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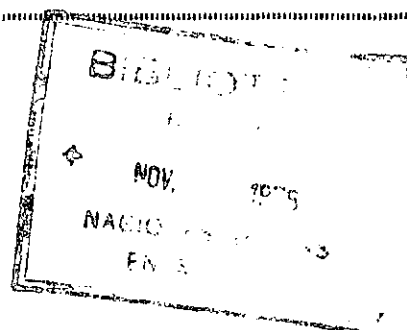
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KOREA'S EXPERIENCE WITH EXPORT-LED INDUSTRIAL DEVELOPMENT

by

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Note: This paper expresses the views and conclusions of its author
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It is widely known that Korea has achieved remarkable success as an exporter of manufactured products. Less widely appreciated, however, are the circumstances underlying Korea's export performance and the role that trade expansion has played in its industrial development. Several major pieces of research into these questions have recently been completed, and the purpose of this paper is to summarize their results.^{1/} As most of the research surveyed here was conducted during the early 1970s, detailed empirical results largely pertain to the 1950s and 1960s. However, where and as possible, this paper updates the analysis into the 1970s.

The discussion is organized as follows: Section 1 briefly traces the history of Korea's industrialization since 1955, with a particular focus on strategy and policy. Section 2 then examines export incentives and performance in greater detail, while the role of trade expansion in Korea's industrial development forms the subject matter of Section 3. Detailed estimates for 1968 of effective protection and subsidy rates are summarized in Section 4, where the use of these to

^{1/} Similar summaries can be found in Kim (1975) and Frank (1976). Based on the then available material, Balassa (1971) provides a useful survey of Korea's development through the 1960s.

evaluate resource allocation and/or to quantify its determinants in the Korean context is also considered. The paper concludes with a brief discussion of the relevance of Korea's experience to policy making in other developing countries.

1. Historical Overview^{1/}

The Republic of Korea, often referred to as South Korea (and here simply as Korea), was created at the end of World War II by the partition of the Korean peninsula, which had been occupied by the Japanese since the early 1900s. Under Japan's colonial administration, agriculture had been intensively developed in the Southern half of the peninsula to promote exports of foodstuffs to Japan. In turn, industrial development had been suppressed until shortly before World War II in order to reserve the Korean market for Japan's manufactured exports. A change in colonial economic policy stemming from mobilization and the subsequent war led to the establishment of a small "modern" manufacturing sector to supply war materiel as well as local demand for light consumer goods.

Economic activity in the South was dominated until approximately 1955 by adjustments first to partition and then to the dislocations caused by the Korean War. Thus the Korean economy's structure in 1955 was much the same as it had been left at the end of the Japanese occupation and still reflected the effects of Japanese colonial economic policies.

^{1/} A detailed account is given in Frank, Kim, and Westphal (1975), Chapters 2 through 5 and 11.

Manufacturing accounted for only eight percent of GNP, while nearly 48 percent originated in the primary sectors (see Table 1 below). Due to the disruption and aftermath of the Korean War, exports were but 1.4 percent of GNP, while manufactured exports were virtually nil.

Korea's industrial strategy during the last half of the 1950s was predominantly one of import substitution. Large scale purchases of won (the domestic currency) at the legal exchange rate by the resident UN military establishment provided a major motivation to maintain an overvalued legal rate, from which a complex structure of multiple exchange rates evolved to resolve recurrent balance of payments problems. In addition, high tariffs were imposed on imports having domestically produced similars, mostly finished products, and the government increasingly relied upon quantitative import restrictions as an additional measure to offset the progressive devaluation of the won. Under these policies, which on balance appear to have favored import substitution over exports, Korea completed the "easy" phase of import substitution for nondurable consumer goods sometime around 1960.

Nonetheless, the start of the rapid and sustained growth of Korea's exports dates back to the late 1950s. Exports in 1956 were only two thirds of their real value in 1953, the last year of the Korean War. They began growing rapidly in 1957, so that in the following year the real value of exports surpassed that in 1953 by nearly 16 percent. In current dollars, exports in 1960 were \$32.8 million, of which about 13 percent (by SITC classification) were manufactured products (see Table 3 in

Section 2 below). The principal incentive to exports during this period came from the multiple exchange rate system, under which export earnings were converted into foreign exchange certificates that were traded at a premium in a free market. Modest direct cash subsidies were also used for a short time. The variety of export incentives discussed below in Section 2 that were operative over most of the 1960s and the first half of the 1970s were not yet in force. In fact, it was not until 1959, when tariff exemptions on imports of raw material for use in producing exports were first granted, that key elements of the later system began to be implemented.

The first five years of the 1960s was a period of social, political, and economic instability during which there were a number of attempts at policy reform and economic liberalization. Upon taking control in 1961, the military government immediately completed the task of unifying the exchange rate that had begun under the civilian authorities who had replaced Singman Rhee after the Student Revolution in 1960. The transition to the unitary exchange rate did not appreciably affect export incentives, since the rate established in 1961 was somewhat lower than the pre-existing free market rate on export earnings. Exporters, however, began to benefit from an increased range of incentives, including exemption from indirect taxes both on major inputs and on export sales, credit subsidies which progressively increased both in the terms and available volume of preferential loans, and lower (by 50 percent) direct tax rates

on income earned through export activity. And, an export performance criterion was for the first time established as the basis for granting importers' licenses. In turn, as a result of a decline in U.S. grant aid, import controls were gradually tightened by means of licensing through semi-annual trade programs (which also included export targets), variable tariffs, and selective import prohibitions.

The liberalization philosophy that had emerged but largely been thwarted during the early sixties took firm hold after the election of a nominal civilian government under Chung Hee Park in early 1964. (President Park still remains in power.) Nineteen sixty-four and 1965 were thus years of major and successful policy reforms in a number of areas; they also saw the establishment of an effective system of short and medium term (indicative) planning.^{1/} With respect to exchange rate policy, a balance of payments crisis in 1963 had led to the re-introduction of a multiple exchange rate system. The unitary exchange rate was subsequently restored in 1964, when the official won-dollar exchange rate was nearly doubled for the second time in three years. Again, however, the devaluation was used primarily to simplify the exchange regime and to offset domestic inflation, rather than to increase export incentives. The unitary exchange rate has since been maintained, with periodic devaluations to adjust for a higher inflation rate in Korea than in its major trading

^{1/} For a comprehensive description and analysis of the complete set of reforms, see Cole and Lyman (1971) and Brown (1973); for a description and evaluation of planning in Korea, see Adelman (1969) and Westphal and Adelman (1972) respectively.

partners.

Other reforms during this period included an increase in commercial bank deposit and lending rates, which increased the latter from 16 to 26 percent; a price stabilization program, which successfully lowered the rate of inflation; and, a revision of the administration of direct taxes, which was required to maintain a reasonably high ratio of tax collections to GNP. These reforms were important in channeling increased private savings through formal-sector financial institutions and in generating higher savings.

Import controls were gradually relaxed following the 1964 devaluation as the number of items eligible for unrestricted import increased. However, it was not until 1967 that a major step was taken in liberalizing import restrictions through a switch from the so-called "positive" list system, under which only those commodities listed in the trade program may be imported, to the "negative" list system, under which all commodities not listed may automatically be imported without restriction. In turn, the tariff structure that had originally been created in 1949 remained unchanged until 1967, except for a minor revision in 1957 to protect recently emerged domestic industries. But the tariff reform undertaken in 1967 ultimately led to very few changes.

To summarize: industrial incentive policies until roughly 1960 were those typically associated with an import substitution regime, though exporters' receipts of foreign exchange were sold in a free market. Over the next five years, a modestly outward-looking set of incentive

policies was adopted along with a package of monetary-fiscal reforms designed to reduce inflation and increase domestic savings. By 1965, exporters were operating under a free trade regime with a realistically valued exchange rate (see Section 2) while import controls were steadily being loosened. On the other hand, production for the domestic market was protected by tariffs and the remaining import controls, while a small list of import substituting industries received many of the same incentives granted to exporters. With but minor exceptions, industrial incentive policies have remained roughly unchanged since 1965, though there appears to have been a continual trend toward liberalizing import controls.

Under the impetus of import substitution for consumer goods, real value added in manufacturing rose at an annual compound rate of 10.3 percent during the latter half of the fifties (see Table 1). But, as a result of political and economic instability between 1960 and 1965, the growth of manufacturing value added was less than 7.0 percent in both 1961 and 1964, though rates of greater than 13.0 percent were achieved in 1962 and 1963 immediately after the first attempt at policy reforms. In the decade following 1965, the manufacturing sector has grown at an annual compound rate of 19.9 percent. In turn, the growth rate of real exports since 1957 has been 27.1 percent per annum. Over the past 18 years, the share of commodities in total exports has risen from roughly 50 percent to more than 90 percent, while manufactures have increased from around ten percent of total commodity exports to slightly more than 80 percent.

Rapid growth of Korean exports clearly pre-dates the successfully implemented policy reforms of the mid-sixties. But this is not inconsistent with the growth of exports having been stimulated by export incentives, since the real effective exchange rate for exports was perhaps higher in the late 1950s than it has been since (see Table 2 in Section 2 below). Furthermore, exports initially grew from an extremely small base, while their growth accelerated after the 1964-5 reforms. These reforms are thus most properly credited with having laid the foundations for continued rapid export growth once a larger base had been established. They were the concomitant of the government's decision to adopt a strategy of export expansion when further opportunities for import substitution were only to be found in intermediate and durable goods where technological economies of scale and the limited domestic market in the early 1960s precluded establishing efficient size plants. This decision was firmly reached, however, only after a period of uneven industrial growth.

As to other indicators of Korea's development performance, real per capita income increased at an annual compound rate of 2.2 percent before 1965 and 8.2 percent thereafter.^{1/} Domestic savings rose from 1.6 percent of GNP in 1960 to a peak of 22.9 percent in 1973; investment also increased quickly, starting at 10.9 percent of GNP in 1960 and reaching an all time high of 31.4 percent in 1974 (based on current price figures).

^{1/} According to the 1975 World Bank Atlas, Korea's per capita income in 1973 in U.S. dollars was \$400.

Major Economic Indicators

	<u>1955</u>	<u>1960</u>	<u>1965</u>	<u>1970</u>	<u>1975^{1/}</u>
A. <u>Computation of Per Capita Income</u>					
<u>GNP (billion won at 1970 prices)</u>	938.2	1129.7	1529.7	2589.3	4107.7
<u>Population (million persons)</u>	21.5	24.9	28.3	31.4	34.7
<u>GNP per capita (thousand won at 1970 prices)</u>	43.6	45.3	54.0	82.4	118.4
B. <u>Percentage Shares in GNP at 1970 Prices</u>					
<u>Value added in:</u>					
<u>Primary production</u>	47.5	42.6	41.0	29.2	23.0
<u>Manufacturing</u>	7.9	10.8	13.9	21.6	31.9
<u>Social overhead^{2/}</u>	4.2	6.0	8.5	13.3	13.7
<u>Services</u>	40.4	40.6	36.6	35.9	31.4
<u>Gross investment</u>	10.0	8.6	12.9	27.2	26.3
<u>Total exports</u>	1.4	2.4	5.2	14.7	28.3
<u>Total imports</u>	11.2	10.4	9.8	24.8	27.2
C. <u>Percentage Shares in GNP at Current Prices</u>					
<u>Government revenue</u>	10.5	19.8	16.1	20.1	19.7
<u>Government savings</u>	.5	2.3	2.2	1.0	-2.9
<u>Total domestic savings</u>	3.7	1.6	7.7	17.1	17.7
<u>Gross investment</u>	11.9	10.9	15.1	27.2	27.1
<u>Total exports</u>	1.6	3.3	8.5	14.7	30.2
<u>Total imports</u>	9.8	12.6	15.9	24.8	39.6
D. <u>Compound Annual Growth Rates</u>					
<u>GNP (at 1970 prices)</u>	<u>1955-60</u> 3.8	<u>1960-65</u> 6.2	<u>1965-1970</u> 11.1	<u>1970-1975</u> 9.7	
<u>GNP per capita (at 1970 prices)</u>	.7	3.6	8.8	7.5	
<u>Manufacturing value added (at 1970 prices)</u>	10.3	11.8	21.3	18.5	
<u>Index of manufacturing output</u>	12.0	9.5	24.2	23.2	
<u>Total exports (at 1970 prices)</u>	16.3	24.0	36.5	25.0	
<u>Prices</u>					
<u>GNP deflator</u>	12.0	19.3	13.7	15.3	
<u>Wholesale price index</u>	10.2	17.2	7.9	18.9	

^{1/} Figures for 1975 are preliminary.

^{2/} Includes construction; electricity, gas, water, and sanitary services; transportation, storage and communication.

Sources: Bank of Korea, Economic Statistics Yearbook, 1967, 1969, 1976; National Income in Korea, 1975; and, Economic Planning Board, Korea Statistical Yearbook, 1975.

In turn, the share of exports in real GNP rose by over ten times between 1960 and 1975. All of this amounts to an impressive growth performance over most of the past two decades. The Korean economy has also performed well with respect to employment and income distribution, as will be documented in following sections.

2. A Closer Look at Export Incentives and Performance

As was observed in the previous section, an incentive system that generally favored exports over import substitution in the manufacturing sectors was not firmly entrenched until around 1965, though exporters benefitted from a free market exchange rate in the last half of the 1950s while various export incentives came into being in the early 1960s. It is virtually impossible to estimate quantitatively the impact of the various incentive policy changes that took place between 1960 and 1965. This is partly due to the unknown effect of import controls on the cost of export production, especially in manufacturing, prior to the granting of free access by exporters to imported raw materials. In turn, import controls make it impossible to determine the degree of protection afforded production for domestic sale from tariff information alone. And, it is not the absolute level of export incentives that concerns us, but rather their relative level vis-a-vis the incentives granted to domestic sales. Detailed comparisons of domestic and world market prices have been made only for 1968; a discussion of the results of this survey is postponed to Section 4 below.

Here it is necessary to rely upon estimates of the effective exchange rate for exports to gain some impression of the trend over time in export incentives. Table 2 presents these estimates, which include the value (per dollar of exports) of those incentives for which quantitative information is available. For comparison, also shown in the table is the effective exchange rate for imports, the nominal value of which equals the official exchange rate plus average customs duties and tariff equivalents (e.g., premia paid to purchase foreign exchange certificates from exporters) paid per dollar of imports. It should be fully understood, however, that the effective exchange rate for imports is a virtually meaningless indicator of protection from competing imports due to the presence of import controls throughout the period covered in the table.

The most important incentives to exporters by 1965 included unrestricted access to and tariff exemptions on imported raw materials and capital goods; generous wastage allowances in determining duty and indirect tax free raw material imports, which permitted the use of some of these imports to produce for sale on the domestic market; exemption from payment of indirect taxes both on major raw material inputs and on export sales; a 50 percent reduction in direct taxes on income earned in exporting; access to subsidized short and medium term credit to finance working capital and fixed investment respectively; and, rate reductions on several overhead inputs including electricity and railroad transport, which were intended at least in part to compensate for payment of indirect

taxes included in the normal charges for these inputs. Information is not available regarding the value of the excess of the wastage allowance over actual wastage in production for export. Except for this subsidy, the difference between the nominal effective exchange rate for exports versus domestic sales and the official exchange rate, both of which are shown in Table 2, is equal to the total value of the incentives listed per dollar of commodity exports. The difference also includes the premium on export earnings under the multiple exchange rate system when it was operative. However, it excludes the value of the export-import link system which entitled exporters to import certain "popular" items which were not otherwise approved for import. This system was used extensively as a means of subsidizing exports during the late 1950s and first half of the 1960s. It has since been used only intermittently on a more or less ad hoc basis to offset exporters' temporary losses due to market fluctuations or entry into new markets, and by now it has almost been completely abandoned.

Some of the incentives to exporters listed above are not genuine subsidies. Except where there is over-rebating, the exemption of export sales from indirect taxes on the same products sold domestically merely establishes tax neutrality under the destination principle that exempts exports from indirect taxes while such taxes are imposed on imports. In turn, while exemption from tariffs on imported inputs and from indirect taxes on major inputs regardless of source favors exports vis-a-vis production for domestic sale, this measure only relieves exporters from a

burden that would put them in a disadvantageous position as compared to exports from other countries. The effect of permitting exporters to have free access to imported inputs while restricting access in the case of production for the domestic market is the same.

Vis-a-vis world market prices, the effect of these measures is simply to subject exporters to a free trade regime: apart from minor inputs (mostly nontradables), whose prices include indirect taxes and tariffs levied at all stages of production, exporters purchase their inputs and sell their outputs at world prices. Genuine export subsidies thus included premia on the sale of export receipts under the multiple exchange rate system, wastage allowances to the extent they were in excess of actual wastage, direct tax reductions, credit preferences, perhaps some part of the rate reduction on overhead inputs, and profits due to the export-import link system. With the exceptions noted above, the difference between the absolute nominal effective exchange rate and the official exchange rate (see Table 2) equals the sum of these subsidies per dollar of exports.

The absolute nominal effective exchange rate for exports indicates the average number of won in current prices received per dollar of exports, also in current prices. Assuming that the prices of a country's exports move in parallel with foreign price movements, multiplying the nominal effective exchange rate by an index of prices in overseas markets yields the number of won in current prices received per dollar of exports, the latter in constant prices. Then, deflating the

TABLE 2

Exchange Rates for Exports and Imports
(Won per U.S. dollar)

	Official Exchange Rate	Effective Exchange Rates				
		For Exports			For Imports	
		Nominal	Purchasing		Nominal	Purchasing
		Versus Domestic Sales	Absolute	Power Parity Adjusted		Power Parity Adjusted
1958	50.0	n.a.	115.2	280.6	64.0	155.9
1959	50.0	n.a.	136.0	325.6	82.8	198.2
1960	62.5	n.a.	147.6	319.6	100.2	216.9
1961	127.5	n.a.	150.6	289.1	147.0	282.2
1962	130.0	151.5	141.2	246.0	146.4	255.1
1963	130.0	169.4	176.7	257.3	148.1	215.7
1964	214.3	281.4	263.0	285.0	247.0	267.6
1965	265.4	304.6	273.0	273.0	293.1	293.1
1966	271.3	322.9	281.6	266.0	296.4	280.0
1967	270.7	333.1	285.4	256.3	296.2	266.0
1968	276.6	354.3	291.8	246.1	302.5	255.1
1969	288.2	363.3	302.9	246.5	312.7	254.5
1970	310.7	397.2	328.0	253.6	336.4	260.1
1971	347.7	450.7	365.8	263.5	369.5	266.2
1972	391.8	482.7	402.3	261.0	415.2	269.3
1973	398.3	489.9	405.7	281.0	417.7	289.4
1974	407.0	518.2	415.6	253.8	424.0	259.0

Source: Figures for 1958 through 1970 taken from Frank, Kim, and Westphal [1975], Tables 5.8 and 5.9. Figures for 1971 through 1974 taken from an unpublished study by Kwang Suk Kim, Korea Development Institute, Seoul.

Notes: Figures are annual averages.

Conceptually, the absolute nominal effective exchange rate for exports does not include the average (per dollar of exports) value of indirect tax and customs duty exemptions, whereas the nominal effective exchange rate versus domestic sales does include it. The data required to calculate this average value are not available prior to 1962. Furthermore, separate estimates of the average value of direct and indirect internal tax exemptions are available only for 1968 through 1974, so that the absolute nominal effective exchange rate for exports shown here excludes (for all years) the average value of direct tax exemptions as well. Direct tax reductions on income earned from export activity were granted starting in 1962 and were abolished in 1973. The average value of this subsidy between 1968 and 1973 is shown below:

1968	1969	1970	1971	1972	1973
5.4	3.7	3.4	4.8	1.9	1.6

The purchasing power parity adjusted effective exchange rate is the nominal (in the case of exports, absolute) effective exchange rate multiplied by the ratio of the foreign price level to the domestic price level. It is thus a "real" exchange rate. (The base year is 1965.) The effective exchange rate (both nominal and real) for imports is based on actual tariffs and tariff equivalents, not on their legal values, from which there were widespread exemptions and reductions.

figure so obtained by an index of domestic prices gives the number of won in constant prices received per dollar of exports, also in constant prices. The resulting (absolute) purchasing-power-parity adjusted, or real, effective exchange rate for exports is shown in the fifth column of Table 2.

The average level of the real effective exchange rate for exports between 1961 and 1974 was 262.7 with the extreme values being 246.0 (in 1962) and 289.1 (in 1961). Over this period, the range is thus only 16.4 percent of the average. The rate was kept from eroding too greatly between devaluations by temporary increases in subsidy rates. (By giving annual averages of the official exchange rate, Table 2 makes it appear that devaluations occurred more frequently than they in fact did.) In turn, relative to its average over the preceding five or six years, the real effective exchange rate for exports increased appreciably in the latter half of 1972 and early 1973, by much more than is apparent from the annual averages. In response to this as well as other, less transitory indications that export incentives were perhaps yielding excessive profits, the government abolished a number of incentive measures. Thus exporters now no longer benefit from lower direct tax rates or automatic tariff exemptions on imported capital goods, while wastage allowances have declined as have credit subsidies. Exports nonetheless continue to grow rapidly, though there was a temporary drop in their growth rate as a result of world market conditions in 1974.

The real effective exchange rate for exports shown in Table 2 is of course only a very crude indicator. It would increase the precision of the estimates as an indicator of profitability if the nominal exchange rate were multiplied by an index of export unit values or export prices abroad rather than by an index of the general price level abroad. Equally, the overall domestic wholesale price index should be replaced by an index of wholesale prices weighted by export volumes if one's concern is with profitability relative to domestic sales or by an index of production costs if one's interest is in the absolute (rather than relative) profitability of exports. Likewise, the precision of the estimates as an indicator of competitiveness would be increased by using indices of domestic and foreign production costs in place of price indices. Unpublished refinements of the estimates in the latter direction by Bela Balassa confirm that the competitiveness of Korea's exports in 1974 and 1975 was slightly greater than in the late 1960s, while it had achieved an extreme level between 1971 and 1973.

Continued rapid growth of exports has been associated with a relatively high and stable real effective exchange rate, but efforts to "prove" the relationship statistically have not yielded notably robust conclusions, owing largely (and somewhat paradoxically) to the relative stability of the exchange rate. Nonetheless, based on regressions of real exports against the real effective exchange rate versus domestic sale, Frank, Kim, and Westphal (1975, pp. 85-86) conclude that "... the responsiveness of exports changed sharply after 1963.... Before 1963,

sensitivity to exchange rate policy was lacking because exports... were insignificant and because the system of multiple exchange rates... was very inefficient." It appears that two other factors were also at work making exports more highly responsive to the real effective exchange rate after 1963: it was probably not until 1963 or shortly thereafter that the government's intention to stabilize exporters' profits at relatively high rates was clearly perceived; and, the general capacity of the economy to produce, which did not begin expanding rapidly until after 1963, may have been an important factor.

As to the overall effectiveness of Korean exchange rate and incentive policies, Frank, Kim, and Westphal (1975, Chapters 8 and 9) develop and estimate a simultaneous equation model to demonstrate that the historical values of the official exchange rate, tariffs, and subsidies, taken together, nearly resulted in achieving the maximum potential growth rate. Combining subsidies on exports with tariffs on imports, the optimal official exchange rate was found to be about equal to the historical rate, though to yield the maximal growth rate tariff collections should have been somewhat higher than they actually were, which would have yielded higher government savings, investment, and thus growth. Under the hypothetical maximal growth regime starting in 1960, real GNP by 1970 would have been roughly seven percent higher than it actually was.

Export Performance

In response to stable and adequate incentives, exports have not only grown rapidly, they have also become more diversified. This may be

seen in Table 3, while the following discussion is based on somewhat more detailed statistics. The most important items in Korea's exports in 1960 were primary products, including (in order of their importance) metallic ores, rice, crude animal and vegetable materials, fish, and dried seaweed. Woven cotton fabrics were more than half of exported manufactures, which in turn accounted for less than 13 percent of total commodity exports. The share of manufactures grew rapidly after 1960, reaching slightly more than 50 percent by 1965. Clothing, plywood, woven cotton fabrics, and plates and sheets of iron and steel each accounted for more than five percent of commodity exports in that year. By 1970, clothing had grown to more than a quarter of Korea's exports of goods, plywood and textile fabrics were each more than ten percent, and electronics were approaching five percent. In turn, the ability of Korean entrepreneurs to respond aggressively to world market trends was shown in the rapid rise of wigs and human hair exports from nil in 1960 to about 12 percent of commodity exports in 1970. These exports later declined in value, falling to one and a half percent of exports in 1975, as the spotlight of fashion turned away from wigs and false eyelashes.

The composition of Korea's exports in 1975 was well diversified by comparison with other developing economies. Exports exceeded one hundred million U.S. dollars for each of the following items in that year (listed in order of importance): woven textile fabrics (of which cotton fabrics were less than ten percent), electrical machinery and appliances (including electronics), miscellaneous manufactures, fish, plates and

TABLE 3

Commodity Composition of Exports

	1960		1965		1970		1975	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Food and Live Animals (0)	9.7	29.6	28.2	16.1	65.6	7.9	602.3	11.9
Beverages and Tobacco (1)	.5	1.5	.9	.5	14.2	1.7	67.6	1.3
Inedible Crude Materials (2)	15.8	48.2	37.0	21.1	100.0	12.0	150.5	3.0
Mineral Fuels (3)	1.1	3.3	1.9	1.1	8.7	1.0	104.5	2.1
Animal and Vegetable Oils and Fats (4)	.2	.6	.1	.1	.1	.0+	.9	.0+
Chemicals (5)	.4	1.2	.4	.2	11.4	1.4	74.8	1.5
Manufactured Goods by Material (6)	3.9	11.9	66.4	37.9	220.9	26.4	1,484.6	29.2
Wood and Cork Products (63)	-	-	18.2	10.4	93.5	11.2	227.6	4.5
Textiles (65)	-	-	10.5	6.0	84.9	10.2	648.9	12.8
Nonmetallic Mineral Manufactures (66)	-	-	2.8	1.6	6.5	.8	106.8	2.1
Iron and Steel (67)	-	-	12.7	7.3	13.4	1.6	231.5	4.6
Manufactures of Metal (69)	-	-	2.2	1.3	12.2	1.5	124.1	2.4
Machinery and Transport Equipment (7)	.1	.3	5.5	3.1	61.5	7.4	702.1	13.8
Electrical Machinery and Appliances (72)	-	-	1.9	1.1	43.9	5.3	441.6	8.7
Transport Equipment (73)	-	-	1.1	.6	9.2	1.1	183.7	3.6
Miscellaneous Manufactured Articles (8)	.1	.3	34.5	19.7	352.5	42.2	1,882.6	37.1
Clothing (84)	-	-	20.7	11.8	213.6	25.6	1,148.2	22.6
Footwear (85)	-	-	4.1	2.3	17.3	2.1	191.2	3.8
Miscellaneous (89)	-	-	8.9	5.1	114.1	13.7	383.6	7.5
Human Hair and Wigs (89995)	-	-	6.8	3.9	101.1	12.1	75.3	1.5
Unclassified (9)	1.0	3.0	.2	.1	.4	.0+	11.1	.2
TOTAL	32.8	100.0	175.1	100.0	835.2	100.0	5,081.0	100.0

Source: Bank of Korea, Economic Statistics Yearbook, various issues.

Note: Values are in millions of current U.S. dollars. Totals may not reconcile due to round-off error.
 Figures for 1975 are preliminary.

sheets of iron and steel, veneer sheets and plywood, footwear, transport equipment, clothing, manufactures of metal, and nonmetallic mineral manufactures. Together, exports of primary products included in SITC categories 0 through 3, which had represented more than 80 percent of commodity exports in 1960, totaled \$925 million, which was less than the combined exports of woven textile fabrics plus electrical machinery and appliances by over \$150 million. Exports of rice, more than ten percent of the total in 1960, were nil after 1967.

As is shown in Table 4, Korea's exports classified by destination also became less concentrated as manufactured exports grew. Japan's share fell from nearly two thirds in 1960 to little less than one fourth in 1975, while the share of the United States rose from nearly seven percent in 1960 to almost one half in 1970 before falling to roughly 30 percent in 1975. In turn, Korea's exports to Europe and the rest of the world increased more than proportionately, with those to the Middle East rising particularly fast after 1973.

This is an appropriate point to dispel several common misimpressions regarding the sources of Korea's export performance. All of these explain Korea's success in terms of its special relationship to the United States and Japan. The data in Table 4 show that the share of Korea's exports to countries other than the United States and Japan increased from 30.0 to 44.2 percent between 1960 and 1975, which is not consistent with this explanation. In turn, an analysis by Cole (1975), demonstrates

that Korea's share in United States' imports was less than that of Taiwan and Hong Kong throughout the period covered (1962-72). In 1962, Korea's share in the United States' import market was 0.06 percent while Taiwan and Hong Kong had shares of 0.3 and 1.0 percent respectively. By 1972, Korea's share had risen to 1.3 percent and those of Taiwan and Hong Kong to 2.3 percent each. With respect to Japan's imports, Korea's share generally fell short of Taiwan's but exceeded Hong Kong's; these countries' shares in Japan's imports in 1972 (1962) were 1.8 (0.5), 1.8 (1.1), and 0.5 (0.3) percent respectively. At least to the extent that Hong Kong has no special relationship with either the United States or Japan, these comparisons do not suggest that Korea's exports were particularly favored by its ties with these countries. They do, however, offer useful perspective on just how successful Korean exporters have been at penetrating foreign markets.

In fact, with but one exception, Korean exports have not received special preferences unavailable to other developing country exporters from either the United States or Japan. The exception occurred during the Vietnam War, when Korean exporters were granted special preference in military procurement. However, exports under military procurement did not begin until 1967 and averaged only 3.4 percent of total exports over the seven years to 1973. The maximum contribution to Korea's annual exports came in 1968 and was 6.4 percent.^{1/}

^{1/} Frank, Kim, and Westphal (1975), pp. 77-8.

TABLE 4

Destination of Commodity Exports

	<u>1960</u>		<u>1965</u>		<u>1970</u>		<u>1975</u>	
	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>
United States	2.2	6.7	61.6	35.2	395.0	47.3	1,536.3	30.2
Japan	20.8	63.4	43.9	25.1	233.9	28.0	1,292.9	25.4
Europe	4.6	14.1	21.4	12.2	76.0	9.1	936.7	18.4
Other Asia	3.8	11.6	41.8	23.9	81.8	9.8	760.0	14.9
Rest of World	<u>1.4</u>	<u>4.3</u>	<u>6.3</u>	<u>3.6</u>	<u>47.6</u>	<u>5.7</u>	<u>555.2</u>	<u>10.9</u>
TOTAL	<u>32.8</u>	<u>100.0</u>	<u>175.1</u>	<u>100.0</u>	<u>835.2</u>	<u>100.0</u>	<u>5,081.0</u>	<u>100.0</u>

Source: Bank of Korea, Economic Statistics Yearbook, various issues.

Note: Values are in millions of current U.S. dollars. Totals may not reconcile due to round-off error.

Beyond the military procurement just discussed, Korea's exports may also have benefitted from commercial relationships (e.g., direct foreign investment, subcontracting) fostered by its close ties to the United States and Japan. I am unaware of any studies which permit general conclusions to be reached regarding this possibility, but the following points are relevant.

Most important, direct foreign investment has not been responsible for a very large proportion of total foreign capital inflows.^{1/} Korea has, of course, relied extensively on foreign savings to finance investment; the ratio of imports minus exports to investment averaged 56.4 percent between 1955 and 1975, the ratio to GNP averaged 9.6 percent. During the 1950s and early 1960s, Korea's continuing trade deficit was almost wholly financed by grant aid from the United Nations and the United States. It was not until the mid-sixties that foreign borrowing became

1/ Legislation controlling nongrant foreign capital inflows was first passed in 1960. Preferences, including a rather standard package of tax concessions for direct foreign investment, were simultaneously established to stimulate the inflow of foreign capital and technology, while limits on equity investment and profit remittances by foreign investors were completely removed in 1966. The relatively low volume of direct foreign investment in Korea during the 1960s is commonly explained either by the uncertainties of its political situation or, more plausibly, by purposeful administrative tactics that were (apparently) relaxed in the early 1970s; it was not due to the lack of legislated inducements.

important, but once started it assumed large proportions.^{1/} However, most of the private capital inflow was in the form of commercial loans. Between 1966 and 1971, direct foreign investment averaged less than four percent of total foreign capital inflows. The proportion increased to average nearly 20 percent over the next four years, largely due to Japanese investment stimulated by rising wages and environmental controls at home. Cumulative direct foreign investment in Korea prior to 1970 was appreciably less than \$100 million in current prices; the inflow from 1970 to 1975 was much larger, in the neighborhood of \$700 million. Thus, any substantial role played by direct foreign investment in promoting Korea's exports would have come after 1970.^{2/}

In fact, it was not until 1970 that Korea established its first free trade zone explicitly designed to attract direct foreign participation in exports. Up to mid-1973, total exports from firms located in this zone cumulated to only \$20 million, though the total planned annual export volume from these firms was \$309 million.^{3/} More than half of the

^{1/} In 1966, official grants were roughly equal in volume to foreign loans; by 1970, the volume of latter was more than five times the size of the former, while less than half of the loan arrivals were from government and multilateral sources. Most of the foreign private loans flowing into Korea have come from Japan, the United States, and Western Europe; many, but by no means all, have been suppliers' credits of one form or another.

^{2/} The discussion in this paragraph is based on Frank, Kim, and Westphal (1975), Chapter 7 and various statistical publications of the Bank of Korea and the Economic Planning Board.

^{3/} Figures in 1973 dollars. See Choe (1975).

planned exports were to come from electrical machinery and appliance producers, most of whom were involved in offshore electronics assembly. In turn, data are available to indicate the extent of foreign, mostly Japanese followed by American, involvement in electronics exports as of 1972. At that time, wholly-owned foreign firms accounted for 34 percent of total production and 54 percent of exports within the industry; the respective figures for joint ventures were 20 and 18 percent.^{1/} Electronics thus appears to be one industry in which foreign participation has been important in Korea's export performance. Similar data for other industries are lacking, but my impression is that electronics exports represent an atypical extreme in the extent of foreign collaboration.

In summary: it appears warranted to conclude that Korea's remarkable achievement as an exporter of manufactures is largely due to the efforts of its entrepreneurs and only tangentially benefitted from the unique circumstances tying Korea to its allies.

3. The Role of Trade Expansion in Industrial Development

The very low share of exports in GNP observed in the 1950s is atypical by international comparison. This suggests that the growth of Korea's exports can be interpreted simply in terms of catching-up to the international "norm." To see whether this is so requires comparing Korea's economic structure with that of other countries of similar size and level of overall development. It is not very useful to do this.

^{1/} Suh (1975).

directly, however, for there are very few countries in the world that are similar to Korea in these respects. A more useful, albeit indirect, comparison can be made using the results of cross-country regression analysis aimed at determining the average, or "norm," economic structure at different levels of development and according to country size.^{1/}

Table 5 compares structural norms applicable to Korea for 1955 and 1972 with the historically observed structural shares. (Nineteen seventy-two is used rather than a later year to avoid the possible distorting effects of the world boom in 1973 and the subsequent aftermath of the increase in oil prices.) Two sets of norm estimates are given: the first uses Korean values of per capita income, population, and the ratio of the current account balance of payments deficit to total domestic resources to calculate the norms from cross-country regressions in which these variables appear as explanatory factors; the second also uses Korean values of per capita income and population but arbitrarily assumes that the capital inflow ratio is zero. Differences between these sets of norms reflect the effects of foreign capital inflows at the unusually high rates observed in Korea.

In 1955, the share of industry (manufacturing plus construction) in GDP was somewhat below that which would be expected while the share of exports was very far below the average for a country of Korea's size and per capita income. By 1972, unusually rapid industrialization had

^{1/} The cross-country regressions used are from Chenery and Syrquin (1975).

TABLE 5

Observed and Norm Industrial Structure

<u>Observed Structural Shares in Korea</u>	<u>1955</u>	<u>1972</u>
Per capita GNP (1965 prices)	\$79	\$179
Capital Inflow Ratio	7.7%	4.9%
Share of Investment in GDP	12.0	20.8
Share of Exports in GDP	1.7	21.0
Share of Mfg. Exports in GDP	.4	17.8
Imports as Percent of GDP	10.0	26.1
Primary Share of GDP	48.0	32.0
Industry Share of GDP	13.0	26.0
Utilities Share of GDP	3.5	7.5
Services Share of GDP	35.5	34.5

<u>Norm Structural Shares</u>	<u>Actual Capital Inflow</u>		<u>Zero Capital Inflow</u>	
Per capital income	<u>\$79</u>	<u>\$179</u>	<u>\$79</u>	<u>\$179</u>
Share of Investment in GDP	14.4	20.2	12.8	19.2
Share of Exports in GDP	9.8	10.8	16.0	14.8
Share of Mfg. Exports in GDP	1.4	2.9	.5	2.3
Imports as Percent of GDP	17.6	15.8	16.1	14.8
Primary Share of GDP	52.8	33.5	55.4	35.3
Industry Share of GDP	14.4	24.9	11.7	23.1
Utilities Share of GDP	5.2	7.1	5.6	7.4

Sources: Westphal and Kim, (1974), p. 91. The norms are those estimated from the large country sample.

reversed the pattern: industry's share was somewhat above the norm while the share of exports was nearly twice the norm when adjusted for the inflow of foreign capital. From the figures shown in Table 5, it may further be concluded that: 1) the share of primary production was probably lower than normal over the past 20 years; 2) the pace of industrialization was more rapid than in many other countries; 3) the growth of manufacturing exports was unusually rapid and reflects more than simply catching up to the norm after the dislocations caused by Japanese colonial policy and two wars; and, 4) the growth of investment was atypically large and too quick to be attributed merely to high foreign capital inflows.^{1/}

While it is apparent from the comparisons above that Korea's industrial development has clearly been export-led, this stands out even more dramatically when the sources of Korea's industrialization are compared with international norms. Using input-output tables, which are fortunately available for several years for Korea, it is possible to measure the contributions of domestic demand expansion, export expansion, and import substitution to industrialization. Roughly speaking, the measure used here decomposes the increase of industry's share in GNP into these three sources, where import substitution is defined in terms of the changing share, for each industrial subsector, of imports in total supply.^{2/}

1/ In relative terms, 1972 was a recession year in Korea, which explains the investment rate's proximity to the norm in that year; investment was more than 28 percent of GNP from 1969 to 1971.

2/ The decomposition is that developed by Chenery (1969). See Frank, Kim, and Westphal (1975), pp. 86-96 for additional details.

The sources of Korea's industrialization from 1960 to 1968 are compared below with crudely estimated cross-country norms for the growth of per capita income from \$100 to \$200. (The estimates for Korea have unfortunately not been carried beyond 1968.) While import substitution contributed very little to Korea's industrialization, the growth of exports contributed more than twice the relative amount that is typically associated with the doubling of per capita income from \$100 to \$200. What makes this comparison all the more striking is that during this period Korea's per capita income increased by only 55 percent, in contrast to the 100 percent increase underlying the norm estimates.

TABLE 6

Sources of Industrialization

	<u>Domestic Demand Expansion</u>	<u>Export Expansion</u>	<u>Import Substitution</u>
Korea (1960-68)	60%	38%	2%
Large Country Norm	55	24	21
All Country Norm	50	18	32

Source: Frank, Kim, and Westphal, (1975), p. 95.

One may also use input-output data to calculate the contribution of each source, sector by sector, to changes in output quantities, rather than to changes in sectoral shares in GNP as above. Seven input-output

tables spanning the period from 1955 to 1973 at roughly three-year intervals are available for Korea. But to insure that the analysis is meaningful, it is necessary to convert data for different years to constant (domestic or world) prices. This has so far been done only for the tables spanning 1955 to 1968, so that the analysis which follows is necessarily restricted to this period. In turn, data are not available at the same level of detail for 1955, so that parts of the analysis cover only 1960 to 1968. However, in qualitative terms and for aggregates, the results for this period are not greatly different from those that would be obtained if the complete analysis could be extended to 1973.

The top half of Table 7 shows the sources of the growth of aggregate output decomposed to indicate separately the relative contributions of the primary, manufacturing, social overhead, and service sectors. Between 1955 and 1968, the growth of the manufacturing sectors was responsible for more than half of the growth of aggregate gross output. In turn, the growth of manufactured exports directly accounted for 15.8 percent (8.4 divided by 53.2 expressed as a percent) of the increase in manufactured output. The estimates shown under the total column for each source include the source's indirect contribution due to induced changes in intermediate demand. Thus the expansion of exports, not just in manufacturing but throughout the economy, contributed 24.2 percent (12.9 divided by 53.2) to the growth of manufactured output, which means that there were strong backward linkages from exports. In contrast, import substitution, by which is meant a fall in the share of imports in total domestic supply,

TABLE 7

Direct and Total Growth Contributions

	Domestic Demand Expansion		Export Expansion		Import Substitution		
	Direct	Total	Direct	Total	Direct	Total	Total
<u>1955-1968: All Goods & Services^{1/}</u>							
Primary Sectors	18.8%	16.3%	.7%	3.3%	-2.3%	-2.2%	17.2%
Manufacturing ^{2/}	42.6	38.5	8.4	12.9	2.2	1.8	55.2
Social Overhead	14.4	13.8	1.4	1.9	-.0	.1	15.8
Services	<u>13.2</u>	<u>11.9</u>	<u>.7</u>	<u>2.0</u>	<u>-.2</u>	<u>-.2</u>	<u>13.7</u>
All Sectors	<u>89.0</u>	<u>80.5</u>	<u>11.2</u>	<u>20.2</u>	<u>-.3</u>	<u>-.6</u>	<u>100.0</u>
<u>1960-1968: Manufactured Goods^{3/}</u>							
Exporting Sectors	10.2	8.7	11.5	13.0	.5	.5	22.2
Import Competing Sectors	23.6	22.4	.3	2.4	-1.8	-2.7	22.1
Non-Import Competing Sectors	44.1	39.7	1.1	6.0	6.2	5.7	51.1
Other Sectors	<u>3.9</u>	<u>3.2</u>	<u>2.1</u>	<u>2.8</u>	<u>-1.7</u>	<u>-1.7</u>	<u>4.3</u>
All Manufactures	<u>81.7</u>	<u>74.0</u>	<u>15.1</u>	<u>24.3</u>	<u>3.2</u>	<u>1.7</u>	<u>100.0</u>

^{1/} Based on data at constant domestic prices.

^{2/} Includes "other."

^{3/} Based on data at constant world prices.

Source: Westphal and Kim (1974), Table K.

Note: Figures may not reconcile due to round-off error. Growth contributions between 1955 and 1960 (1960 and 1968) were first calculated at the 29 (118) sector level and then aggregated before converting to percentages.

accounted directly for little more than two percent of the growth of manufacturing. Its total contribution was even less, indicating that import substitution generated indirect demands on sectors having higher than average requirements for imported intermediate imports.

In the bottom half of Table 7, the growth of manufactured output is decomposed according to a classification of sectors by trade category. Unfortunately, the data required for this do not extend back to 1955. The definition chosen classifies a sector as "exporting" if more than ten percent of output is exported, as "import competing" if more than ten percent of domestic supply is imported, and as "nonimport competing" if neither the export nor the import share exceed ten percent. "Other" sectors comprise those in which both shares exceed ten percent.^{1/} More than half the growth of output in the exporting sectors was due to export expansion, while these sectors were the source of more than 75 percent of the growth of manufactured exports and 20 percent of the growth of manufacturing. Nonetheless, the expansion of domestic demand played a major part, as may be seen either by its contribution to the growth of all manufacturing output, which is nearly 75 percent, or by the total magnitude of the contribution of the sectors in which exports were less than ten percent of output in 1968. Only among the sectors that had achieved nonimport competing status by 1968 was import substitution the source of more than ten percent of output growth.

^{1/} Based on export and import shares in 1968.

The figures presented above amply demonstrate that the growth of exports has played a dominant role in Korea's development, accounting for roughly 20 percent of the growth of aggregate output between 1955 and 1968 when backward linkage effects through the demand for intermediate inputs are included. There is every indication that its contribution has been even greater since 1968, perhaps approaching 35 percent over the period from 1968 to 1975. Furthermore, these estimates understate the full contribution of export growth, for the only indirect contribution included is that due to the derived demand for domestically produced intermediate inputs. Two additional indirect effects may be distinguished: a multiplier effect due to increased consumption and investment out of the additional income earned through export and export related activities; and, a foreign exchange effect due to increased production made possible by a rise in foreign exchange receipts. These effects are most dramatic where factors of production would have otherwise been unemployed, but they also operate by increasing allocative efficiency whenever the domestic resource cost, at shadow prices, of exports is less than the shadow priced value of the foreign exchange receipts. Furthermore, these effects may increase either current or future consumption, the latter through increasing the rate of investment. To determine the magnitude and direction of these effects requires a sophisticated general equilibrium model of a type that has not yet been constructed for Korea. Nonetheless, there is evidence to suggest that these indirect effects have been quite important in Korea.

Korea has been relatively successful in finding employment for its labor force. While only a crude measure, this is indicated by the fall in the unemployment rate from a peak of 8.3 percent in 1962 to the current level of 4.1 percent. It is very likely that there would have been serious unemployment, at least in urban areas, had not exports of light, labor-intensive manufactures grown so rapidly. At least, this is the inference that can reasonably be drawn from estimates of the share of employment due to exports. Table 8 presents estimates taken from a recent study based on input-output data. The indirect employment included in the "total" estimates accounts only for that required in the domestic production of intermediate goods used in exports, so that multiplier and foreign exchange effects on employment are neglected. Even so, exports are seen to have accounted for more than one quarter of manufacturing employment and close to ten percent of total employment in 1970. The contribution of export expansion to increased employment is even more impressive. The same study finds that between 1960 and 1970, the growth of exports was responsible for 38.3 percent of the growth of employment in manufacturing and 32.7 percent of the growth of total employment.^{1/}

Korea has also been successful in increasing the degree of capacity utilization within the manufacturing sector. The most reliable statistics showing the trend of capacity utilization rates are based on electricity usage data and define 100 percent capacity utilization to be

^{1/} Both estimates are inclusive of indirect employment generated by exports.

TABLE 8
Percent of Employment Due to Exports

	<u>1960</u>	<u>1966</u>	<u>1970</u>
<u>Manufacturing Sectors</u>			
Direct Employment in Exports	2.9	13.6	18.9
Total Employment Due to All Exports	5.8	19.0	25.9
<u>All Sectors</u>			
Direct Employment in Exports	2.4	3.4	5.1
Total Employment in Exports	3.7	6.7	9.1

Source: Cole, Westphal (1975), Table 1.

Note: The "A" employment estimates given by Cole and Westphal for 1960 have been converted to correspond to the "B" estimates for 1966 and 1970 by applying the ratio of the "B" to the "A" estimate for 1966 to the corresponding figure for 1960.

equal to plant operation 24 hours a day, 365 days a year. On this basis, the capacity utilization rate within manufacturing as a whole is estimated to have increased at an annual compound rate of 7.2 percent, from 17.7 percent in 1962 to 31.9 percent in 1971 (the survey from which these results are taken does not extend beyond 1971).^{1/} In terms of the measure used, 31.9 percent capacity utilization (on average, roughly the same as single shift operation throughout all of industry) is quite high by international standards. While it is not possible to state whether and by how much the expansion of exports contributed to the increase in capacity utilization, there is little doubt it played a significant role.

^{1/} See Kim and Kwon (1976), Table 2, U₁ series.

Most difficult to assess is the impact of exports on economic efficiency. The determinants of comparative advantage are many and complex. They include elements such as the natural resource endowment, labor skills, learning by doing and other dynamic phenomena, and risk and uncertainty, which are either difficult to quantify or have not been quantified with sufficient precision in Korea's case. Nonetheless, to the degree that Korea's comparative advantage during the 1960s may be said to have been in labor intensive as opposed to capital intensive activities, a partial assessment is possible. Table 9 gives average labor-capital ratios for exports and for the replacement of imports by domestic production. These ratios are weighted averages, in which the weights are proportional to each sector's share in exports and imports respectively. For comparative purposes, the weighted average factor intensity of domestic output is also shown in the table. Furthermore, since these estimates are based on input-output statistics, both direct and total factor intensity measures can be presented. However, for technical reasons having to do with the estimation procedure as well as for substantive reasons, the direct factor estimates are both the most reliable as well as the most relevant.

On examining these estimates, one finds that manufactured exports were more labor intensive than imports of manufactures in every year. On the other hand, total exports were more capital intensive than the bundle of total imports. The latter is to be explained by the effect of Korea's natural resource endowment on the composition of its trade in primary products; Korea exports relatively capital intensive minerals and imports highly labor intensive agricultural products.

TABLE 9

The Factor Intensity of Trade

	Labor-Capital Ratios (Man-years per million won)			
	<u>1960</u>	<u>1963</u>	<u>1966</u>	<u>1968</u>
<u>Direct Factor Requirements</u>				
<u>Manufactured Products</u>				
Domestic Output	2.97	2.89	2.67	2.64
Exports	2.72	3.02	3.24	3.55
Imports	2.09	1.93	1.98	2.33
<u>All Goods & Services</u>				
Domestic Output	4.39	4.59	4.46	4.12
Exports	3.25	2.52	2.41	2.15
Imports	4.53	4.87	4.05	4.28
<u>Total Factor Requirements</u>				
<u>Manufactured Products</u>				
Domestic Output	5.43	5.41	5.03	5.11
Exports	3.74	3.71	4.09	4.29
Imports	2.77	2.40	2.10	2.74
<u>All Goods & Services</u>				
Domestic Output	4.39	4.59	4.46	4.12
Exports	3.42	3.05	3.25	3.15
Imports	3.78	3.66	3.26	3.48

Source: Westphal and Kim (1957), Table O.

The labor-capital ratios, by sector, on which these estimates are based are those for a single year -- 1968. Thus, changes over time in the estimated factor intensity of a particular aggregate are due solely to changes in its composition. Comparing direct factor intensity estimates across years, one may conclude that Korea's manufactured exports became increasingly more labor intensive over time while its manufactured imports

tended to become more capital intensive. In fact, whereas Korea's manufactured exports were less labor intensive than average manufacturing in 1960, they were more labor intensive by 1968. Manufactured imports were more capital intensive than average manufacturing throughout the period.

At least between 1960 and 1968, the shifts over time in the composition of manufactured exports and imports, when translated into changes in direct labor-capital ratios, thus suggest that Korea was following its comparative advantage within the manufacturing sector, where unskilled labor was abundant and capital scarce. However, largely because of the growth of agricultural imports, it cannot be said that total exports were becoming more labor intensive relative to total imports. These conclusions hold almost equally when one examines the total factor intensity estimates. They need not imply, however, that resources were being allocated inefficiently within the primary sector. The relative abundance of some minerals led to the export of these, and it may well have been efficient to import foodgrains given Korea's poor climate and land.

Another study, Hong (1976), investigates the factor intensity of trade up to 1973. Once allowance is made for differences in estimation methods and in the presentation of results, Hong's estimates for manufactured products over the period 1960 to 1968 are consistent with those given above. However, his investigation strongly indicates that there has been an appreciable increase in the capital intensity of manufactured exports after 1968, particularly with respect to the index of

total factor intensity. In part, this is due to capital deepening in the manufacturing sector and rapid increases in labor productivity, as Hong documents by using capital-labor ratios, by sector, specific to each year. Additionally, particularly after 1970, it may also be traced to increased exports of cement, steel, fertilizer, and textiles and miscellaneous items based on petrochemical derivatives. Either directly or indirectly, all of these products require capital intensive production methods in plants subject to severe economies of scale. In the latter connection, given that the domestic demand for these commodities is to be met through domestic production, temporary exports can be efficient as it permits the construction of larger plants without experiencing initial excess capacity and therefore reduces the cost of realizing greater economies of scale. Thus exports of cement, steel, and fertilizer during the first half of the 1970s may well have been in Korea's dynamic comparative advantage. It is less clear that the same conclusion holds in regard to the realization of the backward linkage from textiles and plastic products through the domestic production of petrochemicals.

Trends in the aggregate labor-capital ratio and factor productivities within manufacturing deserve brief mention. Using data from Hong's study, these trends are summarized in Table 8. The labor-capital ratio in manufacturing rose almost continuously during the first half of the 1960s, and then fell almost continuously through 1972, again rising in 1973. In turn, both the output-capital and output-labor ratios were rising continuously

during this entire period; the output-capital ratio rose by 1970 to more than twice its value in 1960, while the output-labor ratio increased by nearly 100 percent. (Output is here measured by value added.)

Total factor productivity thus about doubled between 1960 and 1973.

The sources of increased aggregate factor productivity include both changes in the composition of the aggregate and increased factor productivity at the micro level. The former reflects increased economic efficiency through changes in the allocation of resources while the latter constitutes "pure" productivity change, which in turn may be due to changes in technique or to technological progress at the micro level (as well as increased factor utilization). There have unfortunately been no sufficiently detailed investigations to distinguish between these sources in the Korean case.

TABLE 10

Factor Use in Manufacturing

	<u>1960</u>	<u>1966</u>	<u>1970</u>	<u>1973</u>
Value Added (million 1970 US\$)	392.8	804.5	1,803.0	3,215.6
Employment (thousand persons)	177	258	1,448	2,020
Capital Stock (million 1970 US\$)	772.0	1,273.2	2,137.8	2,603.5
Labor-Capital Ratio	.62	.75	.68	.72
Value Added-Capital Ratio	.51	.63	.84	1.14
Value Added-Labor Ratio	.82	.84	1.25	1.59

Source: Hong (1976), capital stock, Table A.22; employment, Table 7.6; value added, Table A.27.

The expansion of labor-intensive, light manufacturing exports contributed to the observed trend in the labor-capital ratio in manufacturing, both directly and indirectly. It did so indirectly through permitting selective import substitution. Hidden by the aggregate figures given in Table 7 is the important role played by import substitution in some sectors, which is offset in the aggregate by negative import substitution (i.e., a rising ratio of imports to domestic supply) in other sectors.^{1/} This may be seen in Annex Table 1 which presents various indices relevant to gauging the structural change that has occurred within Korea's manufacturing sector.

At a yet more disaggregated level, between 1960 and 1968, import substitution contributed substantially (i.e., greater than 20 percent) to the growth of 12 out of the 80 manufacturing sectors distinguished in the analysis from which these estimates are drawn.^{2/} Among these were sectors

^{1/} Also observed is the role played by the government's policy with respect to imports of consumer durables and other "luxury" consumption goods. Imports of items such as automobiles, refrigerators, television sets, and other electrical and electronic appliances are for the most part prohibited, so that the latent domestic demand for these products is satisfied only after domestic production is initiated. Thus, the government has managed to delay their purchase in significant quantities until they are produced locally, which gives rise to a pattern to which the term "import substitution" should not, strictly speaking, be applied. The mathematics of the sources of growth calculation recognizes this distinction indirectly by assigning a very low weight to these sectors in the aggregate import substitution estimate as a result of their initial by small share in domestic demand.

^{2/} For the source of this and the following statements, see Heston and Kim (1975), pp. 110-1 and Tables K and N.

producing fertilizers, petroleum products, sewing machines, electrical equipment and products, drugs, steel ingots, paper and paperboard, basic inorganic chemicals, and cast and forged steel (listed in order of the relative contribution of import substitution). Furthermore, import substitution played an even larger role in a number of industries over shorter intervals. Nonetheless, import shares over eight years actually increased, leading to negative import substitution, in 39 of the manufacturing sectors (and eight out of 12 primary sectors). In turn, export expansion was the source of more than 20 percent of output growth for 20 manufacturing sectors. Included among these were sectors producing various textile products at different levels of fabrication, miscellaneous manufactured products, lumber and plywood, apparel and accessories, electronics and electrical equipment. But, at the same time, the contribution of domestic demand expansion exceeded 80 percent in 53 out of the 80 manufacturing sectors. Thus the importance of domestic demand growth observed in the aggregate carries over to the individual sectors as well.

The pattern of manufacturing growth from 1960 to 1968 is clearly one of selective export expansion, largely in the labor intensive sectors, coupled with selective import substitution, primarily in sectors producing basic intermediate products. A more recent study, Suh (1975), analyzes the sources of growth through 1973. The results of his study are unfortunately not comparable with the estimates presented above for the period through 1968, partly because a different sector classification and level

of aggregation are used, but more importantly because the estimates are all based on data in current prices. They nonetheless document the continuation of selectivity in both export expansion and import substitution. Equally important, Suh's results indicate the beginnings of a trend toward an increase in the relative importance of the heavy industrial sectors in the growth of manufacturing, both with respect to the domestic market and exports.^{1/} This is brought out in the table below.

TABLE 11

Direct Growth Contributions: 1960 - 1973

	<u>Domestic Demand Expansion</u>	<u>Export Expansion</u>	<u>Import Substitution</u>	<u>Total</u>
<u>1960 - 1968</u>				
Light Industry	56.9%	10.8%	-1.0%	66.7%
Heavy Industry	25.8	1.2	6.3	33.3
Total Industry	82.7	12.0	5.3	100.0
<u>1968 - 1973</u>				
Light Industry	40.1	21.8	-1.8	60.1
Heavy Industry	30.3	2.1	-1.6	30.8
Total Industry	70.4	23.9	-3.4	100.0
<u>1960 - 1973</u>				
Total Industry	73.1	26.8	0.1	100.0

Source: Suh (1957), Table 5.5.

Note: Based on data at current prices. Totals may not reconcile due to round-off error.

^{1/} In Korean parlance, the heavy industrial sectors include nonferrous metal and electrical machinery as well as transport equipment and basic intermediate products.

The sectors experiencing relatively substantial import substitution between 1968 and 1973 included fiber spinning and textile fabrics, rubber products, chemicals, iron and steel, finished metal products, and nonelectrical machinery. With the exception of the last two industries, import substitution was concentrated in the production of intermediate goods, and took place largely in 1965 to 1970. Much of this import substitution was due to the production of basic steel products and petrochemical derivatives in medium scale plants. Among the sectors classified as heavy industry, those contributing most to the expansion of exports over 1968 to 1973 were chemicals, steel products, finished metal products, and electrical machinery and appliances.

As has already been indicated, one of the remarkable features of Korean industrialization has been its selectivity, which appears recently to have diminished somewhat on the export side but continues to be evident with respect to import substitution. Korean entrepreneurs have shown themselves to be highly responsive to opportunities to export, with notable examples being the rapid rise of wig exports in the early 1960s and later the quick expansion of electronics and footwear exports. Similarly, miscellaneous manufactures, the structure of which is continually changing, have long been a dynamic export sector. Exports nonetheless exhibit a relatively stable composition in comparison to the structure of import substitution, which has undergone continual change as new sectors are developed, often under government initiative. Thus, after the initial round of import substitution in the light consumer goods industries,

which was more or less completed by the early 1960s, import substituting investment concentrated first on fertilizer and cement, then on petrochemical derivatives and electrical appliances, and more recently on basic petrochemicals, iron and steel, and transport equipment.

The rapid growth of foreign exchange receipts from exports has been a key factor that has made possible the selectivity of import substitution, which in turn largely explains the small part it has played in the aggregate. Furthermore, the pursuit of an economy's comparative advantage is a matter not only of the composition of exports and imports but also of their size relative to domestic production and consumption. The shares of both exports and imports in GNP were abnormally low at the end of the Korean War, so that to pursue its comparative advantage has required that Korea increase the shares of both. Import substitution is naturally small in the aggregate when the share of imports is rising. In turn, selective import substitution has permitted the concentration of scarce investment resources in one or a few sectors at a time and thereby enabled greater exploitation of economies of scale and of the linkages among closely interrelated activities. Thus, in many areas, import substitution has been delayed until demand was sufficient to support efficient scale plants. This is not to deny, however, that import substitution in other areas, most notably petrochemicals and automobiles, was probably premature, as it certainly appears to have been if learning-by-doing and other "external economy" phenomena are neglected.

4. Incentives and Efficiency

Additional evidence regarding the efficiency of Korean resource allocation may be found by examining the magnitude and structure of industrial incentives, including both protection measures which distort the structure of domestic prices vis-a-vis world market prices and subsidy measures which increase factor remuneration without directly affecting product prices. Much of the literature on trade and development presumes that any substantial deviation of the exchange rate from a unified equilibrium (read, "free trade") rate and large deviations in protection and subsidies among industries cause resources to be allocated inefficiently. There are many reasons to question this view: the protection of infant industries, the need to raise revenue from tariffs, and the ability to achieve social and political goals through manipulation of the price mechanism argue in favor of some divergence between world market and domestic prices. World market prices, however, provide a standard against which the effects of incentive policies can be appraised. Large divergences from world market prices suggest the possibility, when other justifications are lacking, that allocation of resources is inefficient.

A detailed quantitative analysis of incentive policies is required to reach meaningful conclusions regarding their impact on efficiency. Such a study has been conducted only for 1968.^{1/} Its principal results are summarized in the remainder of this section.

In Korea, legal tariff rates have never been a good measure of the divergence between world market and domestic prices. First, many imports

^{1/} Westphal and Kim (1974), summarized in Frank, Kim, and Westphal (1975), Chapter 10.

are exempt from duties, including intermediate goods imported for use to produce exports and capital goods imported for various uses. Second, tariffs are virtually prohibitive for a number of commodities with the result that these are not imported. Domestic production is sufficient to satisfy local demand at or below the world market price plus tariff. In these two cases, the legal tariff overstates the nominal (i.e., actual) degree of protection. Third, many imports are subject to controls. The domestic price of such commodities can be higher than the world market price plus tariff if demand at that price exceeds the permitted volume of imports.

For the study of protection in 1968 it was thus necessary to compare domestic and world market prices directly. The divergence for a particular commodity is conventionally expressed in terms of the nominal rate of protection, which is the percentage excess of the domestic over the world market price, with the latter converted into its domestic currency equivalent at the prevailing exchange rate.^{1/} ^{2/} Average rates of legal and nominal protection are compared in Tables 13 and 14 below according to several classifications of commodities.

1/ In the case of commodities that are not exported, world price refers to the c.i.f. import price; for exports, world price refers to the f.o.b. export price.

2/ Note that this convention implies that nominal protection is equivalent, from a resource allocation point of view, to an actual tariff rate, were it imposed at the same level. As Bhagwati (1965) has shown, this is not always true where markets are imperfect. The nominal rate tends to be greater than the equivalent tariff when domestic production or quotas are monopolized, which means that nominal protection rates in the Korean context may overestimate the protective effects of import controls in an equivalent tariff sense.

Korean (legal) tariff rates in 1968 were quite low by comparison with other developing countries.^{1/} Furthermore, the protection potentially afforded by tariffs to domestic sales (i.e., of domestically produced output) was generally realized only in very small measure. The average tariff rate across all commodities in 1968 was 49 percent whereas the average nominal protection rate was only 13 percent.^{2/} There was thus a great deal of water in Korean tariff rates, with this being most evident for industrial rather than for primary products.

In view of these results, it is tempting to conclude that import controls added little to the protection provided by the tariff structure. However, to make this conclusion valid, it is necessary to analyze import restricted commodities separately. This is because legal tariff rates in 1968 were the sum of two elements: a regular rate that was legislated and a special rate that was administered and used to mop up the scarcity premiums resulting from import controls. Special tariff rates were imposed on 123 commodity groups out of a total of 365 within the price comparison survey sample; these accounted for 13.7 percent of total domestic sales within the sample.

Final judgment on the importance of import controls thus rests on a comparison of nominal protection with the regular tariff rate alone. Table 12 gives estimates which are weighted averages over all commodities for which nominal protection exceeded the regular tariff rate. The basis for

^{1/} The basis for this and the following comparisons with other developing countries is found in Little, Scott, and Scitovsky (1970) and Balassa and Associates (1971).

^{2/} In all cases, legal and nominal protection rates are averaged using domestic sales in world prices as weights; effective protection rates (see below) are averaged using value added at world market prices as weights.

classifying commodity groups by trade category is the same as that employed for classifying sectors in Table 7 above (see page 32).

TABLE 12
Protection Due to Import Controls in 1968

<u>Trade Category</u>	<u>Number of Commodity Groups</u>	<u>Nominal Protection</u>	<u>Regular Tariff</u>
Export	5	64.9%	56.5%
Import Competing	22	41.5	18.0
Non-Import Competing	46	66.2	26.9
Other	4	93.6	33.7
All	77	62.6	26.6

Source: Westphal and Kim (1974), p. 31.

Except for the commodity groups in the export category, import controls did afford some commodities significant additional protection. However, the total of 77 commodity groups included here accounted for only 11.4 percent of total domestic sales within the sample, so that in total effect, import controls were relatively unimportant. This holds even though import controls were imposed on competitive imports in the markets for commodities representing 75.6 percent of all domestic sales in the sample.^{1/}

We turn next to estimates of effective protection and subsidy rates for 1968. These estimates are based on nominal protection, rather than tariff, rates and further incorporate the effects of all incentive policies

^{1/} The last figure cited, however, represents a biased estimate of the imposition of import controls relative to total domestic sales, for a commodity group's inclusion in the price comparison sample was based, in part, on the imposition of import restrictions.

TABLE 13

Average Incentive Rates by Major Industry Grouping in 1968

	<u>Primary Sectors</u>			<u>Total</u> <u>Manufacturing</u>	<u>All</u> <u>Industries</u>
	<u>Agri.</u>	<u>Mining</u>	<u>Total</u>		
Legal Protection	36.0%	9.6%	34.1%	58.8%	49.4%
Nominal Protection	16.6	6.9	15.9	10.7	12.6
Effective Protection	18.1	2.9	17.1	-9	9.9
Effective Subsidy	22.1	4.7	20.9	-6.5	10.0

Source: Westphal and Kim (1974), Tables 2.A and 2.B.

Note: Agriculture includes forestry and fishing; "all" industries refers only to commodity producing sectors.

TABLE 14

Average Incentive Rates in Manufacturing by Trade Category in 1968

	<u>Exporting</u> <u>Sectors</u>	<u>Import</u> <u>Competing</u> <u>Sectors</u>	<u>Non-Import</u> <u>Competing</u> <u>Sectors</u>	<u>Other</u> <u>Sectors</u>	<u>All</u> <u>Manufacturing</u>
<u>On Domestic Market</u>					
Legal Protection	53.7%	54.4%	64.1%	46.3%	58.8%
Nominal Protection	5.2	31.6	5.0	23.1	10.7
<u>Effective Protection to:</u>					
Domestic Sales	-18.0	93.1	-16.4	72.8	-1.4
Exports	4.6	-8.6	-8	-2.1	3.1
Total Sales	-10.7	84.7	-18.1	70.2	-9
<u>Effective Subsidy to:</u>					
Domestic Sales	-26.2	91.4	-24.3	55.0	-8.9
Exports	13.5	35.3	6.1	8.7	12.4
Total Sales	-13.4	90.7	-23.7	37.9	-6.5

Source: Westphal and Kim (1974), Tables 3.A and 3.B.

Note: The basis for classifying individual sectors is the same as that employed in Table 7 above (see page 32).

operating in 1968, including the export incentives discussed in Section 2 above as well as subsidies granted to key import substituting industries.^{1/} Averages based on estimates made at the level of 150 commodity producing sectors are given in Tables 13 and 14. In turn, Annex Table 2 gives estimates averaged according to industrial classification.

Effective protection calculations express the impact of protection measures on value added instead of the gross price.^{2/} The effective protection rate of -0.9 for manufacturing output as a whole (see Table 13) thus indicates that protection measures on balance provided no protection to value added in the manufacturing sectors, the protection on outputs being slightly more than offset by the cost raising effects of protection on inputs. It may further be seen that protection measures afforded an implicit subsidy to primary producers, particularly in the agricultural sectors. Both of these results -- low protection to manufacturing, and higher protection to primary producers -- are nearly unique to Korea, as most other developing countries protect industry at high levels and at the expense of primary production.

Effective subsidy calculations further include the impact of credit and direct tax preferences. These incentive measures do not change unit value added in world prices, however they do affect the composition of value added and profits after taxes. These subsidies were incorporated in the following way: The total direct tax liabilities of all firms were reapportioned to each

^{1/} The subsidy due to the export-import link system is not included, but it is known to have been very small. For details regarding the estimation procedure, see Westphal and Kim (1974), Chapter 3.

^{2/} Formally, the effective rate of protection is defined as the percentage excess of domestic over world market value added, where the latter equals the difference between the world market price of the product and the cost of its inputs at world prices.

sector on the basis of its share in the total tax base; i.e., it was assumed that each firm would have paid the same average tax rate on its net income under a neutral tax policy. The difference between the re-portioned tax liability and a sector's actual tax liability is the estimated tax subsidy, which could thus be negative as well as positive depending upon whether the sector actually paid a higher or lower tax rate than the average. Interest subsidies were determined in an analogous fashion, assuming that all sectors would have paid the same average interest rate on outstanding loans, that rate being determined as the ratio of total interest payments by all sectors to total loans outstanding. Total direct tax and interest subsidies were then added to each sector's value added in domestic prices.^{1/} The effective subsidy rate is the percentage excess of this adjusted value added over value added at world market prices. Since the sum of all tax and credit subsidies over all sectors is zero, the weighted (by world market price value added) average of all effective subsidy rates is equal to the weighted average of all effective protection rates.

Under the incentive system prevailing in Korea, preferential credit goes largely to the manufacturing sectors while the primary sectors benefit from lower tax rates. As may be seen in Table 13, the net result of credit and tax preferences in 1968 was implicitly to tax industry further at the expense of primary activity. Adding these preferences reduces effective protection to industry from -0.9 to -6.5 percent and increases that to primary production from 17.1 to 20.9 percent.^{2/}

^{1/} This adjusted value added is an estimate of what value added in the sector would have been if there were no tax and credit preferences and net factor returns were unaltered from their actual value under the incentive policies followed.

^{2/} Industry is here defined to include beverages and tobacco and processed food. Removing these sectors from industry changes the average effective protection and subsidy rates to 5.7 and 0.3 percent respectively.

Overall, the average level of protection and subsidy was quite low in Korea compared with other countries, because the exchange rate in 1968 was not greatly overvalued. The levels of protection and subsidy for manufacturing were especially low.

Of course, these results obscure difference in the incidence of incentive among particular industries and between exports and domestic sales. As we are here most interested in the manufacturing sectors, Table 14 presents estimates for the sectors averaged by trade category with separate figures given for exports and domestic sales. Starting first with the results for all manufacturing, one finds that greater effective incentives were afforded to exports than to domestic sales. By virtue of being able to import their inputs duty free, exporters faced world market prices both for their outputs and for their tradeable inputs. The positive effective protection rate of 3 percent on export sales reflects the implicit subsidy to exports through generous wastage allowances and preferential rates on electricity and transportation. In turn, export sales benefitted more than did sales on the domestic market from direct tax reductions and credit preferences, so that all the incentives together yielded an effective subsidy rate on exports of 12 percent. By contrast, the effective subsidy rate on domestic sales was minus nine percent.^{1/}

As among manufacturing sectors classified by trade category, the sectors exhibiting the lowest average effective subsidy rates on total sales are the export and non-import competing sectors. These are also the sectors in which the effective subsidy on export sales on average exceeded that on domestic

^{1/} These figures are respectively 13.9 and -1.8 percent when beverages and tobacco and processed food are removed from the average for total manufacturing.

sales. These sectors together accounted for 84 percent of Korea's manufactured exports (at producer's prices) in 1968.^{1/} The share of exports in the output of the export industries was 36 percent; that for the non-import competing industries was roughly 2 percent. In turn, effective subsidy rates were highest on average in the import competing sectors, where domestic sales were highly protected. The share of exports in the output of these industries was less than two percent. However, the "other" sectors had an export share of nearly 40 percent in their output, though the effective subsidy rate on domestic sales was over six times that exports. There thus appears to be a difference in the response of the export and the "other" sectors to export incentives. A full discussion of implications of this is postponed to the conclusion, though a test of the allocative significance of incentives across all sectors is discussed immediately below.

As is widely known, effective incentive rates measured ex post reflect both differential factor remuneration rates and comparative efficiency differences, so that it cannot be ascertained without further evidence whether, for example, a high effective incentive rate is associated on the margin with higher than average profits or inefficient production. Nonetheless, an appropriately signed and significant correlation across sectors between effective incentive rates and a corresponding measure of resource allocation may be considered presumptive evidence that incentives affected the allocation of resources. This is particularly so in the Korean case,

^{1/} Export shares based on Table 3.C, Westphal and Kim (1974).

for incentive policies were quite stable between at least the four years from 1965 to 1968. In turn, the mobility and educational level of the Korean labor force, the rapid pace at which the capital stock was increased, and the absence of any clear evidence to the contrary suggest that resources were quite free to move toward profitable activities.

Table 15 gives rank correlation coefficients between various measures of effective incentive rates and resource allocation. Neither the share of exports in output nor the growth contributions of exports are significantly related to effective protection. However, export trade shares and growth contributions are significantly and positively related to effective rates of subsidy. The result is striking, for it demonstrates the importance of tax and credit preferences among the various export incentives during the latter 1960s and suggests that export incentives had a positive influence on the expansion of exports.

Imports prompt the opposite conclusion. Since the correlation between the share of imports in total supply and effective incentives is significant and positive, it suggests that import substitution had progressed least in those sectors where the level of effective incentives to domestic sales was highest. The correlations between effective incentives to domestic sales and growth contributions are not significant, though they are negative, which is what one would expect if import substitution had progressed least in sectors where incentives were greatest. In effect, effective incentives to domestic sales seem to reflect relative efficiency while effective subsidies to exports seem to reflect profit incentives.

TABLE 15

Rank Correlation Coefficients Between
Effective Incentive Rates and Resource Allocation

	<u>Share of Exports in Output in 1968</u>	<u>Percentage Growth Contribution of Exports: 1960-68</u>
Effective Protection to Exports	-.16	-.15
Effective Subsidy to Exports	.29	.26
	<u>Share of Imports in Domestic Supply in 1968</u>	<u>Percentage Growth Contribution of Import Substitution: 1960-68</u>
Legal Protection on Domestic Market	-.27	.03
Nominal Protection on Domestic Market	.30	-.19
Effective Protection to Domestic Sales	.32	-.14
Effective Subsidy to Domestic Sales	.40	-.14

Source: Westphal and Kim (1974), Table L.

Notes: The correlation coefficients were calculated at the 92 commodity producing sector level, where time series data on resource allocation are available. Coefficients equal to or greater than .16, .20, and .27 (absolute value) are significant at the .10, .05, and .01 levels respectively under a two-tailed test.

5. Conclusion

There are two aspects to the relevance to policy making in other developing countries of Korea's successful experience with export-led industrial development. The first of these concerns overall development performance and will be dealt with only in summary fashion. The second is of a more limited nature but of potentially greater consequence. It involves the question of how to promote exports effectively and efficiently.

Korea's overall development performance since the policy reforms in 1964-5 has indeed been striking, and not merely on the narrow grounds of GNP growth rates alone. As was noted previously, Korea does not have a serious unemployment problem, either among skilled or unskilled labor. In turn, the distribution of income in Korea appears to be quite even. In fact, surveys reveal that consumption expenditure among Korean households tends to be more nearly equal than it is elsewhere in the world and that from 1964 to 1970 this distribution seemed to improve.^{1/} Exports have proven to be a powerful engine of GNP growth and, due to their labor intensity, they have contributed greatly to rapid employment growth, which in turn has doubtless been a major factor in maintaining a relatively even distribution of income.

But the Korean experience, remarkable as it has been, does not necessarily provide a model for other less developed countries, as it reflects a number of special factors which are not likely to be replicated in other countries. The most obvious of these is the high level of foreign assistance, particularly during the 1950s and early 1960s, which helped build the infrastructure for subsequent growth. Foreign capital inflows

^{1/} See Frank, Kim, and Westphal (1975), Chapter 11 for details regarding this and the following points.

from all sources have continued to be substantial. Given an average gross capital-output ratio of about 2.5 over the past 15 years, the average foreign capital inflow of roughly 10 percent of current price GNP over this period yields a contribution to the GNP growth rate of about four percentage points a year. Since the average rate of GNP growth has been about 10 percent over these 15 years, without foreign savings the growth rate might have been closer to six percent. However, more relevant than this calculation is the fact that foreign capital inflows were used efficiently, as is partly reflected in the very low gross capital-output ratio achieved in Korea relative to other developing countries. The foreign capital inflow may have been atypically large, but what is important is that it was used effectively.

More to the point is the very strong government which has enabled the imposition of far-reaching economic policies including frequent devaluations of the currency and tax measures which maintained government savings at high levels until the aftermath of the rise in energy prices. In turn, government policies toward labor have been such that real wages did not rise except in response to labor shortages in the late 1960s and again more recently. Organized labor is not a powerful political interest group in Korea as it is in many other developing economies.

Equally important are the "initial conditions" at the start of Korea's rapid industrialization. With respect to the determinants of income distribution Japanese colonial occupation resulted in the virtual destruction of the landed aristocracy which had ruled Korea prior to the Japanese takeover. A complete and equalizing land reform was initiated by the United States occupation government after World War II and completed by the Korean government in 1952. This, along with the economic dislocation caused by two wars and the departure

of the Japanese, produced a relatively egalitarian distribution of assets throughout the society; in short, everyone started out after the Korean War equally poor or nearly so. Additionally, Korea inherited from its Confucian past a culture in which a very high value is placed on education. Through parents' efforts, and despite the fact that public expenditures on education in Korea have been low by international standards, it has one of the highest literacy rates in the world and a very high proportion of secondary school and university graduates. The large investment in human capital has resulted in a highly skilled labor force obtained without a large expenditure of public resources.

Lastly, much of the growth of industry and exports may be interpreted as a return to "normalcy" after the removal of foreign domination and the disruption of war. But this, like the other special factors mentioned here, is not sufficient alone to explain the successful performance of the Korean economy. Economic policies have made a substantial contribution in fostering what appears to be an efficient allocation of resources. Certainly none of the available evidence, most of which has been reviewed in the preceeding sections, is inconsistent with the propositions either that policy has made a difference or that overall resource allocation has been efficient, though with some notable exceptions in particular sub-sectors. In short, given Korea's poor natural resource endowment and assuming that its comparative advantage lie in labor intensive activities, Korea provides an almost classic case of an economy following its comparative advantage and reaping the gains predicted by conventional economic theory.

With respect to the promotion of exports, the most important conclusions from Korea's experience appear to be that exports respond to incentives while efficiency in resource allocation can be assured by operating close to a free trade regime. Both of these conclusions require further scrutiny. Nothing has so far been said about "institutional" incentives to exports while much deserves to be said. This concluding section will end with a brief discussion of the balance between price and institutional incentives. In turn, the evidence presented above regarding the efficiency of Korean resource allocation is only presumptive, not conclusive. And, the Korean government has relied upon infant industry protection as well as subsidies to foster the selective development of import substituting industries.

One additional feature of Korean export incentive policy that has so far been neglected deserves mention before going on to consider institutional incentives, for it is particularly instructive in the design of policies elsewhere. Excepting direct tax preferences, the key element in Korea's export promotion policy since the early 1960s has been to permit exporters to operate at world market prices, not only for inputs but also for capital goods and, through permitting easy access to foreign credits, short and longer term finance. Unrestricted access to and tariff exemptions on imported inputs lead to a bias in favor of using imported inputs unless somehow offset. The device of the "domestic L/C," which gives the full range of export incentives to producers of intermediate goods supplied to exporters, has been used to negate this bias in Korea. Thus the export incentive system has not unduly favored the use of imported over domestically produced intermediate inputs (of the same quality) in the production of exports, except

insofar as the wastage allowance has operated in this direction. Backward linkages from exports to the production of their intermediate goods have as a result been exploited rather effectively.^{1/} However, tariff exemptions and low interest rate loans tied to the purchase of imported capital goods discriminated against the use of indigenously produced capital goods.^{2/} In particular, the difference between the high interest rate on domestic commercial credit and the interest rate charged on suppliers' credits to purchase imported capital goods has been estimated to have increased the total purchase cost (i.e., including interest payments) of indigenous capital goods by roughly 20 percent.^{3/} Recently, having recognized the retarding effects of these policies on the domestic capital goods sector, the government has abolished automatic tariff exemptions for exporters on their capital goods imports and has established a relatively large fund for providing medium term domestic credit at an interest rate near the world market level.

We lastly turn to institutional incentives. The most difficult of these to appraise are the government assisted export marketing efforts. The government-subsidized Korea Trade Promotion Corporation was founded in 1964

^{1/} It is nonetheless true that the import content of Korea's exports is high, more than 50 percent. But in the main this stems from exports of products requiring raw material inputs not found in Korea's natural resource endowment, though there remain backward linkages to be exploited from the more recently established export lines.

^{2/} This is thoroughly documented for textile weaving machinery in Rhee and Westphal (1976).

^{3/} See Frank, Kim, and Westphal (1976), pp. 117 - 119.

to promote Korea's exports and do market research. It has since established offices in a number of important trading centers abroad. The government also authorized the Korean Traders' Association (a private organization of exporters) to collect one percent of the value of total c.i.f. imports as an export promotion fund. And, it requires its embassies abroad to participate actively in export promotion and has sent special trade missions to a number of foreign countries as well. How to market exports effectively is an important question, which makes the absence of any serious research on the part played by the Korean government's marketing assistance particularly unfortunate.

The government established annual export targets broken down in considerable detail by commodity, market, and domestic exporter starting in 1962. Export incentives and target levels were simultaneously set by the government acting in concert with exporters' associations in each industry. Export targets have generally been met or exceeded, for the export promotion campaign had had high priority, as may be seen in the following. Adjoining the Minister of Commerce and Industry's office is an "export situation" room laid out so that potential target shortfalls may be found at a glance. A large staff maintains almost daily contact with the major exporters and it is not uncommon for the Minister to intercede in the event of possible difficulties in meeting targets. The emphasis on export promotion was given further expression in 1969 when exporters began to be graded into four classes on the basis of export performance, with the highest export achievements bringing the national medal of honor, public Presidential commendation, and a number of more material benefits including relaxation of tax surveillance.

It would be naive to conclude from this that targets independently set by the government determined actual export levels via a command-type system, for the targets were not independently set and they were often exceeded. Rather the targets complemented incentives to exports without which rapid export growth would not have been possible. An important function filled by the export targeting system and its trappings was to publicize the importance attached by the government to exports: export incentives were well advertised and access to them was immediate. An atmosphere was thus created in which businessmen could be certain that the incentive system would reward efforts to export. Businessmen responded by taking the substantial risks of expanding production and capacity for export.

Another important function that may have been filled by the export targeting system appears in the difference noted between the response of export and "other" sectors to export incentives. It will be recalled that the distinction between these is that imports exceed 10 percent of domestic supply in the latter. It was noted in Section 4 that in 1968 the share of exports in the output of the export sectors was 36 percent, while it was 40 percent for the "other" sectors. This is somewhat puzzling in view of the additional finding that, on average, the effective subsidy rate on exports exceeded that on domestic sales only in the former. Furthermore, an examination of individual export industries finds a number in which total incentives to domestic sales were higher than those to exports.^{1/} There is strong, independent evidence of cartelization among producers in most if not all of these export and

^{1/} See Westphal and Kim (1976), Section 3.5.

the "other" sectors. In turn, nearly all of these sectors benefitted from above average nominal protection on the domestic market. Cartels in these sectors thus appear to have operated in the classic mold of discriminating monopoly, covering their fixed costs through high prices in the domestic market and selling at slightly above marginal cost abroad.^{1/} One can only speculate concerning the government's possible encouragement of cartels to promote exports and use of export targeting in this connection. The fact that export targets and export subsidies such as wastage allowances appear to be negotiated jointly between government and business in these industries suggests an institutional mechanism under which incentives on the domestic market are effectively linked to satisfactory export performance. (There is no evidence of excess profits in these industries). Whether exports from these sectors would have been less in the absence of export targeting is unknowable and a matter of considerable debate among knowledgeable specialists. In any event, these industries together accounted for no more than roughly 20 percent of Korea's manufactured exports in 1968.

^{1/} The most careful documentation of this is to be found in Rhee and Westphal (1976).

ANNEX TABLE 1

Structural Change: 1960 - 1968

	Domestic Demand		Shares in Total Commodity						Direct Contribution to Sector's Growth	
	1960	1968	Output		Exports		Imports		Export Expansion	Import Substitution
			1960	1968	1960	1968	1960	1968		
Agriculture, Forestry & Fishing	43.1%	31.5%	46.8%	32.8%	32.9%	4.5%	21.4%	16.3%	-1.1%	-7.9%
Mining & Energy	1.8	1.8	2.7	2.4	25.5	6.2	1.0	1.1	15.9	-3.9
Total Primary	44.9	33.3	49.5	35.2	58.4	10.7	22.4	17.4	1.2	-7.6
Processed Food	12.0	10.1	12.5	11.4	10.4	7.7	9.4	3.8	7.8	1.8
Beverages & Tobacco.	5.4	5.4	6.1	6.4	2.2	2.3	1.1	.0	4.0	2.2
Construction Materials	.8	1.9	.9	2.2	.9	1.4	.4	.4	5.6	8.0
Intermediate Products I ^{1/}	10.2	14.5	8.9	15.0	4.9	24.6	16.1	16.1	17.0	14.8
Intermediate Products II ^{1/}	14.3	15.8	11.9	13.6	12.5	13.2	27.3	24.3	10.4	5.0
Nondurable Consumer Goods	9.0	7.4	8.0	10.8	7.3	34.9	13.8	2.7	36.2	6.8
Consumer Durables	.8	1.7	.5	1.4	.1	3.3	2.2	3.7	23.2	-4.4
Machinery	1.8	5.6	1.0	1.7	1.7	1.5	6.4	20.8	8.0	-19.0
Transport Equipment	.6	4.2	.6	2.4	1.7	.3	.8	10.7	.2	-11.9
Total Manufacturing	55.1	66.7	50.5	64.8	41.6	89.3	77.6	82.6	15.1	3.2

^{1/} Intermediate products I are those at the lowest level of fabrication, for example yarn rather than cloth or steel ingots rather than steel sheet and bars. They are sometimes referred to in the text as basic intermediate products.

Source: Westphal and Kim (1974), Tables H, J, and K.

Notes: Based on data at constant world prices.

Totals may not reconcile due to round-off error.

The classification of industries used here is that developed by Balassa and Associates (1971).

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ANNEX TABLE 2

Effective Incentive Rates by Industry Group in 1968

	<u>Effective Protection</u>			<u>Effective Subsidy</u>		
	<u>Domestic</u> <u>Sales</u>	<u>Exports</u>	<u>Total</u> <u>Sales</u>	<u>Domestic</u> <u>Sales</u>	<u>Exports</u>	<u>Total</u> <u>Sales</u>
Agriculture, Forestry, & Fishing	18.5%	-16.1%	16.1%	22.5%	-9.9%	22.1
Processed Food	-18.2	-2.7	-17.0	-25.2	2.3	-23.0
Beverages & Tobacco	-19.3	-1.9	-18.6	-25.8	14.5	-24.2
Mining & Energy	4.0	-1.0	2.9	5.1	3.0	4.7
Construction Materials	-11.5	-5.2	-11.3	-16.9	5.9	-15.9
Intermediate Products I	-25.5	31.0	-19.5	-29.7	43.4	-21.9
Intermediate Products II	26.1	-0.2	24.2	19.6	17.5	19.5
Non-Durable Consumer Goods	-10.5	-1.9	-8.5	-20.6	5.4	-14.7
Consumer Durables	64.4	-4.7	51.0	38.2	2.4	31.3
Machinery	44.2	-12.7	42.9	31.5	5.2	30.9
Transport Equipment	163.5	-53.1*	163.9	158.7	-22.8*	159.1

Source: Westphal and Kim [1974], Tables 2A and 2B.

*Denotes that value added in exports at prices (inclusive of subsidy elements) actually paid and received by producers is negative.

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