Impact of China's Globalization on Korea's Exports to the U.S. & Chinese Markets

by

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July 2003

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Introduction

Developments in international trade that have been witnessed in East Asia since the 1997 financial crisis are so fast-paced that, unless prepared, the future of Korea's exports can easily be swept aside by these unfolding global events. These developments include China's accession to WTO in 2001, China's agreement in 2002 with ASEAN nations to organize ASEAN-China free trade area, the bilateral investment treaty that Japan and Korea signed in early 2002, and several mechanisms put into place for regional policy dialogue, which include the ASEAN+3 Economic Review and Policy Dialogue, the Manila Framework, and the Executive's Meeting of East Asia-Pacific Central Banks. Recent developments also include (a) the Chiang Mai Initiative that enabled member nations requesting liquidity support can immediately obtain short-term financial assistance; (b) the failed attempt to establish an Asian Monetary Fund; (c) Japan's outreach programs, which include a proposal to establish closer economic relationships with ASEAN countries, a conclusion of a bilateral FTA with Singapore, and a discussion of organizing similar arrangements with Korea and Mexico; and (d) Korea's attempt to establish itself as a Northeast Asia's business hub.

Most important of all these efforts to improve regional cooperation among East Asian nations may well be the emergence of China as a global trade power. Korea is directly affected by China's surging globalization ever since the relations between the two countries were normalized in August 1992. According to the Korea International Trade Association, China is now Korea's second largest export destination and third largest source of imports.(1) Although Korea has not experienced a trade deficit with China since 1992, Korea's concerns over future competition from China as a global exporter have increased in recent years especially in such sectors as machinery, electronics, home appliances, textiles, and some information technology products.

Explored in this paper is the hypothesis that the growing competitiveness of China's exports and trade liberalization on imports to China through its accession to WTO will cause Korea's exports of certain products to be squeezed out of the U.S. as well as the Chinese markets. The source of the trade data employed in this paper is the Comtrade Database Level 2 as collected annually by the United Nations Department of Economic and Social Affairs, Statistics Division.

China's Accession to WTO

In 1947, the GATT was created pursuant to an agreement among 23 nations to reduce the barriers to international trade practiced during the 1930's and the first half of the 1940's. In order to achieve this goal, membership in the GATT was predicated upon each country extending to all other signatory nations most favored nation (MFN) status. In effect, each country would impose the lowest tariffs on goods being imported from its "most favored" trading partner to identical items imported from all GATT members. This commitment to MFN status would result in tariffs being reduced to their lowest level among the GATT countries.

Membership also required each nation to extend “national treatment” to all imports. For example, the same percentage excise or value added tax would be imposed on both imported and domestically produced goods. [Merkel and Lovik 2002, p. 2] By the mid 1980's, more than 100 nations had joined the GATT with average global tariffs on industrial and consumer goods dropping from approximately 44% to about 8%.(2)

In 1995, the GATT evolved into the WTO. Added to the list of membership requirements was the stipulation that all members would settle trade disagreements through the WTO’s Trade Dispute Settlement Procedure rather than on a bilateral basis as was formerly the case. Also, three new areas of trade policy that had generated numerous disputes among GATT countries during the 1980's and early 1990's were included in the new WTO agreement: international investment flows, trade in services such as computer software, and the universal protection of intellectual property rights (IPRs) for patents and copyrights.(3)

Chinese economic policy has undergone a radical transformation since Deng Xiaoping and his allies took control of the government in 1978. The transformation included the use of market mechanisms, flexible prices, and private incentives over a wide range of economic decision-making.(4) As Deng’s economic reforms were implemented, the annual increase in real GDP averaged 9.5% during the 1980's, the highest average yearly increase in the world during this decade. This phenomenal rate of growth continued throughout the 1990's, ranging between the high 14.2% in 1992 to the low 8.8% in 1997.(5)

China’s full accession into the WTO began with a formal petition to join the then GATT in July 1986 from the Chinese government. This was accompanied by a listing of the nation’s laws, regulations, and policies that affected trade and foreign investment which the government proposed to change to satisfy WTO requirements. The then GATT General Council appointed a Working Party in March of 1987 to examine China’s application and negotiate terms for China’s accession. Following the formation of the WTO on January 1, 1995, a successor WTO Working Party took over the negotiations with each interested WTO member negotiating bilaterally with China regarding market access concessions and commitments in the goods and services areas. The most liberalizing concessions and commitments obtained through these bilateral negotiations were consolidated into China’s Goods and Services Schedules and apply to all WTO members. Overlapping in time with these bilateral negotiations, China engaged in multilateral negotiations with Working Party members on the rules that would govern trade with China. These commitments are set forth in China’s Protocol of Accession and an accompanying Report of the Working Party. China’s admission was unanimously approved on November 10, 2001, at the WTO Ministerial Conference in Doha, Qatar. China became the 143rd member of the WTO on December 11, 2001. China’s Protocol of Accession, accompanying Working Party Report and Goods and Services Schedules are available on the WTO’s website (www.wto.org). Even the downing of the US EP-3 spy plane during April 2001 by the Chinese military did not derail these negotiations. Both President Bush and Premier Jiang Zemin agreed to exempt all trade activities and agreements from any ensuing diplomatic measures.(6) Taiwan’s accession to WTO was approved 24 hours after that of China.(7)

What China Received

As a result of China's WTO accession, the United States has granted China permanent most-favored-nation status, which until then was subject to annual renewal by the U.S. Congress. Several of China's trading partners have lifted most of their quantitative restrictions on a range of products. Quotas on textiles and clothing are phased out in accordance with the Agreement on Textiles and Clothing; other quotas are phased out in accordance with negotiated schedules. China can now resort to the WTO for settling trade disputes, as well as participate in multilateral negotiations on trade rules and future trade liberalization.(8)

China's market access gains could be eroded by three provisions that some describe as being discriminatory against China. First, under the so-called transitional product-specific safeguard mechanism which will be in effect for 12 years, China's trading partners may impose restrictions on Chinese imports based on "market disruption or the threat of market disruption," whereas, under the normal WTO standard, restrictions can be imposed on imports only if there is "serious injury" or a "threat of serious injury." In addition, if one country invokes the safeguard mechanism against China, other countries may also take action to prevent diversion of Chinese exports to their countries without establishing evidence of market disruption.(9) Second, although all quotas on China's textile and clothing exports are to be phased out by January 1, 2005, a special safeguard mechanism will be in place until the end of 2008. This mechanism allows importing countries to restrict imports from China when they result in market disruption.(10) Third, Chinese exporters can be hit with dumping charges on the basis of price or cost comparisons of similar products in third countries, instead of China prices, to determine whether Chinese firms are dumping their products. Similar methodologies can also be used to determine whether Chinese exporters are being subsidized.(11)

China's Commitments

A real interest of China's trading partners such as Korea relates to China's commitments. In agriculture, China pledged to reduce all tariffs from an average level of 31.5 percent to 17.4 percent. It will eliminate export subsidies and rapidly increase the volumes of tariff-rate quotas (TRQ) on most imports. In-quota tariff rates will be minimal (1-3 percent); above-quota tariffs for sensitive products (mostly grain) will be reduced from 80 percent to 65 percent, a level comparable to those in the European Union and some Northeast Asian economies.(12) Under the TRQ system, a set quantity of imports is allowed at a low tariff rate, while imports above that level are subject to a higher tariff rate.(13) For industrial products, China has pledged to phase out quantitative restrictions, cut the average tariff from 24.6 percent to 9.4 percent by 2005, and sign the Information Technology Agreement, which will result in the elimination of all tariffs on telecommunications equipment, semiconductors, computers & computer equipment, and other information technology products.(14) To China's credit, China implemented the required tariff changes on agricultural and industrial goods for 2002 on January 1, 2002.(15)

The most far-reaching opening may take place in the services sector, which had largely been closed to competition. The restrictions facing foreign service providers in the areas of licensing, equity participation, geographic location, business scope, and operations will be

relaxed or removed over time. China has promised to open its telecommunications, financial services, distribution, and many other industries to foreign service providers.(16)

Besides market access, China has made other commitments that will increase the transparency of its trade and investment regimes. It has pledged to apply its trade policy uniformly across the country and to enforce only those laws, regulations, and other measures that have been published beforehand. China has also agreed to eliminate all prohibited subsidies including those to state-owned enterprises, liberalize trading rights, and require state trading companies to conduct their operations in a commercial manner.(17) China's Ministry of Foreign Trade and Economic Cooperation announced in May 2002 that more than 2,300 laws and regulations had been amended to comply with WTO rules and 830 abolished since the country joined the world trade body on December 11, 2001.(18) China agreed in its accession protocol to undergo a special transitional review mechanism, under which the WTO's 16 subsidiary bodies and committees will review the country's progress on implementation each year for eight years, with a final review 10 years after accession.(19)

One of the more significant highlights among industrial tariffs was China’s agreement to participate in the Information Technology Agreement (ITA), which requires the elimination of tariffs on computers, semiconductors and other information technology products. China agreed to complete its elimination of these tariffs by January 1, 2005. One problem arose in 2002 from China’s treatment of 15 ITA tariff lines, covering certain semiconductor and telecommunications equipment inputs. China conditioned the reduced or zero tariffs for these tariff lines on the importer’s completion of an end-use certificate, to be approved by the Ministry of Information Industry (MII), guaranteeing that the products being imported would be used as inputs into the production of finished information technology products in China. The use of this condition is not authorized by the Goods Schedule negotiated as part of China’s accession to the WTO.(20)

In its accession agreement, China also agreed to eliminate numerous non-tariff measures (NTMs), which included quotas, licenses and import tendering requirements covering hundreds of products including machinery and electronic products.(21) Most of these NTMs, including, for example, the NTMs covering chemicals, agricultural equipment, medical and scientific equipment and civil aircraft, had to be eliminated by the time that China acceded to the WTO. China was allowed to phase out other NTMs, listed in an annex to the accession agreement, over a transition period ending on January 1, 2005.(22) China has agreed to remove, mostly by 2005 but no later than 2010, all subsidies to SOEs and others as specified in the Agreement on Subsidies and Countervailing Measures (SCM), effectively eliminating dual prices.(23) Projected reduction of tariff and non-tariff rates by product and by country that was agreed upon by China for its WTO accession has been estimated by scholars and summarized in the Appendix of this paper.

The Model

The diplomatic and economic relations between China and Korea were normalized on August 24, 1992. The trade agreement between the governments of China and Korea was signed

on September 30, 1992 and came into force on October 30, 1992. On August 25, 2002, Incheon International Airport announced that China surpassed Japan as the destination with the most flights from Korea during the peak summer season. Korea began to feel post-normalization competitive pressure from China that turned to concerns after China became a member of the WTO late in 2001.(24) Korea's concerns over China's rapid globalization are more conspicuous in Korea's export markets in the U.S. and China itself.

A model is developed in this section to test the hypothesis that the growing competitiveness of China's exports and trade liberalization on imports to China will cause Korea's exports of certain products to be squeezed out of the U.S. as well as the Chinese markets. The source of the trade data employed in this paper is the Comtrade Database Level 2 as collected annually by the United Nations Department of Economic and Social Affairs, Statistics Division.(25)

We first define variables:

i = individual export products

= exports from Korea to U.S., i.e., U.S. imports from Korea

= exports from China to U.S., i.e., U.S. imports from China

= exports from Korea to China, i.e., China's imports from Korea

= exports from world (no Korea) to China, i.e., China's imports from the world

Y_U = GDP of the U.S.
P_K = prices of export products from Korea to the U.S.
P_C = prices of export products from China to the U.S.
P_W = prices of export products from the world to China
T_C = tariffs in China including non-tariff barriers
F_K = dummy for 1997 financial crisis in Korea with 1 for 1997 & 1998
D_K = dummy for post-1997 devaluation of Korea's won with 1 from 1997 to 2001
D_C = dummy for 1994 devaluation of China's yuan with 1 from 1994 to 2001
R_K = research & development in Korea

= regression coefficients indicating the correlation between

&

= regression coefficients indicating the correlation between

and

One approach of testing the competitiveness of Korea's exports to the U.S. in relation to China's exports to the U.S. would be to estimate the following export models:

$= X_{K\text{-}U}(Y_U, P_K, T_C, F_K, D_K, D_C, R_K)$

$= X_{C\text{-}U}(Y_U, P_C, T_C, F_K, D_C, R_C)$

The following two criteria may then be compared to test the hypothesis that the recent globalization of China's trade through lowered tariffs and non-tariff barriers would have had a negative impact on Korea's exports to the U.S. but a positive impact on China's exports to the U.S.:

d( )/dT_C < 0

d( )/dT_C > 0

The impact of lower tariffs in China from its 2001 accession to WTO, however, cannot be estimated through regression because the process of lowering tariffs just started and will continue over the next several years until 2010. Further, the U.S. market had remained open to China's exports during the study period, including the MFN treatment that had been renewed on an annual basis since 1980. This means that the competition between China and Korea began long before China's WTO accession, although the competition may have become more intense with the accession. As an alternative, therefore, the following model is estimated for individual product groups to identify Korea's exports that may have been declining in comparison to China's exports to the U.S. market:

(1) $= X_{K\text{-}U}(F_K, D_K, D_C,$)

Upon estimation, , (coefficient for D_K) and (coefficient for D_C) are reviewed for each product group to determine a significant inverse correlation against the dependent variable .

Similarly, one approach of testing the competitiveness of Korea's exports to China in relation to the world exports to China would be to estimate the following export models:

$= X_{K\text{-}C}(Y_U, P_K, T_C, F_K, D_K, D_C, R_K)$

$= X_{W\text{-}C}(Y_U, P_W, T_C, F_K, D_C, R_K)$

The following two criteria may then be compared to test the hypothesis that the recent globalization of China's trade through lowered tariffs and non-tariff barriers would have had a negative impact on Korea's exports to China but a positive impact on the world's (excluding Korea) exports to China:

d( )/dT_C < 0

d( )/$dT_C > 0$

Again, the impact of lower import tariffs in China from its 2001 accession to WTO cannot be estimated through regression because the process of lowering tariffs just started and will continue over the next several years until 2010. As an alternative, therefore, the following model is estimated for individual product groups to identify Korea's exports that may have been declining in comparison to the world exports to the Chinese market:

(2) $= X_{K\text{-}C}(F_K, D_K, D_C,$)

Upon estimation , and are reviewed for each product group to determine a significant inverse correlation against the dependent variable .

The annual data range 1992 through 2001. The findings of this approach are expected to be important since any small advantage during this period may lead to external economies of scale, i.e., agglomeration benefits, and later internal economies of scale that may widen the gap in comparative advantages between competing nations.

Competition in the U.S. Market

The competition between China and Korea in the U.S. market is measured in equation (1). Estimates of equation (1) are summarized in Table 1.

Table 1. Estimates of Korea's Exports to the U.S.: $X_{K\text{-}U}$

Code	Description	C	F_K	D_K	D_C	$X_{C\text{-}U}$	R^2	D-W
00	LIVE ANIMALS	25331.80	-30848.22	34760.84**	39440.70*	-0.014472	0.799	2.828
			(-1.920151)	(2.723280)	(2.539664)	(-1.452869)		
01	MEAT, MEAT PREPARATIONS	42636.69	-16003.17	-327406.5	365952.8	0.047971	0.438	2.339
			(-0.049973)	(-0.994301)	(1.391342)	(0.386929)		
02	DAIRY PRODUCTS, BIRD EGGS	-72824.54	-876477.8	910778.5	959649.4	0.702083	0.869	2.749
			(-1.329652)	(0.587676)	(1.348196)	(0.752000)		
03	FISH,CRUSTACEAN, MOLLUSC	99573682	-429589.4	-23277256**	-22092161**	0.023056	0.950	3.361
			(-0.055302)	(-2.873844)	(-4.517090)	(0.771380)		
04	CEREALS,CEREAL PREPRTNS.	10083956	-4925748	7103863**	4795762	0.113643	0.847	1.672
			(-2.004831)	(3.224617)	(1.590273)	(0.444976)		
05	VEGETABLES & FRUIT	4405925	-7982637**	7452331**	-6251630*	0.070883	0.883	2.13
			(-3.566432)	(2.647391)	(-2.087382)	(1.831892)		
06	SUGAR,SUGR. PREPTNS,HONEY	3925861	513341.6	253963.8	-1021149	0.054604	0.157	1.925
			(0.313292)	(0.166434)	(-0.756220)	(0.539080)		
07	COFFEE,TEA, COCOA,SPICES	2064403	-735260.9	1857491	163565.3	-0.010029	0.563	2.459
			(-0.468565)	(1.865345)	(0.162575)	(-0.145077)		
08	ANIMAL FEED STUFF	706776.7	-955538.3	5749434**	163241.8	-0.59350	0.761	2.008
			(-1.960265)	(3.133847)	(0.294498)	(-1.637813)		
09	MISC.EDIBLE PRODUCTS ETC	26556087	-4342012	1410126	1790410	0.493178	0.906	1.629
			(-0.864194)	(0.117648)	(0.342263)	(1.355517)		

11	BEVERAGES	2274698	526208.6 (0.212381)	718542.7 (0.245642)	2673691 (1.597369)	0.466917 (0.846253)	0.716	1.688
12	TOBACCO,TOBACCO MANUFACT	-12895991	-8897719 (-1.498450)	4257871 (0.553578)	14413471 (1.693828)	0.896980 (1.421129)	0.710	1.799
21	HIDES,SKINS, FURSKINS,RAW	-4720.508	149956.6 (0.823092)	-382454.7 (-2.217558)	392215.8 (2.326586)	0.012556 (0.257631)	0.763	3.499
22	OIL SEED, OLEAGINUS FRUIT	123073.5	55953.93 (1.330752)	-29995.66 (-0.834237)	-76440.97 (-2.062488)	0.024637 (0.962854)	0.666	3.031
23	CRUDE RUBBER	11692272	-18429975 (-0.978323)	44468345 (1.691133)	5195855 (0.632604)	-5.022098 (-0.519557)	0.853	3.527
24	CORK AND WOOD	25890.41	-39215.21 (-0.596672)	112047.4 (1.735576)	-7475.667 (-0.187302)	0.000718 (0.181105)	0.744	3.399
25	PULP AND WASTE PAPER	23656.72	4426.597 (0.161422)	124.3030 (0.014386)	-14065.32 (-1.533731)	-0.012697 (-0.362374)	0.553	2.322
26	TEXTILE FIBRES	71233349	11702086 (1.566470)	-1964721** (-2.733110)	35072308** (4.667191)	-0.088739 (-0.256531)	0.831	3.312
27	CRUDE FERTILIZER, MINERAL	278877.9	920644.5 (0.931301)	-452334.0 (-0.308639)	4789699** (3.374705)	0.011708 (0.536272)	0.901	2.858
28	METALLIFEROUS ORE,SCRAP	6331883	-3361824 (-0.713648)	4438219 (0.862452)	-1468921 (-0.358074)	-0.213477 (-0.377154)	0.364	1.602
29	CRUDE ANIMAL, VEG.MATERL.	11405621	-2696983 (-1.272411)	-463135.5 (-0.151909)	3045220 (0.994096)	0.007426 (0.183777)	0.612	2.160
32	COAL, COKE, BRIQUETTES	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
33	PETROLEUM, PETROL.PRODUCT	-2.09E+08	-5.12E+08** (-5.119920)	4.86E+08** (5.430083)	49423637 (0.473848)	0.794042* (2.558472)	0.904	1.868
34	GAS, NATURAL, MANUFACTURED	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
35	ELECTRIC CURRENT	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
41	ANIMAL OILS AND FATS	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
42	FIXED VEG. FATS AND OILS	-171798.2	-266674.4 (-0.804199)	-407827.9 (-0.664927)	-123.0849 (-0.000822)	0.190276 (1.111686)	0.713	3.143
43	ANIMAL,VEG.FATS, OILS,NES	53515.67	-298135.1 (-0.660532)	446922.9 (1.069854)	260793.4 (0.425784)	-0.181212 (-0.623708)	0.586	1.934
51	ORGANIC CHEMICALS	54760668	33599963 (0.791141)	32973330 (0.469863)	-27044061 (-0.727968)	0.425383 (1.544186)	0.931	2.419
52	INORGANIC CHEMICALS	-5101454	-18202063* (-2.098827)	23357405 (1.957477)	119865.1 (0.012448)	0.067956 (0.846629)	0.823	0.067
53	DYES,COLOURING MATERIALS	17319957	4329902 (1.216266)	5617955 (0.517693)	2336232 (0.343923)	0.243949 (1.227789)	0.958	2.479
54	MEDICINAL,PHARM. PRODUCTS	-6260151	-6171455 (0.568602)	-297596.2 (-0.016558)	4463855 (0.454047)	0.071800 (0.857143)	0.725	0.071
55	ESSENTL.OILS, PERFUME,ETC	8966394	-1074809 (-0.356220)	4755303 (1.538579)	-1164259 (-0.514104)	0.140054* (2.52874)	0.901	2.912
56	FERTILIZER,EXCEPT GRP272	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
57	PLASTICS IN PRIMARY FORM	25326112	-77987117** (-4.401994)	1.05E+08** (5.305454)	34253664* (2.351745)	0.124369 (0.276804)	0.958	3.397
58	PLASTIC,NON-PRIMARY FORM	85540781	20978068 (0.545529)	-61118802 (-0.728905)	17800291 (0.653145)	2.045517 (1.201550)	0.804	1.623

59	CHEMICAL MATERIALS NES	-7967154	-6204700 (-0.217229)	13700256 (0.436552)	29139091 (1.305813)	0.391265 (1.370958)	0.785	1.938
61	LEATHER, LEATHER GOODS	10334311	-1237478 (-0.687678)	1490995 (0.828465)	363366 (0.257821)	-0.027604 (-1.781754)	0.458	2.899
62	RUBBER MANUFACTRES, NES	2.6E+08	-14303763 (-0.323943)	11927087 (0.170427)	-12281732 (-0.391858)	0.416215 (1.514504)	0.930	2.500
63	CORK, WOOD MANUFACTURES	5240007	-2500780 (-0.787028)	-938034.5 (-0.234679)	2581499 (1.471426)	0.000819 (0.059797)	0.552	2.424
64	PAPER, PAPERBOARD,ETC.	4792204	-69791000 (-1.057816)	1.39E+08 (1.566088)	-16541835 (-0.321604)	0.530711 (0.880015)	0.896	3.035
65	TEXTILE YARN, FABRIC,ETC.	4.20E+08	-10775607 (-0.121139)	2.04E+08 (1.823531)	73912590 (1.257725)	0.218349 (0.758178)	0.942	2.363
66	NON-METAL. MINERAL MANFCT	84665959	-52621122** (-4.659897)	61935830** (2.860428)	-15578775 (-0.924843)	-0.021018 (-0.429613)	0.927	2.761
67	IRON AND STEEL	4.45E+08	1.02E+08 (0.553152)	1.90E+08 (0.845174)	-28167705 (0.139228)	0.849401 (1.137342)	0.740	2.476
68	NON-FERROUS METALS	-21781792	-8017713 (-0.387279)	8638402 (0.219584)	373584.5 (0.018847)	0.590891** (2.828814)	0.937	3.179
69	METALS MANUFACTRES,NES	5.36E+08	-1.66E+08 (-1.829086)	2.32E+08 (1.762883)	62620098 (1.014621)	0.000612 (0.007591)	0.888	2.642
71	POWER GENERATNG MACHINES	4.21E+08	-1.53E+08 (-0.763925)	-6875834 (-0.026667)	-1.63E+08 (-1.065301)	0.896990 (0.790272)	0.532	2.065
72	SPECIAL.INDUST. MACHINERY	1.12E+08	38947607 (0.438135)	95414814 (0.819551)	1.48E+08* (2.528009)	0.293858 (0.416202)	0.905	2.637
73	METALWORKING MACHINERY	11508030	47088258 (0.730806)	-30109639 (-0.341089)	46927941 (0.697233)	0.878153 (0.536020)	0.619	2.199
74	GENERAL INDUSTL. MACH.NES	2.61E+08	-2.49E+08* (-2.457264)	2.66E+08 (1.947650)	-60458867 (-0.805698)	0.258494 (1.647691)	0.953	3.038
75	OFFICE MACHINES, ADP MACH	1.38E+09	-1.92E+09 (-1.085067)	8.28E+08 (0.263455)	-2.00E+08 (-0.156065)	0.666807 (0.821613)	0.784	2.865
76	TELECOMM.SOUND EQUIP ETC	1.38E+09	-1.00E+09 (-1.580332)	2.24E+08 (0.296508)	-1.38E+09* (-2.553811)	0.832180** (3.162213)	0.935	2.511
77	ELEC MCH APPAR,PARTS,NES	3.85E+09	-7.84E+08 (-0.285256)	5.10E+08 (0.129088)	4.85E+09** (2.596350)	-0.731173 (-0.578584)	0.646	2.718
78	ROAD VEHICLES	7.30E+08	-1.47E+09 (-1.358552)	1.19E+09 (0.971494)	-7618968 (-0.010128)	2.492565 (1.791225)	0.924	1.699
79	OTHR.TRANSPORT EQUIPMENT	3.16E+08	-1.55E+08 (-1.006118)	3.70E+08* (2.051829)	-47761780 (-0.275850)	-1.021491 (-0.943998)	0.536	2.120
81	PREFAB BUILDGS, FTTNG ETC	38983903	-4897219 (-0.812849)	108199.3 (0.014304)	8971515 (1.844945)	-0.024250 (-1.691626)	0.796	2.122
82	FURNITURE, BEDDING,ETC.	17963440	1591285 (0.186584)	-3950816 (-0.335526)	5453447 (1.237847)	0.018418* (2.439967)	0.949	2.742
83	TRAVEL GOODS, HANDBGS ETC	3.28E+08	30076796 (1.060584)	-89822233** (-3.540792)	-19560091 (-0.416641)	-0.125779 (-1.061861)	0.868	2.354
84	CLOTHING AND ACCESSORIES	2.71E+09	-4.51E+08 (-1.411759)	4.71E+08 (1.243517)	-7.31E+08* (-2.364875)	-0.033260 (-0.152184)	0.693	2.195
85	FOOTWEAR	1.90E+09	-77790334 (-0.815599)	1.10E+08 (0.751137)	-3.40E+08* (-2.546723)	-0.323279** (-3.751837)	0.973	2.200
87	SCIENTIFIC EQUIPMENT NES	2.99E+08	-3.05E+08** (-2.702882)	5.16E+08** (2.926118)	1.72E+08* (2.357844)	-1.218264** (-2.642658)	0.689	2.664
88	PHOTO.APPARAT. NES;CLOCKS	2.01E+08	48010566 (1.86594)	-26712403 (-0.748924)	42243089 (1.268169)	-0.007056 (-0.090793)	0.613	2.693

89	MISC MANUFCTRD GOODS NES	1.41E+09	-2.15E+08** (-3.242082)	2.11E+08 (1.851264)	-43331398 (0.472169)	-0.046586 (-1.623386)	0.851	2.966
91	MAIL NOT CLASSED BY KIND	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
93	SPEC.TRANSACT. NOT CLASSD	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
96	COIN NONGOLD NONCURRENT	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
97	GOLD, NONMONTRY EXCL ORES	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: United Nations Statistics Division, Comtrade Database - Express Selection, http://unstats.un.org/unsd/comtrade/dqQuickQuery.aspx, based on Standard International Trade Classification, Revision 3 (SITC Rev.3).

Estimates in Table 1 on Korea's exports to the U.S. market in competition of China's exports to the U.S. market are summarized in Table 2 by deleting all coefficients as well as all t-values that are statistically insignificant. Coefficients that are statistically significant at 10 percent level are marked with one star (*); 5 percent level with two stars (**); and 1 percent level with three stars (***).

Table 2. Statistically Significant Estimates of Korea's Exports to the U.S.: $X_{K\text{-}U}$

Code/Description	F_K	D_K	D_C	$X_{C\text{-}U}$
00 live animals		34760.84**	39440.70*	
03 fish,crustacean,mollusc		-23277256**	-22092161**	
04 cereals,cereal preprtns.		7103863**	4795762	
05 vegetables & fruit	-7982637**	7452331**	-6251630*	
08 animal feed stuff		5749434**	163241.8	
26 textile fibres		-1964721**	35072308**	
27 crude fertilizer,mineral			4789699**	
33 petroleum,petrol.product	-5.12e+08**	4.86e+08**		0.794042*
52 inorganic chemicals	-18202063*			
55 essentl.oils,perfume,etc				0.140054*
57 plastics in primary form	-77987117**	1.05e+08**	34253664*	
66 non-metal.mineral manfct	-52621122**	61935830**		
68 non-ferrous metals				0.590891**
72 special.indust.machinery			1.48e+08*	
74 general industl.mach.nes	-2.49e+08*			
76 telecomm.sound equip etc			-1.38e+09*	0.832180**
77 elec mch appar,parts,nes			4.85e+09**	
79 othr.transport equipment		3.70e+08*		
82 furniture, bedding,etc.				0.018418*
83 travel goods,handbgs etc		-89822233**		
84 clothing and accessories			-7.31e+08*	
85 footwear			-3.40e+08*	-0.323279**
87 scientific equipment nes	-3.05e+08**	5.16e+08**	1.72e+08*	-1.218264**
89 misc manufctrd goods nes	-2.15e+08**			

Findings of Table 2 are the following.

First of all, Korea's exports to the U.S. of SITC 85 footwear and SITC 87 scientific equipment nes, which includes instruments, appliances, measuring & analyzing apparatus, and components of industrial plants, have been falling, while China's exports of the same items to the U.S. market have been rising sharply. These are indicated by the negative sign of the X_{C-U} coefficient for the two product groups. These are only two of 58 SITC product groups that both Korea and China have been exporting to the U.S. market. The amount of Korea's exports to the U.S. of SITC 85 footwear was $1,448,917,888 in 1992 (8.0% of total exports to the U.S. in 1992) and $96,377,192 in 2001 (0.3% of total exports to the U.S. in 2001). The amount of Korea's exports to the U.S. of SITC 87 scientific equipment nes was $167,080,656 in 1992 (0.9% of total exports to the U.S. in 1992) and $184,331,328 in 2001 (0.6% of total exports to the U.S. in 2001). The amount of exports of SITC 87 peaked in 1996 at $400,301,440.

Secondly, there are exports to the U.S. market of certain products that have not necessarily been falling in competition against China's exports to the U.S. market, but were likely affected adversely either directly by the 1994 devaluation of the Chinese currency or by the post-1994 growth of the Chinese economy, or both. These products include SITC 03 fish, crustacean & molluscs; SITC 05 vegetables and fruits; SITC 76 telecommunication and sound equipment; and SITC 84 clothing and accessories. Note that the estimated coefficient of D_C is negative for these four product groups. Note also that China's exports of these products to the U.S. have increased sharply during the study period.

For SITC 03 fish, crustacean & molluscs, the amount of Korea's exports to U.S. in 1992 was $108,333,352 (0.6% of total exports to the U.S. in 1992) and $67,329,336 in 2001 (0.2% of total exports to the U.S. in 2001). For SITC 05 vegetables and fruits, the amount of Korea's exports to the U.S. in 1992 was $12,512,208 (0.1% of total exports to the U.S. in 1992) and $25,151,264 in 2001 (0.1% of total exports to the U.S. in 2001). For SITC 76 telecommunication and sound equipment, the amount of Korea's exports to U.S. in 1992 was $1,916,681,088 (10.6% of total exports to the U.S. in 1992) and $4,998,446,592 in 2001 (15.9% of total exports to the U.S. in 2001). For SITC 84 clothing and accessories, the amount of Korea's exports to U.S. was $2,776,940,872 in 1992 (15.3% of total exports to the U.S. in 1992) and $2,208,032,096 in 2001 (7.0% of total exports to the U.S. in 2001).

In the third place, three product groups experienced a significant decrease in exports from Korea to the U.S. market since 1997. China's exports of these products to the U.S. during the same period rose. These are SITC 03 fish, crustacean & molluscs, SITC 26 textile fibres, and SITC 83 travel goods, handbags and related items. This is indicated by the negative sign of the D_K coefficient for the three product groups. Our estimates indicate that Korea's export of textile to the U.S. market decreased while China's exports increased even before China's accession to WTO. For SITC 03 fish, crustacean & molluscs, the amount of Korea's exports to the U.S. in 1992 was $108,333,352 (0.6% of total exports to the U.S. in 1992) and $67,329,336 in 2001 (0.2% of total exports to the U.S. in 2001). For SITC 26 textile fibres, the amount of exports to U.S. in 1992 was $68,876,912 (0.4% of total exports to the U.S. in 1992) and $83,451,960 in 2001 (0.3% of total exports to the U.S. in 2001). For SITC 83 travel goods, handbags and related items, the amount of Korea's exports to U.S. in 1992 was $313,229,952 (1.7% of total exports to

the U.S. in 1992) and $104,781,600 in 2001 (0.3% of total exports to the U.S. in 2001).

Finally, the total amount of the eight SITC export groups identified as having been affected either directly or indirectly represents 38.2 percent of total exports to the U.S. ($18,153,042,774) in 1992 and 24.9 percent of total exports to the U.S. ($31,357,324,325) in 2001, if SITC 26 and SITC 83 were included; and 36.1 percent in 1992 and 24.3 percent in 2001 if SITC 26 and SITC 83 were excluded. Note that the declining exports to the U.S. of SITC 26 and SITC 83 since 1997 may or may not have been caused by competition from China. Either way, the amount of Korea's exports to the U.S. that are affected by the China's emerging global power appears significant.

According to the Korea Trade-Investment Promotion Agency (KOTRA), China has long surpassed Korea in terms of the share of the U.S. import market. Between 1993 and 2001, for instance, Korea`s share of the U.S. import market had remained stagnant at 3 to 3.1 percent; Japan suffered a gradual decline from 18.5 percent to 11.1 percent; but China increased its market share from 5.4 percent to 9 percent in the same period. Put differently, during the period, "Korea posted an average annual growth rate of 9.6 percent in its exports to the United States, which is higher than Japan`s corresponding rate of 3.3 percent, yet sharply lower than China`s 16.8 percent."(26) Although estimates in Table 2 indicate some replacement of Korea's exports to the U.S. by China's exports, it is not clear how much of the China's rapid increase in its export share to the U.S. market is at the expense of Korea's exports. It may suffice to say that "Korea is engaged in fiercer competition with China than with Japan in the U.S. market."(27)

Finally, the U.S.-China Business Council,(28) established in 1973, publishes the leading magazine on U.S.-China trade and economic relations, The China Business Review.(29) Also, Section 421 of the U.S.-China Relations Act of 2000 (P.L.106-286), 22 U.S.C. § 6951, requires the United States Trade Representative (USTR) to report annually to Congress on compliance by China with commitments made in connection with its accession to the WTO, including both multilateral commitments and any bilateral commitments made to the United States. USTR chairs the Trade Policy Staff Committee (TPSC) subcommittee on China WTO Compliance, a newly created, inter-agency TPSC subcommittee whose mandate is devoted to China and the extent to which it is complying with its WTO commitments.(30)

Competition in the Chinese Market

The competition between and the rest of the world in the Chinese market is measured in equation (2). Estimates of equation (2) are summarized in Table 3.

Table 3. Estimates of Korea's Exports to China: $X_{K\text{-}C}$

Code/Description	C	F_K	D_K	D_C	$X_{W\text{-}C}$	R^2	D-W
00 LIVE ANIMALS	88061.67	-52671.08	122280.6	52336.18	-0.003853	0.624	2.949
		(-0.393159)	(1.121079)	(0.357963)	(-0.800913)		
01 MEAT, MEAT PREPARATIONS	-84259.69	-1442854	2956326	63011.66	0.002943	0.833	2.155
		(-0.307624)	(0.589447)	(0.051100)	(0.282817)		

02	DAIRY PRODUCTS, BIRD EGGS	482316.4	-561029.4 (-1.545434)	725582.0 (1.879634)	439288.9** (3.280816)	-0.00732** (-2.677897)	0.819	2.399
03	FISH,CRUSTACEAN, MOLLUSC	-13183620	8703548 (0.441614)	-783681.9 (-0.040148)	10934563 (0.887832)	0.044941 (1.312856)	0.823	2.822
04	CEREALS,CEREAL PREPRTNS.	-700690.6	-2015134** (-3.797180)	3111001** (3.909174)	1407547* (2.165430)	0.000694* (2.067448)	0.925	2.295
05	VEGETABLES & FRUIT	680057.4	689564.3 (0.805997)	-2002768 (-1.764432)	1461759* (2.082718)	0.005191 (1.790815)	0.729	3.056
06	SUGAR,SUGR. PREPTNS,HONEY	1462488	-3313136 (-0.976423)	10740666* (2.513759)	4428931 (0.945097)	0.023711** (2.825540)	0.865	1.857
07	COFFEE,TEA, COCOA,SPICES	-408725.4	252198.1 (1.137549)	46984.49 (0.204731)	368581.9 (1.480694)	0.010435 (1.309237)	0.798	2.880
08	ANIMAL FEED STUFF	-281571.6	334584.9 (0.179809)	2431544* (2.222255)	946000.0 (0.719232)	0.001722 (1.072299)	0.833	2.230
09	MISC.EDIBLE PRODUCTS ETC	756838.0	-217957.6 (-0.132349)	2163109 (1.298198)	-264410.4 (-0.322925)	0.013577 (1.616739)	0.915	2.234
11	BEVERAGES	-197057.9	468617.3 (0.398776)	-562529.5 (-0.341568)	222721.4 (0.530623)	0.014260 (0.924942)	0.664	2.077
12	TOBACCO,TOBACCO MANUFACT	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
21	HIDES,SKINS, FURSKINS,RAW	1215827	1772329 (0.464975)	-13122303** (-3.269924)	9234970** (2.664115)	0.010322 (1.024970)	0.816	3.077
22	OIL SEED, OLEAGINUS FRUIT	-531.5346	430172.1 (1.630023)	-216826.6 (-0.574434)	55213.35 (0.309472)	7.56E-05 (0.548109)	0.569	2.535
23	CRUDE RUBBER	-19983494	-18279266** (-3.865709)	63186262*** (14.51608)	-2029479 (-0.397137)	0.066046*** (7.836014)	0.994	1.950
24	CORK AND WOOD	-175436.8	2568857 (1.341904)	-3210628 (-1.393201)	-284004.1 (-0.417228)	0.002344 (1.935693)	0.594	2.599
25	PULP AND WASTE PAPER	104240.9	-111652.6 (-0.080767)	-827205.9 (-0.541505)	1606050 (1.954605)	-1.44E-05 (-0.016594)	0.496	2.539
26	TEXTILE FIBRES	34956283	1.02E+08 (1.257914)	39977276 (0.444146)	1.01E+08 (0.882523)	0.088736 (1.580231)	0.800	2.324
27	CRUDE FERTILIZER, MINERAL	60738.82	878035.3 (0.377795)	5590651 (1.983412)	4381902** (3.654852)	0.004920 (0.971198)	0.969	2.528
28	METALLIFEROUS ORE,SCRAP	4147317	1960708 (0.328496)	-5030095 (-0.785629)	-7906278 (-1.675817)	0.003919* (2.216791)	0.630	2.872
29	CRUDE ANIMAL, VEG.MATERL.	-10931144	7460532 (1.393274)	-12475314 (-1.525415)	85931252* (2.333299)	0.087444 (1.636497)	0.741	2.430
32	COAL, COKE, BRIQUETTES	32238828	16529834 (1.250430)	-267230.1 (-0.021332)	21761223 (1.142483)	-0.734675* (-3.911443)	0.932	2.070
33	PETROLEUM, PETROL.PRODUCT	24728230	-3.35E+08* (-2.337850)	8.30E+08** (5.245081)	39404392 (0.274872)	0.058267** (3.899405)	0.980	2.656
34	GAS, NATURAL, MANUFACTURED	16586181	-78697215 (-1.268896)	1.53E+08 (1.868754)	30672076 (0.545885)	-0.035415 (-0.353044)	0.774	1.768
35	ELECTRIC CURRENT	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
41	ANIMAL OILS AND FATS	-17800.48	-100002.9 (-1.372408)	128966.6* (2.104263)	-48389.64 (-0.524318)	0.000974 (1.091991)	0.676	1.986
42	FIXED VEG. FATS AND OILS	305406.9	1411301 (1.449266)	-371290.4 (-0.292174)	739060.3 (0.451216)	-0.000351 (-0.345812)	0.453	2.504
43	ANIMAL,VEG.FATS, OILS,NES	-366852.5	997093.2 (1.673758)	-187597.5 (-0.288387)	193972.5 (1.058084)	0.045870** (3.833678)	0.984	2.571

51	ORGANIC CHEMICALS	-3.00E+08	1.40E+08 (0.655959)	102227.6 (0.000460)	1.51E+08 (1.331162)	0.339694** (6.057612)	0.984	2.858
52	INORGANIC CHEMICALS	-14501935	-9369283 (-1.593778)	10343896 (1.353020)	3275938 (0.710339)	0.094841** (5.822179)	0.985	2.136
53	DYES,COLOURING MATERIALS	-53498859	36989678 (1.933540)	-49122249 (-1.865701)	36097491** (2.945418)	0.171916** (5.031164)	0.979	2.484
54	MEDICINAL,PHARM. PRODUCTS	-11847978	3728856 (0.296688)	2815212 (0.216811)	3005448 (0.505832)	0.041285* (2.023575)	0.884	2.853
55	ESSENTL.OILS, PERFUME,ETC	-3470890	6864543 (1.908760)	3984618 (0.896209)	5297609** (2.623526)	0.041628 (1.662628)	0.974	2.953
56	FERTILIZER,EXCEPT GRP272	-6597497	2371619 (1.336885)	-10062691** (-5.619467)	14847541*** (8.539561)	0.003386** (3.677142)	0.971	2.725
57	PLASTICS IN PRIMARY FORM	-2.01E+08	4.04E+08 (1.718797)	1.38E+08 (0.443700)	4.28E+08* (2.385796)	0.201362** (2.971150)	0.972	2.825
58	PLASTIC,NON-PRIMARY FORM	-81986187	74429702 (1.298867)	43088556 (0.566996)	46112628 (0.935629)	0.155382 (1.178291)	0.929	2.850
59	CHEMICAL MATERIALS NES	-97200722	62981350** (6.013033)	57772104** (-3.913447)	-3211518 (-0.561068)	0.133860*** (13.12543)	0.997	2.920
61	LEATHER, LEATHER GOODS	-3.09E+08	99459657 (0.906007)	16934819 (0.167173)	3.01E+08** (2.784083)	0.495015 (1.678157)	0.906	2.183
62	RUBBER MANUFACTRES, NES	9970269	-32723900 (-1.283398)	44590589 (1.423608)	16721468 (1.428404)	-0.021079 (-0.230458)	0.865	2.614
63	CORK, WOOD MANUFACTURES	-2214927	-13018792 (-1.095550)	2745487 (0.264790)	42133335** (3.554268)	0.036611 (0.741131)	0.804	2.019
64	PAPER, PAPERBOARD,ETC.	-2.94E+08	47532782 (0.897932)	74066649 (0.723649)	62535601 (0.929661)	0.286601** (3.079096)	0.978	2.885
65	TEXTILE YARN, FABRIC,ETC.	-2.85E+09	83969314 (0.389490)	1.82E+08 (0.823145)	4.50E+08 (1.358983)	0.479921** (3.401170)	0.955	2.628
66	NON-METAL. MINERAL MANFCT	-47941459	-30289328 (-0.876865)	59322063 (1.468343)	-7844777 (-0.323532)	0.082629* (2.203882)	0.946	2.841
67	IRON AND STEEL	3.64E+08	-4.38E+08** (-3.039833)	8.62E+08*** (7.120411)	-24432324 (-0.180892)	0.068033** (2.796419)	0.937	3.575
68	NON-FERROUS METALS	-13086390	-1.70E+08 (-1.908841)	4.07E+08** (3.924827)	80340936 (1.543006)	0.030945 (0.976361)	0.973	2.673
69	METALS MANUFACTRES,NES	-83442151	-13785903 (-0.580734)	38468845 (1.419057)	46357504 (1.404299)	0.130892** (2.614393)	0.955	2.189
71	POWER GENERATNG MACHINES	-5.80E+08	62921759 (0.717370)	-1.84E+08 (-1.299760)	-1.45E+08 (-2.012396)	0.244933** (2.888510)	0.927	2.213
72	SPECIAL.INDUST. MACHINERY	-5.74E+08	22556762 (0.169044)	2.13E+08 (1.496637)	1.92E+08 (1.329110)	0.078111* (2.526189)	0.774	1.549
73	METALWORKING MACHINERY	-1.14E+08	46504408 (1.358014)	28974581 (0.949053)	-13345689 (-0.255710)	0.069176* (2.192363)	0.745	2.162
74	GENERAL INDUSTL. MACH.NES	-3.08E+08	74923538 (1.085474)	66890093 (1.246159)	-37821926 (-0.431304)	0.096899** (3.948250)	0.937	2.036
75	OFFICE MACHINES, ADP MACH	-31949443	-88779278 (-0.779373)	54702209 (0.363907)	32808681 (0.481804)	0.043216* (2.256328)	0.934	2.756
76	TELECOMM.SOUND EQUIP ETC	-1.40E+08	-1.03E+08 (-0.438392)	1.61E+08 (0.702810)	1.58E+08 (0.969092)	0.057611 (1.344986)	0.854	1.517
77	ELEC MCH APPAR,PARTS,NES	-2.83E+08	-3.96E+08 (-1.401026)	7.13E+08* (2.091469)	36889678 (0.226827)	0.106661*** (7.031346)	0.992	2.941
78	ROAD VEHICLES	-38420368	-39390296 (-1.247027)	-9177256 (-0.374819)	1.16E+08** (3.804578)	0.015455 (1.422953)	0.800	2.314

79	OTHR.TRANSPORT EQUIPMENT	-15498796	64760962 (1.769458)	-29098386 (-0.882651)	19958131 (0.533276)	0.008362 (0.544818)	0.433	2.972
81	PREFAB BUILDGS, FTTNG ETC	2536158	-3115990 (-1.444731)	4975419 (1.376549)	5520836* (2.291209)	-0.003311 (-0.071627)	0.842	2.362
82	FURNITURE, BEDDING,ETC.	-621016.9	1420554 (1.199556)	-962422.0 (-0.857305)	1258680 (1.441275)	0.026412** (2.670706)	0.759	2.950
83	TRAVEL GOODS, HANDBGS ETC	1621475	1200985 (0.613760)	-178184.4 (-0.127187)	-1492703 (-0.935118)	0.024452 (0.310311)	0.303	2.441
84	CLOTHING AND ACCESSORIES	-57750299	45456186* (2.513974)	-81799095** (-3.229709)	17708915 (0.691356)	0.178528** (2.848089)	0.863	2.774
85	FOOTWEAR	1.87E+08	8770208 (0.415537)	5914874 (0.163075)	19715491 (0.280881)	-0.462215 (-0.747661)	0.858	1.918
87	SCIENTIFIC EQUIPMENT NES	-1.07E+08	67505783* (2.515298)	-66080758* (-2.412332)	-6648899 (-0.357417)	0.084833*** (8.803867)	0.974	2.705
88	PHOTO.APPARAT. NES;CLOCKS	-16306769	-13373576 (-1.298214)	32840611** (3.022295)	14150123 (1.950740)	0.015196 (1.654677)	0.958	2.297
89	MISC MANUFCTRD GOODS NES	-1.74E+08	46881529 (0.818804)	43891223 (0.717190)	1.12E+08* (2.412243)	0.144171* (2.323202)	0.942	2.412
91	MAIL NOT CLASSED BY KIND	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
93	SPEC.TRANSACT. NOT CLASSD	-8251254	4241508 (1.014539)	-3921276 (-0.821515)	-1020747 (-0.601616)	0.013410* (2.350703)	0.908	2.638
96	COIN NONGOLD NONCURRENT	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
97	GOLD, NONMONTRY EXCL ORES	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: United Nations Statistics Division, Comtrade Database - Express Selection, http://unstats.un.org/unsd/comtrade/dqQuickQuery.aspx, based on Standard International Trade Classification, Revision 3 (SITC Rev.3).

Estimates in Table 3 on Korea's exports to the Chinese market in competition of the world's exports to the Chinese market are summarized in Table 4 by deleting all coefficients as well as all t-values that are statistically insignificant. Coefficients that are statistically significant at 10 percent level are marked with one star (*); 5 percent level with two stars (**); and 1 percent level with three stars (***).

Table 4. Statistically Significant Estimates of Korea's Exports to China: $X_{K\text{-}C}$

Code/Description	F_K	D_K	D_C	$X_{W\text{-}U}$
02 dairy products,bird eggs			439288.9**	-0.00732**
04 cereals,cereal preprtns.	-2015134**	3111001**	1407547*	0.000694*
05 vegetables & fruit			1461759*	
06 sugar,sugr.preptns,honey		10740666*		0.023711**
08 animal feed stuff		2431544*		
21 hides,skins,furskins,raw		-13122303**	9234970**	
23 crude rubber	-18279266**	63186262***	-2029479	0.066046***
27 crude fertilizer,mineral			4381902**	
28 metalliferous ore,scrap				0.003919*
29 crude animal,veg.materl.			85931252*	
32 coal, coke, briquettes				-0.734675*
33 petroleum,petrol.product	-3.35e+08*	8.30e+08**		0.058267**

41	animal oils and fats		128966.6*		
43	animal,veg.fats,oils,nes				0.045870**
51	organic chemicals				0.339694**
52	inorganic chemicals				0.094841**
53	dyes,colouring materials			36097491**	0.171916**
54	medicinal,pharm.products				0.041285*
55	essentl.oils,perfume,etc			5297609**	
56	fertilizer,except grp272		-10062691**	14847541***	0.003386**
57	plastics in primary form			4.28e+08*	0.201362**
59	chemical materials nes	62981350**	57772104**		0.133860***
61	leather, leather goods			3.01e+08**	
63	cork, wood manufactures			42133335**	
64	paper, paperboard,etc.				0.286601**
65	textile yarn,fabric,etc.				0.479921**
66	non-metal.mineral manfct				0.082629*
67	iron and steel	-4.38e+08**	8.62e+08***		0.068033**
68	non-ferrous metals		4.07e+08**		
69	metals manufactres,nes				0.130892**
71	power generatng machines				0.244933**
72	special.indust.machinery				0.078111*
73	metalworking machinery				0.069176*
74	general industl.mach.nes				0.096899**
75	office machines,adp mach				0.043216*
77	elec mch appar,parts,nes		7.13e+08*		0.106661***
78	road vehicles			1.16e+08**	
81	prefab buildgs, fttng etc			5520836*	
82	furniture, bedding,etc.				0.026412**
84	clothing and accessories	45456186*	-81799095**		0.178528**
87	scientific equipment nes	67505783*	-66080758*		0.084833***
88	photo.apparat.nes;clocks		32840611**		
89	misc manufctrd goods nes			1.12e+08*	0.144171*
93	spec.transact.not classd				0.013410*

Interpretation of the Estimates

Probably because of the advanced nature of the Korean economy in relation to other countries that also export to the China market, and also because China's economy is still in its early stages of development, Korea's exports to China in competition of the world exports to China have not been disadvantaged much for the study period, 1992 to 2001. Whether this success in the short run will continue in the long run remains to be seen.

First of all, only two product items of Korea's exports to China declined while the world exports of the same items increased (sharply) during the study period: SITC 02 dairy products and bird eggs, and SITC 32 coal, coke and briquettes. Note that X_{W-C} is negative for the two product groups. China's comparative advantage is claimed to lie in the agricultural sector.(31) Further, given China's large cost advantage in the production of fruit, flowers, and vegetables, its exports may be expected to make major inroads into regional markets.(32) Our estimates already indicate a declining export of SITC 02 dairy products to China in comparison to the world's export to China. For SITC 02 dairy products and bird eggs, the amount of Korea's exports to China was $60,287 in 1992 (0.0% of total exports to China in 1992) and $37,274 in 2001 (0.0%

of total exports to China in 2001). For SITC 32 coal, coke and briquettes, the amount of Korea's exports to China was $63,819,096 in 1992 (2.4% of total exports to China in 1992) and $631 in 2001 (0.0% of total exports to China in 2001).

Secondly, Korea's exports of SITC 23 crude rubber to China in comparison to the world exports to China decreased since 1994. It may be cautioned, however, that the estimated coefficient of D_C is statistically insignificant, making the interpretation tentative. The decrease is not caused by production of substitutes in China because the amount of the world exports to China of the item has increased through 2001. It may indicate a loss of comparative advantages to Korea's exporters of the product. The amount of Korea's exports of SITC 23 crude rubber to China was $5,157,235 in 1992 (0.2% of total exports to China in 1992) and $127,517,528 in 2001 (0.5% of total exports to China in 2001).

Thirdly, four product items of Korea's exports to China in comparison to the world exports to China decreased since 1997: SITC 21 hides, skins, furskins, raw; SITC fertilizer; SITC 56 fertilizer; SITC 84 clothing and accessories; and SITC 87 scientific equipment. This is indicated by the negative sign of D_K for the four product groups. It may be pointed out that the decrease may not have been caused by production of substitutes in China at least for SITC 21, 84 and 87 because the amount of the world exports to China of these three items have increased through 2001. It may indicate a loss of comparative advantages to Korea's exporters of the three product groups. In case of SITC 56, both Korea's and the world's exports to China fell during the study period, indicating increased production of fertilizer in China. It is widely believed that China's shares of world export markets for apparel and textiles as well as electronics and other manufacturers are projected to rise dramatically due to WTO accession.(33) It is less known, however, that China's imports of textiles are also projected to increase due to an expansion in Chinese's wearing apparel sector.(34)

For SITC 21 hides, skins, furskins, raw, the amount of Korea's exports to China was $1,928,929 in 1992 (0.1% of total exports to China in 1992) and $4,601,616 in 2001 (0.0% of total exports to China in 2001). For SITC 56 fertilizer, the amount of Korea's exports to China was $1,884,714 in 1992 (0.1% of total exports to China in 1992) and $1,820,607 in 2001 (0.0% of total exports to China in 2001) For SITC 84 clothing and accessories, the amount of Korea's exports to China was $9,989,819 in 1992 (0.4% of total exports to China in 1992) and $74,408,424 in 2001 (0.3% of total exports to China in 2001). For SITC 87 scientific equipment, the amount of Korea's exports to China was $5,683,456 in 1992 (0.2% of total exports to China in 1992) and $312,348,480 in 2001 (1.3% of total exports to China in 2001).

Finally, the total amount of the six SITC export groups (excluding SITC 23 which is insignificant) to China identified as having been affected either directly or indirectly by world competition represents no more than 3.2 percent of total exports to China ($2,622,744,567) in 1992 and 1.6 percent of total exports to China ($23,376,903,021) in 2001. It appears that at least during the study period, Korea has not lost its competitive edge so far as its exports to China are concerned.

Some argue that “In the short run, China’s reduction of tariffs and non-tariff trade barriers following its WTO entry will boost Korea’s exports to China and thus its China trade surplus.”(35) The benefits for Korea described above that will follow from China’s WTO membership arise allegedly from the complementary nature of the Chinese and Korean economies.(36) In the long run, however, keener competition is expected in both Chinese and third country markets and Chinese companies will become fierce competitors. Further, Korea has to compete with other countries in the Chinese market. Companies from various countries will set up their production bases in China, capturing both the cheap labor costs and more importantly the huge domestic market. Therefore, Korea is going to compete with the best companies from all over the world.(37) There is also the threat from fast-learning Chinese companies. These Chinese companies will compete with their Korean counterparts in the Chinese market as well as in third-country markets. Korea’s higher cost structure when compared to China can only be justified if Korea can produce more effectively.(38)

Opportunities for Service Industries

China enacted new patent law on July 1, 2001; new trademark law on December 1, 2001; and new copyright law on October 27, 2001. These new laws and regulations are designed to bring China into compliance with minimum Trade Related Aspects of Intellectual Property Rights Agreement (TRIPs) requirements.(39) The biggest problem is still a lack of effective IPR enforcement. Among the reasons cited are: lack of coordination between central and local governments, local protectionism and corruption, lack of criminal enforcement and weak punishments. China has taken steps to protect IPR by giving more power to IPR enforcement authorities. The 2002 anti-counterfeit and anti-piracy campaigns seized 16 million in illegal publications and 39 million in pirated disc.(40) Although China has revised its IPR laws and regulations to strengthen administrative enforcement, civil remedies and criminal penalties, IPR violations are still rampant.(41)

In 1998, one American visitor in China bought a video CD of *Saving Private Ryan* for $2.00 in a music store in Kunming while the movie was still being run in western theaters. In fact, he was given a list of movies that were still running in year 2003 and not on video yet in the United States: *Chicago, Catch Me If You Can, Gods and Generals, Dare Devil, Lord of the Rings - The Two Towers, Harry Potter and The Chamber of Secrets, Final Destination II, Jungle Book II, How to Lose a Guy in Ten Days*. The American visitor found all of these movies available for purchase in China.

China is believed slow in accepting service businesses from foreign firms. For instance, China through the Ministry of Information Industry threatens to restrict the business of international express delivery companies in China by proposing a domestic monopoly for delivery of mail under 500 grams and by requiring foreign express services firms to register with China Post for carrying packages over 500 grams. For another example, China's Administrative Regulations on Foreign Insurance Companies calls for extremely high capital requirements, which foreign companies view as being restrictive if not prohibitive.(42)

Summary & Conclusions

One of the most important determinants of the future global status of the Korean economy is the rapidly globalizing Chinese economy aided by its accession to WTO in 2001. Although the long term impact of China's globalization on Korea's exports requires continuing research, this study finds the following trends in Korea's exports to the U.S. and the Chinese markets on the basis of trade data from 1992 to 2001.

Korea's exports to the U.S. of SITC 85 footwear and SITC 87 scientific equipment nes, which includes instruments, appliances, measuring & analyzing apparatus, and components of industrial plants, have been falling, while China's exports of the same items to the U.S. market have been rising. The correlation between Korea's exports and China's exports to the U.S. market for the remaining 56 product groups has been insignificant. Secondly, there are Korea's exports to the U.S. market of certain products that have not necessarily been falling in competition against China's exports to the U.S. market, but appear to have been affected adversely in recent years. These product groups include SITC 03 fish, crustacean & molluscs; SITC 05 vegetables and fruits; SITC 26 textile fibres; SITC 76 telecommunication and sound equipment; SITC 26 textile fibres; and SITC 84 clothing and accessories. Overall, the total amount of the Korea's eight SITC export groups identified as having been affected either directly or indirectly by China represents 38.2 percent of Korea's total exports to the U.S. in 1992 and 24.9 percent of Korea's total exports to the U.S. in 2001, if SITC 26 and SITC 83 were included; and 36.1 percent in 1992 and 24.3 percent in 2001 if SITC 26 and SITC 83 were excluded. Either way, the amount of Korea's exports to the U.S. that are affected by the China's emerging global power appears significant.

Regarding the competition in the Chinese market, only two product items of Korea's exports to China declined while the world exports of the same items increased: SITC 02 dairy products and bird eggs, and SITC 32 coal, coke and briquettes. Korea's exports to China of SITC 21 hides, skins, furskins, raw; SITC 23 crude rubber; SITC 56 fertilizer; SITC 84 clothing and accessories; and SITC 87 scientific equipment have declined in recent years. This decrease is not caused by production of substitutes in China because the amount of the world exports to China of these items have increased through 2001. It is widely believed that the WTO opening of China will offer new opportunities in the services sector. However, Korea's services sector is weak and is not expected to gain materially from this area. Overall, the total amount of the six SITC export groups, excluding SITC 23 which is insignificant statistically, to China identified as having been affected either directly or indirectly by world competition represents no more than 3.2 percent of total exports to China in 1992 and 1.6 percent of total exports to China in 2001. At least during the study period, Korea does not appear to have lost its competitive edge so far as its exports to China are concerned.

Undoubtedly, global China is a mixed blessing for the Korean economy. Global China provides many new export and business opportunities for Korean firms, but at the same time poses a big threat in international markets, including Korea's domestic market. Whether or not global China is more a blessing than a curse may well depend on how well Korea prepares for

future competition from China. It is safe to stress the importance of continuing reform of Korea's economy, and developing a new China strategy through research on identification and promotion of comparative advantages. Estimates presented in this model clearly indicate that competition between China and Korea has just begun.

Interestingly when China launched its ambitious modernization program around 1980, the Chinese leadership headed by Deng Xiaoping was quick to adopt an export-oriented growth model, which has dominated China's economic development since then.(43) A recent article by Feldman and Xie (2001) suggests signs that China is shifting away from an export-oriented growth model toward a trade deficit-based, internal demand driven growth model.(44) This shift away from the export-oriented strategy is viewed as being consistent with the essence of the export-oriented strategy which is to build capital stock and wealth by serving markets abroad first, and then serving domestic markets after income had risen far enough to become self-sustaining. Abeysinghe and Lu argue that since the second half of the 1990s, domestic demand has increasingly become the major engine of China's economic growth, and that "a further developed China with greater market openness will become an increasingly powerful growth engine in the region."(45)

Endnotes

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3. Merkel and Lovik, p. 3.
4. U.S. ITC 1999, p. F-2.
5. Merkel and Lovik 2002, p. 3.
6. *Time*, April 23, 2001, p. 43.
7. Hong Kong Trader http://www.hktrader.net/200111/200101/200101s5.htm.
8. Adhikari and Yang 2002, p. 23.
9. Adhikari and Yang 2002, p. 23.
10. Adhikari and Yang 2002, p. 23.
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12. Adhikari and Yang 2002, p. 22.
13. U.S. Trade Representative, p. 13.
14. Adhikari and Yang 2002, p. 22.
15. U.S. Trade Representative, p. 30.
16. Adhikari and Yang 2002, p. 23.
17. Adhikari and Yang 2002, p. 23.
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19. US-China Business Council staff. "China's WTO Implementation Efforts," The China Business Review, V. 29, N4, July-August 2002, p. 1 from http://www.chinabusiness review.com/0207/tni.html.
20. U.S. Trade Representative, p. 8.
21. Bajona and Chu 2002, p. 7.
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23. Bajona and Chu 2002, p. 7.
24. For instance, Korea agreed in July 2000 to buy large amounts of garlic at fixed rates to protect Korean garlic producers from being outpriced by their Chinese competitors in exchange for the lifting of a Chinese retaliatory tariff on South Korean mobile phone and chemical exports to China. In July 2002, it was revealed that such import controls could not be extended beyond 2002 under a secret clause in the July 2000 agreement, subjecting Korean garlic growers to new international competition beginning in 2003. On July 19, 2002, Senior Presidential Secretary for Economic Affairs Han Duck-soo and Vice Agriculture and Forestry Minister So Kyu-ryung resigned to take responsibility for the government's alleged concealment of an agreement with China to open the Korean market to Chinese garlic imports from Jan. 1, 2003. On July 25, 2002, the Korea's Ministry of Agriculture and Forestry announced that it would invest 1.8 trillion won into the local garlic farming sector over the next five years following a firestorm of criticism that the Korean government failed to act transparently during the garlic negotiations with China, under which Korea would be open to Chinese garlic imports from Jan. 1, 2003. On July 30, 2002, Korean Trade Commission Chairman Junn Sung-chull resigned to take

responsibility for South Korean failures in negotiations over garlic imports.]

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31. Poon 2001, p. 7.
32. Bhattasali and Kawai 2001, p. 16.
33. Bhattasali and Kawai 2001, p. 16.
34. Chirathivat and Mallikamas 2002, p. 8.
35. Poon 2001, p. 5.
36. Poon 2001, p. 9.
37. Poon 2001, p. 10.
38. Poon 2001, p. 10.
39. U.S. Trade Representative, pp. 35-37.
40. Testimony of Robert A Knapp, "Effects and Consequences of an Emerging China," US-China Business Council, 2002, posted March 19, 2003. Http://www.uschina.org/public/ testimony /testimony14.html.
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45. Abeysinghe and Lu 2002, p. 17.

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Appendix

China's Reduction of Trade Barriers by Product

Wang estimated reductions from China's accession to WTO in normal tariff and also reduction in tariff after taking processing trade and duty exemption into account. The projected reduction in tariff by product and by year are summarized in table APP-1. [Wang 2002] APP-1 indicates that the rate of reduction in tariffs on imports to China will be about 50% by 2010.

APP-1. Tariff and Non-tariff Protection Rates in China for its WTO Accession (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008-10	Rate of reduct.	Initial NTBs
Normal Tariff											
Rice	78.6	63.6	49.7	37.0	25.4	25.4	25.4	25.4	25.4	-67.7	31.0
Wheat	2.0	2.0	2.0	2.0	2.0	15.0	15.0	15.0	15.0	n.a.	109.3
Other grains	8.9	8.7	8.6	8.4	8.2	8.2	8.2	8.2	8.2	-7.3	78.9
Oilseeds	14.3	12.7	11.2	9.6	8.0	8.0	8.0	8.0	8.0	-44.0	94.4
Planted fiber	1.0	1.0	1.0	1.0	1.0	15.0	15.0	15.0	15.0	n.a.	72.7
Non-grain crop	21.7	19.3	17.0	14.8	12.6	12.6	12.6	12.6	12.6	-41.7	2.9
Livestock	20.7	20.1	19.6	19.1	18.5	18.5	18.5	18.5	18.5	-10.4	0.0
Dairy & meats	17.0	15.5	13.9	12.4	10.9	10.9	10.9	10.9	10.9	-35.8	2.8
Processed food	31.7	28.6	25.5	22.5	19.6	17.6	15.9	15.9	15.9	-50.0	8.7
Tobacco & Bev.	50.5	42.9	35.2	27.6	20.0	19.2	19.2	19.2	19.2	-61.9	12.4
Forest & fish	3.5	2.4	2.1	2.1	2.1	2.1	2.1	2.1	2.1	-41.1	1.2
Energy products	5.2	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	-24.8	9.4
Mineral	9.6	8.7	8.3	8.1	8.0	8.0	8.0	8.0	8.0	-17.4	9.4
Textiles	25.4	21.7	17.9	14.4	11.2	9.1	9.1	9.1	9.1	-64.1	7.0
Clothing	32.1	28.4	24.9	21.3	17.8	15.0	15.0	15.0	15.0	-53.3	5.1
Leather & shoe	12.2	10.4	9.3	8.9	8.6	8.6	8.6	8.6	8.6	-29.6	5.1
Other light manufacture	22.1	20.4	18.9	17.7	16.6	15.6	15.6	15.6	15.6	-29.4	1.7
Wood & paper	11.4	9.3	7.3	5.7	4.4	4.1	4.1	4.1	4.0	-64.6	11.0
Intermediates	11.9	10.1	8.6	7.9	7.3	7.0	6.8	6.6	6.3	-46.7	15.9
Motor vehicle	33.4	28.0	22.7	19.3	16.3	13.7	13.7	13.7	13.7	-58.9	26.3
Other Trans	4.9	3.8	3.7	3.6	3.5	3.5	3.5	3.5	3.5	-29.3	12.2
Electronics	11.6	7.7	3.9	3.0	2.9	2.9	2.9	2.9	2.9	-75.0	7.8
Machinery	13.5	10.9	8.6	7.7	7.3	7.3	7.3	7.3	7.3	-46.1	5.1
Traded Service	70.9	63.8	56.7	46.1	35.5	35.5	35.5	35.5	35.5	-50.0	0.0
Average	17.9	15.1	12.6	10.7	9.3	8.9	8.8	8.8	8.7	-51.4	10.1
Tariff after taking processing trade and duty exemption into account											
Rice	72.4	58.6	45.8	34.0	23.4	23.4	23.4	23.4	23.4	-67.7	31.0
Wheat	1.6	1.5	1.5	1.5	1.5	11.1	11.1	11.1	11.1	n.a.	89.7
Other grains	5.9	5.8	5.7	5.6	5.5	5.5	5.5	5.5	5.5	-7.3	78.9
Oilseeds	11.8	10.5	9.2	7.9	6.6	6.6	6.6	6.6	6.6	-44.0	94.3
Planted fiber	0.9	0.1	0.1	0.1	0.1	1.6	1.6	1.6	1.6	n.a.	6.9
Non-grain crop	14.6	13.0	11.4	10.0	8.5	8.5	8.5	8.5	8.5	-41.7	2.9
Livestock	7.2	7.0	6.8	6.7	6.5	6.5	6.5	6.5	6.5	-10.4	0.0
Dairy and meat	11.1	10.1	9.1	8.1	7.1	7.1	7.1	7.1	7.1	-35.8	2.8
Processed food	20.6	18.6	16.6	14.6	12.7	11.5	10.3	10.3	10.3	-50.0	8.5
Tobacco & Bev.	25.7	21.8	17.9	14.0	10.1	9.8	9.8	9.8	9.8	-61.9	12.4
Forest & fish	2.5	1.7	1.6	1.5	1.5	1.5	1.5	1.5	1.5	-41.1	1.2

Energy product	3.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	-24.8	9.4
Mineral	4.2	3.8	3.6	3.5	3.5	3.4	3.4	3.4	3.4	-17.4	9.4
Textiles	0.9	0.8	0.6	0.5	0.4	0.3	0.3	0.3	0.3	-64.1	7.0
Clothing	0.6	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.3	-53.3	5.1
Leather & shoes	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	-29.5	5.1
Other light manufacture	1.6	1.5	1.4	1.3	1.2	1.1	1.1	1.1	1.1	-29.4	1.7
Wood & paper	4.6	3.7	2.9	2.3	1.8	1.7	1.6	1.6	1.6	-64.6	11.0
Intermediates	3.7	3.2	2.7	2.5	2.3	2.2	2.1	2.1	2.0	-46.7	15.9
Motor vehicle	25.0	21.0	17.0	14.5	12.2	10.3	10.3	10.3	10.3	-58.9	26.3
Other Trans	4.2	3.3	3.2	3.1	3.0	3.0	3.0	3.0	3.0	-29.3	12.2
Electronics	3.3	2.2	1.1	0.8	0.8	0.8	0.8	0.8	0.8	-75.0	7.8
Machinery	4.0	3.2	2.5	2.2	2.1	2.1	2.1	2.1	2.1	-46.1	5.1
Traded Service	71.0	63.9	56.8	46.2	35.5	35.5	35.5	35.5	35.5	-50.0	0.0
Average	8.0	6.9	5.9	5.0	4.2	4.1	4.1	4.1	4.0	-49.6	9.6

Source: "The Impact of China's WTO Accession on Patterns of World Trade," Zhi Wang. Paper prepared for presentation at ASSA Annual Meeting in Atlanta, Georgia, January 4-6, 2002.

Wang also estimated in table APP-2 net trade by sector for 2001 to 2010 in terms of differences between a WTO with and without China's accession. In APP-2, only a limited number of countries of special interest to Korea was selected for this paper. Overall, U.S. and China are expected to have significant positive net trade, while Korea's net trade is expected to fall except textiles other than clothing, and intermediates.

APP-2. Differences between a WTO with and without China: Accumulated Sectoral Net Trade by Region during 2001-2010 (billions of U.S. dollars)

Products	United States	Japan	Korea	Hong Kong	Taiwan	China
Rice	-0.3	-0.2	0.0	0.0	0.0	-2.3
Wheat	1.7	-0.2	-0.1	0.0	0.0	-14.8
Other grains	-0.4	-0.1	0.3	0.0	0.1	-7.3
Oilseeds	13.6	-0.2	0.0	0.0	0.1	-16.7
Planted fiber	5.9	-0.1	-0.1	0.0	-0.2	-11.6
Non-grain crops	-0.4	-0.3	-0.2	0.0	-1.3	-0.1
Sub-total	20.2	-1.0	-0.2	0.0	-1.3	-52.8
Livestock	-0.6	-0.1	-0.1	0.0	0.3	3.7
Dairy and meats	0.9	-0.3	0.0	0.0	-0.5	-0.8
Processed food	2.6	-1.1	-0.2	0.6	-1.0	-12.4
Tobacco & Beverage	3.9	0.8	-0.1	0.8	-5.8	-10.3
Sub-total	6.8	-0.7	-0.4	1.3	-7.0	-19.8
Forest and fishery	0.2	0.3	0.0	-0.1	-0.4	-1.1
Energy products	-0.5	-0.8	-0.3	-0.1	-2.0	-11.4
Mineral products	-0.3	-0.8	-0.3	0.1	-0.6	0.3
Wood & paper	1.9	0.5	1.3	1.3	-0.5	-11.1
Sub-total	1.3	-0.8	0.7	1.3	-3.4	-23.3

Textiles	1.8	6.7	5.5	6.5	10.5	-35.0
Clothing	-6.4	-4.2	-3.3	-11.4	-2.1	160.8
Leather & shoes	-1.0	-0.5	0.1	-0.1	0.2	22.3
Other light manuf.	-0.5	-2.0	-0.7	0.2	-1.6	17.6
Sub-total	-6.1	0.0	1.5	-4.8	7.0	165.7
Intermediates	7.0	17.7	10.5	3.0	11.4	-73.7
Motor vehicle	3.1	11.5	-3.1	-0.1	-8.5	-16.9
Other Transp	-9.3	-4.8	-3.6	0.0	2.2	18.6
Electronics	-7.0	-5.1	-3.9	1.9	3.6	23.0
Machinery	-10.5	-12.3	-3.1	0.6	0.0	41.7
Sub-total	-16.7	7.0	-3.2	5.4	8.8	-7.3
Traded Services	6.0	-5.6	-3.5	-3.7	-2.2	-27.8
Construction	0.0	-0.9	0.0	0.0	0.0	1.6
Total	11.5	-2.0	-5.2	-0.7	1.9	36.2

Source: "The Impact of China's WTO Accession on Patterns of World Trade," Zhi Wang. Paper prepared for presentation at ASSA Annual Meeting in Atlanta, Georgia, January 4-6, 2002.

Reduction in tariff on imports to China with China's accession to WTO has also been made by Bhattasali and Kawai. [Bhattasali and Kawai 2001] Table APP-3 shows China's likely weighted average tariff rates with and without WTO accession as summarized by Bhattasali and Kawai. Despite considerable difficulty in quantifying the degree of protection in agriculture, rates of pre-WTO protection are assumed to be sustained after accession, because the bindings are estimated to be above the previously applied protection rates. For industrial products, average tariffs on imported manufactures that are subject to tariffs drop from 24 percent to 7 percent. Rates of protection of beverages and tobacco, textiles and apparel products, and automobiles fall dramatically. Overall, China's WTO offer lowers the average tariff protection on imports from 21 percent to 8 percent. APP-3 shows likely tariffs on imp[orts to China without WTO accession, which is not shown in APP-1. Tariffs with WTO accession in Table 3 are comparable to tariffs for 2008-10 in APP-1.

APP-3. Weighted Average Tariffs in China with and without WTO Accession

	Without WTO Accession (%) [a]	With WTO Accession (%) [b]
Foodgrain [b]	0.00	0.00
Feedgrain [b]	6 .03	6.03
Oilseeds [b]	4.16	4.16

Meat and livestock [b]	10.14			10.14		
Dairy [b]	26.74			26.74		
Other Agriculture [b]	22.09			22.09		
Other food	27.68			27.68		
Beverages and tobacco	123.50			20.38		
Extractive industries	3.59			1.26		
Textiles [c]	57.10			9.39		
Wearing apparel [c]	75.99			14.85		
Wood and paper [c]	21.57			4.80		
Petrochemicals [c]	20.17			6.94		
Metals [c]	17.52			6.22		
Automobiles [c]	129.07			13.76		
Electronics [©]	21.69			3.44		
Other manufactures [b]		23.53			6.74	
Agriculture total [b]	17.09			16.88		
Manufactures total [c]		24.27			6.95	
Total	21.41			7.85		

Note: [a] The tariff rates are the stated rates on imports that are subject to tariffs. As many imports enjoy duty exemptions currently and are expected to continue to do so with WTO accession, these stated rates overstate the actual rates. The rates without WTO are for the year 1995.

[b] The degree of agricultural protection is assumed to be virtually unchanged with WTO accession. [C] The table highlights the large "offer" made by China on manufacturing protection.

Source: Ianchovichina, Martin and Fukase (2000b) as printed in Deepak Bhattasali and Masahiro Kawai, "Implications of China's Accession to the World Trade Organization", a paper presented at the APEC Roundtable and APIAN Workshop titled "APEC at the Dawn of the 21st Century," organized by the Institute of Southeast Asian Studies, Singapore, June 8-9, 2001, p. 5.