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Korea's FTA Policy Consistent with APEC Goals

Inkyo Cheong

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KIEP KOREA INSTITUTE FOR INTERNATIONAL ECONOMIC POLICY

KOREA INSTITUTE FOR
INTERNATIONAL ECONOMIC POLICY (KIEP)
300-4 Yomgok-Dong, Socho-Gu, Seoul 137-747, Korea
Tel: (822) 3460-1208 Fax: (822) 3460-1133
URL: http://www.kiep.go.kr

Kyung-Tae Lee, *President*

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Executive Summary

Up until very recently, Korea had maintained a steadfast support of trade liberalization realized only through multilateral means, such as through the WTO and APEC. However, as countries of almost all regions except East Asia have embraced regionalism, Korea has been forced to question its adherence to a view that would see it lose out to the substantial trade diversion of these growing agreements, even though Korea still remains a strong supporter of the WTO.

This paper begins with a more detailed analysis of the factors that led to Korea's more open approach to FTAs, culminating in the officially stated intention of exploring a bilateral FTA with Chile. Korea and Chile have concluded preliminary talks and working-level negotiations are expected to begin in 1999. Looking beyond the FTA with Chile, Korea has stated that it is pondering establishing FTAs with Thailand, South Africa, and Turkey. The choice of these countries is part of Korea's strategy to establish an FTA with a country in each continent in order to increase market access around the world. However, this paper takes the position that if Korea seeks for future free trade partners after the establishment of a Korea-Chile FTA, Korea needs to look a new regional trading bloc within APEC. Through extending preferential bilateral FTAs to other APEC economies, Korea's FTA may not only accelerate the trade and investment liberalization of APEC, but also help Korea play a leading role in APEC in the future.

This paper then proceeds to support a view that Korea's next move needs to be the consideration of bilateral FTAs with Australia, New

Zealand and Canada or a multilateral FTA encompassing all four countries. While trade with all of these countries would be highly complementary for both sides, the most compelling reason for such a FTA would be its potential for spreading free trade throughout the Asia Pacific region. Along with Chile, Australia, New Zealand and Canada are all APEC members. Such a free trade area would demonstrate the benefits of free trade to regional economies and possibly exert the pressure needed to restart the currently stalled free trade talks of APEC. Such progression would move Korea to the forefront of international trade talks.

Dr. Inkyo Cheong, a Research Fellow of KIEP, earned his Ph.D. in Economics from Michigan State University. He specializes in Korea's FTA policy, economic cooperation in the Asia-Pacific region, international trade policy, and building multi-region, multi-sector computational general equilibrium model (CGE). Corresponding address: 300-4 Yomgok-Dong, Seocho-Ku, Seoul 137-747, Korea. Ph. (822) 3460-1208; Fax. (822) 3460-1133; E-mail: ikcheong@kiep.kiep.go.kr.

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Ⅰ. Introduction

Attempts to realize APEC's 2010/2020 trade liberalization goal have been dominated by two approaches. One is to improve Individual Action Plans (IAPs) and Common Action Plans (CAP) submitted by APEC members. The second approach is to develop Early Voluntary Sectoral Liberalization (EVSL) as seen in APEC members pushing for the conclusion of the Information Technology Agreement (ITA) in the WTO Ministerial meeting held in Singapore in November 1996. However, neither approach seems likely to produce results that will meet the lofty APEC goal of total trade liberalization by 2010 for developed economies and 2020 for developing economies. For example, IAPs submitted by member economies in 1997 showed scant improvement over those originally submitted IAPs. The second approach is also providing little promise of realizing APEC liberalization. The short falls of this approach were clearly seen at last year's Kuala Lumpur APEC meeting when member economies failed to conclude a tariff reduction scheme for the 9 EVSL sectors.[1)]

* The author appreciates valuable comments by Dr, Song, Yoo-Cheol, though any remaining errors are author's.

1) Because it seemed impossible for APEC to agree upon the EVSL agenda, APEC decided to transfer the agenda to the WTO.

This lack of success has led certain members to place their hopes for APEC economic liberalization on a third, more indirect approach. Members embracing this third way seek to form a subregional trading bloc within APEC as a first stage and then extend the bloc to other APEC economies. The USTR (1997) stated that the United States' bilateral FTAs with large economies, "in particular ones with a proven commitment to open trade, could be a catalyst to opening the entire [APEC] region, accelerating market access opportunities for US exports and fulfilling the APEC mandate."

Moreover, recent studies have found that regionalism can contribute to multilateral trade agreements and thus that subregional liberalization in APEC can lead APEC trade liberalization.[2] Regionalism's contribution to multilateral trade is well documented in Bergsten (1996a, b). Bergsten argues that regionalism can be "stepping stones" for global trade liberalization. He argues that regional trade agreements (RTA) demonstrate the merits of free trade causing both member economies and envious outsiders to desire the effect of free trade, which naturally leads to multilateral FTAs. RTAs often provide strong momentum for domestic reforms, which would otherwise not likely be implemented. Reports by the OECD (1995) and WTO (1995) discuss the synergy effects between regionalism and multilateralism, which comes from learning effects, recognition of international trade rules, enhancement of rational negotiation capacity, and the role of RTAs as experiments for multilateral negotiations under regionalism.[3]

2) The existence of several regional trading blocs in APEC can be one of major obstacles to APEC trade liberalization. This argument seems to be still valid, but a new subregional trading bloc can play a medium role in connecting existing trading blocs such as NAFTA, AFTA, and ANZCER.

3) However, Lester Thurow (1992) argues that the current proliferation of

This paper focuses on the prospects of Korea's embrace of this third way. Up until very recently, Korea had maintained a steadfast support of trade liberalization realized only through multilateral means, such as through the WTO and APEC. However, as countries of almost all regions except East Asia have embraced regionalism, Korea has been forced to question its adherence to a view that would see it lose out to the substantial trade diversion of these growing agreements. Further, the recent economic crisis has shown the average Korean the folly of adhering to a view that its economy could grow in its semi-closed state. This growing acceptance of a more economically liberal approach has allowed Korean policy makers to embrace trade initiatives that were previously only possible if the weight of the world (i.e. the WTO) was pushing for such trade opening. Finally, and most important in this paper, is the fact that Korea's embrace of regional FTAs need not undermine its strong support for multilateral trade agreements. Small groupings of countries in a free trade area often exert pressures on other trade partners to join and also for the original trade area members to embrace new countries.

This paper begins with a more detailed analysis of the factors that led to Korea's more open approach to small FTAs, culminating in the officially stated intention of exploring a bilateral FTA with Chile. This paper then proceeds to support a view that Korea's next move needs

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regional agreements and the recurring fear of trade conflicts will endanger the credibility of the global trading system by shifting the world to a tripolar system of Asia, Europe, and North America. Jagdish Bhagwati (1993) sees the current world trade system as "stumbling blocs" rather than "building blocs", arguing that the expansion of regionalism will undermine the multilateral system without making a positive contribution towards global trade liberalization.

to be the consideration of bilateral FTAs with Australia, New Zealand and Canada or a multilateral FTA encompassing all four countries.

Following detailed discussion of the compelling factors behind such a FTA, this paper proceeds to analyze the economies of Australia, New Zealand and Canada. This individual economy analysis is followed by forecasts of the economic impact of various versions of FTAs encompassing the four countries; analyzing the impact of trade liberalization in a general equilibrium context, this paper employs the computational general equilibrium (CGE) model by Cheong (1995), which was used to simulate the economic effects of APEC trade liberalization. The CGE model was discussed at the Appendix.

Ⅱ. Korea's New Embrace of Regionalism

A WTO (1995) report discusses why regional trading blocs[4] arose during the last stage of the Uruguay Round in the early 1990s. It explains the expansionary trend of regionalism as "the insurance policy in the event of failure of the Uruguay Round negotiations". This may be seen to imply that regional integration initiatives would be weakened as the multilateral trading system becomes firmly established. Yet following the inauguration of the WTO, the trend of increasing numbers and deepening scope of regional trading blocs has continued, as shown in 〈Table 1〉.

Regionalism is one of the most dominant trends in the world economy today. There were only 26 new RTAs reported to GATT prior to 1969. Following a weakening in the pace of regional integration in the 1980s, the number of new regional trade arrangements exploded in the 1990s. 35 additional regional agreements were signed in the years 1995 and 1996 and 17 such agreements were reached in the years 1997 and 1998. This demonstrates that rather than simply being

〈Table 1〉 Reports of Regional Trading Blocs

Year	1948~1959	1960~1969	1970~1979	1980~1984	1985~1989	1990~1994	1995~1996	1997~1998.8
# of blocs	5	21	40	6	5	33	35	17

Source: WTO (1998), Discussion Paper of CRTA

4) Preferential trading blocs that bear the responsibility of reports to GATT/WTO based on GATT XXIV, GATS V, and the Enabling Clause.

a type of insurance policy taken against a lack of multilateral free trade formation, regionalism is seen as a viable commercial strategy that complements multilateral trade agreements.

The trend of regional integration was not the only motivating factor behind Korea's altered view in favor of establishing FTAs with major trading countries, the outbreak of the Asian financial crisis also played a large role.[5] As per the IMF, Korea opened most of its financial sectors to foreign investors and implemented unilateral trade liberalization measures. Albeit coerced, this liberalization has been viewed as beneficial by most Koreans and there is a growing perception that the establishment of FTAs with major trading partners will bring greater welfare gains. The current account deficit that preceded the financial crisis has made painfully clear the danger in failing to secure stable access to foreign trade and financial markets.

In response to the continued strong trend of increasing RTAs and the recent financial crisis opening Korea's eyes to the needs to open its economy, the Korean government is currently pursuing the establishment of FTAs with smaller strategic countries as a precursor to establishing trade agreements with its larger trade partners. Chile was chosen as the candidate through which Korea would begin its

5) Basic readings and references on the causes of the crisis can be found at Professor Roubini's web site (*http://www.stern.nyu.edu/~nroubini/asia/AsiaHomepage.html*). The web site contains hundreds of articles, papers and books on the Asian financial crisis. Refer to OECD (1998), WTO (1998), IMF (1997), Stiglitz (1998), Wolf Jr. (1998), Hale (1998), Roubini (1998), Radelet and Sachs (1998), Goldstein (1998), and Bergsten (1998) on the causes of the Asian financial crisis. Also refer to WTO (1998), IMF (1997), DRI (1998), UNCTAD (1998), the World Bank (1998), and Liu *et al* (1998) on the impact of Asian crisis on the world economy.

pursuit of RTAs. Chile's exports of primary goods such as copper and wood (wood products) will be highly complementary to Korea's manufactured goods exports of automobile and electronic products. Moreover, Chile is one of the most active countries in terms of liberalizing trade and establishing FTAs. Chile has already signed FTAs with Mexico, Canada, Peru, Venezuela, Ecuador, Columbia, and is currently discussing the establishment of FTAs with Bolivia, Panama, Cuba, and the EU among others. Chile's rather open and likely non-confrontational approach will likely allow Korea to sign a relatively comprehensive FTA agreement that is unencumbered by numerous side agreements. Thus the agreement would set a favorable precedent for Korea signing FTAs with other countries. Chile's experience with free trade and operating a relatively liberalized economic market will likely provide Korea valuable experience as it attempts to further liberalize its own economy and pursues FTAs with larger economies.

Aside from the economic aspects, political realities are also behind the choice of Chile as Korea's first potential partner in a free trade agreement (FTA). While current opinions are certainly more favorable than in the past, Korea abandoning its insistence that free trade be pursued in an open and multilateral approach is a major policy reversal. However, the economic size of Chile is relatively small and the trade volume between the two countries amounts to a small percentage of Korea's total trade.[6] Any adjustment costs, such as workers being displaced, will be relatively low. Further, international response to Korea's aboutface will be muted due to the non-

6) Korea's export to Chile accounts for around 0.5 percent of Korea's total exports, while imports from Chile is less than 1.0 percent of Korea's total imports.

threatening size of the agreement.

Korea and Chile have concluded preliminary talks and working-level negotiations are expected to begin in 1999. Looking beyond the FTA with Chile, Korea has stated that it is pondering establishing FTAs with Thailand, South Africa, and Turkey. The choice of these countries is part of Korea's strategy to establish an FTA with a country in each continent in order to increase market access around the world. Opening FTAs with Turkey and South Africa should improve Korean access to the neighboring markets of the EU and Africa, respectively.

However, this paper takes the position that if Korea seeks for future free trade partners following establishment of a Korea-Chile FTA, Korea should look a new regional trading bloc within APEC. Through extending preferential bilateral FTAs to other APEC economies, Korea's FTA may not only accelerate the trade and investment liberalization of APEC, but also help Korea play a leading role in APEC in the future.[7] Similar idea can be found in Park (1998). He suggested a gradual free trade approach to APEC where economies not belonging to any subregional trading bloc in APEC establish such trading blocs in the near future. Park ultimately pushed for a Northeast Asia FTA or East Asia FTA.[8]

While trade with all of these countries would be highly complementary for both sides, the most compelling reason for such

7) According to Huff *et al* (1995) and Cheong (1995), Korea is expected to realize the highest economic benefit among APEC member countries once the APEC free trade area is established.

8) Park (1998) advocates the formation of new subregional trading bloc in APEC, because that will reduce number of players in the process of liberalization discussion, by grouping non-member economies of existing subregional blocs into one subregional bloc.

an FTA would be its potential for spreading free trade throughout the Asia Pacific region. Along with Chile, Australia, New Zealand and Canada are all APEC members. Such a free trade area would demonstrate the benefits of free trade to regional economies and possibly exert the pressure needed to restart the currently stalled free trade talks of APEC. Such progression would move Korea to the forefront of international trade talks. Another reason for reaching out to the Australia, New Zealand, and Canada over other APEC members in establishing an FTA is that these economies, like Korea, are positioned as middle-economies within APEC. Signing an FTA would likely increase their role within APEC, and thereby allow them to serve as a mediator and reconciler of the strongly pro-liberalization role of the US and the more reticent positions of China and other lesser advanced APEC economies. Further, among APEC countries, Canada, Australia and New Zealand appear the most promising free trade partners for Korea, as the three countries have a great complimentary relationship with Korea's trade structure. In the proceeding section, this paper demonstrates the strong welfare gains all participants would realize among the establishment of an FTA. An economic model used in this paper will further demonstrate that one FTA encompassing all four countries appears likely to improve the current Korean trade deficit it experiences with the other three.

Some may say that the benefits to be gained from FTAs with Australia, New Zealand and Canada would be smaller under an FTA with larger APEC economies, such as the US or Japan. However, as stated above, trade between the manufacturers of Korea and the capital and natural resource plentiful Australia, New Zealand and Canada would be highly complementary. Further, while Koreans are increas-ingly accepting the need for modernizing their economy, their

competitive disadvantages relative to the US or Japan would likely inflict too great of adjustment costs. However, the much smaller economies of the three proposed countries would inflict lower adjustment costs on Korean economy and yet force Korea to update many of its outdated economic institutions and practices. Following this adjustment period, Korea would be much better positioned to enter an FTA with Japan, the US, and other major advanced and/or large economies.

Ⅲ. Korea's Trade Relations with Australia, Canada, and New Zealand

1. Economies of Australia, Canada, and New Zealand[9)]

The GDP of Australia grew 3.7 percent in 1996 and 3.0 percent in 1997. In 1998, the economy will likely outperform the previous two years. Business investment and private consumption rose strongly in 1997 after slowing in 1996. Lower interest rates were expected to strengthen investment in 1998, especially in the housing sector. The major factor restraining growth is weakened confidence in the wake of the Asian financial crisis.

Australia's 1997 inflation rate was 1.4 percent. In 1998 the inflation rate is expected to rise slightly. Australia has suffered from high unemployment rates for several years, and current unemployment rates run at higher than 8 percent. However, as the economy is expected to continue its strong growth, unemployment rates are expected to decline.

As a result of a large sale of gold by the Reserve Bank in 1997, the current account deficit amounted to 3.2 percent of GDP in 1997, down from 4.0 percent in 1996. However, as domestic growth is expected to continue to outpace world economic growth, the current account is expected to deteriorate in 1998 and 1999.

Canada posted strong growth 1997, which allowed the government to lower interest rates and reduce the fiscal deficit. GDP growth

9) This chapter heavily depends on the 1998 APEC Economic Outlook produced by APEC EC (1998).

jumped 3.7 percent in 1997 following growth of 1.2 percent in 1996. Moderate growth is expected to continue in 1998, in spite of the slowdown of the world economy.

Canadian consumer demand and business investment increased by 4.1 percent and 14.5 percent, respectively, in 1997. The rise in business investment was due to increased business confidence. Lower interest

〈Table 2〉 Major Economic Indicators in 1997

	Korea	Australia	Canada	New Zealand
Per capita GDP (USD)[1]	10,268	20,809	20,447	17,163
Nominal GDP (billion USD)	442.6	393.8	617.6	64.5
Real GDP (%[2])	5.5	3.0	3.7	2.3
Total Consumption (%[2])	3.5	3.2	4.1	3.1[5]
Total Investment (%[2])	-3.5	11.1	14.1[4]	-0.6[3]
Exports of Goods and Services (%[2])	5.0[3]	11.4	8.0	2.1
Imports of Goods and Services (%[2])	-3.8[3]	13.8	13.3	4.0
Budget Balance (% of GDP)	0.03	0.3	0.9	2.1
Merchandise Trade Balance (% of GDP)	-0.5	0.4	1.7	0.9
Current Account Balance (% of GDP)	-1.9	-3.2	-1.5	-7.7
GDP Deflator (%[2])	4.5	-3.2	0.5	0.1
Unemployment Rate (%[2])	2.6	8.6	9.2	6.7
Population (millions)	46.2	18.6	30.24	3.78

Note: 1) Taken from DRI (1998)
2) % change from previous year.
3) Goods only.
4) Reflects private investment only, ignoring government investment.
5) Reflects private consumption only, ignoring government consumption.

Sources: APEC Economic Committee, *1998 APEC Economic Outlook*, 1998.
DRI, *World Economy Outlook*, Second Quarter 1998.

rates were also a factor as residential construction grew by double-digit rates in 1996 and 1997; such growth is likely to continue in 1998.

Canadian exports increased by 8 percent in 1997. This growth is expected to continue in 1998 due to strong economic growth in the US and in the European Union offsetting the negative affects of the Asian financial crisis. The major exports of Canada are machinery equipment and automobiles.

The government and the Bank of Canada have implemented a policy of setting inflation targets. This policy will take effect in 2001, when targets have been set at between 1 and 3 percent by 2001. Canada already recorded a core inflation rate[10] of 1.6 percent in 1997 and the rate is expect to be yet further reduced in 1998. Similarly, the GDP deflator grew only 0.5 percent in 1997 due to decreases in imported goods by worldwide price depression since the Asian financial crisis. The high GDP growth was expected to have created 372,000 new jobs in 1997 and similar high growth in new job openings is expected in 1998.

In 1996, Canada's current account deficit of GDP was 0.6 percent, largely due to a sharp increase in the merchandise trade balance deficit. However, the current account deficit worsened to 1.5 percent of GDP in 1997 as strong domestic economic growth saw imports sharply rise.

In 1993~1995, New Zealand recorded economic growth rates of 4 to 6 percent, but in 1997 the growth rate slowed to 2.3 percent. Private consumption expenditure and business investment grew between 3 and 4 percent in 1997, which was significantly lower than investment growth between 1993 and 1995.

10) The core inflation rate is the inflation rate for goods which exclude volatile food and energy prices and indirect taxes.

New Zealand successfully fought off fairly strong inflationary pressures during 1997 and the consumer price index (CPI) rose only 0.8 percent, down from 2.6 percent in 1996.[11] The CPI is expected to remain below 1 percent in 1998. Like Australia and Canada, New Zealand has recorded continuously high unemployment rates. In 1997, the unemployment rate rose to 6.7 percent and is not likely to fall in 1998 due to weak business confidence.

The most serious economic problem New Zealand faces is a surge in the current account deficit. In 1996, the current account deficit as a percentage of GDP was 3.9 percent; it then soared to 7.7 percent in 1997. Major factors behind the widening deficit is the reduced amount of savings overseas New Zealand workers repatriated home, a fall in returns to New Zealand residents on their overseas investments, and a fall in tourism earnings due to the Asian financial crisis. In 1998, because of improvement in the trade balance due to the depreciation of the New Zealand dollar, the current account deficit is likely to contract slightly.

2. Korea's Trade Structure with Australia, Canada, and New Zealand

1) Australia

Korea recorded a trade deficit with Australia of USD 4.5 billion in 1996. While Korea's exports to Australia exceeded USD 1 billion in 1992, they grew little through 1996. However, upon Korea's sharp currency devaluation in 1997, exports to Australia have increased.

11) The Reserve Bank of New Zealand set a target band of inflation to be 0 percent to 3 percent.

Meanwhile, Korea's imports from Australia increased from USD 3.0 billion in 1991 to USD 6.3 billion in 1996. However, imports from Australia have contracted sharply due to the devaluation of the won. Thus, following a period of high trade deficits ranging between USD 2.0 billion and USD 4.5 billion between 1991 and 1997, Korea's trade deficit with Australia contracted to USD 1.8 billion in 1998.

〈Table 3〉 Korea's Exports and Imports to Australia

(Unit: USD mil)

	1991	1992	1993	1994	1995	1996	1997	1998
Exports	990	1,095	1,185	1,232	1,570	1,087	2,210	2,791
Imports	3,009	3,086	3,347	3,782	4,897	6,270	5,893	4,615
Trade Balance	−2,019	−1,991	−2,162	−2,550	−3,327	−4,464	−3,683	−1,824

The trade structure between the two countries is complementary. A large amount of Korea's imports from Australia are natural resources and agricultural products, amounting to USD 3.7 billion and USD 0.9 billion in 1997, respectively. Meanwhile, transportation equipment and electric and electronic products cover more than half of Korea's total exports to Australia.

However, Korea's exports face a difficult tariff regime in Australia. Tariff rates for most manufactured goods in Australia are 5 percent, but high tariff rates are charged for Korea's major exporting goods. For example, Australia charges tariffs of 20 percent for automobiles and parts, and 20–30 percent for textiles, clothing, and footwear. Tariff removal of these areas by Australia under an FTA would see these key Korean exports increase sharply.

Korea's overseas direct investment (ODI) in Australia increased steadily in the 1990s. Especially in the mid 1990s, Korea's investment

〈Table 4〉 Australia's Tariffs

	1997	1998	1999	2000–2004	2005
Automobile	22.5	20	17.5	15	10
Clothing	32	31	28	25	17.5
Textiles	22	19	17	15	10
Footwear	24	21	18	15	10

increased in the number of projects and amounts, with the government encouraging the development of natural resource facilities and suppliers in foreign countries. More than half of Korea's ODI to Australia was invested in natural resource facility development, with a majority of this amount invested in the coal industry. However, Australia's foreign direct investment (FDI) in Korea has been very sluggish.

2) Canada

In 1997, trade volume between Korea and Canada reached USD 4.1 billion. Korea exported USD 1.5 billion to Canada, while Canada exported USD 2.6 billion to Korea, resulting in a USD 1.1 billion Korean trade deficit. In 1997, Korean exports to Canada increased by 25.8 percent and while imports from Canada decreased by 4.4 percent. As the full effect of won depreciation took hold in 1998, Korean exports to Canada increased again slightly while imports fell another 24.2 percent to USD 2.0 billion.

Generally, Korean exports to Canada are dominated by manufactured goods such as industrial electronics and other electronic products, automobiles, and other manufactured products; Korean imports from Canada consist largely of timber and paper products, agricultural

〈Table 5〉 Korea's Exports and Imports with Canada

(Unit: USD mil)

	1991	1992	1993	1994	1995	1996	1997	1998
Exports	1,673	1,608	1,374	1,390	1,794	1,203	1,514	1,551
Imports	1,907	1,574	1,695	2,005	2,605	2,723	2,604	1,975
Trade Balance	-234	34	-321	-615	-811	-1,520	-1,090	-424

products, and high-tech products. Compared to other advanced economies, Canada charges relatively high tariff rates on manufactured goods of 6.6 percent, although the country will reduce tariffs for manufactured goods to 4.8 percent by 2000. An FTA between Korea and Canada would like to promote trade in favor of both countries.

One of the advantages of an FTA with Canada is that in addition to promoting free trade within APEC, a Korea-Canada FTA could be a stepping stone to joining NAFTA. While not likely to be realized in the short-term, an FTA with large economies such as the US would bring Korea a large amount of welfare gains.[12]

3) New Zealand

Due to New Zealand's small domestic market and its high tariff rates[13] on Korea's major exports of manufactured goods, Korea's export volume has been as low as one to two hundred million US dollars and Korea has recorded continual trade deficits with New Zealand.

12) See Cheong and Wang (1999) for the economic effects of the Korea-US FTA.

13) According to APEC IAP (1997), about 50 percent of New Zealand tariff lines are tariff free, but 6 percent of imports are imposed with high tariff rates over 20 percent or higher.

Korean exports to New Zealand in 1998 reached USD 209 million and imports from New Zealand reached USD 504 million, resulting in a Korean trade deficit of USD 296 million.

〈Table 6〉 Korean Exports and Imports with New Zealand

(Unit: USD mil)

	1991	1992	1993	1994	1995	1996	1997	1998
Exports	120	113	124	157	202	233	241	209
Imports	501	488	571	663	817	816	750	504
Trade Balance	-381	-375	-446	-506	-616	-583	-509	-296

New Zealand's exports to Korea heavily depend on forestry and agricultural products, while the country's major imports from Korea are heavy industrial products such as automobile, steel, and chemicals. This trade pattern of low trade and large imbalances in New Zealand's favor is expected to continue in the future, unless trade policies of two countries are changed. Further, despite the low trade volume between the two countries, an FTA would see New Zealand become a more important buyer of Korea's higher value added exports and further the spread of free trade within APEC.

Ⅳ. Simulation Results[14]

Korea's subregional trading bloc can be in forms of bilateral FTAs with Australia, Canada, and New Zealand, or a multilateral FTA encompassing three or four of the countries. A CGE model[15] was used in order to perform simulations of economic effects under these FTA combinations in order to investigate which type of regional bloc in APEC is most advantageous for Korea.

1. Bilateral Tariff Removal

Table 7 shows the estimated changes in the major macroeconomic indicators when each country of concern enters into a bilateral FTA with Korea. In Table 7, U represents the estimated rate of change in the overall welfare level of Korea and the country of concern under bilateral FTA formations. EV represents the equivalent variation value of this rate of change measured in US millions of dollars. Y and P represent the estimated rate of change in GDP and the consumer price index, respectively. ΔX is the estimated change in exports. w and r represent the estimated rate of change in wages and interest on capital, respectively.

In comparing the individual cases of signing FTAs with Australia, Canada and New Zealand, an FTA with Australia would bring the

14) Simulation results reported in this chapter are taken from Kim and Cheong (1996). However, the results are interpreted in accordance with the theme of this paper.

15) The CGE model is documented in Appendix.

〈Table 7〉 **Estimated Economic Effect of Tariff Removal**

(Unit : USD mil)

	(1) Korea–Australia		(2) Korea–Canada		(3) Korea–New Zealand	
	Korea	Australia	Korea	Canada	Korea	New Zealand
U(%)	0.42	0.24	0.16	0.05	0.03	0.18
EV(M$[2])	1138.9	621.5	433.9	263.4	81.4	65.0
Y(%)	0.76	0.72	0.26	0.11	0.06	0.43
P(%)	0.34	0.48	0.09	0.06	0.03	0.25
ΔX(M$[2])	1617.6	3389.7	1985.3	2086.5	185.8	786.1
w(%)	1.4	0.9	0.4	0.2	0.1	0.7
r(%)	1.3	1.0	0.4	0.2	0.1	0.9

highest welfare gains to Korea. Australia is approximately the same size as Korea in terms of GDP, and yet unfettered trade with the country would be more beneficial to Korea than opened trade with Canada, whose economic size is roughly twice that of Korea. One of the main reasons behind this outcome is that Korea can realize higher efficiency gains under an FTA with Australia than one with Canada. Much of the efficiency gains would be realized in agricultural trade where Australia is much better positioned than Canada to capitalize on the opportunities of an open Korean agricultural market.

However, the rate of change in wages and interest on capital are expected to be higher under the formation of an FTA between Korea and Australia, than FTAs with the other two countries. Note that the increase of primary production factors will raise the price of exports, and thus, Korea will lose international competitiveness, leading to a worsening of the trade balance. Establishment of an FTA will cause Korea to import resources for its production exclusively from Australia. While import prices following removal of tariffs will cause overall Korean unit costs of production to fall, the rises in primary production factors will cause unit costs to rise. According to simulation results,

the net effect is an increase in unit costs and as a result, an FTA between the two countries is expected to increase Korea's trade deficit with Australia. Another reason for Korea's worsening trade balance with Australia can be rapid growth of imports of Australia's raw materials, for example, coal, iron, agricultural products, etc.

Overall, when deciding the wisdom of signing an FTA with Australia, Korean policy makers must decide whether the substantial welfare gains outweigh the substantial increase in the trade deficit with Australia. Welfare increases for Korea and Australia following the establishment of an FTA are expected to be 0.42% and 0.24%, respectively. In dollar terms, these rates are equivalent to USD 1.14 billion for Korea and USD 620 million for Australia. However, Korea is expected to deteriorate trade balance with Australia by 1.8 billion dollars.

In the case of a Korea–Canada FTA, a welfare increase of 0.16% is expected for Korea and the rate of increase of income in Korea is projected to be 0.26%. The rise in price level, however, is expected to be an insignificant 0.06%. Canada's welfare and income are also expected to rise following the establishment of an FTA with Korea. With respect to trade, Korea's exports to and imports from Canada are expected to rise at about the same rate, however a slight increase in the trade deficit is expected. In sum, while the expected improvement in welfare of a Korea–Canada FTA is somewhat lower than in the case of a Korea–Australian FTA, Korea's trade balance would remain largely unchanged. Further, establishment of free trade with Canada would advance a potential long–term goal of Korea of entering into an FTA with the US or NAFTA. Canada appears to be a very desirable free trade partner.

Under a Korea–New Zealand FTA, a small positive economic effect

is expected on the Korean side, while New Zealand is expected to experience an increase in its welfare level (0.18%). With respect to trade, Korea's exports to New Zealand are expected to rise by USD 180 million while import from New Zealand is expected to increase by USD 780 million. This would enlarge Korea's current trade deficit with New Zealand, and New Zealand would most likely be highly supportive of establishing an FTA with Korea.

2. Multilateral Tariff Removal in the Subregionalism

While the previous section only looked at scenarios of FTAs between Korea and each of the three countries, this section discusses the impact of one multilateral trade agreement between Korea, Australia, and Canada, and a second that adds New Zealand to the mix.

Under a single multilateral agreement between Korea, Canada and Australia,. Korea will realize welfare improvement of 0.57 percent, which is equivalent to USD 1.5 billion. This improvement would surpass the benefits Korea would realize in signing individual bilateral trade agreements with Australia and Canada. However, Australia's welfare benefits would be less under the multilateral agreement. Like Korea, Canada would realize higher welfare gains from a single, multilateral agreement covering all three countries. Australia's lower welfare gains contract as most of its welfare benefits derive from agricultural trade, where the sector would have to compete with Canada under a multilateral trade agreement.

Korean exports would also be substantially higher under the multilateral FTA, than under the case of individual trade agreements. Under bilateral trade liberalization, the increases of exports by Korea would be approximately USD 2.0 billion to Canada and USD 1.6 billion

〈Table 8〉 **Economic Impact of Multilateral Tariff Removal**

(Unit : USD mil)

	Korea–Australia–Canada			Korea–Australia–Canada–New Zealand			
	Korea	Australia	Canada	Korea	Australia	Canada	New Zealand
U(%)	0.57	0.18	0.10	0.57	0.29	0.11	0.47
EV(M$)	1545.7	466.1	526.8	1545.7	751.0	579.5	169.8
Y(%)	1.00	0.59	0.21	1.00	1.01	0.23	1.26
P(%)	0.43	0.41	0.12	0.43	0.72	0.12	0.79
ΔX(M$)	7065.7	4023.9	2632.2	7309.9	3924.1	2633.3	462
w	1.78	0.89	0.28	1.85	1.55	0.30	3.91
r	1.64	1.00	0.28	1.70	1.58	0.31	3.64

to Australia. However, under the case of a multilateral FTA among the three, Korean exports would increase by a huge USD 7.1 billion, because of the increase of scale economies due to enlarged market. This extra effect can be captured with the CGE model which incorporates scale economies and imperfect competition.

Mutual tariff removal by all four countries is expected to produce the almost same results as that of three country tariff removal, though minor differences rise. One of the differences would be substantial improvement in welfare gains by Australia. The reason for this is not clear, but the reason is at least partially due to the improvement in Australia's terms of trade if New Zealand joins the three in a multilateral FTA. As Australia is already New Zealand's largest trade partner, Australia would stand to reap the highest gains in new export opportunities in New Zealand. This can be well captured when a CGE model with scale economy is used in simulations.

Korea's trade surplus would improve slightly under the four-country trade agreement while the welfare of all four countries would improve. Further, the welfare of Korea is slightly higher in the four-country agreement than in the three-country FTA, as is the case with

Canada and Australia. Based on these findings, the most favorable FTA to Korea's interest would be a multilateral FTA including Australia, Canada and New Zealand.

Ⅴ. Summary and Policy Implications

Korea has announced that it is pursuing an FTA with Chile during the Kuala Lumpur APEC Leaders' meeting. The government is also studying the economic and political feasibility of joining FTAs with other countries such as South Africa, Turkey, and Thailand. While signing FTAs with each of these countries would likely improve Korea's economic welfare, political costs may outweigh such benefits. Korea signing such agreements may raise suspicion that Korea is no longer committed to APEC. After all, they might say, APEC is targeting the elimination all regional trade barriers by the 2010/2020 deadlines.

Korea's overall position remains one of the pursuit of widening free trade through multilateral agreement. APEC is one potential vehicle through which Korea's goal may be realized. However, currently, efforts to expand APEC trade liberalization appear stalled. This paper takes the stance that one possible approach to reinvigorating free trade under APEC free trade talks is for a group of member economies to spur intra-APEC trade. Korea's recent interest in bilateral and small multilateral FTAs should not be construed as an abandonment of multilateral trade initiatives, but more so an attempt to spur on such initiative while at the same time allowing Korea to maintain access to export markets in the current atmosphere of heightening regionalism. Korea is 100% behind APEC's goal of regional free trade.

The paper evaluates the economic impact of Korea's bilateral and multilateral FTAs with Australia, Canada, and New Zealand. All three countries are auspicious trade partners for Korea as FTAs with all three would bring Korea welfare gains. As for establishing a

multilateral agreement, the inclusion of all four is best, although the inclusion of Australia and Canada would bring substantial benefits to Korea. While individual bilateral trade agreements with each country would increase the welfare of Korea, they would also result in an overall increase in Korea's trade deficit. Meanwhile, Korea would likely realize a trade surplus if a multilateral agreement includes all four countries. Furthermore, this four-way multilateral agreement increases Korea's welfare the most. Therefore, this paper concludes that pursuing a multilateral FTA covering all four countries is more in Korea's interest than pursuing bilateral FTAs with each country individually.

There are a number of reservations that will be raised regarding the establishment of this proposed subregional trading bloc. First, agricultural products are among the major exports of Australia, Canada and New Zealand. Thus, opposition to establishing such a trading bloc would almost certainly be raised by Korea's agricultural sector. Therefore, an in-depth study on sectoral impact of the proposed trading bloc will be needed. Second, negotiations for an FTA is a tedious process, and doing so under a multilateral approach will increase the difficulty of the negotiation process. Therefore, strategic study regarding the feasibility of single, bilateral trade negotiations or discussing one multilateral trade agreement is needed.

References

APEC Economic Committee. 1998. *1998 APEC Economic Outlook*. Singapore: APEC Secretariat.

APEC. 1997. *Individual Action Plans: IAPs*. Singapore: APEC Secretariat.

Armington, P. 1969. "A theory of demand for products distinguished by place of production." *IMF Staff Papers* 16: 159–178.

Bachrach, Carlos and Lorris Mizrachi. 1992. "The Economic Impact of a Free Trade agreement Between the United States and Mexico: a CGE Analysis." Presented in the USITC Symposium, February 24–25, Washington D.C.

Bergsten, C. Fred. 1996a. "Competitive Liberalization and Global Free Trade: A Vision for the Early 21st Century." IIE Working Paper 96–15.

_____. 1996b. "Global Free Trade." in *Foreign Affairs*. Vol. 75 no. 3.

_____. 1998. "The Trade Implications of the Asian Financial Crisis." Remarks before the Committee on Finance, US Senate. February 4.

Bhagwati, J. 1993. "Regionalism and Multilateralism: An Overview." *New Dimensions in Regional Integration*, edited by J. de Melo and A. Panagariya. Cambridge: Cambridge University Press.

Brown, D.K. 1992. "Properties of computable general equilibrium trade models with monopolistic competition and foreign direct investment." Working Paper. Tufts University.

Brown, D.K., and Stern, R.M. 1989. "U.S.–Canada bilateral tariff elimination: The role of product differentiation and market structure." *Trade policies for international competitiveness*,

edited by R. C. Feenstra. Chicago: University of Chicago Press.

Cheong, Inkyo. 1995. *The Economic Effects of Asia-Pacific Economic Cooperation(APEC) and Asia-Based Free Trade Area(AF-11): A Computational General Equilibrium Approach*. Ph.D. Dissertation. Michigan State University.

_____ and Yunjong Wang. 1999. *Korea-US FTA: Prospects and Analysis*. KIEP Working Paper 99-03. Seoul: KIEP.

Cox, David, and Richard G. Harris. 1985. "Trade Liberalization and Industrial Organization: Some Estimates for Canada." *Journal of Political Economy* 93, pp. 115-45.

_____. 1986. "A Quantitative Assessment of the Economic Impact on Canada of Sectoral Free Trade with the United States." *Canadian Journal of Economics* 19, pp. 371-94.

_____. 1992. "North American Free Trade and its Implications for Canada: Results form a CGE Model of North American Trade." *The World Economy* 15(1): 31-44.

Dixit, A., and Stiglitz, J.E. 1977. "Monopolistic competition and optimum product diversity." *American Economic Review* 67(3): 297-307.

DRI. 1998. *World Economic Outlook*. New York: DRI, 2nd quarter.

Goldstein, Morris. 1998. "The Asian Financial Crisis." IIE International Economics Policy Briefs. Washington, D.C.: IIE.

Hale, David. 1998. "What the Asia crisis is all about." *The International Economy*. January/February.

Harrison, Glenn W., Thomas F. Rutherford and David G. Tarr. 1995. "Quantifying the Uruguay Round." World Bank Conference on *The Uruguay Round and the Developing Economies*. Washington D.C. (January 26-27).

Harrison, J., and Pearson, K.R. 1993. *GEMPACK user documentation.*

The Impact Project and KPSOFT. Monash University. Clayton, Victoria, Australia.

Hertel, Thomas W. 1997. ed. *GTAP Model Documentation.* London: Cambridge University Press.

Huff, Karen M, Robert McDougall, K. R. Pearson, and Alan A. Powell. 1995. *Medium-run Consequences for Australia of an APEC Analyses Using the GTAP and Monash Models*. Presented to the Pan-Pacific Conference XII, Dunedin, New Zealand. (May 29-June 1).

IMF. 1997. *World Economic Outlook-Interim Assessment*. Washington D.C.: IMF, December.

Johansen, L. 1960. *A multi-sectoral study of economic growth.* Amsterdam: North-Holland Publishing Company.

Jomini, P., Zeitsch, J.F., McDougall, R., Welsh, A., Brown, S., Hambley, J., and Kelly, J. 1991. *Model structure, database, and parameters*, in *SALTER: A general equilibrium model of the world economy, Vol. 1.* Canberra, Australia: Industry Commission.

Kim, Taehyung and Inkyo Cheong. 1996. *Korea's Small Scale FTA*, Policy Paper 96-06. Seoul: KIEP.

Liu, Ligang, Marcus Noland, Sherman Robinson, and Zhi Wang. 1998. "Asian Competitive Devaluations." IIE Working Paper 98-2. Washington. D.C.: Institute for International Economics.

Mercenier, J. 1995. "Can '1992' reduce unemployment in Europe? On welfare and employment effects of Europe's move to a single market." *Journal of Policy Modeling* 17 (1): 1-38.

Mercenier, J., and Schmitt, N. 1996. "Sunk costs, free-entry equilibrium, and trade liberalization in applied general equilibrium: Implications for 'Europe 1992'." *International Economic Review* 37(3).

Nguyen, T.T., and Wigle, R. M. 1992. "Trade liberalization with

imperfect competition: The large and small of it." *European Economic Review* 36 (1): 17–35.

Norman, V. D. 1990. "Assessing trade and welfare effects of trade liberalization." *European Economic Review* 34 (4): 725–751.

OECD. 1995. *Regional Integration and the Multilateral Trading System: Synergy and Divergence*. Paris: OECD.

_____. 1998. *Asian Financial Crisis*. Paris: OECD.

Park, Sung-Hoon. 1998. *Making APEC's Open Regionalism to Consistent with the WTO*. KIEP APEC Analysis Series. Seoul: KIEP.

Prattern, C. 1988. "A survey of the economies of scale." in *Studies on the economics of integration, Vol. II*. Commission of the European Communities.

Radelet, Steven and Jeffrey Sachs. 1998. "The Onset of the East Asian Financial Crisis." Presented at the National Bureau of Economic Research(NBER) Currency Crises Conference. (February 6–7, 1998).

Roubini, Nouriel. 1998. "An introduction to open economy macroeconomics, currency crises and an analysis of the causes of the Asian crisis." in web site *http://www.stern.edu/~nroubini/asia/AsiaHomepage.html*.

Sobarzo, Horacio E. 1992. "A General Equilibrium Analysis of the Gains From Trade for the Mexican Economy of a North American Free Trade Agreement." *World Economy* 15(1), pp. 83–100.

Stiglitz, Joseph. 1998. "Bad Private-Sector Decisions." *Wall Street Journal*, February 4.

Thurow, L. 1992. *Head to Head: The Coming Economic Battle Among Japan, Europe and America*. New York: William Morrow.

UNCTAD. 1998. *The financial crisis in Asia and foreign direct investment*. Geneva: UNCTAD.

USTR. 1997. "Recommendations on Future Free Trade Area Negotiations." *Report to the Congress*. Washington: USTR, September.

Wolf Jr., Charles. 1998. "Too much government control." *Wall Street Journal*, February 4.

World Bank. 1998. "What effect will East Asia's crisis have on developing countries?" PREM notes. Washington D.C.: the World Bank.

WTO. 1995. *Regionalism and the World Trading System*. Geneva: WTO Secretariat.

WTO. 1998. *World Trade Growth Accelerated in 1997, Despite Turmoil in Some Asian Financial Markets*. Geneva: WTO Secretariat.

Appendix: CGE Model and Parameters

Alleviation of tariffs leads to the fall of import prices and, thus, has a direct effect on the consumption and production activities of the countries of concern. For the analysis of economic policies such as lowering tariffs, the need for an analytical method based on the general equilibrium theory has long been recognized by scholars. In light of this need, the computational general equilibrium model (CGE) has been developed. This model differs from the partial equilibrium model in one key aspect. The partial equilibrium takes a certain part of an economy and conducts equilibrium analysis under the assumption that all other conditions remain constant. The CGE model, however, carries out a general analysis on the economy as a whole by evaluating the mutual effects between various economic variables, while allowing the variables to change with respect to shocks specified by the analyst. For this reason, this CGE model is widely used for policy analysis in such organizations as the WTO and the OECD.

Since the model starts from the rational assumption that each economic entity optimizes its objective function under given conditions, the result from using the CGE model is consistent over the whole economy. In fact, this assumption is reflected in each economic agent's behavioral equation, in that the CGE model assumes that each economic agent—i.e., producers, consumers and the government —optimizes his/her own objective function, thus, realizing an equilibrium state within a single period. Therefore, the CGE model is most suitable for medium and long term analysis where the market is assumed to fully respond to and incorporate changes in the market condition.

This study uses Cheong's CGE model (Cheong 1995) for the analysis with data from the GTAP database in Hertel (1997). World production, consumption, and trade data have been aggregated into the following nine countries or regions for use in this study: Korea, Canada, the U. S., Mexico, Australia, New Zealand, Singapore, ASEAN (Malaysia, Indonesia, Thailand, and Philippines) and the rest of the world (ROW). In addition, each country or region's products on the input-output table have been aggregated into the following seven categories: agricultural products, mining, other manufacturing, textiles, chemicals/ rubber, heavy industrial/machinery and services products. The CGE model used in this paper incorporates scale economies for some production sectors, namely, chemicals/rubber and heavy industrial/machinery.

We begin with a description of consumer preferences. If goods of the same category were truly homogeneous, each country would specialize in the production of a small number of goods, and cross-hauling of the same good would not be observed in real trade data. However, since this is not the case, it has been popular to employ the "Armington (1969) assumption" to explain product differentiation by country of origin to deal with this difficulty.

However, under the Armington assumption, product differentiation by country of origin is exogenous to the model, and is necessarily somewhat *ad hoc*. Norman (1990, p. 725) finds that the Armington approach understates the effects of trade liberalization, and concludes that the Armington approach is "a poor substitute for explicit incorporation of oligopolistic interaction and product differentiation at the firm level."

Therefore, we use an alternative approach which is based on theoretical work of Dixit and Stiglitz (1977), which assumes that

products are differentiated not by country of origin, but by producing firm. This firm-level product differentiation is preferable to the Armington-type differentiation, since it is necessarily linked to imperfect competition, whereas the Armington assumption is not. Specifically, with firm-level product differentiation, consumers select commodities directly, without a middle procedure of dividing the composite commodity between domestic goods and imports as is the case with the Armington assumption. Thus, consumers look at the brand name of the commodity rather than its country of origin, assuming that each firm produces only one brand.

1. Description of the Model

1) Consumer Preferences

This firm-level product differentiation is to assume that products are differentiated not by the origin of country but by the producing firm. Consumers purchase goods, considering the brand names of products. In a model of this type, a BMW is regarded as a different car from a Mercedes-Benz, whereas an Armington specification would lump all German automobiles together. Firm-level product differentiation is necessarily linked to imperfect competition, while the Armington assumption does not necessarily require imperfect competition.

The major difference between GTAP and our model is that we replace the Armington assumption with firm-level product differentiation in the demand structure for the household in each region. In the GTAP model, economic agents divide their consumption of composite commodities into domestically-produced goods and imports at the highest nest of the utility function. Then, the sources of imports

are identified by the bottom nest of the utility function. With firm-level product differentiation, consumers select commodities directly, without a middle procedure of dividing the composite commodity between domestic goods and imports, as with the Armington assumption. That is, economic agents are assumed to differentiate commodities at the firm level. Thus, consumers look at the brand name of the commodity, rather than its country of origin. If the destination region is equal to the source region, the commodity is produced domestically. Otherwise, it will be an imported commodity.

Consumers have two levels of consumer decision making: The first stage determines the expenditure share for each of the composite commodities. A Cobb-Douglas formulation is specified for the top nest, and each region has one representative consumer, whose welfare level represents that for the region. The household's utility level, u_r, will depend on the consumed amounts of the composite goods. Mathematical form of the top nest is given in eq. (1). That is, consumer preferences at the top nest will be defined as a product of composite demands for all final commodities (both imported and domestic), powered with expenditure shares (δ_r^i) :

$$u_r = \prod_{i=1}^{N} d_r^{i\,\delta_r^i} * S_r^{\delta_r^s}, \text{ where } \sum_{i=1}^{N} \delta_r^i + \delta_r^s = 1. \quad (1)$$

In equation (1), S_r is savings in region r.[16]

The second level of the utility function determines the optimal

16) We add savings to the utility function, in order to keep as many properties of the GTAP model as possible. More importantly, keeping the data for savings in our model minimizes the need for modification of the database.

composition of the consumption aggregates, in terms of region or firm of origin, identifying the brand (firm) name of each commodity.[17] For the perfectly-competitive sectors, we have :

$$d_r^i = \Psi \left\{ \sum_{s=1}^{T} d_{sr}^{i\,(\sigma_c-1)/\sigma_c} \right\}^{\sigma_c/(\sigma_c-1)}, \tag{2}$$

where σ_c is the elasticity of substitution between traded commodities for consumers, and Ψ is a scale parameter with positive value. The imperfectly-competitive sectors
have additional components. These include the number of firms operating in region s's production sector i, n_s^i, and region r's market share for good i from region s, φ_{sr}^{i}.[18]

$$d_r^i = \Psi \left\{ \sum_{s=1}^{T} n_s^i * \varphi_{sr}^{i} * d_{sr}^{i\,(\sigma_c-1)/\sigma_c} \right\}^{\sigma_c/(\sigma_c-1)}. \tag{3}$$

The top nest (eq. (1)) transforms composite commodity consumption into the regional utility level. The second level nest (eq. (2) or eq. (3)) identifies the sources of composite consumption.

In order to measure changes in welfare, we calculate the regional equivalent variation (EV) as in GTAP:

$$EV_r = Y_0 * \left\{ \frac{U_r^n - U_r^0}{U_r^0} \right\},^{19} \tag{4}$$

17) Each firm is assumed to produce only one brand (variety) of product.

18) This is a typical method of adding firm-level product differentiation into a CGE model, used by trade modelers such as Brown (1992), Mercenier (1995), Mercenier/Schmitt (1992), and Nguyen/Wigle (1992).

19) In a non-linear CGE model, EV is defined as $(V_b - V_r) * p_b$, where V is the indirect utility level, and P is the price level. The subscripts b and r imply base case and revised case, respectively. A linear CGE model

where Y_0 is the regional income level before the policy, and u_r^n and u_r^0 denote the utility level after policy and before policy, respectively.

2) The Structure of Production

In our model, two production sectors are assumed to be imperfectly competitive, and the rest are assumed to be perfectly competitive. The imperfectly-competitive sectors are (1) chemicals, plastic, resources, and resource refinery (RPR), and (2) transportation, machinery, and equipment (TME). This classification of production sectors is based on the size of scale economies, studied by Prattern (1988). In the perfectly-competitive sectors, the producer's price equals marginal cost. It is assumed that the perfectly-competitive firms operate with constant-returns-to-scale technologies in production.

Firms employ labor and capital as primary production factors. Both labor and capital are assumed to be perfectly mobile within the region, but immobile between regions. The imperfectly-competitive firms have fixed costs, as a result of which their technology exhibits decreasing average costs. Fixed costs are composed of labor and capital. The imperfectly-competitive sectors are characterized by free entry and exit, and zero net profits. Thus, we can think of these firms as monopolistically competitive.

Each industry in the imperfectly-competitive sectors has N firms per region, where N is specified exogenously for the initial equilibrium.[20] The variable for the number of firms will be determined

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cannot calculate *EV* with this formula, since the utility variable in eq. (4) is the level of utility, and this variable is the percentage change of the price level in the linearized version. But eq. (4) gives the EV for linear modeling.

20) Because of lack of data on the numbers of firms, exogenous numbers of

endogenously when the new equilibrium is calculated, because of free entry and exit. Each firm in an industry is assumed to have the same technology and the same pricing rule, and each industry is assumed to produce N varieties of commodities. That is, each firm is assumed to produce exactly one variety. If a new free trade area were to be formed in the Pacific-Rim region, the demand for each variety would increase, since price would go down due to the elimination of tariffs, as long as the traded commodities are normal goods. Responding to the increased demand, firms increase their production, which decreases the average total costs in the imperfectly-competitive industries. Then, they will move downward along their average total cost curves. Commodities at the firm level will be aggregated into a composite commodity with a C.E.S. formulation. Primary production factors will be aggregated into fixed value added and variable value added, once again using a C.E.S. function. In addition, the top of the production structure in the imperfectly-competitive sectors will combine variable value added and composite intermediate goods, using a fixed-coefficient (Leontief) technology.

The differences between the GTAP model and imperfectly-competitive model can be found in several points. First, our model extends the GTAP model to incorporate imperfect competition. Second, for the intermediate goods, firm-level product replaces the "Armington" assumption. Third, primary production factors can be devoted either to fixed costs or variable costs in the imperfectly-competitive sectors. $VA_{ri}^{f}(VA_{ri}^{v})$ is fixed (variable) value added for the production

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firms are given at the initial bench-marking. After then, the numbers of firms are endogenously determined. The numbers of firms at the initial simulation turned out to be insignificant. Refer Cheong (1995) for details.

sector i in region r. z_{sr}^{ji} is the conditional demand of the production sector i in region r for intermediate good j from region s.

Composite intermediate goods will be defined as follows :

$$Z_r^{ji} = \Phi \left\{ \sum_{s=1}^{T} z_{sr}^{ji\,(\sigma-1)/\sigma} \right\}^{\sigma/(\sigma-1)}, \tag{5}$$

for the perfectly-competitive sectors, and

$$Z_r^{ji} = \Phi \left\{ \sum_{s=1}^{T} n_s^i * \zeta_{sr}^{ji} * z_{sr}^{ji\,(\sigma-1)/\sigma} \right\}^{\sigma/(\sigma-1)}, \tag{6}$$

for the imperfectly-competitive sectors. Φ is a scale parameter, and ζ_{sr}^{ji} is firm i's share in region r for good j from region s.

Currently, engineering information for fixed costs is not available at levels of aggregation that are sufficiently high to be used in a model of this type. Thus, it will be necessary to calibrate fixed value added for the imperfectly-competitive model in this paper. (For details, see Cheong (1995).) As the total perceived demand elasticity increases, fixed value added will be lower, given the market value of the firm's output. Since fixed value added is a part of total value added, the calibration process must observe the restriction that the ratio of fixed value added to total value added cannot be greater than one.

We assume that primary factor markets are perfectly competitive, so that the price of primary factors (labor and capital) is the same for the perfectly- and imperfectly- competitive sectors.

3) Total Perceived Demand Elasticities

The imperfectly-competitive sectors can have power of pricing on their products for maximizing their profits. Some researchers have used the Eastman-Stykolt hypothesis (ESH) as the pricing rule for

monopolistically-competitive firms. For example, the ESH is used by Cox and Harris (1985, 1986, and 1992), and Nguyen and Wigle (1992). The ESH assumes that the firm sets its price equal to the price of the import-competing good, inclusive of the domestic tariff, such that the domestic price = (the world price of imports) * (1 + tariff). This is a less-aggressive pricing policy. This pricing rule has been supported in Canadian industrial organization studies.[21]

Though the ESH can be easily specified in the model, it is criticized that the ESH has no theoretical basis. In addition, when the ESH rule is used for imperfectly-competitive firms, the welfare effects of an FTA may be overestimated, because of the direct linkages between tariff cuts and domestic prices.[22] Thus, our model will use the Lerner pricing rule, because it prodeces a conservative evaluation of the benefits of new FTA.

The Lerner formula for the optimal pricing rule for a monopolistically-competitive firm is given in eq. (7):

$$\frac{p^i_{sr} - c^M_{ri}}{P^i_{sr}} = \frac{1}{E^i_r} \quad , \tag{7}$$

where c^M_{ri} is the marginal cost of producing good i in region r, and E^i_r is the absolute value of the perceived total demand elasticity. E^i_r cannot be less than one, since the supply price cannot be less than marginal cost.

Defining the markup rate as $M^i_r = \frac{P^i_{sr}}{C^M_{ri}}$, eq. (7) becomes

21) See Cox and Harris (1986), p. 382, and Karikari (1988) for evidence supporting ESH.

22) Cox and Harris are criticized by Nguyen and Wigle (1992) for overestimating the welfare effects of Canada-U.S.A. FTA. See also Sobarzo (1991).

$$M_r^i = \frac{E_r^i}{E_r^i - 1} \quad , \tag{8}$$

where the markup rate is greater than one, since the total demand elasticity is greater than one. From eq. (8), we see that the markup rate will go down if the perceived demand elasticity increases. As the perceived demand elasticity increases, the model approaches the competitive position quickly. This will tend to reduce the efficiency gains from establishment of an FTA. Another reason that lower welfare gains may be generated by higher elasticities is that, if the perceived total demand elasticity increases, the fixed value added will be lower. Smaller fixed value added will be related to smaller welfare gains from removing tariffs and non-tariff barriers, which was discussed in the previous section. Lower markup will bring smaller changes of welfare with a formation of an FTA.

The perceived total demand elasticity will be derived from the perceived demand elasticity, η_{sr}^{i}, weighted by market shares, Φ_{sr}^{i}, as shown below :

$$E_r^i = \sum_{s=1}^{T} \Phi_{sr}^{i} * \eta_{sr}^{i} \quad . \tag{9}$$

As tariffs are removed, region s's market share for good i in region r, Φ_{sr}^{i}, increases, as long as region r and s are members of the new FTA, due to the trade-creation effects of the FTA. Eq. (9) implies that, as market shares increase with the new FTA, a firm's total perceived demand elasticity will be increased. As a result, markup rates will be decreased.

The perceived demand elasticity, η_{sr}^{i}, can be defined in several ways, depending on the imperfectly-competitive firm's expectations about rival firm's behavior. In this paper, simulations will be

performed under the Bertrand approach, because the Cournot perceived elasticity will be lower than the alternative perceived elasticity, and the associated markup will be larger, with the same elasticity of substitution. Thus, we expect that the estimated welfare effects will be larger, when imperfectly-competitive firms are assumed to operate under the Cournot conjecture. Thus, the Bertrand conjecture can be viewed as a more conservative assumption. Under the Bertrand conjecture, the perceived demand elasticity is

$$\eta_{sr}^{Bi} = \sigma - \{\sigma - 1\} * \left\{ \frac{\Phi_{sr}^{i}}{N_s^i} \right\} , \tag{10}$$

where σ is the elasticity of substitution[23], N_s^i is the number of firms in the imperfectly-competitive sector i in region s, and the superscript B in the perceived demand elasticity represents Bertrand.

4) Market-Clearing Conditions

The market-clearing conditions for labor and capital for each region are :

$$\begin{aligned} L_r &= \sum_{j \in PCM} L_{rj}^v + \sum_{h \in IMC} N_r^h * L_{rh}^v + \sum_{h \in IMC} N_r^h * K_{rh}^f , \\ K_r &= \sum_{j \in PCM} K_{rj}^v + \sum_{h \in IMC} N_r^h * K_{rh}^v + \sum_{h \in IMC} N_r^h * K_{rh}^f , \end{aligned} \tag{11}$$

where $L_r(K_r)$ denotes the total supply of labor (capital) in region r. In equations (11), PCM represents the set of perfectly-competitive sectors, and IMC is the set of imperfectly-competitive sectors. $L_{rj}^v(K_{rj}^v)$

23) Detailed derivations for the elasticity of substitution are given at Hertel (1992).

is labor (capital) per firm for competitive sector j in region r,[24] $L^v_{rh}(K^v_{rh})$ is variable labor (capital) per firm for the imperfectly-competitive sectors, and $L^f_{rh}(K^f_{rh})$ is fixed labor (capital) per firm for the imperfectly-competitive sectors. N^h_r is the number of *IMC* firms in production sector h in region r.

For each region in the model, the domestically-produced commodities, q^i_r, should be equal to the sum of region r's sales of commodity i, such that

$$q^i_r = \sum_{s=1}^{T} s^i_{sr} \quad , \tag{12}$$

where s^i_{sr} is region s's sale of commodity i to region r. Total imports of each commodity should satisfy both the final demand for that good by private households and the intermediate demand by production sectors. Imports (or the use of domestic goods) by source will equal the sum of all the domestic demands for the imported good in each region. The equilibrium condition for imports by source will be

$$s^i_{sr} = d^i_{sr} + \sum_{j=1}^{N} z^{ji}_{sr} \quad . \tag{13}$$

2. Data and Parameters

The GTAP database uses regional input-output matrices taken from the SALTER-III database.[25] The international trade data used in GTAP

24) Since the perfectly-competitive sectors have no fixed factors, the percentage changes of primary factors for perfectly-competitive sectors are represented with only variable primary production factors.

25) See Jomini, *et al.* (1991).

are based on United Nations D series trade statistics. Export subsidy and protection data are obtained from the original country's submissions to GATT for the Uruguay Round. The 1996 version of the GTAP database used in this paper is comprised of 24 disaggregated regions and 37 disaggregated sectors.

Table A1 summarizes the values of the elasticities of substitution used by other trade CGE modelers, and those taken for this paper. Mercenier and Schmitt (1996) use elasticities ranging from two to four for perfectly competitive sectors, and five to ten for imperfectly competitive sectors. However, Brown and Stern (1989) use the high elasticity of 15, so that the fixed value-added shares be lower than one.

The CGE model needs two sets of elasticities for traded commodities. The numbers on the left side of the GTAP parameter column in Table A1 are the elasticities for imported commodities (EM), which are used to identify the sources of aggregated imports. The right side contains the Armington elasticities (AE), which are used for dividing aggregated commodities into domestically produced goods and imported goods.

If we solve all equations for consumers and producers simultaneously, satisfying the market-clearing conditions, we have an equilibrium which replicates the observed data. Then, policy changes can be simulated by changing the relevant policy parameters and recalculating a new equilibrium. With this procedure, we can predict the effects of policy changes, such as the effects of a bilateral reduction of tariffs on regional income. Finally, the model is solved using GEMPACK (General Equilibrium Modeling PACKage), which is a suite of general-purpose economic modeling software. (See Harrison and Pearson (1993).) The solution technique, which was pioneered by Johansen

(1960), involves linearizing the equations of the model and then solving the linearized system through a multi-step simulation method which eliminates the approximation errors that can sometimes occur with a linearized model.

〈Table A1〉 Parameters for the Elasticity of Substitution

	Mercenier-Schmitt	Brown-Stern	GTAP Parameters	
			(ME)	(AE)
Agriculture	2	15	2.40	4.64
Mining	4	15	2.41	5.33
Light Manufacturing	4	15	2.37	5.05
Textiles	4	15	3.23	7.16
Chemicals, Rubber	5	15	2.31	4.52
Heavy Industry, Machinery	7	15	3.54	6.97
Services	2	15	1.94	3.92

EM: The elasticity of substitution between domestic goods and imports.
AE: The elasticity of substitution for Armington specification.

國文要約

－지난해 11월 정부는 확대 · 심화되는 지역주의에 능동적으로 대처하고 지역무역협정의 순기능을 활용하기 위해 주요 거점지역과의 FTA 체결을 추진키로 하였음.

· 주요 내용은 칠레와의 FTA 체결을 우선 추진하고, 이어 이스라엘, 남아공, 터키 등과 FTA를 추진하는 것임.

－칠레와의 FTA는 양국간 교역이 상호보완적이고, 교역규모가 작은 관계로 FTA 체결로부터 오는 충격을 최소화하면서도, 칠레의 지역무역협정 경험을 공유할 수 있다는 점에서 동 FTA의 추진은 바람직하다고 할 수 있음.

－그러나 칠레와의 FTA이후에 우리나라가 추진해야 할 FTA는 가능하면 외국의 부정적인 시각을 줄이면서 우리나라의 장기적 FTA 추진방향과 일치하는 것이어야 함.

－칠레와의 FTA 체결이후 우리나라가 체결하는 FTA 대상국가를 APEC 회원국으로 선정하는 것이 우리나라의 FTA 추진 정책을 APEC 무역자유화와 연관시켜 주요 교역국에 설명할 수 있을 뿐만 아니라, 장기적 FTA 대상국가인 미국과의 FTA 체결에도 도움이 될 것으로 보임.

· 즉, 지역주의가 다자체제를 보완할 수 있다는 논리와 같이 APEC 역내 소지역무역협정의 체결로 역내 무역자유화를 앞당기는 효과가 있으며, 신규 소지역무역협정은 NAFTA, AFTA와 같은 기존의 소지역무역협정과의 연대를 통해 더 넓은 지역의 무역자유화를 달성할 수 있음.

· 또한 소지역무역협정간 경제통합은 협상참여자의 수를 줄임으로써 APEC 21개국이 참여하는 것보다 자유화협상이 더 순조로울 수 있음.

· 한편 APEC의 무역자유화가 진전을 보이지 못하자 미국은 동아시아 주요국가와의 FTA 체결을 통한 APEC 무역자유화 목표 달성을 강구하고 있는 것으로 알려져 있어 우리나라가 캐나다, 호주 등 APEC 회원국과의 FTA를 체결하게

되면 미국도 우리나라와의 FTA 체결을 검토할 것으로 보임.

- 본 보고서는 한 · 칠레 FTA이후 한국이 APEC내에서 FTA를 체결한다면, 가장 바람직한 국가로는 호주, 캐나다 및 뉴질랜드를 들고 있으며, 이들 국가와의 개별 FTA보다는 한국-호주-캐나다 혹은 4개국 FTA가 더 바람직함을 보여주고 있음.

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鄭仁敎
한양대학교 경제학과 졸업 (1985)
미국 Michigan State University 경제학 박사 (1995)
對外經濟政策硏究院(KIEP) 硏究委員 (現, E-mail: ikcheong@kiep.kiep.go.kr)
著書 『미국 FTA 정책의 전개와 시사점』 (1998)
『금융위기 이후 수출구조변화와 향후 수출여건 전망』 (공편저, 1998)
『한국의 소규모 자유무역지대 설립의 경제적 타당성에 대한 연구』 (공저, 1996)

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발 행 인 李 景 台

對外經濟政策硏究院
발 행 처 서울특별시 서초구 염곡동 300-4
우편번호 137-747 전화 : 3460-1208 FAX : 3460-1133

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