

# The Limited Performance of the United States in Exporting Manufactured Products to Korea\*

Alice H. Amsden

*New School for Social Research  
and Massachusetts Institute of Technology*

Sunshik Min

*College of Business Administration,  
Seoul National University*

The share of United States in Korea's total imports did not increase between 1985 and 1987 despite the sharp depreciation of the dollar against the yen and Korean trade policies to increase imports generally from the United States. The U.S.'s share rose in 1988, but the increase was small and slow. This paper shows that Japanese suppliers aggressively reduced yen prices to defend the Korean market; Japanese products far out-competed American goods in non-price areas; and U.S. firms did not have the capacity or the appropriate products to serve the Korean market. Our findings suggest that U.S. exporters need to improve in both price and non-price areas in order to sell to Korean buyers. This paper also proposes that joint Korean-U.S. efforts be directed toward opening and penetrating the Japanese market.

## I. Korea's Imports from the United States and Japan

The United States and Japan are major foreign suppliers to Korea. They accounted for more than half of Korea's total imports in the period from 1985 to 1990. Table 1 shows the market share in Korea's imports of the United States and Japan in 1985-90. The U.S.'s share in Korea's total imports remained virtually unchanged at 21% between 1985 and 1987 while Japan's share rose from 24% to 33%.<sup>1</sup> The U.S.'s share began rising in 1988. Moreover, the table

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<sup>1</sup>The market share is calculated in terms of the import value.  
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TABLE 1  
KOREA'S IMPORTS  
(Unit: Million U.S. Dollars, Share in Percent)

		United States		Japan	
1. Total					
Year	Value	Share*	Value	Share*	
1985	6,489.3	20.8	7,560.4	24.3	
1986	6,544.7	20.7	10,869.3	34.4	
1987	8,729.1	21.4	13,622.3	33.4	
1988	12,756.7	24.6	15,928.8	30.7	
1989	15,910.6	25.9	17,448.6	28.4	
1990	16,942.5	24.3	18,573.9	26.6	
2. Manufactures					
Year	Value	Share†	Value	Share†	
1985	4,508.4	22.3	7,286.2	36.0	
1986	4,694.7	20.7	10,626.4	46.8	
1987	6,178.4	20.3	13,376.1	44.1	
1988	8,020.4	22.9	15,424.8	44.0	
1989	10,438.5	25.3	16,820.2	40.7	
1990	10,898.8	23.6	17,677.0	38.3	

Source: Office of Customs Administration (1985, 1986, 1987) and KFTA (1990, 1991).

Note: 1. \*: share in Korea's total imports.

2. †: share in Korea's total imports of manufactures.

shows that the U.S.'s share in Korea's imports of manufactured products declined by 2% between 1985 and 1987 while Japan's share rose by 8%. Later the United States gained larger share in Korea's imports of manufactured products but the U.S.'s share in 1990 is not significantly larger than that in 1985.

The U.S. export performance is considered limited because some factors changed favorably for the U.S. exporters vis-a-vis their Japanese competitors. Table 2 shows the foreign exchange rate variations in 1985-90. The dollar depreciated against both the Korean won and the yen, and the yen even appreciated against the Korean won. This change would have made the U.S. exports more competitive in price vis-a-vis the Korean local products and Japanese goods, and one might expect that the U.S.'s share in Korea's imports should grow while Japan's share is falling.

The limited performance of the U.S.'s exports coincided with Korea's reduction of trade barriers on at least 100 items specifically requested for liberalization by the U.S. government. This not-

TABLE 2  
FOREIGN EXCHANGE RATES

Year	Exchange Rate of*		Yen/\$	Change in <sup>†</sup> Yen/\$
	Won/\$	Won/Yen		
1984	827.4	3.306	250.3	100.0
1985	890.2	4.437	200.7	80.2
1986	861.4	5.384	160.0	63.9
1987	792.3	6.423	123.4	49.3
1988	684.1	5.477	124.9	49.9
1989	679.6	4.721	144.0	57.5
1990	716.4	5.324	134.0	53.8

Source: Bank of Korea, *Economic Statistical Yearbook*, 1991.

Note: 1. ∙: exchange rates at the end of each year.

2. †: change is an index value (1985 = 100).

TABLE 3  
VALUE OF LIBERALIZED IMPORTS, 1986-87  
(Unit: Million U.S. Dollars, Share in Percent)

1. Total		16,971	
2. Shares: U.S. and Japan			
	Amount		Share
U.S.	3,467		20.4
Japan	8,443		49.7

Source: Economic Planning Board, Korea, Internal Document.

withstanding, liberalization led to Korea's absorbing Japanese, not American, imports. As Table 3 indicates, of the \$17 billion worth of imports affected by the liberalization between 1985 and 1987, Japan accounted for 49.7% while the United States accounted for only 20.4%. During this period, the Korean government pressured Korean importers to switch from Japanese suppliers, especially to U.S. suppliers. It went as far as providing loans with a reduced interest rate for imports from non-Japanese suppliers.

The U.S. pressure to open Korea's market intensified in 1988 and the Korean government liberalized import of more products. There were no available data for 1988-90 to show how much the import liberalization contributed to the increase in the U.S. exports to Korea. However, one can imagine from Table 1 that the United States did not benefit much from the import liberalization of manufactured products.

TABLE 4  
 PRODUCT COMPOSITION OF JAPAN'S AND THE U.S.'S  
 TOTAL EXPORTS TO KOREA, 1985-89

(Unit: %)

	United States			Japan		
	1985	1987	1989	1985	1987	1989
Agriculture	23.37	22.24	25.50	2.28	1.21	1.31
Raw Material except Agriculture	7.16	6.98	5.26	1.35	0.59	0.86
Manufactures	69.47	70.78	69.25	96.37	98.19	97.84
Total	100.00	100.00	100.00	100.00	100.00	100.00
Metallic and Mineral Products	7.01	7.05	4.17	13.22	11.01	11.48
General Machinery	10.65	12.79	16.97	21.34	21.32	22.21
Electrical and Electronic Products	23.58	23.36	22.99	22.58	29.28	28.50
Transportation Equipment	16.42	10.37	15.41	5.68	4.74	4.02
Precision Equipment	5.62	5.63	5.03	5.49	5.36	6.22
Chemicals Equipment	16.51	19.29	17.98	15.37	13.94	15.20

Source: Office of Customs Administration (1985, 1987) and KFTA (1991).

This paper suggests why the United States failed to gain larger share in Korea's imports despite all these factors favorable to U.S. exports, and what can be done about it. In seeking to understand this episode of competition, this paper examines the changes in the U.S.'s and Japan's market shares in Korea's manufactured imports between 1985 and 1987.

The U.S. export bundle is based on a natural resource advantage to a greater extent than the Japanese, as Table 4 indicates. About one-third of U.S. exports to Korea consists of primary products. Japan's market share in Korea's imports of primary products was approximately 2% in 1985, and it fell later. If, in general, the export of manufactures is regarded as subject to more intensive competition than the export of agricultural products, then Japan's export bundle to Korea appears to be harder won than the U.S. bundle.

This paper focuses on the period of 1985 to 1987 because it is after these three years when the U.S.'s share rose slowly in 1988. Korea's stagnated imports from the United States and its growing imports from Japan during the three years in question can be explained as an example of the J-curve effect. The idea of the J-curve

effect is that a nation's current account figures improve slowly after its currency depreciation as the volume of trade adjusts with a time lag to international price changes that the depreciation brings about. This paper examines managerial behavior of U.S. and Japanese exporters and Korean importers as factors behind the three-year adjustment lag. This business-level analysis can contribute to better understanding of the J-curve effect which has been a subject of macroeconomic studies.

In order to arrive at our conclusions, the authors statistically analyzed Korean import data and examined information from field interviews with managers.<sup>2</sup> These two methods have their individual merits while complementing one another. The statistical analyses provide a broader view of Korea's trade than the field interviews as they rely on a larger number of observation (i. e., products as the unit of analysis).<sup>3</sup> The field interviews provide case-based evidence to support findings from the statistical analyses. In addition, the field interviews make it possible to examine factors which were not quantifiable. The authors were unable to examine competition between imports and locally produced goods because of lack of price and quantity data for local products. The argument presented hereafter is the analysis of competition of the U.S. and Japanese products in Korea's import market.

In the simplest terms, the limited performance of U.S. exports resulted from: i) Japanese price reductions; ii) inelasticity of Korean demand; and iii) the limited capacity of the United States to export manufactured products to Korea. Japanese price reductions are examined first since these behavior hindered the dollar depreciation from fully affecting the price competitiveness of U.S. and Japanese products.

## II. Japanese Price Reduction

According to data compiled from Korea's *Statistical Yearbook of Foreign Trade*, dollar prices of Japanese exports rose on average in Korea by slightly more than half the exchange rate variation be-

<sup>2</sup>The data of this study are largely based on Min (1989).

<sup>3</sup>Another reason that this paper focuses on the period of 1985-87 is incompatible trade data. The Korean government changed its product grouping method from the Customs Cooperation Council Nomenclature (CCCN) to the Harmonized Commodity Description and Coding System (HS) in 1988. This change made statistical analyses of 1985-90 import data infeasible.

tween the dollar and the yen. The authors calculate prices of Korea's imports classified by four digits of the CCCN code. The yen appreciated approximately 63.5% relative to the dollar in 1985-87 while Japanese export prices rose by only 34.9% in dollar terms. Thus, Japanese exporters reduced the yen prices of their exports.

Appendix A shows the findings of regression analyses of the change in Japan's and U.S.'s export shares. The authors examine the change in each country's share in Korea's imports of 692 industrial products, computed at the four-digit level of the CCCN code. Market shares in the regression analyses are measured in terms of quantity. The authors estimate our regression equations in log form. Details about the definition of variables are presented in Appendix A. The dependent variable, SHARE CHANGE, is negatively correlated with an independent variable, PRICE CHANGE, in both equations for Japanese and American share changes. The *t* statistics in the two equations are extremely high. This significant negative correlation indicates that a country lost its shares in Korea's import of individual products in cases where its prices, relative to the world prices of Korea's imports, rose (and vice versa). The result implies that Japan's share should have fallen more than what the authors observed from the Korean trade data had not Japanese exporters reduced their yen prices.

Japanese price reduction may be interpreted as a long-term-oriented competitive strategy to counter inroads into the Korean market by cheaper U.S. goods. Japanese exporters reduced their yen prices radically when they would have otherwise lost large market shares: a strategy which Min called the "opportunistic share-holding pricing strategy" (Min 1989, pp. 43-8). Japanese exporters subsidized their price reductions with windfall profits that they realized in their protected homemarket because they did not pass on the decrease in yen costs of imported inputs to domestic prices (Min 1989, pp. 188-202).

One might imagine that Japanese suppliers were willing to lower the yen prices of their exports because of the importance of the Korean market to Japan. As pointed out by Krugman (1986), Baldwin (1988) and Froot and Klemperer (1988), in the case of foreign markets where exporters have a large share, they are likely to defend that market in the event of a currency change by lowering their prices. Japanese exporters acted aggressively to preserve the Korean market although the Korean market was small for them,

whereas the U.S. exporters did not attempt to gain more shares. In 1985, exports to Korea accounted for only 4% of Japan's total exports, not much more than the comparable figure for the United States, of 2.8%.<sup>4</sup>

In sum, Japanese price reductions was a reason for the limited U.S. export performance. U.S. exports did not gain price competitiveness against Japanese products as greatly as one might expect from the dollar depreciation. Consequently, the dollar depreciation failed to bring about substantial volume changes of Korea's imports from the two countries. The authors moved to the issue of slow volume changes despite the price changes by examining Korean behavior and U.S. export capacity.

### III. Inelastic Korean Demand

Korean buyers were unable to switch to other suppliers even when Japanese exporters raised their dollar prices because of a complex set of considerations related to technology transfer. Either an explicit or implicit agreement to buy equipment, parts and components was incorporated into technology transfer agreements, and most of Korea's technology transfers came from Japan. Technology is typically embodied in machinery and in 1984, 52.1% of Korea's machinery imports came from Japan (the United States accounted for 25.7%). Between 1962 and 1983, 56.1% of all government-approved technology licensing agreements in Korea were also with Japan (only 23.1% were with the United States) (Amsden 1989, pp. 234-318).

Frequently machinery requires unique rather than standardized parts and, therefore, the purchase of machinery from a supplier often "ties in" the buyer to purchase parts and components. Technology transfers to Korea often had explicit clauses for parts purchase, as in the case of facsimile machines or video cassette recorders.<sup>5</sup> In other cases, such as automobiles, it is merely understood that parts are to be purchased, where possible, from the technology seller. The relationship between buyer and parts supplier itself is an important source of technology transfer insofar as

<sup>4</sup>Sources of data are *Economic Statistical Annual* by the Bank of Japan, and *Highlights of U.S. Export and Import Trade* by the U.S. Bureau of the Census.

<sup>5</sup>Information on technology transfers and "tie-in" purchase is from field interviews with Korean firms.

Japanese parts suppliers typically provide information to buyers on design changes and product debugging. Under these circumstances, parts procurement is part of a learning experience, and not merely an arms length transaction. It reinforces ties between a licensor and a licensee.

Moreover, formal technology transfers to Korea understated total exchanges of information. Korean firms of all sizes have hired Japanese consultants who are retirees or moonlighters. Such consultants have provided Korean firms with a wealth of knowledge about technology, and through such contacts, Korean firms have become increasingly predisposed towards buying Japanese goods. Korean firms have hired Japanese rather than American consultants for some of the same reasons that they have bought Japanese rather than American goods: geographical proximity and the better service and price therein implied. In all, the decision of Japanese firms to sell technology to Korea, and thereby risk cradling more competition, appears to have paid off for the time being in the form of higher exports.

Appendix A provides regression estimates that include a dummy variable, PART, which has a value of 1 in cases where the concerned products were parts. The significant positive sign of the coefficient in Japan's case suggests that Japan's export share of parts decreased less than other types of products for given changes in Japanese prices. The small decrease in Japan's share of parts supports what the authors argued above. Correspondingly, the U.S.'s share of parts stagnated more than its share of other types of products, as a negative coefficient for PART in the U.S. case implies.

In addition, Korean buyers were unwilling to substitute American for Japanese goods because of perceived differences in quality. Their perceptions lowered the demand price elasticity for Japanese products. Appendix A shows that the coefficient for PRICE CHANGE was larger (in terms of absolute value) in the case of American products (1.03) than Japanese goods (0.71). This result suggests that for a one percent decrease in American prices (relative to world prices of Korea's imports), the 1985 share of American products rose by 1.03%. For Japan, every one percent rise in Japanese relative prices led to only a 0.71 percent decrease in Japan's share.

One may argue that the demand price elasticity for American products was larger than for Japanese goods because the relative



prices of American exports fell whereas Japanese relative prices rose.<sup>6</sup> In other words, the asymmetrical change in prices can be a reason for the more price elastic demand for American products. However, the authors expect that Korean demand responds more elastically for American products than for Japanese goods even in cases of American price increases and Japanese prices declines. This is because the quality of American products are perceived by Korean buyers as inferior to Japanese quality. Accordingly, Korean importers would more readily switch from American suppliers in cases where American exports became less price competitive (or American prices rose while Japanese prices were falling).

The authors found differences in perceptions of quality of U.S. and Japanese products in interview with 21 Korean importers. In the case of standardized inputs, such as chemicals and other commodities, quality between the two countries was perceived as equal. In the case of customized products like machinery and electronics, however, quality was perceived to differ. American products were believed to be inferior in terms of variance in functional ability (or higher rejection rates) which interrupted the smooth flow of the production process. In cases of products without defects, the functional capabilities of American and Japanese products were felt to be equal.

Besides our interview data, a study by the Korean Traders Association on how to increase imports from the United States showed that American quality was judged by Koreans as problematic. Japanese goods were considered superior in quality to comparable American products for 36% of the 285 items surveyed, while American products were deemed superior in only 16.4% of all cases. In the remainder of cases, quality between the two countries was judged to be equal (KTA 1987, p. 15).

The Korean Traders Association observed that "non-price considerations often weigh more heavily in Korean importers' mind than price factors" (KTA 1987, p. 33). The Korean Traders Association and our interview data suggest that U.S. exporters were wanting in the following non-price areas: lack of information on potential U.S. exporters, difficulties in placing small orders, slow delivery, unsatisfactory warranty service, and insufficient technical and financial assistance. Whereas the 199 companies who responded to the

<sup>6</sup>Professor Koichi Hamada at Yale University presented this argument when he commented on our previous version of this paper at East Rock Institute's conference.

survey of the Korean Traders Association gave Japanese products a quality edge over their U.S. counterparts by a margin of more than two-to-one (36% to 16%), in other non-price areas the margin in favor of Japan was much wider: 13 to 1, or 80.4% to 6.3%. In all, the data indicate that Japanese exporters retained a larger market share in Korea despite the appreciation of the yen and Korean trade policies because they far outdistanced American companies in terms of their price, marketing activities, as well as quality.

Thus far the authors have suggested that Japanese price reduction and inelastic Korean demand resulted in the limited increase in U.S.'s export shares in Korea. Now the authors add a third factor: the U.S.'s limited capacity — in terms of both production and product — to export industrial products to Korea.

#### **IV. Limited U.S. Production and Product Capacity to Export Manufactures**

The authors think of capacity in two senses: the availability of resources to supply the export market; and the existence of a saleable product. The authors discuss each capacity in turn, based on results from the regression equation in Appendix B.<sup>7</sup> The regression results suggest that the U.S.'s export share was sensitive to both measures of capacity and, therefore, that the stagnation in the U.S.'s share between 1985 and 1987 was related to a lack of capacity in both senses of the term.

##### *A. The Availability of Resources*

The variable CAPA UTIL in Appendix B refers to the capacity utilization rate of each U.S. industry in 1987. The negative sign suggests that U.S. industries did not sell to Korea in cases where they had high capacity utilization rates. The capacity utilization rate of U.S. industries began rising in 1985 because both domestic and foreign buyers increased their purchase of U.S. products as the dollar depreciated.<sup>8</sup> However, the negative coefficient for CAPA

<sup>7</sup>The basic design of the regression equation is not different from the one presented in Appendix A. However, the equation in Appendix B has more independent variables representing the U.S. capacity to export. The authors had to exclude some observations which were shown in Appendix A because of limited availability of data for some independent variables presented in Appendix B.

<sup>8</sup>See various issues of *Annual DRI/McGraw-Hill Spring Survey of Business Plans for New Plants and Equipment*, Data Resources, Lexington: MA.

UTIL implies that U.S. companies appeared to prefer domestic sales to exports in cases where they did not have sufficient capacity to respond to the demand increase.

This argument is supported by the behavior of a closely related variable in Appendix B, CAPA GROW, which measures the increase in production capacity of U.S. industry due to new investments in physical plant and production equipment between 1985 and 1987. The positive sign of this variable suggests that the increase in U.S.' share was large in cases where U.S. industry expanded its production capacity.

The regression result shows that one reason for the limited U.S.'s share growth in Korea during the period of the dollar depreciation is that U.S. industry did not have resources available to increase its export supply. Information from field interviews also supports the regression result. For example, one Korean importer of stainless steel coils used to import more than 90% of its total product from Japan before the yen appreciation. The company decided to switch suppliers when Japanese companies increased their prices and the Korean government prodded it to import non-Japanese products. However, the company switched from buying Japanese to buying European, since American producers were not able to export to Korea because of their limited production capacity. The company continued to import about half of its total imports from Japan because of the limited supply capacity of European suppliers.

### *B. The Availability of Saleable Products*

In addition to the U.S. capacity constraint on its exports, the market share of U.S. industrial products in Korea's imports appears to have stagnated due to the unavailability of saleable products. This is suggested by three variable: NET SURP; R&D; and EQUIP.

The variable NET SURP is measured as U.S. exports minus U.S. imports divided by total U.S. trade (exports plus imports). The authors regard this variable as a proxy for "net U.S. trade surplus" of individual products, or the availability of products for export net of what the United States needs to import. The higher import relative to exports, presumably the fewer the products that can be sold abroad. The positive coefficient of this variable indicates that the United States was able to increase its share of its products in

Korea when it exported the concerned products more to the world than it imported from the world. The stagnant U.S.'s share between 1985 and 1987 suggests the absence of such a surplus.

The authors get another sense of the restricted saleability of U.S. products by looking at the variable R&D. This variable measures the ratio of R&D expenditures to total sales of various U.S. industries. What is noteworthy is the negative coefficient of this variable. The negative coefficient implies that certain U.S. industries with higher ratios of R&D expenditures to sales increased their exports relatively less than other U.S. industries to Korea the implication being that there is little demand in Korea for the "high-value-added" goods of U.S. industries.

An absence of demand in Korea for the American high-technology products or processes was suggested in interviews with Korean importers. In the case of the R&D-intensive semiconductor industry, for example, importers reported that they were unable to buy memory chips from the United States (whatever the price); all that was available were high-end products for which there was negligible demand, such as high-speed microprocessors. The case of computers and related parts was slightly different. U.S. firms based in the continental United States stopped manufacturing some products and set up production bases in foreign countries. The overvalued dollar in the early 1980s appears to be a major factor behind such disinvestment of production in the United States. Firms with foreign subsidiaries exported foreign-made products to Korea, such as Singapore-made hard disk drives which carried an American brand. The authors, however, encountered few other industries in which U.S. firms sold to the Korean market from foreign subsidiaries.

Aerospace products provide a different picture of U.S. high-technology products. Here the United States had a potential product to sell, aircraft and related components, but the product was becoming increasingly less competitive relative to that of Europe. While U.S. sales of aerospace products to Korea remained flat between 1985 and 1987, increasing annually by about 8%, European sales rose by a factor of 27.

The authors also found that a number of Korean importers of production equipment switched from Japanese suppliers to suppliers from other countries, but not U.S. suppliers. The coefficient, reported in Appendix B, of a dummy variable EQUIP is negative. The variable has a value of 1 if the concerned product is production equipment and 0 otherwise. The negative coefficient suggests that

U.S.'s share in Korea's import of production equipment stagnated, although Min (1989, pp. 108-15 and 173-81) found that Japan's share of Korea's imports of production equipment fell because of Korean trade policies. Before the authors discuss why U.S.'s share of production equipment stagnated, the authors will explain the Korean trade policies that reduced Japan's share of the product.

The Korean government provided special loans for importers of non-Japanese production equipment. The reduced-rate loans appeared to have two purposes: to diversify Korea's imports from Japan; and to subsidize Korean investment, not consumption, of foreign products.<sup>9</sup> Korean importers indicated that the subsidized loans were good incentive to switch suppliers. As Korea's deficits in trade of commodities and services turned into surplus in 1986, the Korean government restricted private and state-owned companies from borrowing abroad, and reduced credits to private firms to control inflationary pressure coming from increased foreign reserves. The Korean government also asked private firms to raise capital in the Korean stock market in order to reduce high debt-equity ratios and bolster the stock market. As a result, the reduced-rate loans became a relatively cheap and readily available source of capital. Their borrowing rate was set at about 8%, while Korea's prime rate was over 12%.

While the reduced-rate loans worked as carrots, Korean companies were prodded with sticks. Large Korean companies, including business groups, were summoned to meetings with government officials where they had to report what their performance had been in diverting imports from Japan. Monitoring by the government was a burden to private companies, since the government generally exercised discretionary industrial policies, ranging from issuing industrial licences to providing relief loans to troubled companies.

Nonetheless, Korea's special import loans did not lead to an increase in the U.S.'s share of production equipment imports, as Appendix B shows. One reason for the stagnant U.S.'s share was the unavailability of the product. The United States had become a net importer of production equipment. U.S. manufacturers of production equipment had reduced their production capacity or had stopped making fabricating machinery altogether in the early 1980s when the dollar was overvalued. As noted earlier, another reason

<sup>9</sup>The authors infer this because the Korean government did not extend reduced-rate loans to imports of consumer goods.

why the Korean government's import loan policy failed was the inadequate quality and production efficiency of U.S. equipment, even in cases where U.S. suppliers survived. For example, as our interviews revealed, Korean importers of production equipment for making steel and video and audio tapes said that U.S. producers did not enhance the production efficiency or the quality of their machines. Besides cases where lack of American supply and limited demand in Korea kept U.S. exports of production equipment from increasing, a Korean steel manufacturer imported certain production equipment from Europe, because the European exporter arranged cut-rate loans which were not available from potential U.S. suppliers of comparable products.

Nonetheless, some U.S. makers of production equipment focused on markets of high-technology machines and they were able to export to Korea. Korean automobile companies imported highly sophisticated equipment from the United States to fabricate engines. A Korean manufacturer of memory chips thought that U.S. machinery was better than other machines available elsewhere. Overall demand for those high-technology machines, however, was small in Korea, as the authors discussed earlier.

## V. Conclusions

It appears that the U.S.'s share in Korea's imports of industrial products failed to grow between 1985 and 1987 despite a host of favorable factors because of:

- i) Japanese price reductions,
- ii) the price inelasticity of Korean demand for Japanese goods,
- iii) the importance of non-price factors in Korea's demand for imports,
- iv) resource constraints in the United States on export supplies,
- v) a mismatch between the types of goods the United States supplies and those Korea demands.

For this pattern to change would require a radical transformation in the way U.S. exporters conduct business in Korea.

First, to increase sales of many goods in the Korean market, U.S. exporters would have to become more competitive with Japanese exporters. In some cases, this might mean accepting lower profit mar-

gins. In other cases, especially where U.S. exporters penetrate the Korean market for the first time, unrealistically low or negative profit margins might be required. Second, U.S. goods would have to become competitive in non-price areas; quality, warranty service, financing, customization, etc. For some U.S. companies with low export propensities, this might mean becoming more sensitive to the needs of foreign buyers and especially to foreign buyers in relatively small markets like Korea. Third, in many industries U.S. firms would have to be willing to invest long-term and enter a market at the first stage of technology transfer, the design stage. It is at this stage, according to our interviews, that decisions are made by buyers that impact on sequential imports. Fourth, U.S. firms need to expand their production capacity in the home country in order to take advantage of the dollar depreciation.

To improve the export competitiveness of U.S. firms in these directions, the U.S. government has relied on exhortation and *ad hoc* policies. No serious attempt has been made to develop a comprehensive export policy along the lines of Korea's, which involves not merely export incentives but also performance standards (targets) to insure the productive use of such incentives (Amsden 1989, ch. 1 and 2).

Although the U.S.'s share rose slowly in 1988, the authors are still questioning whether this improvement results from the U.S.'s efforts. According to Korea Foreign Trade Association's report, Korea's imports from Japan did not increase as much as Korea's total imports (thus Japan's share decreased) in the late 1980s due to the decrease in imports of Japanese parts and components resulting from the sluggish exports of Korean final products. It suggests that Korea's imports of Japanese production equipment stagnated because Korean importers switched to European suppliers. It also mentions that U.S.'s total export figures mainly depend on its exports of primary products (KFTA 1991, pp. 18-21).

Consequently, under the competitive conditions the authors observed, one may anticipate only a slow improvement in the U.S.'s exports in markets like Korea, where competition from third countries such as Japan renders U.S. currency depreciation relatively ineffective. It is also expected that U.S. pressure to liberalize further the Korean market of industrial products and Korean policies of import diversification may merely raise Korea's imports from Japan and possibly Europe, not the United States.

An alternative policy on the part of the United States to forcing

Korea to liberalize in order to import more U.S. goods would focus of the real sore spot in both countries' trade balance: the Japanese market. The U.S. and Korea both run huge trade deficits with Japan, and instead of fighting with each other, the United States and Korea would do well to join forces in order to penetrate the Japanese market. Korea's low cost but capable labor, proximity to the Japanese market, and finesse at exporting can be combined with the technical competence of U.S. firms. For the joint penetration to be successful, both the Korean and U.S. governments need to pressure Japan to eliminate the explicit and implicit barriers to entry existing in Japan.

A case in point is the Japanese construction industry, which accounts for about 10% of Japan's GNP, and has been in the process of being liberalized under intense pressure from the U.S. government. U.S. construction firms could offer architectural and engineering services and high-technology material as well as project management, while Korean construction firms could offer a capable workforce and basic construction material (as well as project management). The two parties already have experience working together in the construction business in the Middle East. However, foreign penetration into the Japanese construction market is still negligible because of various barriers. Foreign firms, including the suggested Korean-U.S. joint ventures, cannot access the Japanese market unless a wide array of barriers are torn down.

Besides reducing the trade deficits of the two countries, the formation of new Korea-U.S. production and trading ventures to enter the Japanese market might restore an element of cooperation to the two (and even three) countries' relationship. In addition, the joint penetration of the Japanese market would limit the ability of Japanese exporters to carrying out their strategy of cutting export prices and subsidizing them with windfall profits earned in their protected home market.

## Appendix A

*Regression Analysis: Changes in Japanese and U.S.'s Shares* (Number of Observation: 692)

### 1. Japanese Share

Dependent Variable: SHARE CHANGE



	B	T	Beta
Constant	-0.2175	-4.349	
PRICE CHANGE	-0.7131***	-16.637	-0.537
PART	0.4698**	2.443	0.079

Unadjusted  $R^2$  0.2876, Adjusted  $R^2$  0.2856,  $F = 139$  (D.F. 2,689)

## 2. U.S.'s Share

Dependent Variable: SHARE CHANGE

	B	T	Beta
Constant	0.1552	2.522	
PRICE CHANGE	-1.0260***	-21.805	-0.640
PART	-0.4977**	-2.130	-0.063

Unadjusted  $R^2$  0.4087, Adjusted  $R^2$  0.4070,  $F = 238$  (D.F. 2,689)

\*\* : significant at 5%, \*\*\* : significant at 0.5% (one tailed)

## 3. Definition of Variables

SHARE CHANGE: Change in each country's market share in terms of quantity from 1985 to 1987 for each product, which was derived by taking the log of share in 1987 divided by share in 1985

PRICE CHANGE: Change in dollar prices of each country's exports relative to the world price, which was derived by taking the log of (each country's price/world price in 1987) divided by corresponding price ratio in 1985.

PART: Dummy variable, which has a value of 1 for parts, and 0 otherwise.

## Appendix B

*Regression Analysis: Change of U.S.'s Share* (Number observation: 490)

Dependent Variable: SHARE CHANGE

	B	T	Beta
Constant	0.5880	1.192	
PRICE CHANGE	-0.8364***	-10.066	-0.658
PART	-0.2737*	-1.634	-0.058
CAPA UTIL	-0.5375	-0.931	-0.035
CAPA GROW	1.7540	1.293	0.045
NET SURP	0.2512*	1.602	0.062
R&D	-2.9530	-1.360	-0.053
EQUIP	-0.1653	-0.944	-0.033

Unadjusted  $R^2$  0.4406, Adjusted  $R^2$  0.4325

\*: significant at 10%, \*\*\*: significant at 0.5% (one tailed)

### *Definition of Variables*

(See Appendix A for SHARE CHANGE, PRICE CHANGE and PART)

CAPA UTIL: Capacity utilization rate of U.S. industries from 1985 to 1987, which was derived by taking the log of capacity index in 1987 (index 1985 = 100).

NET SURP: Ratio of U.S. net surplus to U.S. trade in the world market in 1987, which was derived by dividing (U.S. exports minus imports) by (U.S. exports plus imports).

R&D: Ratio of expenditure for R&D to total sales of U.S. industries.

EQUIP: Dummy variable, which has a value of 1 for production equipment, and 0 otherwise.

### **References**

- Amsden, Alice H. *Asia's Next Giant: South Korea and Late Industrialization*. New York: Oxford University Press, 1989.
- Baldwin, Richard. "Some Empirical Evidence on Hysteresis in Aggregate U.S. Import Prices." Working Paper No. 2483, Cambridge, MA: National Bureau of Economic Research, 1988.
- Froot, Kenneth A., and Klemperer, Paul. "Exchange Rate Pass-Through When Market Share Matters." Working Paper No. 2542, Cambridge, MA: National Bureau of Economic Research, 1988.
- KFTA (Korea Foreign Trade Association). *The Statistics of Foreign Trade*. Seoul, Korea: KFTA, 1990, 1991.

- KTA (Korean Traders Association). *How to Increase U.S. Exports to Korea: Report of a Survey of Korean Business Executives*. Seoul, Korea: KTA, 1987.
- Krugman, Paul. "Pricing to Market When the Exchange Rate Changes." Working Paper No. 1926, Cambridge, MA: National Bureau of Economic Research, 1986.
- Min, Sunshik. "The Appreciation of the Yen and Japan's Exports to Korea." Doctoral Dissertation. Boston, MA: Harvard University, the Graduate School of Business Administration, 1989.
- Office of Customs Administration. *Statistical Yearbook of Foreign Trade*, Korea: 1985, 1986, 1987.