	2.23	3.37	1.47	1.90	2.01	1.80	2.87	2.44	2.11	3.01	2.00	1.05
New Zealand	0.41	0.28	0.33	0.04	0.40	0.64	0.66	0.58	0.67	0.55	0.51	0.72	0.54	0.34	0.32	0.35	0.19
Peru	0.28	0.70	0.58	0.86	1.03	1.16	1.50	1.66	1.98	1.09	0.85	1.33	0.76	1.01	0.83	0.98	0.54
Philippines	0.10	1.53	-0.07	-0.57	0.49	1.25	2.37	0.11	0.58	0.55	0.78	1.85	0.40	1.35	0.84	3.04	0.38
Russia	0.03	0.04	-0.01	-0.09	-0.04	0.01	-0.03	-0.04	-0.03	-0.04	-0.03	-0.01	-0.02	-0.04	0.03	-0.02	0.02
Singapore	0.05	1.00	0.54	-0.16	0.84	0.91	1.29	0.59	1.01	0.21	0.39	1.00	0.05	0.70	1.70	0.32	0.17
Chinese Taipei	0.06	0.39	0.00	-0.25	0.15	0.26	0.02	0.05	0.36	0.01	0.11	0.35	0.07	0.23	0.10	0.35	0.03
Thailand	0.50	2.10	0.53	2.31	3.00	3.02	3.44	2.65	2.95	2.36	2.17	2.99	3.10	2.93	2.40	2.73	1.30
United States of America	0.12	0.12	0.04	-0.03	0.09	0.19	0.16	0.18	0.18	0.08	0.09	0.17	0.14	0.10	0.06	0.06	0.03
Viet Nam	-0.02	2.14	0.28	1.82	3.02	4.77	4.52	3.40	4.06	1.93	1.37	3.17	2.30	2.31	8.62	1.46	0.40
Rest of Asia	0.00	0.15	0.00	-0.17	-0.09	-0.09	-0.13	-0.07	-0.11	-0.10	-0.05	-0.11	-0.08	-0.11	-0.09	-0.07	-0.06
Rest of America	0.00	0.17	-0.04	-0.15	-0.08	-0.11	-0.12	-0.12	-0.12	-0.09	-0.06	-0.12	-0.08	-0.08	-0.07	-0.08	-0.01
Europe	0.03	0.18	-0.01	-0.14	-0.01	-0.01	-0.03	-0.04	0.05	-0.05	-0.03	-0.06	-0.05	-0.06	-0.05	-0.05	-0.01
Rest of the World	-0.01	0.11	-0.03	-0.23	-0.11	-0.12	-0.18	-0.12	-0.14	-0.12	-0.06	-0.08	-0.07	-0.08	-0.06	-0.09	0.01

Table 3-3-7B: Sectoral Capital Stock Adjustments
(Rate of Changes in Percent)

	AGR	MNG	PFD	TXL	CHM	MTL	TRN	ELE	OME	OMF	EGW	CNS	T_T	CMN	FSI	OSP	PUB
Australia	0.50	0.40	0.53	0.45	1.03	0.96	1.60	0.89	1.04	0.72	0.83	1.47	1.89	1.01	1.20	0.61	0.63
Canada	0.68	0.31	1.17	1.02	1.33	1.03	0.58	0.44	0.91	0.45	0.66	1.43	1.44	1.47	3.62	0.85	0.39
Chile	1.48	2.63	2.07	3.18	3.72	3.70	7.45	4.76	4.72	3.91	2.81	5.06	4.84	3.88	5.82	3.50	3.28
China	0.31	1.60	0.61	1.10	2.03	2.65	3.62	1.66	2.43	1.62	2.87	5.13	4.45	3.04	8.27	5.26	1.57
Hong Kong, China	0.53	0.33	0.22	0.11	0.98	0.38	0.36	0.51	0.59	0.17	0.00	0.27	0.09	1.41	2.03	0.10	0.13
Indonesia	1.78	2.07	2.13	6.83	5.42	10.41	32.17	6.85	14.59	5.43	4.94	10.62	8.68	9.22	5.95	10.67	3.97
Japan	0.04	0.20	-0.04	-0.09	-0.03	0.00	-0.21	-0.07	0.09	-0.10	-0.03	-0.09	-0.02	-0.06	-0.05	-0.03	-0.06
Korea	0.07	0.40	0.00	-0.07	0.26	0.21	0.04	0.12	0.22	0.03	0.09	0.23	0.45	0.35	0.35	0.03	0.04
Malaysia	0.78	0.74	0.21	1.56	2.39	5.87	4.69	1.62	5.30	3.70	2.35	4.94	3.54	1.78	5.42	4.09	2.12
Mexico	0.73	0.95	1.05	2.54	3.03	2.82	4.09	2.28	2.56	2.47	3.17	4.44	3.62	2.61	6.32	2.53	2.58
New Zealand	0.63	0.42	0.70	0.33	0.63	0.89	0.92	0.84	0.90	1.19	1.09	1.04	2.11	0.48	0.56	0.43	0.56
Peru	0.60	0.93	0.67	0.99	1.29	1.64	1.78	1.85	2.06	1.18	1.69	1.61	2.77	1.45	1.63	1.45	1.44
Philippines	0.30	1.82	0.15	-0.13	0.81	1.51	4.63	0.50	1.30	1.20	0.93	2.75	0.99	2.85	3.97	4.05	0.93
Russia	0.03	0.05	-0.02	-0.12	-0.07	-0.02	-0.04	-0.09	-0.08	-0.08	-0.06	-0.07	-0.06	-0.06	0.25	-0.05	-0.05
Singapore	0.26	1.08	1.40	0.21	1.25	1.17	2.43	0.91	1.56	0.50	0.51	1.33	0.36	3.74	8.47	0.53	0.64
Chinese Taipei	0.33	0.42	0.08	-0.15	0.23	0.35	0.30	0.12	0.47	0.12	0.25	0.48	0.21	0.72	0.26	0.62	0.17
Thailand	1.13	2.40	0.79	2.64	3.42	3.21	3.66	2.74	3.09	2.62	2.51	3.38	3.88	3.46	3.21	3.10	2.90
United States of America	0.18	0.18	0.11	0.14	0.11	0.42	0.32	0.21	0.23	0.11	0.22	0.21	0.99	0.24	0.10	0.08	0.07
Viet Nam	0.64	2.69	1.59	3.56	4.49	7.53	11.48	6.36	6.03	3.24	4.29	4.73	6.62	4.64	17.21	2.60	1.81
Rest of Asia	-0.02	0.15	-0.03	-0.23	-0.14	-0.15	-0.18	-0.12	-0.17	-0.15	-0.10	-0.16	-0.16	-0.16	-0.15	-0.13	-0.11
Rest of America	-0.01	0.18	-0.09	-0.20	-0.15	-0.19	-0.21	-0.20	-0.20	-0.16	-0.14	-0.20	-0.17	-0.12	-0.14	-0.12	-0.14
Europe	0.03	0.20	-0.04	-0.18	-0.06	-0.06	-0.08	-0.09	0.00	-0.09	-0.06	-0.11	-0.10	-0.10	-0.09	-0.07	-0.07
Rest of the World	0.00	0.14	-0.07	-0.29	-0.16	-0.18	-0.25	-0.19	-0.21	-0.17	-0.09	-0.15	-0.14	-0.13	-0.13	-0.12	-0.08

Table 3-3-7C: Sectoral Export Adjustments
(Rate of Changes in Percent)

	AGR	MNG	PFD	TXL	CHM	MTL	TRN	ELE	OME	OMF	EGW	CNS	T_T	CMN	FSI	OSP	PUB
Australia	0.60	0.03	0.24	0.05	0.57	0.71	1.26	0.59	0.84	0.09	2.28	0.56	0.80	0.66	1.08	0.20	-0.11
Canada	0.88	-0.04	0.95	0.16	0.54	0.24	0.17	0.05	0.26	-0.01	1.23	0.28	0.20	0.95	1.42	1.05	0.17
Chile	-1.27	1.79	1.12	3.30	1.96	2.53	7.62	1.98	2.17	3.08	3.29	1.93	4.95	5.19	3.99	6.77	-1.21
China	-0.76	-0.11	-0.04	0.23	0.78	1.68	3.95	0.79	1.21	0.71	4.21	1.03	2.34	8.77	12.89	7.39	0.60
Hong Kong, China	0.00	-0.25	0.41	0.14	0.93	1.00	0.35	0.52	0.81	0.32	0.28	0.23	-0.04	3.03	2.09	0.01	0.16
Indonesia	-6.19	-0.97	1.65	5.56	2.84	7.46	51.79	5.62	8.60	2.90	6.80	7.28	9.22	22.10	5.67	15.99	5.30
Japan	0.79	1.67	-0.05	-0.09	0.19	0.62	-0.32	0.06	0.40	-0.10	-0.43	0.04	-0.20	-0.56	-0.40	-0.39	0.00
Korea	0.40	1.40	-0.18	-0.10	0.39	0.53	-0.10	0.13	0.47	0.06	-0.33	0.09	0.26	0.20	-0.17	-0.24	-0.04
Malaysia	-2.77	-0.95	-0.79	0.48	1.00	3.43	5.07	0.99	4.32	1.49	1.83	0.97	2.04	0.22	12.21	4.90	-1.00
Mexico	-2.42	-1.12	0.08	2.22	2.06	1.33	3.59	1.28	1.60	1.57	1.74	0.48	4.62	2.05	6.38	1.19	-1.15
New Zealand	0.71	0.11	0.42	-0.14	0.26	0.61	0.53	0.48	0.57	0.72	4.54	0.28	0.75	-0.33	-0.37	0.13	-0.14
Peru	-1.42	0.30	0.94	1.93	1.30	1.04	4.77	4.65	4.00	2.20	0.18	1.30	0.14	1.64	0.23	1.39	-0.42
Philippines	-1.20	2.57	-1.29	-0.90	0.10	0.74	3.14	0.09	0.26	-0.41	-0.38	-0.02	-0.07	3.90	2.07	4.14	-0.72
Russia	0.20	0.14	-0.05	-0.30	-0.06	0.05	-0.09	-0.13	-0.02	-0.12	-0.21	0.05	-0.08	-0.50	-0.05	-0.28	0.07
Singapore	-0.21	1.90	0.79	-0.16	0.91	1.11	1.39	0.60	1.15	0.14	0.04	0.25	-0.11	4.76	5.10	0.14	-0.33
Chinese Taipei	0.58	1.58	-0.11	-0.28	0.35	0.44	-0.03	0.04	0.48	-0.08	0.05	-0.02	-0.29	0.79	-0.31	0.94	-0.22
Thailand	-3.56	-0.52	-0.63	2.63	3.26	2.56	5.02	2.51	2.55	2.12	3.21	2.07	4.75	3.94	1.28	3.17	-1.04
United States of America	0.46	0.33	0.13	0.05	0.22	0.58	0.35	0.35	0.42	0.13	0.30	0.09	0.11	-0.15	-0.35	-0.21	-0.01
Viet Nam	-1.37	1.58	0.37	1.76	2.81	5.44	6.05	3.54	4.24	1.93	2.70	2.42	3.50	4.26	16.94	12.04	1.74
Rest of Asia	0.80	1.21	0.11	-0.31	0.05	0.27	-0.11	0.13	0.15	-0.11	-0.16	0.07	-0.18	-0.42	-0.32	-0.19	0.04
Rest of America	0.28	0.52	-0.09	-0.54	-0.01	0.00	-0.14	-0.06	0.02	-0.18	-0.14	0.03	-0.32	-0.58	-0.38	-0.36	0.10
Europe	0.20	0.31	0.02	-0.19	0.02	0.04	-0.02	-0.01	0.11	-0.07	-0.10	0.14	-0.10	-0.39	-0.25	-0.21	0.14
Rest of the World	0.22	0.23	-0.16	-0.44	-0.14	-0.08	-0.30	-0.11	-0.12	-0.24	-0.45	-0.01	-0.29	-0.57	-0.39	-0.37	0.03

Table 3-3-7D: Sectoral Import Adjustments
(Rate of Changes in Percent)

	AGR	MNG	PFD	TXL	CHM	MTL	TRN	ELE	OME	OMF	EGW	CNS	T_T	CMN	FSI	OSP	PUB
Australia	0.18	0.63	0.08	0.35	0.43	0.78	0.53	0.67	0.72	0.51	-0.64	0.36	0.19	0.22	-0.04	0.35	0.50
Canada	0.02	0.64	-0.21	0.15	0.20	0.38	0.25	0.38	0.46	0.27	-0.37	0.55	0.34	0.14	-0.07	0.12	0.08
Chile	2.06	2.28	0.54	0.66	1.66	2.16	2.27	2.53	3.04	1.14	-0.31	1.41	-0.23	-0.30	0.03	-0.77	1.44
China	0.85	1.80	0.13	0.25	0.85	1.24	0.48	1.13	1.54	0.82	-1.93	2.15	-0.49	-2.76	-4.61	-2.21	0.26
Hong Kong, China	-0.18	0.14	-0.07	0.03	0.11	0.21	0.12	0.12	0.22	0.06	1.48	0.11	0.17	-0.59	-0.48	0.18	0.00
Indonesia	4.11	4.21	0.20	2.75	2.62	4.92	1.82	5.25	5.86	2.61	-0.30	-0.25	-0.32	-0.38	2.05	0.01	-0.49
Japan	-0.22	-0.05	0.07	0.26	0.12	0.32	0.34	0.26	0.28	0.27	0.24	0.03	0.33	0.36	0.19	0.13	0.01
Korea	-0.04	0.10	0.08	0.12	0.16	0.29	0.26	0.16	0.19	0.27	0.19	0.07	0.10	0.09	0.23	0.30	0.03
Malaysia	2.48	2.52	0.60	0.51	1.52	2.46	1.19	1.27	1.51	1.37	2.16	1.67	0.63	1.03	-3.66	0.50	1.34
Mexico	2.06	2.73	1.03	0.66	1.38	1.77	2.15	1.94	2.06	1.45	1.11	2.68	0.03	1.09	-0.06	1.54	1.62
New Zealand	-0.02	0.58	0.13	0.33	0.46	0.55	0.67	0.58	0.70	0.26	-1.73	0.45	0.17	0.56	0.59	0.53	0.37
Peru	1.38	1.16	0.14	-0.01	0.56	0.93	-0.46	0.67	0.45	0.26	0.66	0.74	0.86	0.38	0.90	0.66	0.81
Philippines	0.94	0.46	0.72	-0.15	0.77	1.14	1.21	0.62	0.78	0.95	1.60	1.46	0.62	-0.46	-0.11	0.20	0.60
Russia	-0.05	-0.01	0.02	0.06	0.03	0.03	0.04	0.04	0.03	0.03	0.07	0.02	0.26	0.30	0.05	0.20	0.00
Singapore	-0.15	0.84	-0.10	0.09	0.55	0.86	0.65	0.55	0.71	0.40	0.42	0.68	0.51	-0.59	-1.00	0.65	0.38
Chinese Taipei	-0.16	0.12	0.16	0.15	0.21	0.42	0.24	0.13	0.35	0.34	0.05	0.49	0.34	0.17	0.39	-0.17	0.15
Thailand	3.13	3.08	1.14	0.52	1.37	2.60	1.79	2.49	2.68	1.63	0.11	1.76	0.33	0.75	1.56	1.16	1.97
United States of America	-0.23	0.08	0.10	0.26	0.26	0.23	0.29	0.28	0.33	0.25	0.37	0.09	0.18	0.26	0.25	0.32	0.09
Viet Nam	1.11	2.63	0.08	1.25	1.23	2.26	0.94	1.80	2.39	0.91	-0.23	1.27	0.06	-0.01	-3.15	-3.33	-0.48
Rest of Asia	-0.41	-0.28	-0.12	0.09	0.00	-0.05	0.12	-0.06	-0.04	-0.02	-0.02	-0.08	0.11	0.19	0.09	-0.01	-0.07
Rest of America	-0.12	-0.12	0.05	0.15	0.02	0.09	-0.02	-0.04	-0.03	0.08	-0.01	-0.05	0.22	0.31	0.18	0.20	-0.06
Europe	-0.09	-0.04	-0.01	-0.01	-0.02	0.00	-0.03	-0.01	-0.02	0.00	0.01	-0.06	0.21	0.20	0.07	0.15	-0.06
Rest of the World	-0.02	-0.06	0.07	0.10	0.06	0.02	0.03	-0.01	-0.02	0.06	0.18	0.06	0.22	0.30	0.22	0.18	0.00

To be more specific, the changes in sectoral output are largely explained by those in sectoral capital stock. It must again be noted that output effects of investment liberalization depend on the degree of investment liberalization, that is, on the magnitude of initial FDI barriers. On the other hand, contractions in certain sectors, although much less significant in their magnitudes, are attributable to inter-sectoral capital mobility within the economies.[80]

Impacts on trade, in particular exports, of investment liberalization vary much more widely. It is shown that investment liberalization leads to an increase in exports of manufacturing, and to a lesser extent, of the services sectors in most APEC economies. However, the effect on the primary sector is mixed. The export of primary products would decrease in several ASEAN and central/south American economies. The import of primary products from those economies would also decrease in trade partners although to a lesser extent in terms of rate of change. These results are consistent with an expectation that trade and investment linkage is extensive in manufacturing sectors, in micro perspectives.

There may be two factors to differentiate the impact of investment liberalization on sectoral exports. First, the economies which would enjoy larger benefits from investment liberalization would face much more inflationary pressure than other economies. Second, significant investment liberalization in certain manufacturing and services sectors would induce inter-sectoral capital movements to those sectors, and therefore limit increases in capital stock in the primary sector. These may result in changes in the relative competitiveness of sectors across the economies.

3.3.3 Issues for future studies

Quantitative analysis of investment liberalization rather than trade liberalization is still a difficult task. Although there have been several signs of progress, much remains to be done. The current study has achieved an important point but, more importantly, it has clarified the issues for future studies.

First, the quality of the estimated FDI stock matrix may be limited, largely due to data availability. Any information concerning bilateral inflows and outflows of FDI would be appreciated, in particular where that data is not yet published.

Second, investment barriers have been quantified by their frequency and coverage measures. Although they give a good indication of the relative strictness of the restrictions by the sectors and economies, more direct measurement of the absolute level of barriers in terms of prices or rates of return would be fruitful for policy simulations. The member economies are encouraged to respond to the “TILF Survey Questionnaire” and to provide estimates of the “interest rate equivalent” of investment barriers.

Moreover, although we used IAPs as a reference to quantify existing FDI restrictions, it was realized that, because of its voluntary nature, the information is neither complete nor consistent among member economies to be used for that purpose. As the main apparatus of APEC for liberalization and facilitation of investment, which require intensive effort, IAPs will be more useful for future economic analysis if they become more complete and consistent.

Thirdly and finally, the dimension of the FDI model is significantly larger than the standard CGE model, which does not explicitly incorporate such behavior. The model simulations would be subject to computational capacity. A certain technical progress of computer engineering may be required in this regard, in particular when the model database is highly disaggregated by sector and by economy.

[80] It may be noted that external balances are fixed in the current model simulation. Therefore, international capital mobility is not allowed.

The current model simulation evaluates the impact of reduction in the capital cost. Although several dynamic aspects are incorporated into the standard static CGE model, other key features of FDI are issues to be implemented in future studies.

4. CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

As mentioned in the Bogor Declaration of APEC Economic Leaders in November 1994, open and free trade and investment are expected to be realized in the APEC region by 2010 for industrialized economies and by 2020 for developing economies. Following the adoption of Bogor Declaration, the APEC leaders announced their Osaka Action Agenda (OAA) in November 1995. The agenda provides the template for future APEC work toward the common goal mentioned above. The first action plan based on OAA was the Manila Action Plan for APEC (MAPA) adopted in Manila, the Philippines, in 1996.

Since then, member economies have been working voluntarily through the Individual Action Plan (IAP) process to develop the environment for open and free investment, including most-favored-nation trade status, innovative action in granting national treatment, greater transparency, etc. Improvements in the business environment are underway in the APEC member economies with the Philippines and China allowing foreign business entry, Korea and Thailand making one-stop services available. In Chinese Taipei, fairness and transparency in administrative processes has been secured with enforcement of the administrative procedure law. However, in comparison with liberalization and facilitation of trade, investment liberalization has not yet made significant progress, as seen in the, *The Impact of Investment Liberalization in APEC* of 1997.

The findings of this chapter have revealed that all member economies will benefit from investment liberalization. The level of benefit liberalization will bring to each economy is expected to be, generally speaking, larger for economies with steeper investment barriers, although this is dependent on internal and external FDI stock prior to investment liberalization. In other words, the impact on developing economies in the APEC region is expected to be relatively large.

Moreover, the findings show that the growth in FDI spurred by liberalization is in a complementary relationship with trade volume. The simulation study in this chapter shows that trade volume for both imports and exports will grow as a result of liberalization. These results suggest that promoting liberalization of investment is vitally important for APEC in the years ahead.

In this chapter, investment barriers in the various economies have been measured quantitatively with a specific method, based on description of investment-area activities in the Individual Action Plan (IAP) of each member economy, the action plan aimed at trade and investment liberalization and facilitation under OAA. The IAPs provide important information on the level of progress achieved by APEC toward the Bogor goals in compliance with the principles, goals and guidelines of the OAA. On the other hand, however, IAPs are developed voluntarily by each APEC member economy and lacks in comprehensiveness and standardized with other economies. This characteristic of IAP is an impediment in the quantification of investment barriers. The calculations presented may not reflect reality in some areas. Still, IAPs are vital in showing the state of progress made in APEC toward the goals announced at Bogor. They make contribution in presenting a comparative study of the current state of member economies.

This experience has led to the conclusion that developing IAP which are more comprehensive and are standarduzed among the various economies will clarify where we stand *vis-à-vis* the Bogor goals. Also, such IAPs data will be extremely useful in economic analysis, as well as for investors making investment decisions.

4.2 Recommendations for Future Research

There are three issues that must be addressed in expanding on this research.

First, the investment barriers were measured quantitatively based on IAPs. However, this is the first such attempt and it was extremely ambitious in approach. Individual Action Plans are updated and improved continually. Therefore, it is important to undertake periodic follow-up assessments of the anticipated impacts of APEC actions in terms of evaluating the current state of investment liberalization and facilitation in the region.

Secondly, quantitative analysis has its limitations. Since the details in this area have been described in the preceding section, discussion in this area will be omitted here. Still, effective analysis, by developing the analytic model itself based on detailed classification by economy and by industry in relation to investment liberalization, is believed possible.

Finally, the impact of liberalization is generated not only from investment but also from trade. However, integrated analysis of the two areas in order to find liberalization in which area has the greater economic impact has not been done adequately. Analysis and comparison based on an integrated model for assessing impact of liberalization and facilitation in both trade and investment is believed to be highly beneficial.

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Annex: Weights of FDI Barriers

According to Hardin and Holmes (1997), entire bans on foreign investment are given the weight of one. Even if this is not the case, restrictions on market entry are the most important and are given the weight of 0.6, while ownership and control restrictions and operational restrictions each have weights of 0.2. The same weights were applied to these three groups as shown in Annex Table 3-3-1.

However, the individual weights assigned to each type of barrier within each group are adjusted, taking into account frequency of barriers. Those compositions are shown in Annex Table 3-3-2.

Annex Table 3-3-1: Weights of Barriers to FDI in the Aggregated Index of FDI Restrictions

		Max Point	Max Weight	Weight
Restrictions on market entry	Bans on foreign investment in certain sectors	1	1	1
	Quantitative restrictions	0.6	0.5	
	Foreign equity limits on all firms			
	Less than 50 percent foreign equity permitted			0.5 or
	More than 50 percent and less than 100 per cent foreign equity permitted			0.25
	Foreign equity limits on existing firms, none on greenfield			or
	No foreign equity permitted			0.5 or
	Less than 50 percent foreign equity permitted			0.25 or
	More than 50 percent and less than 100 per cent foreign equity permitted			0.125
	Screening and approval		0.1	
	Investor required to demonstrate net economic benefits			0.1 or
	Approval unless contrary to national interest			0.075 or
	Notification (pre or post)			0.05
	Other restrictions on market entry		0.4	0.4
Ownership and control restrictions	All firms	0.2 or		
	Existing firms, none for greenfield	0.1		
Operational restrictions	All firms	0.2 or		
	Existing firms, none for greenfield	0.1		

Annex Table 3-3-2: Composition of Barriers to FDI

A: Other restrictions on market entry

	Weight
Restrictions on the legal form of the foreign entity	0.25
Minimum capital requirements	0.25
Conditions on subsequent investment	0.125
Conditions on location	0.25
Admission taxes	0.125

B: Ownership and control restrictions

	Weight
Compulsory joint ventures with domestic investors	0.4
Limits on the number of foreign board members	0.05
Government appointed board members	0.05
Government approval required for certain decisions	0.05
Restrictions on foreign shareholders' rights	0.05
Mandatory transfer of some ownership to locals within a specified time (eg.15 years)	0.4

C: Operational restrictions

	Weight
Performance requirements (eg. export requirements)	0.3
Local content restrictions	0.4
Restrictions on imports of labour, capital and raw materials	0.2
Operational permits or licences	0.025
Ceilings on royalties	0.025
Restrictions on repatriation of capital and profits	0.05

CHAPTER IV

CONCLUDING REMARKS AND POLICY IMPLICATIONS

A cooperative research effort between Japan and Korea has been carried out in response to instructions from Ministers and Leaders and the strong demand coming from the business sector that APEC should place more emphasis on investment liberalization and trade facilitation in order to promote a free and open trade environment to achieve the Bogor goals. The Japanese research team has examined the impact of investment liberalization and facilitation, whereas, the Korean research team has taken the lead in measuring the impact of trade facilitation. This volume combines the products of the research cooperation between the two economies under the careful supervision of the EC and this section highlights each team's findings including policy implications for APEC member economies.

1. TRADE FACILITATION

While complementing the successful completion of the Uruguay Round, trade facilitation is one method to achieve economic prosperity along with increases in welfare resulting from continuously liberalizing trade. In particular, APEC's efforts to enhance trade facilitation have become an important engine for expanding regional trade to achieve the Bogor Goals. At the same time, this policy coincides with the WTO's movement toward globalization. This has led to a preference for trade facilitation among the APEC member economies that support open regionalism.

With this background, a team of Korean researchers attempted to quantitatively measure the effects of trade facilitation in the APEC region on the APEC economies. The team applied two different methodological approaches to conduct this research—a survey analysis and a CGE model analysis.

According to the most conservative figures found in the survey, a 50 percent improvement in trade facilitation will result in an average trade cost reduction effect of between 2.9 percent, for industrialized (Australia; Canada; Japan; New Zealand; United States of America) and newly industrialized APEC economies (Hong Kong, China; Korea; Mexico; Singapore; Chinese Taipei), and 3.5 percent for industrializing APEC economies (Chile; China; Indonesia, Malaysia; Peru; the Philippines; Thailand; Viet Nam; and Russia). If we take the most optimistic opinion, the reduced trade costs will vary from 5.8 percent for industrialized APEC economies, 6.2 percent for newly industrialized APEC economies and 7.7 percent for APEC economies when trade facilitation is incurred.

The Korean research team applied the survey results to measure the macro-economic effects of trade facilitation on the APEC economy as a whole and on individual participating member economies by using a CGE model analysis. From the CGE model analysis, the team found that both trade liberalization through a free trade area in the APEC region and all possible reductions in trade costs through trade facilitation in the region produced beneficial effects for the APEC regional economy. This resulted in positive GDP growth, increased income for representative agents and expanded private consumption.

Moreover, gains from trade facilitation are more beneficial to the APEC economy than gains from trade liberalization. In particular, the effect of the Shanghai Accord on APEC's GDP growth will be 0.98 percent (US$154 billion), on average, with Singapore enjoying the biggest gain of 7.65 percent and the US getting the smallest gain of 0.32 percent. In addition, the optimistic case of APEC's regional trade facilitation multiplies the beneficial effect on APEC's GDP by 1.3 percent (US$204 billion).

In terms of achieving GDP growth, regional trade facilitation, that is, trade facilitation limited to the APEC member economies, is a better policy option than global trade facilitation, trade facilitation is open to members and non-members alike. However, global trade facilitation under the principle of open regionalism is better than regional trade facilitation in terms of

consumer welfare since it results in more private consumption and lower output prices although there exists a free-rider problem.

The distribution of gains from trade liberalization over the different levels of economic development in APEC is quite typical. Relatively less developed APEC economies with relatively smaller domestic markets and are more dependent on the regional export market take bigger gains from the freer trade. On the other hand, the beneficial effects of trade facilitation are distributed over the APEC member economies depending on the intra-APEC trade share and the trade dependency of each economy. The higher the intra-APEC trade share an economy has and the higher its trade dependency, the bigger gains it will enjoy in terms of GDP growth from trade facilitation among the APEC economies.

In conclusion, this research shows that the effects of trade facilitation are superior to and more practical than the effects of trade liberalization through eliminating or lowering of import tariffs. As traditional trade barriers such as import tariffs come down, trade facilitation will become increasingly important. According to this research, the benefits of trade facilitation can be quite significant. With current facilitation covering broad areas, the potential benefits are much higher. Thus, emphasizing and accelerating trade facilitation will be an important objective for APEC.

2. INVESTMENT LIBERALIZATION AND FACILITATION

As mentioned in the Bogor Declaration of APEC Economic Leaders in November 1994, open and free trade and investment are expected to be realized in the APEC region by 2010 for industrialized economies and by 2020 for developing economies. Following the adoption of the Bogor Declaration, the APEC leaders announced the Osaka Action Agenda (OAA) in November 1995. The agenda provides the template for future APEC work toward the common goal mentioned above. The first action plan based on OAA was the Manila Action Plan for APEC (MAPA) adopted in Manila in 1996.

Since then, member economies have been working voluntarily through the Individual Action Plan (IAP) process to develop the environment for open and free investment, including most-favored-nation trade status, innovative action in granting national treatment, greater transparency, etc. Improvements in the business environment are under way in the APEC member economies with the Philippines and China allowing foreign business entry, and Korea and Thailand making one-stop services available. In Chinese Taipei, fairness and transparency in administrative processes has been secured with enforcement of the administrative procedure law. However, in comparison with liberalization and facilitation of trade, investment liberalization has not yet made significant progress, as seen in, *The Impact of Investment Liberalization in APEC* of 1997.

The findings of this chapter have revealed that all member economies will benefit from investment liberalization. Those gains in real GDP range from 3.1 percent in Indonesia and virtually zero in Japan. The level of benefit liberalization will bring to each economy is expected to be, generally speaking, larger for economies with steeper investment barriers, although this is dependent on internal and external FDI stock prior to investment liberalization. In other words, the impact on developing economies in the APEC region is expected to be relatively large.

Moreover, the findings show that the growth in FDI spurred by liberalization is in complementary relationship with trade volume. The simulation study shows that trade volume for both imports and exports will grow as a result of liberalization. The real GDP of the APEC member economies as a whole would increase by 0.3 percent mainly supported by capital formation, which expands by 0.5 percent. While, 0.5 percent would boost the APEC trade.

These results suggest that promoting liberalization of investment is vitally important for APEC in the years ahead as well.

In this study, investment barriers in the various economies have been measured quantitatively with a specific method, based on description of investment-area activities in the Individual Action Plan (IAP) of each member economy, the action plan aimed at trade and investment liberalization and facilitation under the OAA. The IAPs provide important information on the level of progress achieved by APEC towards the Bogor goals in compliance with the principles, goals and guidelines of the OAA. On the other hand, however, the IAP is developed voluntarily by each APEC member economy and lacks cohesiveness and a generally accepted standard among other economies. This characteristic of IAPs is an impediment to the quantification of investment barriers. The calculations presented may not reflect reality in some areas. Still, the IAP is vital in showing the state of progress made in APEC toward the Bogor goals. They provide a measure of contribution in presenting a comparative study of the current state of member economies.

This experience has led to the conclusion that developing IAPs with greater cooperation among the various economies will clarify where we stand *vis-à-vis* the Bogor goal. Also, such IAPs' data will be extremely useful in economic analysis, as well as for investors in making investment decisions. In conclusion, this is the first attempt to measure quantitatively investment barriers based on the IAP. However, the IAP is updated and improved continually. Therefore, it is important to undertake periodic follow-up assessments of the anticipated impacts of APEC actions in terms of evaluating the current state of investment liberalization and facilitation in the region.

ACRONYMS

ACRONYMS

ABAC	APEC Business Advisory Council
BITs	Bilateral Investment Treaties
CGE	Computable General Equilibrium
EC	Economic Committee
EVSL	Early Voluntary Sectoral Liberalization
FDI	Foreign Direct Investment
FTA	Free Trade Area
FTAs	Free Trade Agreements
GAMS	Generalized Algebraic Modeling System
GATS	General Agreement on Trade in Services
GTAP	Global Trade, Assistance, and Production
GTAP	Global Trade Analysis Project
GTF	Global Trade Facilitation
IAP	Individual Action Plans
M&As	Mergers And Acquisitions
MAPA	Manila Action Plan for APEC
MFN	Most Favored Nation
MOFAT	Ministry of Foreign Affairs and Trade [Korea]
NTMs	Non-Tariff Measures
OAA	Osaka Action Agenda
RTF	Regional Trade Facilitation
SA	Shanghai Accord
SMEs	Small And Medium Enterprises
TCE	Trade Creation Effect
TD	Trade Deficit
TDE	Trade Diversion Effect
TILF	Trade and Investment Liberalization and Facilitation
TPR	Trade Policy Review [WTO]
TRIM	Trade-Related Investment Measures
USTR	United States Trade Representative
WTO	World Trade Organization