

The Economic Effects of China's WTO Accession on Northeast Asian Economies

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INTRODUCTION

In 1986, China officially applied for accession to the General Agreement on Tariffs and Trade (GATT). Subsequently, it began an all-out campaign to join the World Trade Organization (WTO) in order to complement the multilateral trading system as its role in international trade expanded.

A special report in the *Economist* (December 7, 1996), published at the time of the WTO ministerial meeting in Singapore in December 1996, pointed out the two most urgent tasks for the WTO: First, trade liberalization of goods and services under the New Round, agreed upon by member countries, should be completed without delay. Second, the WTO should allow China's participation in order to secure a substantial leverage over the world trade. This statement purports to legitimize China's entry to the WTO, emphasizing that Chinese membership is vital in controlling global trade relations.

China's involvement in the world economy is increasing year by year. The scale of the Chinese economy in terms of nominal US dollars has increased by 4.5 times over the last 14 years, export value

has increased more than six-fold and import value has increased by 3.9 times. China is the ninth-largest trading country in the world in terms of total trade value.

Since 1986, China has been implementing trade liberalization measures in a number of ways: reforming trade regulations, watching trends in the international economic environment in order to reform its domestic economy and introducing market system. Especially in the 1990s, China strove to liberalize trade by focusing on broad tariff reduction and the easing of non-tariff barriers. In addition, it accelerated reform efforts by announcing plans to cut down tariff and non-tariff barriers in order to join the GATT/WTO, and also to improve relations with the U.S., Japan and other major trade partners.

Korea and Japan, both of which have a high trade volume with China, have supported China's accession to the WTO in order to secure their position in the Chinese market. In particular, behind Korea's support for China is the idea that China's WTO membership could influence North Korea to pursue an open-door policy.

TRADE AND INVESTMENT STRUCTURE OF KOREA, CHINA AND JAPAN

Trade Structure of Korea, China and Japan

As soon as China joins the WTO, its political and economic status will be enhanced dramatically. First, by expanding its market, resource allocation efficiency will be enhanced. Moreover, exports will be automatically granted most favorable treatment (MFN), so that normal trade relations (NTR) from the US will no longer apply. In addition, geographically proximate countries such as Korea and Japan will be able to take advantage of China's membership.

The economic growth of East Asia, based on export-oriented policies, has been remarkable. Korea, Japan and China have experienced a huge expansion of trade and investment due to

<Table II-1> Trade Structure of Korea, China and Japan

(Unit: \$ billion)

	Korea		China		Japan	
	China	Japan	Korea	Japan	Korea	China
Exports	13.68 (9.5%)	15.86 (11.0%)	7.82 (4.0%)	32.42 (16.6%)	23.37 (5.5%)	23.82 (5.6%)
Imports	8.87 (7.4%)	24.14 (20.1%)	17.23 (10.4%)	33.78 (20.4%)	16.36 (5.2%)	43.71 (13.8%)

Note: Numbers in parentheses are shares in exports and imports.

Source: KOTIS.

China's market opening and the end of the Cold War. Since 1970, Korea, Japan and China have clearly played an important role in the rapid economic growth and industrialization of East Asia. In 1999, their combined total trade in exports was \$766.8 billion, and in imports it reached \$601.7 billion, accounting for approximately 11% of total world trade. These numbers have fallen slightly due to the recent Asian financial crisis, but it is foreseen that the situation will improve as soon as circumstances settle. In addition, trade within Northeast Asia is \$261.1 billion (exports, \$117 billion; imports, \$144.1 billion), the interdependence of trade within the region is 19.1%. Broken down, imports account for 23.8% and exports, 15.3%.

According to Table II-2, import shares are increasing within the region. In 1985, with respect to the three nations' total amounts of export and import, the percentages of intra-regional exports and imports were 13.5% and 17.0% respectively. However, in 1999, they increased to 15.3% and 23.8%. In the last 15 years, Korea's share of intra-regional exports has risen dramatically, while that of China has decreased. Furthermore, while the import share of Japan has more than doubled, China's share has fallen as it has in the case of exports. In other words, China has been expanding its trade with other areas instead of in Northeast Asia.

In 1999, as major importers for Northeast Asian countries, Japan held 41.7% of the market, China, 35.4%; and Korea, 22.9%. However,

<Table II-2> Trade Structure of Northeast Asia

(Unit: \$ billion)

Source	Destination	Export		Import	
		1985	1999	1985	1999
Korea	World	30.29	143.60	31.06	119.75
	China	0.68	13.68	0.61	8.87
	Japan	4.55	15.86	7.56	24.14
	Intra-NEA	5.23	29.54	8.17	33.01
	Share of Intra-NEA	17.3%	20.5%	26.3%	27.6%
China	World	27.33	195.18	42.48	165.78
	China	0.55	7.82	0.75	17.23
	Japan	6.09	32.42	15.18	33.78
	Intra-NEA	6.64	40.24	15.93	51.01
	Share of Intra-NEA	24.3%	20.6%	37.5%	30.8%
Japan	World	1,771.9	428.00	130.52	316.19
	China	7.16	23.37	4.14	16.36
	Japan	12.59	23.82	6.53	43.71
	Intra-NEA	19.75	47.19	10.67	60.07
	Share of Intra-NEA	11.1%	11.0%	8.2%	19.0%
NEA (Total)	Total Trade(A)	234.81	766.78	204.06	601.72
	Intra-Trade(B)	31.62	116.97	34.77	144.19
	Share of Intra-NEA Trade(B/A)	13.5%	15.3%	17.0%	23.8%

Source: KOTIS

Japan leads in absolute volume only. In order to measure the contribution more precisely, the size of the domestic market must be compared to the import volume. As shown in Table II-3, Korea and China rank quite high while Japan's figure is comparatively low, indicating that Japan can expand its regional trade if it absorbs more imports.

Looking at the current economic situation, we can presume that

<Table II-3> Contribution to Intra-regional Imports (1999)

(Unit: \$ billion, %)

	Korea	China	Japan	Total
GDP (A)	489.7	1,035.8	4,173.3	
Intra-regional Imports (B)	33.01	51.01	60.07	144.09 (C)
B / C	22.9	35.4	41.7	100.0
B / A	6.74	4.92	1.45	

Source: Direction of Trade, *The World Outlook*, KOTIS

trade within the region will increase. Even though oil prices are unstable and predictions of a world economic slowdown and other negative effects abound, China's WTO accession, recovery from the Asian financial crisis, and Japan's overcoming economic weaknesses will probably contribute to the increase of trade volume within the region. In Particular, the relaxation of trade barriers and an advanced trade regime after China's accession to the WTO will cause an increase in China's trade volume with Northeast Asian countries.

If we consider the trade structure of those three countries, supplementary division, depending upon the differences of regional resource endowments, is expanding actively. Overall, Japan is functioning as an advanced nation, supplying funds, technology and assistance. China has a mixture of a goods consumption market and production lines. Korea seems to be somewhere in the middle. If we look at the export structure of each country, Japan's export volume is high in industries such as general electronics, telecommunications, recording equipment, metal, plastic, rubber, and precision machinery. Korea exports metals, textiles, electronics, telecommunications and recording equipment, while China shows a high volume in clothing, textiles, agriculture, etc.¹⁾

1) About trade structure in the Northeast Asia, refer to Chung Kab-young, "The New Economic Order in Northeast Asia and Changes in China," a paper presented at a Symposium by Korean Association for Northeast Asia (June 12, 1998).

<Table II-4> Korea FDI Trends in China

- Based on Permission -									
	1992	1993	1994	1995	1996	1997	1998	1999	2000
No. of Projects	269	631	1,065	882	920	743	308	539	413
Value (\$ million)	221	623	821	1,241	1,680	907	821	452	389
Share (%)	18.2	33.2	22.9	25.1	26.7	15.6	16.0	10.2	11.5
- Based on Investment -									
	1992	1993	1994	1995	1996	1997	1998	1999	2000
No. of Projects	171	377	836	733	721	607	231	416	354
Value (\$ million)	141	262	622	810	800	613	620	203	125
Share (%)	11.6	25.8	30.6	29.3	22.2	20.5	17.9	9.5	4.6

Note:1) Shares are the ratios in the Korea's total FDI.

2) The FDI for 2000 is January - July.

Source: Export-Import Bank of Korea, "Foreign Direct Investment," October 2000.

Clothing, textiles and agriculture account for the largest volume, followed by machinery and transportation equipment, with 30% of total regional trade. Japan dominates machinery and transportation equipment, and other countries rely mostly upon Japan in those industries. Only in agriculture does China export to Korea and Japan, although the export rate is still low.²⁾

Highly competitive sectors within the trade structure should also be mentioned here. The most competitive areas between China and Korea are export goods such as clothing, accessories, microwaves, microphones, tape recorders, phones, camcorders, and integrated circuit boards. Korea competes with Japan in the export of semiconductors, circuit boards, phones, recorders, microphones, computers, metals, textiles and film.³⁾

2) For a detailed discussion, refer to Kim Hwa-sup, *Economic Cooperation Models for Northeast Asia* (Seoul: Korea Institute for Industrial Economics and Trade, 1998).

3) A good discussion of sectoral competition in the region is provided in Korea Institute for Industrial Economics and Trade, "The Economic Crisis and Changes in Competition Relations," *KIET Real Economy* Vol. 21 (1998).

<Table II-5> Chinese FDI Trends in Korea

	(Unit: \$ thousand)								
	1992	1993	1994	1995	1996	1997	1998	1999	2000.1-7
Value	1,056	6,864	6,145	10,892	5,578	6,518	8,381	26,586	53,456
No. of Projects	6	29	31	45	56	66	87	300	717

Note: Values are based on reports for investment.

Source: MOCIE, "FDI Trends," July 2000.

Investment Structure in Korea, China and Japan

Both Korea and Japan invest directly in China, while Japan also invests in Korea. Due to China's cheap labor and high potential growth, investment has expanded since 1992, and in 1995 and 1996 investment volume exceeded \$1.2 billion and \$1.7 billion. However, since the financial crisis in 1997, Korean investment has shrunk. On the other hand, Chinese investment has recently begun to flow into Korea with a recorded \$10 million in 1995. After a dramatic reduction in 1999 and 2000 (January-July), levels reached \$27 million and \$53 million, respectively. Considering the total investment volume, however, one may conclude that Korea is an investing country while China remains only a host country.

Japan-China investment is clearly one-sided. In the 1980s, Japanese direct investment in China was stable at a yearly average of \$0.2-\$0.8 billion. As Chinese economic liberalization accelerated in the 1990s, investment volume into China increased. In 1993, the total amount of Japanese investment in China reached \$1.3 billion (by realization). Although Japanese Foreign Direct Investment (FDI) has fallen due to the economic recession and the Asian financial crisis, Japanese investment in China (by realization) has increased on the whole. On the other hand, Chinese investment in Japan stays at an average of \$10 million annually, which is less than 0.1 % of the total

<Table II-6> FDI Between Korea and Japan

	(Unit: \$ million, %)									
	1992	1993	1994	1995	1996	1997	1998	1999	2000	
To Japan ¹⁾	28	6	58	105	81	64	23	48	33	
Change	(133.3)	(-78.6)	(866.6)	(84.2)	(-99.0)	(-20.9)	(-64.1)	(108.6)		
Share	(2.3)	(0.5)	(2.5)	(3.4)	(1.9)	(2.0)	(0.6)	(1.9)	(2.6)	
To Korea ²⁾	174	157	339	337	279	235	423	818	423	
Change	(-14.7)	(-9.8)	(115.9)	(-2.3)	(-17.2)	(-15.8)	(80.0)	(93.4)		
Share	(21.6)	(21.5)	(34.2)	(24.8)	(12.1)	(7.6)	(8.1)	(7.8)	(9.7)	

Note: 1) Based on investment, 2) Based on arrival.

Source: MOCIE, "FDI Trends," July 2000.

Export-Import Bank of Korea, "Foreign Direct Investment," October 2000.

FDI volume in Japan.

In terms of FDI between Korea and Japan, Japan is the larger direct investor. However, in general, the total amount of FDI between the two countries has grown. With the mid-1990s as a reference point, Japanese direct investment in Korea showed a tendency to rise and fall. Recently, it has started to expand again. For instance, in 1999, it reached \$0.82 billion (7.8% of total FDI in Korea), a 93.4% of increase over the previous year. In the past, Japan mainly invested in simple processing-and-assembling industries such as textiles and apparel, electronics and electric, metals and machinery. On the contrary, in the 1990s, there was an increase in investment in the service industry. Korean direct investment in Japan fell after 1995 (\$0.1 billion), as a result of Japan's economic recession and Korea's economic crisis.

Apart from Korean and Japanese direct investment in China, the slack investment in Northeast Asia can best be explained by different economic policies toward foreign investment among these countries and regional economic characteristics. First, Korea and Japan did not host FDI in the past, while China was actively hosting foreign investment in order to utilize it as a vital tool in its economic development. Secondly, political instability in Northeast Asia is

<Table III-1> China's Tariff Structure and Concession Schedule

(Unit: %)

Base Tariff Rates (1999, %)	No. of Tariff Lines (Share, %)	Tariff Reduction (%point)	Tariff Rates After Tariff Reduction (%)
+100	9(0.2)	75	25
80-100	22(0.4)	55	25
60-80	32(0.6)	0-60	0-65
50-60	23(0.4)	15-40	10-35
40-50	46(0.8)	0-37.5	0-40
30-40	760(13.4)	0-35	0-30
20-30	984(17.3)	0-20	0-28
10-20	2,167(38.1)	0-18	0-18
1-10	1,550(27.3)	0-10	0-10
0	92(1.6)	0	0

Source: Fan and Zheng (2000), p.3. Table 1.

discouraging a more active FDI. Thirdly, a lack of social infrastructure such as telecommunications and transportation has played a role. However, if Korea and Japan overcome current economic difficulties and successfully achieve economic cooperation to guarantee institutional harmonization and political stability, direct investment within the region is expected to grow.

ANALYSIS OF CHINA'S TARIFF REDUCTION FOR WTO ACCESSION

Analysis of the General Structure of Tariff Concessions

Before analyzing the tariff reduction structure in detail, observation of the general structure of base tariff rates at the time of negotiation will be helpful. Out of 5,685 items subject to the tariff

<Table III-2> Distribution by Tariff Reduction Rate

Reduction of Tariff Rate	No. of Tariff Lines (HS8)	Share (%)
+70%	10	0.2
50 - 70%	29	0.5
30 - 50%	49	0.9
20 - 30%	348	6.1
10 - 20%	1,204	21.2
5 - 10%	1,174	20.7
2.5 - 5%	1,084	19.1
0.1 - 2.5%	864	15.2
0.0%	923	16.2
Total	5,685	100

Note: This analysis is based on the tariff schedule in the US-China agreement

reduction, there are 2,167 items whose tariff rates range between 10-20%, accounting for 38% of the total. Next, 1,550 items (27%) are subject to tariff rates between 1-10% and 984 items (17.3%), between 20-30%. As a result, items with tariff rates below 30% account for 84% of the total items considered. However, higher tariff rates over 50% are imposed on a few items such as automobiles, motorcycles and film, accounting for 2.3% of the total.

One of the main characteristics of the concession schedule agreed to by the U.S. and China on market access is that the higher the tariff, the higher the reduction. For example, tariff rates of 100% and 80% on some items will be lowered by 75% and 55% within 5 years, converging at a uniform rate of 25% in 2005. However, some of the items with tariff rates between 60-80%, such as gin, vodka and wine, will still maintain high tariff rates of more than 50%.

When China's tariff concessions are fully enacted, items with peak tariffs (a tariff rate above 25%) will be alcoholic beverages, motorcycles, film, cameras, printing paper, some consumer electronics such as irons, toasters, hair dryers, color TVs, voice- or video-recording apparatus, shavers, CD players, vacuum cleaners, and

<Table III-3> Analysis of the Annual Rates of Tariff Reduction

Reduction of Tariff Rate (Annual)	No. of Tariff Lines (HS8)	Share (%)
+10%	40	0.7
7.5 - 10.0%	18	0.3
5.0 - 7.5%	204	3.6
2.5 - 5.0%	3,146	55.3
0.1 - 2.5%	1,330	23.4
0.0%	947	16.7
Total	5,685	100

Note: This analysis is based on the tariff classification provided in the US-China agreement

luxury items such as precious metals and pearls. Even though China is price-competitive in these items, it fears a drastic import surge after market opening, due to a lack of competitiveness in quality.

Although China has reduced tariffs, the share of items for high tariff reduction does not seem to be substantial. Only 88 items will enjoy a reduction rate above 30%, accounting for 1.6% of the total items. That is, a reduction rate over 30% will be applied to only 10% of 892 items having a tariff rate above 30%. On the other hand, there are 1,204 items whose reduction rates will range between 10-20%, accounting for 21% and 4,045 items accounting for a highest share of 71.2%, less than 10%. Therefore, we can conclude that items with relatively low rates will occupy the major part of the tariff reduction, while items with peak tariffs will be little affected.

While the reduction rate in Table III-2 takes the final year of tariff reduction as base year without considering the length of the implementation period, the reduction rate in the Table III-3 is based on the annual rate of reduction. According to this table, there are 40 items with an annual rate of tariff reduction of more than 10% and 3,146 items, which account for more than half of the total, are subject to an annual reduction rate of 2.5- 5%. On the other hand, an annual reduction rate of 0.1- 2.5% will apply to the other 1,330 items.

<Table III-4> Analysis of Tariff Reduction by Implementation Period

Implementation of Tariff Reduction	No. of Tariff Lines (HS8)	Share (%)
Year 2008	35	0.6
Year 2007	-	-
Year 2006	5	0.1
Year 2005	753	13.2
Year 2004	936	16.5
Year 2003	425	7.5
Year 2002	808	14.2
Year 2001	939	16.5
Year 2000	1,784	31.4
Total	5,685	100

Note:1) This analysis is based on the tariff classification in the US-China agreement

2) There is no actual tariff reduction in 2000.

As one of the conditions for China's accession to the WTO, the US-China agreement provides that China can adopt a maximum implementation period of eight years, until 2008, to complete the concession schedule for market access. However, an implementation period of more than six years will be allowed for only 40 items. Most of the items, therefore, will be subject to a shorter implementation period of less than five years. Specifically, for 753 items, five years will be permitted and for 936 items, four years will be allowed.

Analysis of China's Tariff Concession by Sector

In order to analyze China's tariff reduction structure by sector, the whole economy has been broken down into 30 sub-sectors.⁴⁾ The

4) Although there are 28 sectors provided in Table III-6, the agriculture and the service sectors bring the total to 30. Tariff concessions for agriculture and services are not provided in this table, as they mainly consist of the elimination of non-tariff barriers such as expansion of import quotas, rather than reduction of tariffs.

average tariff rate is the preferential tariff granted by China when US-China negotiations were still under way in 1999. The tariff rates for the final year indicate the average tariff rates after the completion of tariff reduction. The last column in Table III-5 is included for reference. Although the final year of the implementation period varies for different items within each sub-sector, for convenience, we used as the final year the last year of implementation of the item referred to in the table.

The year 1999, shows marked differences among sub-sectors. The average tariff for the beverages and alcoholic drinks sector recorded the highest rate at 63%. This is followed by automobiles and parts, at a rate of 41%. Textiles and clothing come next with an average tariff rate of 33% and 25%, respectively. Also, an average tariff rate above 20% is applied to some sectors such as natural and synthetic rubber (24%), processed fish products (22%), leather products (22%) and other manufactured products (22%). Sectors with an average tariff rate over 10% are shellfish (15%), other fish products (17%), lumber and furniture (14%), printing and publishing (15%), plastics (11%), glass and ceramics (18%), metal products (14%), other transportation equipment (12%), electric and electronic products (18%), and machinery and equipment (16%). On the other hand, a lower tariff rate of less than 10% is applied to plant-based fiber, forestry products, coal and coke, petroleum and chemicals, and steel.

The automobile and parts sectors show the highest tariff reduction, with an average reduction rate of 64%. As a result, the average tariff rate for this sector will be lowered from 41% in 1999 to 15% in 2005. Lumber and furniture, and printing and publishing come next with a reduction rate of 63.9% and 63.1%, reaching an average tariff rate of 5.2% and 5.4% in 2005 and 2008, respectively. China's competitive sectors such as textiles and clothing will also see a great tariff reduction, resulting in an average tariff rate of 10.3% and 16.1% in 2005. The average tariff rates for electric and electronics, processed fish products, beverage and tobacco, and steel are also expected to be lower by more than 40%. In general, items

**<Table III-5> Tariff Reduction by Sector Scheduled for China's
Accession to WTO¹⁾**

Industrial Classification	Base Tariff Rate (1999)	Tariff Rate after Implementation of Tariff Reduction	Ratio of Tariff Reduction	Final Year of Implementation
Plant-based fiber	6.9	4.7	32.0	2002
Natural and Synthetic rubber	24.0	20.0	16.7	2002
Shellfish	15.0	9.7	35.6	2004
Forestry	2.4	1.7	29.5	2002
Other fish products	17.1	10.5	38.6	2005
Coal , Coke	4.4	4.4	0.0	2000
Oil	3.8	3.0	20.0	2000
Petroleum, Gas	7.1	5.9	16.9	2002
Mineral products	5.0	4.3	14.6	2005
Processed fish	22.1	11.9	46.1	2005
Beverages, tobacco	63.0	36.0	42.9	2005
Textiles	25.4	10.3	59.7	2005
Wearing apparel	32.9	16.1	50.9	2005
Leather products	21.5	17.5	18.6	2005
Lumber, furniture	14.3	5.2	63.9	2005
Paper, printing	14.7	5.4	63.1	2008
Petrochemicals	8.0	5.5	31.6	2005
Plastics	11.4	6.9	39.4	2005
Glass, ceramic	17.8	15.0	15.5	2004
Ferrous metals	8.9	5.1	42.1	2004
Non-ferrous metals	8.1	5.5	32.1	2004
Metal products	13.7	11.4	16.8	2004
Automobiles & parts	41.3	14.7	64.4	2005
Other transp. Equip.	12.3	8.2	33.6	2005

Electr., Electronics	18.1	9.0	50.2	2005
Machinery, equip.	15.6	10.0	35.9	2005
Other manufacture	21.8	16.4	24.8	2005
Others (notclassified)	13.9	7.2	48.4	2005
Industry average	16.8	10.1	40.2	

Source: US-China Agreement on China's Accession to WTO (Market Access)

Note: 1) This is the simple average tariff rate.

2) This is based on the industrial classification in GTAP Database version 4.

with higher tariff rates will experience a major increase in imports, as they are subject to a higher tariff reduction rate. Sectors with a tariff reduction of over 30% will be plant-based fibers, shellfish, other fish products, petroleum and chemicals, plastics, nonferrous metals, other transportation equipment and machinery and equipment. For natural and synthetic rubber, petroleum gas, mineral products, leather products, glass and ceramics, and metal products, a moderate reduction of 10% is expected.

ECONOMIC EFFECTS OF CHINA'S ENTRY INTO THE WTO ON THE NORTHEAST ASIAN ECONOMIES

The Impact on Macroeconomic Variables

A global economic model that subdivides the Northeast Asian region is needed, since this research will analyze the effect of the expansion of market access on the Northeast Asian economy and world economy following China's entry into the WTO. The Computational General Equilibrium Modeling (CGE) analyzes the static and dynamic effects due to the expansion of market access appearing in major variables, and is thus able to estimate the effect of policy changes.

<Table IV-1> The Impact of Tariff Reduction in China on Macroeconomic Variables

(Unit: %, \$ million)

	EV	GDP level(%)	Price (%)	TOT (%)	Export (%)	Import (%)	Trade Balance
China	21,603	0.869	-0.519	-0.964	4.770	7.094	-1,635
Korea	1,681	0.008	0.183	0.157	0.269	0.280	-36
Japan	2,905	0.002	0.090	0.117	0.397	0.384	321
North America	1,876	0.001	0.017	0.018	0.096	0.041	537
Western Europe	2,835	0.001	0.041	0.020	0.079	0.053	632
ROW	7,282	0.003	0.062	0.052	0.138	0.123	181

Note: EV represents equivalent variations in US \$ million terms.

The potential estimated impact that tariff reductions in China will have on the main regions of the world, including Northeast Asia can be seen below. The table shows that China itself has the most to gain, and it is expected to enjoy \$21.6 billion in increased social welfare. The economic benefits for the rest of the world are likely to be smaller. The improvement of social welfare in Korea and Japan is expected to record \$1.7 and \$2.9 billion each, and in North America and Europe, there is likely to be a similar level of social welfare improvement. The reason that large Chinese social welfare improvements are anticipated, despite the deteriorating terms of trade caused by tariff reduction, is mainly due to improved efficiency in resource allocation brought about by lowered tariff barriers.⁵⁾

5) According to Li and Zhai, China's accession to the WTO is expected to bring substantial economic gains through the improvement of economic efficiency. Fan Zhai, and Shantong Li, "The Implications of Accession to WTO on China's Economy," presented at the Third Annual Conference on Global Economic Analysis, Melbourne, Australia (June 27-30, 2000).

The real GDP growth will also follow a similar pattern to that of changes in the level of social welfare. The Chinese GDP growth rate is expected to increase by an additional 0.87% due to tariff reductions while the real GDP of the other regions will not be much affected. The prospect that Chinese real GDP will grow substantially by reducing tariff rates is generally consistent with existing research results. Zhai and Li⁶⁾ suggested that Chinese GDP would increase by 1.53% if it adopts all the conditions required for entry into the WTO, and Lejour⁷⁾ estimated that China would see a 2.1% increase in GDP with only a reduction in tariffs. Furthermore, Walmsley and Hertel, Feng and Huang, Fan and Zheng, and Li, Zhai and Xu also produced similar research results.⁸⁾ Only the research of Sun and Ezaki⁹⁾ forecasted that real income in China would decrease. Their research results are based on a CGE model including China's economy only; one-country CGE model tends to underestimate the effect of the correction of distortion in the allocation of resource that tariff reductions will bring and this seems to be the reason that their

6) Fan Zhai, and Shantong Li, "The Implications of the Accession to WTO on China's Economy," presented at the Third Annual Conference on Global Economic Analysis, Melbourne, Australia (June 27-30, 2000).

7) Arjan Lejour, "China and the WTO: The Impact on China and the World Economy," presented at the Third Annual Conference on Global Economic Analysis, Melbourne, Australia (June 27-30, 2000).

8) Terrie Walmsley, and Thomas W. Hertel, "China's Accession to the WTO: Timing is Everything," *mimeo*, Center for Global Trade Analysis, Purdue University (2000); Lei Feng, and Yiping Huang, "China's Trade Liberalization and Structural Adjustments for the World Economy," *Asian Economic Journal*, Vol. 11, No. 3 (1997), pp. 283-297; Mingtai Fan, and Yu-xin Zheng, "China's Trade Liberalization for WTO Accession and Its Effects on China-A Computable General Equilibrium Analysis," *mimeo*, Chinese Academy of Social Sciences, Peking (2000); Sang Tong Li, Zhai Fan, and Xu Lin, "Economic Effects of China's WTO Accession on the Chinese Economy," *Studies of Chinese Development* (Chinese Development Publisher, 1999), pp. 358-394.

9) Lin Sun, and Mitsuo Ezaki, "Trade Liberalization and the Chinese Economy," *Industrial Linkage*, Vol. 9, No. 3 (2000).

research predicts the reduced real income for China.

With tariff reductions, Chinese import prices will fall, and accordingly the overall price level in China will also fall to some degree. The price changes in other regions will be negligible at a maximum of 0.2%, but Korea and Japan are expected to be affected more.

Like price level changes, the terms of trade (TOT) in Korea and Japan will be more affected than other regions by the changes in Chinese tariff reduction, which reflects the fact that countries in Northeast Asia are closely related to China, compared to North America and Europe. Tariff reduction in China will increase imports by 7.1% and exports by 4.8%, totaling about a \$16 billion trade deficit. On the other hand, improvement in TOT in other countries is likely to bring a small increase in trade surplus. However, Korea is expected to register a small improvement in the trade balance, because it will have a trade surplus with China while having a trade deficit with other regions.

The Impact on Industry and Trade in China

Table IV-2 shows the implications of tariff reduction for Chinese industrial production and trade. Generally, tariff reduction impedes import prices in the short term, reducing the demand for domestic goods, which then leads to lower national production. In the long term, however, as tariff reductions relax the distorted price system, the relative price of production inputs will change, and more efficient reallocation of resources in each industry will expand the production scale of highly efficient industry. Thus, production in some industries having a competitive edge will rise with trade liberalization. The economic model used in this research is constructed to suggest solutions under long-term equilibrium, and the outcome indicated in this research should be construed as one that reflects the net short- and long-term effect of tariff reduction.

To analyze the effects of tariff reduction in China, industries in

each region are categorized into a total of 29 sectors: 27 for manufacturing sectors and one each for agriculture and services. As for agriculture and services, however, easing quantity restriction and allowing market access are major issues over and above tariff reduction, which makes it difficult to measure tariff-equivalent econometrically. Therefore, this research deals only with tariff reduction effects on the manufacturing industry, which are computable in econometric terms. A total of 15 out of 27 industries are expected to face production contraction with tariff reduction. The industries most likely to be affected are light industries including plant-based fibers, lumber and furniture, textiles, rubber, and heavy industries such as petroleum gas, automobile and parts, metals, machines and equipment, plastic and steel. Yet industries such as clothes, furs, electricity and electronics and other fisheries and forest sectors are expected to see an increase in production.

As for production, this research resulted in the same findings as other research, but there are differences in some industries. For instance, Li and Zhai,¹⁰⁾ and Lejour¹¹⁾ estimated that the production in the textile industry would grow, while this study predicts the opposite. The assumption of different rates of tariff reduction in each study could be the reason for the different outcomes. However, the major reason is that the studies took into account full implementation of the Multilateral Fiber Agreement (MFA), so that China's exports to the U.S. and EU will increase tremendously, thereby stimulating additional demand for textiles. Increasing imports will satisfy some aspects of such a demand hike, and the rest will be filled by a rise in domestic production. Li and Zhai, and Lejour also came out with different results for the figures for electrical and electronics production. Li and Zhai suggested results opposed to this study, while Lejour forecasted an increased level of production in this industry. This study produced the same results as

10) Li and Zhai, *op. cit.*

11) Lejour, *op. cit.*

**<Table IV-2> The Impact of Tariff Reduction on Production and Trade
After China's Entry into the WTO¹⁾**

(Unit: %, \$ million)

	Industrial production (sales)		Export		Import		Trade Balance by Industry
	Change Rate	Amount	Change Rate	Amount	Change Rate	Amount	
Plant-based fiber	-2.48	-78	0.79	1	1.76	24	-24
Natural and Synthetic rubber	-0.24	-9	-0.92	-11	4.06	30	-41
Shellfish	0.57	147	-2.67	-30	14.60	62	-91
Forestry	0.24	9	-2.63	-2	2.79	11	-13
Other fish products	0.09	4	-1.99	-8	13.61	9	-17
Coal , Coke	-0.05	-13	1.07	18	-0.83	-1	19
Oil	0.02	2	0.71	16	0.00	0	16
Petroleum, Gas	-0.39	-3	4.99	1	-0.20	-1	2
Mineral products	-0.17	-16	2.26	35	-1.40	-30	65
Processed fish	-0.40	-77	-0.14	-5	9.86	130	-135
Drinks, Beverages	-0.29	-50	0.80	9	46.22	100	-92
Textiles	-1.83	-1,262	7.14	939	18.93	3,006	-2,067
Wearing apparel	11.10	3,666	17.02	5286	41.35	442	4,844
Leather products	4.52	1,121	5.52	1,278	6.30	203	1,075
Lumber, furniture	-0.28	-31	5.38	208	12.13	232	-23
Paper, printing	-0.59	-135	3.00	47	7.74	289	-242
Petrochemicals	0.02	5	0.51	3	1.99	18	-15
Plastics	-0.80	-705	2.66	368	3.33	807	-439
Glass, ceramic	0.03	13	2.16	72	3.64	45	27
Ferrous metals	-1.40	-710	1.71	91	3.28	276	-185
Non-ferrous metals	-1.40	-234	2.32	48	2.62	93	-45
Metal products	0.03	10	2.61	139	4.70	139	0
Automobiles & parts	-29.35	-5,584	36.74	205	66.27	2,519	-2,314

Other transp. Equip.	1.31	110	8.11	224	4.25	161	63
Electr., Electronics	2.84	803	7.65	1,377	5.97	685	692
Machinery, equip.	-0.95	-1,125	3.63	1,033	5.11	2,123	-1,090
Other manufacture	0.96	276	4.25	974	8.83	307	667
Industry average		-3,865		12,315		11,681	635²⁾

Note: 1) The changes of values are based on estimated volume changes

2) Since this shows the impact on manufacturing sectors except agriculture and services, it is not the same as the estimated change in the trade balance in Table IV-1.

Lejour in terms of electrical and electronics production.

Table IV-1 suggests that Chinese GDP growth will increase due to tariff reductions, yet table IV-2 shows contradictory results: a large number of industries will suffer from production contraction which could result in a \$3.9 billion downturn in gross production of the manufacturing industry. However, the value of production change in Table IV-2 includes intermediate goods. Since only the values of finished products are used for GDP estimates, it cannot be directly compared with the rate of GDP change. Although sales values could shrink, tariff reduction could allow for purchase of cheaper intermediate goods and increase the net value of finished products, ultimately driving up the GDP of the whole economy. Agricultural production, one of the most vulnerable industries in China, will fall due to liberalization. Unemployed workers released from the agriculture industry will be hired in more competitive industries and thus, increase productivity in those efficient industries.

As tariffs are reduced, industrial competitiveness and the demand pattern change depending on the change in relative prices. To sum up, the implications of tariff reduction on trade are manifested in different patterns in different industries. First, five industries out of 22 will experience an increase in exports. The

increasing rates of export in 22 industries far exceed the decreasing rates of export in five industries in absolute terms. Industries expected to experience a large surge in exports are automobile and parts (37%), and clothing (17%). A 4-7% increase is expected in the textile, leather, other manufacturing, furniture, machines and equipment and petroleum gas industries. Industries such as forestry and fisheries are expected to suffer a 2-3% decrease in exports.

Generally, if tariffs are reduced, the import prices of intermediate inputs fall, and exports will rise as a result. However, this research finds that export performance in some industries will be aggravated, a point which deserves further study. First, deteriorated export in some industries is caused by a shift in international competitiveness of industries. As reduced tariffs bring changes to the price system, the export price changes, and thus the production scales differentiate by industry. If export prices in China rise more than other countries, the volume of exports will dwindle. This research includes these factors in the model. Moreover, the model developed in this research is constructed in such a way that demand is influenced depending on income or demand elasticity, considering the possible changes in income brought by tariff reduction both in China and other nations.

Since these factors in the model influence each other in a complex way, it is not easy to find a consistent relationship between tariff reduction and exports, and exports and the production scale. For example, as tariffs on natural and synthesized rubbers are reduced from 24% to 20% in 2000, the production scale will shrink by 0.24%, imports will increase by 4% and exports will decrease by 0.9%, showing a consistent relationship between tariff reduction, production and trade. However, production in the beverage and tobacco industries will contract 0.29%, and exports will rise by 0.8%. The rise in exports despite curtailed production is due to the fact that imports increased 46% with a 27% tariff reduction.

As overall tariffs in China are reduced, most industries are expected to see an increase in imports. Only mineral products such as asbestos, plaster, cement, mica, petroleum gas, coal and coke are

expected to experience a drop in imports. Unlike changes in sectoral production and exports, import growth rates are likely to be relatively high. More than 40% of import increases are anticipated in such industries as automobile and parts (66%), beverage and tobacco(46%) and clothing (41%). Around a 10% increase in imports is expected in industries like plant-based fibers (19%), shellfish (14%), other fishery products (14%) and lumber and furniture (12%).

Generally, a high rate of tariff reduction leads to a sharp increase in imports. Therefore, for instance, imports of beverages and tobacco are forecast to increase by 46% when the tariff rate is reduced by 59.7% and imports of clothing (reduced 50.8%) by 41%. Meanwhile, there will be only a 33.6% reduction for automobile and parts but imports will increase by an estimated 66%, which is much higher than the tariff reduction rate. On the other hand, for some industries, imports are not likely to increase even with the lowered tariff rate. Examples are the petrochemical and steel industries, marking a 2% and 3% increase respectively with a 39.4% and 32.1% tariff reduction. The impact of tariff reduction on production and exports for these industries is unnoticeable, and thus imports are little influenced. Since the chemical and steel industries are known to produce low-quality products using low-level technology, it is expected that imports in these industries will rise drastically, while the real increase in imports will be very small.

Industries singled out to experience production contraction are those, which will face increased demand for imported goods, with the increase in imports far exceeding exports. For example, the automobile and parts industry is expected to undergo a 29% decrease in production (\$5.6 billion) because the imports (\$2.5billion) will outstrip exports (\$0.2 billion). Conversely, as imports and exports in the electrical and electronic industry will increase to \$0.7 and \$1.4 billion, respectively, domestic production will also rise.

The Impact of Tariff Reduction by China on the Trade of Korea and Japan

As was discussed earlier, tariff reductions bring down import prices, increasing import demand. But it also has a positive effect on increasing competitiveness, correcting distorted resource allocation and reducing tariffs imposed on imported intermediate inputs. In particular, in industries where imported intermediate goods account for a large portion of the production of the goods, it could enhance price competitiveness. Table IV-3 shows the impact of tariff reduction in China on Korea and Japan and reflects both the effect of price drops and the impact on international competitiveness.

The total increased value of China's exports and imports will be \$12.3 billion and \$11.7 billion, respectively, of which \$2.8 (export growth value) and \$4.4 billion (import growth value) will be with Northeast Asia. This accounts for 22.3% and 37.6% of the total. It can be construed that tariff reduction in China facilitates more trade with Korea and Japan than with other countries. For reference, Korea and Japan accounted for 20.6% and 30.8% of China's foreign trade in 1999.

It is estimated that China's trade balance with Korea and Japan will further improve, while trade with Japan is expected to increase more than with Korea. The scope of increased trade volume between China and Japan will reach for \$5.6 billion, while trade with Korea

<Table IV-3> The Impact of Tariff Reduction in China on Trade in Northeast Asia

	Value of Export Growth	Value of Import Growth	Trade Balance
World	123(100%)	117(100%)	6.4
Northeast Asia	28(22.8%)	44(37.6%)	-16.2
· Korea	3(2.4%)	13(11.1%)	-9.6
· Japan	25(20.3%)	31(26.5%)	-6.6

Sources: Simulation Results

<Table IV-4> The Impact of China's Entry into WTO on its Sectoral Trade With Korea and Japan

(Unit: %, \$ million)

	China's Trade with Korea			China's Trade with Japan		
	Exports	Imports	Trade Balance	Exports	Imports	Trade Balance
Plant-based fiber	0	0	0	0	0	0
Natural and Synthetic rubber	-1	0	-1	-3	0	-3
Shellfish	0	4	-5	-3	4	-7
Forestry	0	0	0	-2	0	-2
Other fish products	0	0	0	-5	0	-5
Coal, Coke	3	0	3	5	0	5
Oil	2	0	2	10	0	10
Petroleum, Gas	0	0	0	0	0	0
Mineral products	3	0	3	9	1	7
Processed fish	0	7	-7	-2	14	-16
Drinks, beverages	0	0	0	0	2	-2
Textiles	98	736	-638	126	660	-534
Wearing apparel	63	24	39	1,547	33	1,514
Leather products	19	31	-12	181	8	173
Lumber, furniture	7	12	-5	66	12	55
Paper, printing	1	46	-45	4	41	-37
Petrochemicals	1	3	-2	0	6	-6
Plastics	18	120	-102	45	124	-79
Glass, ceramic	3	1	2	13	3	10
Ferrous metals	19	25	-5	21	121	-100
Non-ferrous metals	5	17	-12	13	32	-19
Metal products	2	9	-7	13	19	-7
Automobiles & parts	1	104	-103	15	567	-552
Other transp. Equip.	7	1	8	14	40	-26
Electr., Electronics	20	49	-29	141	523	-383

Machinery, equip.	30	65	-36	145	845	-700
Other manufacture	17	31	-14	111	71	40
Industry average	317	1,282	-965	2,464	3,126	-662

Note: The changes of values are based on estimated volume changes

will stay around \$1.6 billion. However, China will have to face a more aggravated trade deficit with Korea. China's trade with Korea will drive up exports by \$0.3 billion but imports will increase by \$1.3 billion, recording a trade deficit of \$1 billion. The expected trade deficit with Japan is likely to reach \$0.7 billion.

According to the simulated results show in Table IV-4, the industrial sectors in which trade among the three countries in Northeast Asia is expected to be facilitated are mainly textiles, clothing, plastic, steel, electrical products and electronics, and machinery and equipment. Meanwhile forestry, shellfish, other fishery products and natural and synthesized rubbers are not likely to be affected by tariff reduction because they have been exported from China to Korea and Japan in the past. Since industries such as textiles, coal and coke, oil and gas received a small tariff reduction, there is little chance for these industries to expand trade with Korea and Japan. It is expected that trade with Southeast Asian countries will replace many of these sectors in which trade with Korea and Japan is more or less discouraged.

Trade in the textiles and clothing industries, benefiting from a 60% and 51% tariff reduction each, will be more active, but the effects on China's trade pattern with Korea and Japan will show sectoral differences. China will increase its textiles imports from Korea and Japan, respectively, but its clothing exports to Korea will be insignificant, while exports to Japan will increase by \$1.5 billion. What made this possible is the improved price competitiveness due to reduced tariffs, and the more expensive price of clothing in Japan. Following these sectors in which the trade is expected to be facilitated, are automobiles and parts, electrical products and

electronics, and machinery and equipment. In these sectors as well, imports will surpass exports with tariff reduction, but it should be remembered that export and import increases are deeply related to other factors like industrial conditions and increase in import demand for intermediate goods related to changes in production activities in China. For instance, the Chinese automobile industry has been recognized as a sector lacking international competitiveness as it is excessively regulated and sheltered under government protection. Therefore, opening the market will be inevitably followed by withering production, and increased imports will fill up the decreased production. Increased imports of electrical and electronic parts and machinery and equipment are derived from increased production activities in other sectors. Thus, companies prefer imported intermediate to domestic goods, because of the lower prices brought about by tariff cuts.

Except for the textiles and clothing industries, the impact of tariff reduction on Chinese exports to Korea will be negligible, recording less than a \$30 million increase in exports. It is expected that a more than \$0.1 billion increase in imports from Korea in sectors like textiles, plastic, and automobiles and parts will be seen, with little change in other sectors. China's trade with Japan will take on a similar pattern, yet with the difference of more sector-specific export concentration. For example, out of \$2.5 billion in increased exports to China, the clothing industry will account for 60%, or \$1.5 billion. However, the textiles industry's share is a mere 30% of the net export growth value, even though it is an item China expects to increasingly export to Korea.

POLICY IMPLICATIONS

Considering the great impact of China's WTO accession on the three Northeast Asian countries, efforts should be made to forge cooperation measures that will maximize the synergy effect while

minimizing the negative effects. It is expected that China's market opening and economic growth will positively affect the economies of Korea and Japan as well as China. Therefore, China must thoroughly implement the Protocol of the WTO accession, and Korea and Japan should actively support China's implementation process.

China's accession to the WTO will provide an opportunity for Korea, China and Japan to raise their level of economic cooperation. Due to history, hegemonism and the differing economic capabilities, efforts toward establishing a comprehensive program for regional economic integration have been made without concrete outcomes. However, it seems that it will be relatively easy for Korea, China and Japan to agree on, and implement policy cooperation measures in certain sectors.

In addition, China's socialist economic system—one of the biggest obstacles to economic cooperation in Northeast Asia—will weaken with China's WTO accession and the expansion of market principles all over China. This will contribute significantly to overcoming the obstacles that plagued it in the past. The possibility of forming a Northeast Asia economic bloc is now greater than before, with increasing discussions on economic integration in the region. During the ASEA+3 Summit Meeting held in Singapore in November 2000, Korea, China and Japan agreed to establish an East Asia economic cooperation bloc. It is essential to further study the reinforcement of economic cooperation in Northeast Asia in order to reap the benefits of regional economic integration in Northeast Asia and open effective discussions on regional integration between Southeast and Northeast Asia

Lastly, Korea and Japan, facing the possibility that their vulnerable industries might be negatively affected, should concentrate on reinforcing their competitiveness through active restructuring, just as China is enhancing its international competitiveness through system improvements and restructuring.