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10.1 Introduction

The first objective of this paper is to analyze the relationship between the export-oriented growth strategy and the high growth performance of the Korean economy, on the one hand, and the relationship between the shifting comparative advantage and the manufactures trade pattern of Korea, on the other. The second objective is to analyze the impact of subsidized credit rationing, which was adopted as one of the major policy measures to promote export expansion in Korea, upon the pattern of manufactures trade.

The four principal policy measures that have been adopted in Korea to pursue its export-oriented growth strategy consist of vigorous administrative supports for export promotion, a preferential tax system and subsidy allocation for export activities, and reduction of the import substitution biases in the Korean economy.¹ In general, the more severe the bias of commodity market distortions for import substitution activities, the stronger should be the first three measures to promote export activities. Since there already exists a vast amount of literature dealing with the details of the export promotion policies that have been followed by the Korean government (see Hong 1979; Frank, Kim, and Westphal 1975; Krueger 1979), this study concentrates on the subsidy allocation in the form of low-interest-rate bank loans in relation to the sectoral orientation of investments and the characteristics of the leading export sectors.² That is, this paper concentrates on capital market distortions and their impact on production and trade patterns.

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Section 10.2 analyzes the relationship between the export-oriented growth strategy and the high growth performance of the Korean economy in terms of the productivity-enhancing and savings-increasing effects of export promotion. Sections 10.3 and 10.4 examine the rising real wages, capital intensity, and changing patterns of manufactures production and trade over the period 1960–80. Section 10.5 examines credit rationing at low interest rates, and the last two sections examine the impact of subsidized credit rationing on the pattern of manufactures exports.

10.2 Export-Oriented Growth Strategy and the Growth Performance of Korea

As a result of significant distortions in commodity markets that were heavily biased toward import substitution activities, the labor-abundant Korean economy had not actively taken advantage of the gains from trade à la Heckscher-Ohlin in the 1950s and maintained a semiautarkic state until the beginning of the 1960s. Even after the initiation of its export-oriented growth strategy, Korea was not a free trade economy. However, the import substitution biases caused by import restrictions, though they could not be removed entirely, have been more than offset by the vigorous government policies promoting manufactured exports.

While the absolute magnitude of Korea's exports amounted to only about \$20 million a year in the 1950s, exports expanded so rapidly in the 1960s and 1970s as to reach more than \$21 billion by 1981. Furthermore, the proportion of commodities with SITC code numbers 5 through 8 (which are usually classified as manufactured goods) in total exports expanded from less than 15% in 1960 to 77% in 1970 and to about 90% in 1981.³

Prior to the initiation of vigorous export promotion, the comparative advantage of Korea in labor-intensive manufactures remained merely a potential one. In this sense, Korea's export-oriented growth in the 1960s and thereafter may be regarded as the process of opening up the Korean economy to semifree trade. According to Corden (1971), the opening up of an economy to trade generates a "static" efficiency gain, which is very similar to a "once-and-for-all" technical progress in raising the absorption possibility frontier of a country at the given factor supplies. Furthermore, with a given constant propensity to save, the static efficiency gain itself will induce the rate of capital accumulation to rise and consequently will raise the growth rate of the economy, which might be described as the "induced growth gain" from trade. If investment goods were mostly imported, then this induced growth gain will also include the effect of reduced prices of investment goods. On the other hand, the opening up to free trade may raise the "rate" of

growth of an economy not only through the static efficiency gain and the associated induced growth gain but also by directly raising the propensity to save of the country.

If instantaneous structural adjustments are assumed, as Corden (1971) does, the static efficiency gains would materialize instantaneously. However, the opening up of a semiautarkic economy to semifree trade may occur over an extended period of time. Then, the static efficiency gains from the opening up to free trade may materialize year after year over a long period of time. Furthermore, the so-called static efficiency gains may be broadly interpreted to include the Keesing-Bhagwati-Krueger (Keesing 1967; Bhagwati and Krueger, 1973) type of positive effects of intensified international competition upon the quality of domestic entrepreneurship, the realization of internal scale economies, and the exploitation of external economies that arise from the "infant" export production activities.

In the 1950s, the imports of Korea were mostly financed by foreign aid, much of it on very concessional terms. The freeing of the Korean economy to trade (as measured by the ratio of exports to GNP) occurred over an extended period of time covering the 1960s and 1970s. The efficiency gains from trade have materialized partly in the form of rapidly increasing real wage rates and partly in the form of rising rates of return on investment. The average rates of return on investment in the Korean manufacturing sector increased from 13% in 1954–61 to about 23% in 1972–79 (see table 10.1). Over the period 1962–81, there also have been rapid increases in domestic savings, which, together with the productivity gains from trade, maintained nearly a 10% average annual growth rate of the GNP (table 10.2).

During the inward-looking growth period of 1953–61, the export share of Korea's GNP amounted to only about 3%. With the initiation of the outward-looking growth strategy in the early 1960s, the export GNP share rose rapidly from about 8% in 1962–66 to about 38% in 1977–81. The average annual growth rate of GNP rose from about 4% in 1953–61 to about 8% in 1962–66 and to about 10% in 1967–76. Because of the political turmoil associated with the assassination of President Park and a minus 6% growth in 1980, the average annual growth rate for 1977–81 fell to about 6%. However, if 1980 is excluded, the average growth rate for 1977–81 amounts to nearly 9%.

Domestic savings increased from about 4% of GNP in 1953–61 to about 24% of GNP in 1977–81. On the other hand, the proportion of gross investment in GNP rose from about 16% in 1962–66 to about 30% in 1977–81. Consequently, although domestic savings increased rapidly, Korea had to maintain substantial foreign capital inflows throughout the period 1962–81 because of the vigorous pace of investment activities.

Table 10.1 Average Annual Rates of Return on Investment in Manufacturing: Korea

	(A) Incremental Output- Capital Ratio	(B) Share of Capital in Value Added (I-O Data)	(C) Ratio of Net Working Capital to Fixed Assets	(D) Estimated Capital Gain (per annum)	Estimated Rates of Return		
					(E) = (A × B)	(F) = E/(1 + C)	(G) = (F - D)
1954-61	0.345	0.520	0.300	-0.01	0.18	0.14	0.13
1962-66	0.448	0.520	0.300	-0.03	0.23	0.18	0.15
1967-71	0.441	0.517	0.183	-0.01	0.23	0.20	0.19
1972-76	0.679	0.592	0.268	-0.09	0.40	0.32	0.23
1977-79	0.594	0.546	0.112	-0.06	0.32	0.29	0.23
1980	-0.033	0.602	-0.017	-0.20	-0.02	-0.02	-0.22
1981	0.343	0.602	-0.069	-0.09	0.21	0.23	0.14
1982	0.199	0.602	-0.044	0.03	0.12	0.13	0.13

Sources: Bank of Korea, *Economic Statistics Yearbook, National Income in Korea*, various issues; and idem, *Input-Output Tables of Korea*, various issues.

Notes: (A) Gross incremental value-added/fixed-capital ratios were computed allowing a one-year time lag between the increase in value added (at a 1975 constant factor cost) and gross fixed capital formation.

(B) Imputed wages for unpaid family workers were excluded from the share of capital in value added.

(C) In order to take account of the fact that most firms also use (net) working capital in addition to fixed capital, the rates-of-return figures were deflated by the amount of net working capital.

(D) Capital loss was approximated by the differences between the rates of increase in average prices of capital goods and those of the wholesale price index for all commodities. Estimates (G) differ from those in Hong 1979 (p. 189): 12% in 1954-61, 17% in 1962-66, 26% in 1967-71, and 27% in 1972-75. Estimates in this table use income statistics of 1975 as base year and incremental-value-added/gross-investment ratios, while the estimates of Hong 1979 use income statistics of 1970 as base year and the inverse of ICOR (incremental-capital-output ratios) in computing output attributed to gross investment. For a more detailed discussion on the estimation of the rate of return on investment see Hong 1979, 176-96.

Table 10.2 Growth, Savings, and Trade Balance in Korea (percentages)

A. Growth Rate (annual averages)					
	GNP		Manufacturing		ICOR
1953-61	4.0		10.5		1.3
1962-66	7.9		15.1		2.3
1967-71	9.7		21.8		2.8
1972-76	9.7		19.2		2.7
1977-79	9.6		15.9		3.8
1980	-5.2		-1.1		—
1981	6.2		7.2		4.4
1982	5.6		4.0		5.8
1983	9.5		10.8		3.8
1984	7.6		14.6		—

B. Ratio to GNP					
	Gross Investment	Domestic Saving	Foreign Saving	Commodity Exports	Commodity Imports
1953-61	12.4	4.4	8.0	1.1	10.6
1962-66	16.3	7.7	8.6	4.4	15.3
1967-71	25.7	15.6	10.1	9.5	22.8
1972-76	27.0	20.3	6.7	23.7	31.0
1977-79	31.5	27.9	3.6	25.9	30.0
1980	31.3	21.9	9.4	29.8	36.9
1981	29.1	21.4	7.7	32.7	37.0
1982	27.0	22.5	4.5	31.5	33.9
1983	27.6	24.7	2.9	32.9	33.8
1984	29.9	27.6	2.3	34.4	34.4

Source: Bank of Korea, *National Income Accounts: 1984*.

During 1962-71, government savings amounted to about 5.8% of GNP on average, of which about 30% was generated by tariff revenue. Government savings amounted to 4.0% and 6.1% of GNP during 1972-76 and 1977-81, respectively, and the proportion contributed by tariff revenue expanded from 48% in 1972-76 to 95% in 1977-81.

During 1953-81, around 20% of total investment was allocated to the manufacturing sector, around 10% to the primary sectors, and the rest to the service and social overhead sectors. Throughout the period, the manufacturing sector grew approximately twice as rapidly as the whole economy. During 1963-79, the total number of employed persons increased by about 3.5% per annum, while the number of workers employed in manufacturing increased by about 10% per annum (table 10.3). As a result, the proportion of manufacturing output in GNP rose from about 9% in 1953 to about 14% in 1960, to about 21% in 1970, and to about 30% by 1981. The manufacturing sector absorbed only

Table 10.3 Rising Real Wages and Capital Intensity of Korean Manufacturing

	1960	1968	1980
Capital stock (in millions won)	\$ 24,131	\$332,790	\$10,727,405
Employees' remuneration (in millions won)	\$ 6,765	\$ 77,058	\$ 3,471,631
Number of workers	275,254	748,307	2,014,751
Per worker capital stock			
In millions current won	\$ 0.088	\$ 0.445	\$ 5.324
In millions of 1980 dollars won ^a	\$ 1.956	\$ 2.853	\$ 5.324
In thousands of 1980 dollars ^b (<i>k</i>)	\$ 3.190	\$ 4.650	\$ 8.680
Wage rate			
In millions current won	\$ 0.025	\$ 0.103	\$ 1.723
In millions of 1980 dollars won ^c	\$ 0.373	\$ 0.510	\$ 1.723
In thousands of 1980 dollars ^b (<i>w</i>)	\$ 0.608	\$ 0.831	\$ 2.809
Labor share in value added	31%	26%	29%
Elasticity of substitution ^d			
Av. annual $(dk/k)/(dw/w)$: 1960–80		$(5.0\%)/(8.0\%) = 0.63$	
Av. annual $(dk/k)/(dw/w)$: 1968–80		$(5.5\%)/(10.5\%) = 0.52$	

Sources: Economic Planning Board, *Report on Mining and Manufacturing Census*; and Bank of Korea, *Economic Statistics Yearbook*.

^aApplying the GNP deflator for gross fixed capital formation in manufacturing. (Land is excluded from fixed assets.)

^bApplying the exchange rate of 613.4 won per dollar.

^cApplying the GNP deflator for value added in manufacturing.

^dPoint elasticities of capital-labor substitution estimated by assuming constant rental price for capital service over the period covered. If the rental price for capital service had actually been falling over the periods covered, the true point elasticities should be smaller than these estimates.

about 8% of total employment in 1963, but it absorbed about 13% of total workers in 1970 and 20% of the total by 1981.

The opening up of the Korean economy to trade was associated with rapid increases in the aggregate savings propensity, which resulted in continuous shifts of Korea's comparative advantage in international trade. Such a rise in the savings propensity may be explained by the high marginal propensity to save and rapid increases in per capita income, by the highly profitable export activities motivating larger savings (especially by entrepreneurs), or by a change in the basic time preference structure itself, making people more patient. The opening up to trade is equivalent to the discovery of new efficient production techniques and, hence, will raise the savings propensity.⁴ The opening up to trade might also change thrift, foresight, self-control, and benevolence of individuals as well as the government so as to raise the aggregate savings.⁵ Furthermore, the gains from trade might also stabilize political conditions and the purchasing power of money, reducing the overall risk elements in a society and raising the propensity to save (see Fischer 1961, 500–506).

10.3 Rising Real Wages and Capital Intensity of Korean Manufacturing

The very high rates of capital formation in Korea have not only generated high rates of growth in GNP and manufactured outputs but also resulted in rapid increases in real wage rates and significant rises in ICOR (incremental-capital-output ratios). During 1967–81, the average real wage rate in the manufacturing sector increased by about 7% per annum if deflated by the GNP deflator for the whole industry, and increased by about 10% if deflated by the consumer price index.⁶ The ICOR rose from 1.3 in 1953–61 to 2.3 in 1962–66, to 2.75 in 1967–76, and then jumped to 4.3 in 1977–81 (excluding 1980).

If we apply the GNP deflator for value added in manufacturing, the average real wage rate for workers employed in the manufacturing sector increased by only about 37% during 1960–68 (from \$608 to \$831), but it increased about 3.4 times during 1968–80 (from \$831 to \$2,809), implying an average annual growth rate of about 10.5%. On the other hand, the fixed capital stock per worker in manufacturing (excluding land) increased by about 87% during 1968–80, implying an average annual growth rate of about 5.5%. If we assume a constant rental price for capital service throughout the period 1968–80, the estimated point elasticity of capital-labor substitution becomes 0.52 for the period 1968–80. However, it may be more reasonable to assume somewhat falling prices for capital service in Korea during this period, implying the likely upward biases in the above estimate of point elasticity.⁷

The share of wages in value added steadily fell from about 37% in 1958 to 31% in 1960 and to 23% in 1973. However, the labor share in value added started to increase steadily thereafter, reaching about 29% in 1980. These shifts in labor share are consistent with the estimated point elasticity of capital-labor substitution. In any case, one can conclude that there were rapid increases in real wage rates and the capital intensity of the manufacturing sector in Korea during the late 1960s and throughout the 1970s.

10.4 Changing Pattern of Manufactures Production and Trade

In 1960 less than 14% of Korea's GNP was contributed by the manufacturing sector, and furthermore, less than 3% of total manufactured products were exported. The only manufacturing sector which had a sizable export-output ratio (e) was fish processing (with $e = 0.27$).⁸ The exports of various textile products (including wearing apparel) amounted to less than 3% of their outputs. By 1970, however, more than 20% of Korea's GNP was contributed by the manufacturing sector, and about 13% of total manufactured products were exported. The

following six sectors had been firmly established as Korea's major export sectors: footwear (with $e = 0.28$), wearing apparel (with $e = 0.35$), miscellaneous manufactures (with $e = 0.54$), fish products (with $e = 0.51$), veneer and plywood (with $e = 0.37$), and electronic products (with $e = 0.44$).⁹ The export-output ratios of textile yarn and textile fabric also increased to 18% and 15% respectively by 1970.

In 1980 nearly 30% of Korea's GNP was contributed by the manufacturing sector, and about 19% of total manufactured products were exported. Four labor-intensive manufacturing sectors have been added to the list of Korea's major manufacturing export sectors: textile fabrics (with $e = 0.35$), metal products (with $e = 0.46$), precision instruments, consisting mostly of watches and optical instruments (with $e = 0.42$), and leather products (with $e = 0.46$). Textile yarns (with $e = 0.18$), electrical machinery (with $e = 0.16$), and nonmetallic mineral products excluding cement (with $e = 0.14$) also became important export sectors.

Throughout the period 1960–80, the electronic products, metal products, precision instruments, electrical machinery, and leather products sectors were heavily import dependent. However, electronic products became a major export sector by the end of the 1960s and each of the others by the end of the 1970s. All these sectors are classified as export-import sectors in the sense that they exported significant proportions of their outputs in the 1970s while also being significantly dependent on imports.

The total number of workers employed in manufacturing establishments with five or more employees increased 2.7 times during 1960–68 and also during 1968–80. Among the labor-intensive manufactured export sectors, electronics and communications equipment manufacturing contributed most of the labor absorption: from 0.3% of total manufacturing employment in 1960 to 1.2% in 1968 and to 7.8% in 1980. The proportion of labor employed in the clothing and footwear sectors (including leather products) also expanded from about 10% of total manufacturing employment in 1968 to 16% of it by 1980. Surprisingly, the proportion of labor employed in textiles declined steadily from about 30% in 1960 to about 25% in 1968 and to less than 20% in 1980. The proportion of labor employed in the wood and furniture sector also declined, from about 5.8% in 1968 to about 3.3% in 1980. However, the proportion of workers employed in labor-intensive export sectors, textiles, electronic products, and labor-intensive export-import sectors as a whole steadily increased from about 59% of total manufacturing employment in 1960 to about 61% of it in 1968 and to 65% in 1980.

The major labor-intensive manufactured export sectors of Korea may be divided into three different groups. The first group represents those which were the leading export sectors in the late 1960s and early 1970s but whose export growth rates became much lower in the late

1970s. This group consists of wearing apparel, miscellaneous manufactures (mostly wigs), fish products, textile fabrics (including miscellaneous textile products), natural fiber yarns, and veneer and plywood. The second group represents those which revealed high rates of growth in exports only at the end of the 1970s. This group consists of footwear, watches and optical instruments, radios and televisions (including phonographs and tape recorders), metal products, and nonmetallic mineral products (excluding cement). The third group represents those which maintained more or less the same rates of growth throughout the 1960s and 1970s. This group consists of electronic products, wood products, and leather products. Apparently, the rise and fall of various labor-intensive manufactured exports over time do not occur strictly in relation to the order of capital intensity. That is, the magnitude of the adverse impact inflicted by the tripling of the real wage rate during 1968–80 does not seem to have been proportional to the capital intensity of the sectors.

In the 1970s there occurred a significant shift in the composition of Korea's commodity exports: the exports of capital-intensive manufactures increased significantly. Sugar refining (with $e = 0.29$), cement (with $e = 0.17$), fertilizer (with $e = 0.29$), and rubber products (with $e = 0.53$), (which are presented as capital-intensive export sectors in table 10.4) became important export sectors by 1980. Furthermore, synthetic resin, fiber and plastic materials, transport equipment, steel products, and iron and steel, which were heavily import-dependent sectors in the 1960s, became capital-intensive export-import sectors in the 1970s. However, their employment effect seems to have been very limited. The proportion of labor employed in capital-intensive export sectors and capital-intensive export-import sectors as a whole increased from about 7% of total manufacturing employment in 1960 to about 12% in 1968, but it was still 12% in 1980.

The major capital-intensive manufactured exports of Korea may be divided into two groups on the basis of employment effect. The first group represents extremely capital-intensive manufactures which experienced a declining share of labor absorption in spite of increasing exports. This group consists of synthetic resin, fiber and plastic materials, fertilizers, sugar refining, iron and steel, cement, and petroleum refining. The second group represents those sectors with relatively lower capital intensity which consequently had significant positive employment effects. This group consists of machinery, ships, automobiles and parts, rubber tires and tubes, steel products, and nonferrous metal products.

The increasing exports of such capital-intensive manufactured goods may be explained mostly in terms of the rising relative labor costs and rapid capital accumulation in Korea during 1960–80. However, gov-

Table 10.4 Sectoral Capital Intensity and Trade Patterns: Korean Manufacturing

Sector	Capital Intensity (thousands of 1980 \$) ^a			Export-Output Ratio (<i>e</i>) (%)			Import-Domestic Demand Ratio (<i>m</i>) (%)			Labor Allocation (%)		
	1960	1968	1980	1960	1970	1980	1960	1970	1980	1960	1970	1980
All primary sectors	—	—	—	3.1	3.7	5.6	12.8	17.2	42.1	—	—	—
All manufacturing sectors	4.0	5.8	10.4	2.5	13.0	19.1	18.2	23.2	20.1	100	100	100
L-intensive export ^b	2.4	2.8	4.4	5.2	35.6	43.1	10.2	4.4	5.7	23.0	27.0	28.0
K-intensive export ^c	12.8	50.1	32.3	0.6	5.4	30.2	61.5	2.8	5.1	1.7	2.7	2.1
Textile yarns and fabrics ^d	3.0	4.7	7.4	2.7	16.6	24.8	1.5	15.7	8.6	29.7	25.2	19.5
Electronic products ^e	2.0	3.6	4.5	2.7	44.2	43.8	57.4	52.3	39.6	0.3	1.2	7.8
L-intensive Export-import ^f	3.0	4.1	7.7	3.3	7.2	34.5	28.7	43.9	32.7	5.9	7.2	9.8
K-intensive Export-import ^g	4.7	6.8	28.2	4.3	3.6	20.2	26.1	39.2	23.8	5.4	9.6	9.9
N-intensive import ^h	3.4	10.9	20.8	1.8	7.4	3.6	61.0	15.4	16.6	3.5	3.3	3.7
Chemicals	9.7	6.0	16.7	2.8	1.0	7.0	38.9	39.5	30.0	4.7	4.0	5.0
Machinery	3.7	4.1	11.4	2.7	3.3	10.7	39.6	78.3	61.7	3.5	3.2	4.0
Other manufacturing ⁱ	5.0	4.7	11.4	0.9	3.4	2.3	3.3	6.3	9.7	22.3	16.6	10.2

Sources: Bank of Korea, *Input-Output Tables of Korea*; and Economic Planning Board, *Report on Mining and Manufacturing Census*.

^a1980 prices were obtained by applying the GNP deflator for gross fixed capital formation in manufacturing and the 1980 exchange rate of 613.4 won per dollar. Capital stock includes land.

^bFootwear, wearing apparel, miscellaneous manufactures, fish products, wood and furniture, and nonmetallic mineral products excluding cement.

^cRubber products, fertilizer, cement, and refined sugar.

^dIncludes miscellaneous textile products.

^eElectronic products and communication equipment, including radios and televisions.

^fMetal products, precision instruments, electrical machinery (excluding electronic products and communication equipment), and leather products.

^gSynthetic materials (resins, fibers, and plastic material), transport equipment, steel products, and iron and steel.

^hNonferrous metal products, pulp and paper products, and petroleum products.

ⁱFood products (excluding fish products and sugar), printing, and coal products.

ernment subsidy of capital in Korea has also played a role in this trend, especially in the case of increasing exports of highly capital-intensive goods.

In the 1960s the export-oriented growth of Korea was possible only through the expansion of manufactured exports to advanced countries such as the United States, Japan, and the European Community. Korea's exports to the newly affluent OPEC countries have recently increased greatly. Manufactured exports to non-OPEC developing countries steadily increased in the 1970s.¹⁰ Since, in general, developing-country import restrictions against intermediate and investment goods are not as severe as those against consumer goods, and since Korea has been transforming its output and export pattern toward such products, it is expected that in the future export expansion to developing countries may become as important as that to advanced countries. Korea has imported almost all its intermediate and investment goods from advanced countries, especially from Japan, the United States, and the European Community. The resource-rich advanced countries such as Canada, Australia, and the United States have supplied most of the non-oil primary products to Korea. Also, Korea's import dependency on non-OPEC developing countries has continuously increased, mainly in primary products but also in some manufactures as well.¹¹

10.5 Credit Rationing at Low Real Interest Rates

In addition to the full-fledged administrative support for export expansion, two major policy instruments were applied by the Korean government in carrying out the export-oriented growth strategy: the preferential tax system and the allocation of subsidies. The most important form of government subsidy allocation was, first, to maintain extremely low real interest rates on bank loans by applying fixed nominal interest rates along with high rates of inflation through expansionary monetary policy and, second, to ration these low real-interest-rate loans to preferred sectors for export expansion.

Total loans provided through the deposit money banks (DMB), Korea Development Bank (KDB), and Korea Export-Import Bank (EXIMB) have steadily increased from a magnitude equivalent to about 15% of GNP in 1962-66 to about 32% in 1967-71, to about 39% in 1972-76, and to about 46% of GNP in 1977-81.¹²

During 1962-66, EXIMB did not exist, but KDB alone provided more than one-third of total loans in the form of discretionary policy loans. During 1967-76 KDB and EXIMB provided only about 15% of total loans, but as a result of the rapidly expanding EXIMB activities since the late 1970s, their share in total loans expanded to about 18% during 1977-81. Discretionary policy loans provided through DMB (in

the form of the machine industry promotion fund, the term loan fund, the medium industry fund, the export industry equipment fund, and the foreign currency loan fund, etc.) increased from about 10% of total loans in 1962–66 to about 20% in 1967–81. Therefore, the magnitude of loans formally designated as discretionary policy loans amounted to around 36% of total loans during 1967–81.

Short-term export credits and loans for agriculture, fisheries, and housing may be classified as nondiscretionary policy loans. These loans composed about 17% of total loans during 1967–81. Thus, formal policy loans slightly exceeded half of total loans (provided through DMB, KDB, and EXIMB) during 1967–81. However, discounted commercial bills and loans based on general banking funds were also rationed at the discretion of the government in Korea, and hence, these loans should be regarded as nonpolicy but discretionary loans. The number of such loans declined from about 30% of total loans in 1967–71 to about 20% in 1977–81.

Overdraft, loans based on installment savings deposits, personal loans, remunerations (Citizens National Bank loans based on installment savings deposits), and loans by branches of foreign banks may be regarded as nonpolicy loans free of government discretion, though they may still have been subject to favoritism and political influence. These nondiscretionary nonpolicy DMB loans amounted to around 22% of total loans during 1972–81.¹³

The real interest rate (i.e., difference between nominal interest rate and the rate of change in GNP deflator) on one-year time deposits amounted to about -10.7% per annum on the average in 1954–64, 10.0% per annum during the high-interest-rate era of 1965–71, and -3.4% per annum in 1972–81. The real interest rate applied to discounts of commercial bills amounted to -7.3% per annum on the average in 1954–64, 9.5% per annum in 1965–71, and -1.7% per annum in 1972–81.¹⁴ If we estimate the real interest rates on all loans provided by all banking institutions in Korea by using the real interest rates applied to discounts of commercial bills (since the real rate of return on capital in manufacturing amounted to around 23% per annum on the average during 1972–79; as shown in table 10.1), the rate of the subsidy element associated with rationed low-interest loans in Korea seems to have amounted to about 24% per annum on the average during 1972–81.¹⁵

The weighted-average real interest rate on foreign loans amounted to 2.1% per annum during 1967–71 and -7.4% per annum during 1972–76 on the average (Hong 1979, 201). During 1977–79 Korea maintained a fixed exchange rate (at 484 won per dollar) in spite of the fact that domestic prices were rising at about 19% per annum, while the (weighted average) price level of its major trade partners (i.e., the United States

and Japan) was rising at about 6% per annum (applying equal weights to both countries). Since the Euro-dollar interest rates amounted to about 11% per annum during 1977–79 on average, the real interest rates on Korea's foreign borrowing could not have exceeded –2% during 1977–79.¹⁶ Therefore, there seems to have been as much of a subsidy element associated with foreign borrowing as there was with domestic bank loans. Naturally, the allocation of foreign borrowing has also been strictly controlled by the government.

The total volume of domestic loans provided through DMB, KDB, and EXIMB amounted to about 39% of GNP in 1972–76 and about 46% of GNP in 1977–81. On the other hand, the estimated average real rates of return on investment in the Korean manufacturing sector amounted to around 22% in the 1970s. If we take the difference between the real rate of return on investment and the real interest rate as the subsidy rate associated with domestic bank loan allocations (which exceeded 24% per annum), the annual provision of credit subsidies in Korea amounted to at least 10% of GNP each year on average in the 1970s.¹⁷ At 10% of GNP, the domestic credit subsidy must be judged large enough to significantly affect the pattern of Korea's output and trade. Furthermore, there were also low-interest-rate foreign loans amounting to about 6% of GNP each year on average in the 1970s that were allocated directly to entrepreneurs. Indeed, the rationing of domestic and foreign loans provided the largest source of rents in Korea, helping to worsen the distribution of income in the 1970s (see Hong 1981).

We have so far ignored the nonmonetary financial markets. In Korea, a business group which gets preferential treatment in bank loan rationing either directly controls (owns) a significant portion of a nonmonetary financial institution or gets preferential treatment from them. The political and economic significance of getting preferential treatment in credit rationing in the highly regulated Korean economy is the vastly reduced possibility of bankruptcy in the eyes of lenders not only in nonmonetary financial markets but also in unorganized money markets. Hence, the size of bank loans rationed to a firm itself leads to substantial additional benefits from nonbank financial markets.

10.6 Manufacturing Output and Export with Factor Market Distortions

According to Krueger (1977), factor market distortions in the form of lower rental-wage rates applied to capital-intensive manufacturing sectors would result in production (and exports) of excessively capital-intensive manufactures. Furthermore, the lower rental-wage rates that would result for labor-intensive manufacturing sectors would make

very labor-intensive sectors become profitable with excessively labor-intensive techniques of production. As a result, we would expect to observe more significant disparities in capital intensities among manufacturing sectors (as well as manufactured exports) of a country with substantial factor market distortions than in those of a country with moderate distortions in factor markets. If the government allocates subsidized loans to each manufacturing sector in proportion to sectoral value added, then the rates of subsidy (in the form of low rental price for capital service) provided per unit of each manufacturing activity will be identical. However, if the more capital-intensive sectors are allocated a larger proportion of subsidized credits per value added, then the rates of subsidy provided for these production activities will be higher than those for labor-intensive production activities. For instance, subsidized credits allocated in proportion to sectoral capital use rather than in proportion to sectoral value added will raise the relative rates of subsidies for capital-intensive sectors. This will be conducive to both output expansion and factor substitution toward more capital-intensive techniques of production in capital-intensive sectors.

In order to see what manufacturing sectors in Korea received more than proportionate amounts of subsidized loans per unit of value added, the ratio of year-end balances of outstanding (domestic and foreign) bank loans to value added of each manufacturing sector was computed (table 10.5). The "L-intensive I" group of labor-intensive manufacturing export sectors, consisting of clothing and footwear (including leather products), food products, textiles, and metal products, received subsidized bank loans much below the manufacturing average throughout the 1970s. The "L-intensive II" group of labor-intensive manufacturing sectors, consisting of miscellaneous manufactures (including precision instruments, telecommunications equipment, furniture, pottery, clay, and other miscellaneous nonmetallic mineral products) and wood products, received an above-average rate of subsidized loan allocations in the 1970s. In 1968 the shares of both groups in total manufacturing value added and exports were very similar (table 10.6). However, while the share of the L-intensive I group in manufacturing value added and exports expanded substantially during 1968–80, the share of the L-intensive II group declined significantly. In spite of the very unfavorable loan allocation, the L-intensive I group was the leading labor-intensive manufacturing export sector of Korea in the 1970s.¹⁸

In 1968 none of the capital-intensive manufacturing sectors contributed significantly to exports. In a relative sense, the K-intensive III group (consisting of cement, fertilizers, and petroleum products) contributed most to the exports in 1968. However, the K-intensive I group, consisting of basic chemicals (including refined sugar and synthetic

Table 10.5 Sectoral Loan/Value-Added Ratios for Korean Manufacturing

	Ratio of Year-end Domestic Loan Balance to Value Added			Ratio of Year-end Total Loan Balance to Value Added		
	1971	1976	1981	1971	1976	1981
L-intensive I	1.4	0.8	0.8	1.7	0.9	0.8
L-intensive II	2.2	1.6	1.2	3.1	2.0	1.6
K-intensive I	2.1	1.1	1.4	3.0	1.7	1.7
K-intensive II	2.4	1.5	1.4	4.7	3.2	2.7
K-intensive III	0.9	0.6	1.2	4.3	1.5	2.0
All manufacturing	1.5	1.1	1.1	2.5	1.6	1.5

Source: Table 10.A.5.

Note: "L-Intensive I" consists of clothing and footwear (including leather products), food products (excluding sugar refining), textiles, and metal products; "L-Intensive II" includes miscellaneous manufactures (including precision instruments), wood products, telecommunications equipment, and nonmetallic mineral products (excluding cement); "K-Intensive I" consists of basic industrial chemicals (including synthetic materials and sugar refining), electrical and nonelectrical machinery and equipment, and transport equipment; "K-Intensive II" consists of steel products, nonferrous metal products, and iron and steel; "K-Intensive III" consists of cement, fertilizers, and petroleum products.

fiber, resin, and plastic materials), electrical and nonelectrical machinery, and transport equipment), and the K-intensive II group, consisting of steel products, iron and steel, and nonferrous metal products, contributed most to the expansion of capital-intensive manufactured exports in the 1970s. Indeed, these two groups constituted the leading capital-intensive manufacturing sectors of Korea in the 1970s. On the other hand, the share of the K-intensive III group in total manufactured exports increased only slightly, while its shares in outputs and employment were significantly reduced. All the capital-intensive manufacturing sectors received very large amounts of subsidized loan allocations in the 1970s, but the K-intensive II group (especially the iron and steel sector) received the largest amount of subsidized loan allocations per value added and achieved the most rapid expansion in shares of exports and outputs during 1968–80.

Assuming a constant rental price for capital service, we estimated the sectoral point elasticities of capital-labor substitution (i.e., the ratio of average annual percentage change in capital intensity to average annual percentage change in real wages) during 1968–80 in each manufacturing sector (see also table 10.A.2). A high estimated elasticity may imply both the high substitutability between capital and labor in the sector and the decrease in actual rental price for capital service, contrary to our assumption of constant rental price during 1968–80. Because of aggregation, however, the capital-labor substitution within

Table 10.6 Shifts in the Pattern of Specialization and Capital Intensity of Korean Manufacturing

	Share in Total Manufactured Exports (%)		Composition of Value Added (%)		Sectoral Labor Allocation (%)		Import-Domestic Demand Ratio (%)	
	1968	1980	1968	1980	1968	1980	1968	1980
L-intensive I	43.0	51.3	20.9	31.7	34.8	46.0	8.4	14.3
L-intensive II	46.1	11.2	19.3	14.8	29.1	21.8	13.8	8.4
K-intensive I	2.7	14.1	14.1	16.6	12.6	14.6	42.5	39.7
K-intensive II	1.5	11.0	3.8	7.8	3.9	4.5	26.1	22.8
K-intensive III	3.4	4.4	11.5	7.3	2.1	1.1.1	16.1	10.5
All manufacturing	100	100	100	100	100	100	17.0	19.7

	Export-Output Ratio (%)		Capital Intensity (thousands of 1980 \$)		Wage Rate (thousands of 1980 \$)		Point Elasticity of Substitution 1968-80
	1968	1980	1968	1980	1968	1980	
L-intensive I	15.6	26.8	3.00	4.91	0.65	2.39	0.39
L-intensive II	24.1	22.5	4.79	7.61	0.69	2.39	0.36
K-intensive I	2.0	15.8	6.84	17.87	0.97	3.59	0.74
K-intensive II	3.4	21.0	5.33	40.08	0.99	3.85	1.54
K-intensive III	5.4	6.7	68.65	64.60	1.90	5.71	-0.05
All manufacturing	10.8	19.2	5.79	10.37	0.83	2.81	0.48

Sources: Bank of Korea, *Input-Output Tables of Korea*; and Economic Planning Board, *Report of Mining and Manufacturing Census*.

Note: 1980 prices were obtained by applying the GNP deflators for gross fixed capital formation and value added in manufacturing and the exchange rate of 613.4 won per dollar. Fixed capital includes land.

a sector might well imply mainly the introduction of new capital-intensive commodities rather than factor substitutions in existing lines of production in each sector.

The K-intensive II group of sectors revealed the highest point elasticity of substitution.¹⁹ The share of this group in total manufacturing value added more than doubled, its share in total manufactured exports increased over sevenfold, and its average export-output ratio increased over sixfold during 1968–80. The K-intensive I group of sectors revealed the second-highest point elasticity of substitution. The share of this group in total manufacturing value added increased only moderately, but its export-output ratio increased nearly eightfold, and its share in total manufactured exports increased more than fivefold during 1968–80. Therefore, in terms of the rate of increase in absolute amounts of exports as well as export-output ratios, these two groups represent the leading export sectors of Korea in the 1970s. The high value of estimated elasticities for these groups may mostly reflect the lower rental price for capital service in these sectors resulting from the favorable credit rationing.

On the other hand, the K-intensive III group of sectors revealed the lowest elasticity, a substantial decline of shares in total manufacturing value added, and a slight increase in export-output ratio. The low estimated value of elasticity may reflect the facts that the capital intensity of this group was extremely high already by 1968, and hence there existed only a limited possibility for further factor substitutions, and also the sectors in this group were fairly narrowly defined and consequently there was not much room for the introduction of new commodities in any significant scale within these sectors.²⁰

As can be observed in table 10.A.2, the real wage rates have also been rising in every labor-intensive manufacturing sector, and the response of each labor-intensive sector (in terms of capital intensity) to rising labor costs seems to have been more or less uniform, and the estimated elasticities were quite close to the manufacturing average as a whole. On the other hand, there have been wide disparities in the rates of increase in capital intensities of capital-intensive sectors.²¹

10.7 Intensity of Capital Market Distortions and the Trade Pattern

Among the four Asian advanced developing countries, Korea and Hong Kong seem to reflect opposite extremes in capital-market distortions and credit rationing in favor of capital-intensive manufacturing sectors. Taiwan and Singapore seem to fall somewhere between Korea and Hong Kong. Hence, one may expect Korea to have exported the largest amount of capital-intensive manufactures among the four countries, and Hong Kong the smallest. In 1980 commodity exports of these

countries amounted to \$13–\$20 billion. Indeed, the capital-intensive goods (excluding petroleum products) exported by Korea amounted to about \$4.1 billion, those by Taiwan about \$3.4 billion, those by Singapore about \$1.5 billion, and those by Hong Kong only about \$1.4 billion.²² Including petroleum products, the capital-intensive manufactures exported by Singapore amounted to about \$6.9 billion, those by Korea \$4.1 billion, those by Taiwan \$3.7 billion, and those by Hong Kong \$1.4 billion. The Singapore economy in the 1970s, which had the highest per capita income among the four, may be characterized by a semiinfinite supply of capital (owing to the Singapore dollar market and relatively high domestic savings) and low rates of growth in labor supply.²³ The Hong Kong economy may also be characterized by the relatively abundant supply of capital (owing to the Hong Kong dollar market) but has maintained relatively high rates of growth in labor supply (owing to its proximity to mainland China). Taiwan has maintained a more rapid growth of domestic capital supply than Korea because of higher domestic savings. Korea, which had the lowest per capita income and the lowest propensity to save among the four, exported the largest amount of capital-intensive manufactures, excluding petroleum products. If petroleum products are included, then Korea exported the second-largest amount of capital-intensive manufactures. This might well be explained by the significant capital market distortions in favor of capital-intensive sectors in Korea during the 1970s.

Compared with Korea, Taiwan has maintained fairly high rates of real interest on bank deposits and loans and hence seems to have suffered less from the adverse effects of arbitrary credit rationing. In Korea, the real interest rate on one-year time deposits amounted to 10.0% per annum on average during the high-interest-rate era of 1965–71. However, it amounted to –10.7% per annum on average in 1954–64 and –4.0% per annum in 1972–79, while in Taiwan it amounted to about 10.7% per annum in 1953–60, 6.4% in 1961–70, and 0.3% in 1971–79. In Korea, the real rate of interest applied to the discount of nonpreferential commercial bills amounted to about 9.5% per annum on average during 1965–71, but it amounted to only about –7.3% per annum in 1954–64 and –2.6% in 1972–79, while in Taiwan it amounted to about 10.4% per annum on average in 1953–60, 9.4% in 1961–70, and 2.3% in 1971–79. That is, except for the so-called high-interest-rate period of 1965–71 in Korea, real rates of interest on bank deposits and loans in Taiwan were on average higher than those in Korea by 4% or more.²⁴

If we compare the sectoral export performance of Korea and Taiwan in 1981 (see table 10.7). Taiwan's exports of such labor-intensive manufactures as wood and furniture products and miscellaneous manufactures were about 2.4 times larger than those of Korea (i.e., \$5.5 billion

Table 10.7 Sectoral Export Performance in 1981: Korea and Taiwan

	Exports (billions of dollars)			Capital Intensity ^a (thousands of 1981 \$)		Wage Rate ^a (thousands of 1981 \$)	
	Korea (A)	Taiwan (B)	A/B	Korea (1981)	Taiwan (1976)	Korea (1981)	Taiwan (1976)
Miscellaneous manufactures ^b	1.7	4.3	0.41	7.0	5.6	2.7	1.9
Wood products	0.5	1.2	0.42	9.0	6.4	2.6	2.0
Electronic and Telecommunications equipment	1.8	2.8	0.65	5.6	5.3	2.8	2.2
Metal products	1.1	1.0	1.09	8.3	5.8	3.1	2.0
Clothing and footwear	4.9	4.4	1.12	2.3	4.0	2.1	1.8
Textiles, natural ^c	1.3	1.2	1.09	7.9	8.8	2.4	2.0
Textiles, synthetic	1.2	0.9	1.36	9.6	29.7	2.5	2.5
Steel products	1.4	0.4	3.71	17.4	10.6	3.6	2.7
Transport equipment	2.0	0.8	2.39	20.6	20.9	4.3	2.4
Rubber products	0.5	0.2	2.82	12.6	7.3	3.7	2.3
Basic chemicals	0.36	0.3	1.19	53.1	55.5	4.7	3.3
Sugar refining	0.2	0.02	10.04	66.1	29.0	5.4	4.6
Fertilizers	0.2	0.0	94.00	48.2	64.2	5.8	4.3
Cement	0.34	0.07	5.21	69.4	101.2	5.5	5.1
Nonferrous metal products	0.1	0.04	2.44	28.6	35.7	3.8	2.8
Iron and steel	0.4	0.05	7.37	75.5	154.0	4.5	3.4
Machinery	0.9	2.2	0.42	13.5	11.2	3.3	2.4
Petroleum products	0.1	0.4	0.32	113.1	118.3	8.4	4.3
All manufacturing	21.0	22.5	0.93	11.7	12.0	3.0	2.2

Sources: Korean Traders Association, *Foreign Trade Statistics*; and Inspectorate General of Customs, Taiwan, *The Trade of China (Taiwan District)*.

^a1981 prices for Taiwan were obtained by applying the wholesale price index for all commodities (158.42) and the WPI for capital goods (143.35) with 1976 as base year and the exchange rate of NT \$36.8 per dollar. (The exchange rate of 682.7 won per dollar was applied to Korea.)

^bIncluding nonmetallic mineral products (except cement), precision instruments, and plastic products.

^cIncluding natural fiber yarns and fabrics and other textile products except synthetic fiber yarns and fabrics.

versus \$2.2 billion), and Taiwan's exports of electronic and telecommunications equipment were about 55% larger than those of Korea (i.e., \$2.8 billion versus \$1.8 billion). On the other hand, Korea's exports of such capital-intensive manufactures as steel products were about 3.7 times larger than those of Taiwan (i.e., \$1.4 billion versus \$0.4 billion) and its exports of transport equipment (including ships and containers) amounted to about 2.4 times those of Taiwan (i.e., \$2.0 billion versus \$0.8 billion). Furthermore, the exports of such capital-intensive manufactures as rubber products, basic industrial chemicals (including synthetic resin, fiber, and plastic materials), fertilizers, cement, refined sugar, nonferrous metal products, and iron and steel amounted to about \$2.1 billion in Korea but only about \$0.7 billion in Taiwan.

One might regard the case of machinery as an exception because, while the machinery sector was relatively capital intensive in Korea, Korea's exports of machinery in 1981 amounted to only about 43% of those of Taiwan. In 1981 Taiwan's exports of electric motors and generators, sewing machines, machine tools for particular industries, air pumps and gas compressors, lifting and loading machinery, electrical equipment for internal combustion engines, electromechanical domestic appliances with motors, apparatus for making or breaking electric circuits, and calculating and other office machines and parts amounted to about \$1.1 billion, while Korea's exports of these items amounted to only about \$0.25 billion (see table 10.A.7). In Korea the average capital intensity of these sectors amounted to about \$9.2 thousand per worker, while that of the other electrical and nonelectrical machinery sectors amounted to about \$16 thousand per worker. That is, although Taiwan's exports of electrical and nonelectrical machinery as a whole (\$2.2 billion) were only 2.4 times larger than those of Korea in 1981 (\$0.9 billion), Taiwan's exports of relatively labor-intensive machinery and equipment were as much as 4.6 times larger than those of Korea in 1981. After all, the machinery sector in Taiwan could be classified as relatively labor-intensive, while the machinery sector in Korea (excluding electronic and telecommunications equipment) had to be classified as relatively capital-intensive.²⁵

10.8 Concluding Remarks

In Korea, the efficiency gains associated with the long process of the opening up of a semiautarkic economy to semifree trade have materialized not only in the form of rapidly rising real wage rates but also in the form of high rates of return on investment. These enhanced rates of return in turn seem to have kindled the "animal spirit" of Korean

entrepreneurs and generated a vigorous pace of investment activities in Korea during the past twenty-year period. By the beginning of the 1980s, however, exports as a percentage of GNP already exceeded 40%. As of 1981, the raw materials and intermediate inputs imported for "direct" use in export production amounted to about 29% of total commodity imports. Hence, there is still substantial room to increase the net value-added content of exports even while maintaining the same export share of GNP. However, the large efficiency gains associated with the initial phase of the opening up of trade must now be more or less exhausted. In this sense, Korea might have to worry about the sagging animal spirit of entrepreneurs and the weakening vigor of their investment activities in the 1980s. However, with the vast amount of positive experience and kinetic energy accumulated during the past two decades, the gains from marginal structural adjustment can be amplified, as has been observed in Japan. To accomplish this, however, Korea may have to pay more attention to "marginal" efficiency and to the market mechanism in general.

Because of the increase in real wages in Korea and the worsening protectionist policies of advanced countries against labor-intensive manufactures, Korea does not have any alternative but to keep undertaking structural transformation of its production and exports toward the more skill- and technology-intensive and the somewhat more capital-intensive manufacturing sectors. The system of negative real interest rates, subsidies, and credit allocations has been maintained as one of the important policy instruments to promote export-oriented growth in Korea. The most serious problems associated with this "repressed" financial regime have been the slower growth in the magnitude of loanable funds of formal financial institutions and the increasing probability of inefficient and wasteful allocation of available investment funds. There was a rapid increase in aggregate savings propensity in Korea during 1962–81, and yet the savings/GNP ratio (especially the level of household savings) achieved by Korea is far below those achieved by Taiwan, Singapore, and Japan. The reason for this gap is often attributed to the repressed financial regime.

The mismanagement of credit rationing in favor of the arbitrarily selected heavy industries was most conspicuous in the late 1970s and is believed to have lowered the overall productivity of Korean industries. The notorious failures in Korea were the investments in nonferrous metal manufacturing, large petrochemical complexes, large fertilizer plants, capital-intensive armament factories, and a gigantic heavy-machine factory. The low rates of growth in industrial productivity, GNP, and commodity exports experienced by Korea since the beginning of the 1980s may readily be attributed to the second oil crisis,

worldwide recession, and the prevailing high interest rates in international financial markets. However, the arbitrary system of credit rationing may also have to share some of the responsibility.

Furthermore, credit rationing seems also to have been, at least partly, responsible for the worsening distribution of income in Korea (see Hong 1981). Credit rationing has been concentrated on large company groups, and as a result, there occurred a concentration of export activities. In the beginning of the 1970s, the share of exports from the nine general-trading-company groups in Korea's total commodity exports amounted to only about 15%. By the early 1980s, however, these nine groups exported nearly half of the total of commodity exports.²⁶ Their expanding share in the 1970s was at the expense of the share of small- and medium-sized exporting firms.²⁷

Considering the equity and efficiency aspects of credit rationing, one may be able to conclude that it is time for the Korean government to start reducing the excessiveness of credit rationing by enhancing the role of the market mechanism in resource allocation. If the governments succeeds in maintaining the past trend of an increasing propensity to save and in eliminating excessive distortions in factor and commodity markets, Korea will be able to improve the efficiency of its export-oriented economy and consequently will be able to maintain high rates of growth in the 1980s and thereafter.

Table 10.A.1 Output and Trade Patterns of Korean Manufacturing

	Value Added (Wage Share)		Output		Exports (Export-Output Ratio)		Imports (Import Dependency)	
	1968	1980	1968	1980	1968	1980	1968	1980
Clothing and footwear	156(37.2)	1,601(40.6)	756	6,709	187(24.7)	3,615(53.9)	7(1.2)	289(8.5)
Food products	151(25.2)	1,383(26.7)	1,408	12,015	106(7.5)	295(2.5)	83(6.0)	752(6.0)
Electronic products	25(40.0)	1,034(37.6)	118	3,835	32(27.1)	1,678(43.8)	27(23.9)	1,416(39.6)
Metal products	64(34.4)	629(40.4)	142	1,918	16(11.3)	877(45.7)	76(24.3)	275(20.9)
Miscellaneous manufactures	156(35.9)	1,480(37.2)	553	3,529	95(17.2)	1,193(33.8)	39(7.9)	648(21.7)
Textiles	404(34.4)	2,623(35.5)	1,541	6,157	309(20.1)	1,237(20.1)	161(11.6)	484(9.0)
Wood products	106(24.5)	237(51.1)	395	1,272	158(40.0)	431(33.9)	76(24.3)	42(4.8)
Basic chemicals	119(13.5)	904(17.6)	341	6,556	5(1.5)	769(11.7)	228(40.4)	2,178(27.4)
Machinery	126(32.5)	1,170(38.0)	453	3,991	18(4.0)	524(13.1)	418(49.0)	3,758(52.0)
Transport equipment	128(32.8)	1,141(39.7)	585	2,729	4(0.7)	805(29.5)	355(37.9)	1,424(42.4)
Steel products	34(29.4)	325(29.5)	287	3,987	4(1.4)	1,214(30.4)	101(26.3)	537(16.2)
Nonferrous metal products	13(38.5)	262(27.5)	58	937	11(19.0)	111(11.9)	30(39.0)	476(36.3)
Iron and steel	54(31.5)	920(19.3)	91	2,886	0(0.0)	311(10.8)	18(24.7)	813(24.0)
Cement	82(12.2)	452(12.4)	166	1,356	13(7.8)	231(17.0)	7(4.4)	2(0.2)
Fertilizers	114(15.8)	212(17.0)	108	1,098	4(3.7)	321(29.2)	75(41.9)	52(6.3)
Petroleum products	107(3.7)	749(4.1)	351	7,388	17(4.8)	106(1.4)	31(8.5)	1,022(12.3)
Rubber products	23(26.1)	244(34.4)	58	877	4(6.9)	464(52.9)	2(3.6)	47(10.2)
Other products	822(19.3)	3,965(19.8)	2,110	10,637	33(1.6)	757(7.1)	95(4.4)	1,231(11.1)
All manufacturing	2,642(25.6)	19,329(29.3)	9,404	77,877	1,014(10.8)	14,939(19.2)	1,718(17.0)	15,441(19.7)

Sources: Bank of Korea, *Input-Output Tables of Korea* (for output and trade data); and Economic Planning Board, *Report on Mining and Manufacturing Census* (for value-added and wage-share data). See also notes for table 10.3.

Note: Numbers are millions of 1980 dollars.

Table 10.A.2 Shifts in Wage Rates and Capital Intensity of Korean Manufacturing

	Capital (Capital-Labor Ratio) ^a		Wages (Per Worker Wage Rate) ^a		Number of Workers (Labor Allocation) ^b		Point Elasticity of Substitution 1968-80
	1968	1980	1968	1980	1968	1980	
Clothing and footwear	170(2.26)	682(2.12)	53(0.71)	650(2.02)	75.4(10.1)	321.3(16.0)	-0.06
Food products	258(4.26)	1,219(8.91)	35(0.58)	369(2.70)	60.6(8.1)	136.8(6.8)	0.48
Electronic products	32(3.60)	710(4.60)	9(1.03)	389(2.52)	8.9(1.2)	154.4(7.7)	0.25
Metal products	100(3.52)	645(7.24)	20(0.71)	254(2.85)	28.6(3.8)	89.1(4.4)	0.48
Miscellaneous manufactures	219(2.54)	1,287(5.73)	52(0.60)	551(2.45)	86.9(11.6)	224.6(11.2)	0.56
Textiles	875(4.71)	2,923(7.44)	128(0.69)	931(2.37)	186.4(24.9)	392.8(19.5)	0.36
Wood products	168(5.37)	423(9.16)	24(0.76)	121(2.62)	31.4(4.2)	46.2(2.3)	0.41
Basic chemicals	247(17.17)	1,775(45.95)	15(1.02)	159(4.12)	14.4(1.9)	38.6(1.9)	0.68
Machinery	185(4.30)	1,573(11.22)	38(0.87)	445(3.17)	43.1(5.8)	140.2(7.0)	0.74
Transport equipment	211(5.73)	1,918(16.56)	39(1.05)	453(3.91)	36.8(4.9)	115.8(5.8)	0.78
Steel products	45(5.65)	445(16.70)	9(1.16)	96(3.60)	7.9(1.1)	26.7(1.3)	0.95
Nonferrous metal products	26(6.52)	436(25.53)	5(1.18)	72(3.43)	3.9(0.5)	21.0(1.0)	1.26
Iron and steel	83(4.90)	2,621(62.07)	16(0.92)	178(4.22)	17.0(2.3)	42.2(2.1)	1.78
Cement	577(85.84)	683(63.49)	9(1.37)	56(5.21)	6.7(0.9)	10.8(0.5)	-0.21
Fertilizers	381(60.11)	306(51.35)	17(2.61)	36(6.05)	6.3(0.9)	6.0(0.3)	-0.18
Petroleum products	107(43.52)	403(83.45)	4(1.50)	31(6.42)	2.5(0.3)	4.8(0.2)	0.42
Rubber products	21(3.75)	302(12.38)	6(0.97)	84(3.44)	5.7(0.8)	24.4(1.2)	0.91
Other products	603(5.09)	2,291(11.44)	138(1.17)	721(3.60)	118.6(15.9)	200.3(9.9)	0.70
All manufacturing	4,337(5.79)	20,898(10.37)	621(0.83)	5,660(2.81)	748.3(100)	2,014.8(100)	0.48

Source: Economic Planning Board, *Report on Mining and Manufacturing Census*.

^aIn thousands of 1980 dollars. See notes for table 10.3. Fixed capital includes land.

^bIn thousands of persons.

Table 10.A.3 The Composition of Bank Loans in Korea (in billions won and percentages)

	Nondiscretionary Nonpolicy DMB Loans ^a		Discretionary Nonpolicy DMB Loans ^b	Nondiscretionary DMB Policy Loans		Discretionary Policy Loans		Total Loans (DMB, KDB, and EXIMB)
	Domestic Banks	Foreign Banks		Export Credit	Others ^c	DMB Loans ^d	EXIMB and KDB ^e	
1961	1(2)	—	11(21)	1(2)	14(26)	5(10)	20(39)	52(100)
1962	5(8)	—	15(22)	2(2)	14(20)	7(11)	24(36)	68(100)
1963	8(10)	—	15(20)	3(4)	15(20)	8(11)	28(36)	77(100)
1964	9(10)	—	16(19)	3(3)	16(19)	10(12)	32(37)	85(100)
1965	14(12)	—	26(24)	5(4)	17(16)	11(10)	37(34)	109(100)
1966	28(18)	—	38(25)	5(3)	20(14)	12(8)	47(31)	150(100)
1967	43(17)	—	70(27)	17(6)	30(11)	49(19)	52(20)	261(100)
1968	84(18)	2(0)	146(32)	25(5)	49(11)	80(18)	66(15)	452(100)
1969	158(20)	5(1)	246(31)	35(4)	79(9)	180(23)	96(12)	798(100)
1970	194(20)	10(1)	296(31)	56(6)	110(12)	157(16)	129(14)	953(100)
1971	224(18)	18(2)	398(32)	80(6)	130(11)	227(18)	158(13)	1,234(100)
1972	244(16)	29(2)	401(26)	108(7)	160(10)	358(23)	239(16)	1,540(100)
1973	383(19)	51(3)	475(23)	224(11)	186(9)	419(21)	319(16)	2,034(100)
1974	573(19)	71(2)	829(27)	360(12)	241(8)	549(18)	426(14)	3,048(100)
1975	820(21)	132(3)	893(23)	339(9)	291(8)	774(20)	608(16)	3,857(100)
1976	976(20)	184(4)	1,025(21)	462(9)	391(8)	1,033(21)	796(16)	4,867(100)

Table 10.A.3 (continued)

	Nondiscretionary Nonpolicy DMB Loans ^a		Discretionary Nonpolicy DMB Loans ^b	Nondiscretionary DMB Policy Loans		Discretionary Policy Loans		Total Loans (DMB, KDB, and EXIMB)
	Domestic Banks	Foreign Banks		Export Credit	Others ^c	DMB Loans ^d	EXIMB and KDB ^e	
1977	1,073(17)	409(7)	1,348(21)	567(9)	530(8)	1,189(19)	1,129(18)	6,345(100)
1978	1,433(15)	685(7)	1,995(21)	883(9)	763(8)	1,948(21)	1,608(17)	9,316(100)
1979	2,272(17)	943(7)	2,620(20)	1,126(9)	1,126(9)	2,513(19)	2,364(18)	13,064(100)
1980	2,654(14)	1,953(11)	3,635(20)	1,721(9)	1,646(10)	3,192(17)	3,617(18)	18,417(100)
1981	3,025(13)	2,236(9)	5,007(21)	2,197(9)	1,799(8)	4,466(19)	4,773(20)	23,503(100)
1982	3,777(13)	2,684(9)	6,805(23)	2,278(8)	2,444(8)	5,397(18)	6,234(21)	29,619(100)
1983								
1962-66	11.6%	—	22.0%	3.2%	17.8%	10.4%	34.8%	100.0%
1967-71	18.6%	0.8%	30.6%	5.4%	10.8%	18.8%	14.8%	100.0%
1972-76	19.0%	2.8%	24.0%	9.6%	8.6%	20.6%	15.6%	100.0%
1977-81	15.2%	8.2%	20.6%	9.0%	8.6%	19.0%	18.2%	100.0%

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

^aConsists of overdrafts, loans based on installment savings deposits, personal loans, remunerations (Citizens National Bank loans based on mutual installment funds), and loans by the branches of foreign banks (including foreign currency loans).

^bConsists of discounted commercial bills and loans of general funds.

^cConsists of loans for agriculture, fisheries, and housing with banking funds and government funds.

^dIncludes foreign currency loans by domestic DMBs. Foreign currency loans include a small amount of import usage (around 5%). The non-foreign currency loans are for specified projects.

^eIncludes foreign currency loans.

Table 10.A.4 Money Supply and Domestic Credit in Korea

	Reserve Money	M ₁	M ₂	M ₃	Domestic Credit 1	Domestic Credit 2 ^a	Loans by KDB, EXIMB, DMB
Average Annual Growth Rates (percentages)							
1953-61	35.4	51.6	—	—	—	—	—
1962-66	48.4	19.4	32.3	—	28.1	—	24.0
1967-71	30.5	33.9	48.7	—	56.0	—	54.5
1972-76	38.2	34.2	31.2	—	33.8	—	31.9
1977-81	16.6	21.5	30.3	34.0	36.2	39.2	37.2
Percentage Ratio to GNP							
1953-61	6.9	8.9	—	—	—	—	—
1962-66	6.4	8.5	12.3	—	12.7	—	14.9
1967-71	9.6	10.9	29.1	—	28.5	—	31.6
1972-76	11.0	12.7	34.2	38.5 ^b	38.4	49.9 ^b	38.9
1977-81	10.5	11.2	35.2	43.4	43.0	60.9	46.2

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

^aIncluding credits by nonmonetary financial institutions.

^bAverage for 1974-76.

Table 10.A.5 The Sectoral Allocation of Domestic and Foreign Loans: Korean Manufacturing
(in billions won)

	1971		1976		1981	
	Bank Loans	Total Loans	Bank Loans	Total Loans	Bank Loans	Total Loans
Clothing and footwear	15(1.1)	15(1.1)	175(0.9)	185(0.9)	566(0.8)	584(0.8)
Food products	37(2.2)	50(3.1)	174(1.2)	198(1.3)	272(0.6)	325(0.7)
Electronic products	8(1.1)	9(1.2)	57(0.4)	77(0.6)	495(0.7)	549(0.8)
Metal products	3(0.9)	3(0.9)	26(0.7)	29(0.7)	405(1.2)	446(1.3)
Miscellaneous manufactures	11(0.9)	11(0.9)	59(0.7)	63(0.8)	325(0.7)	339(0.8)
Textiles	86(1.9)	131(2.9)	463(1.4)	615(1.9)	1,527(1.1)	2,146(1.5)
Wood products	27(4.5)	28(4.7)	129(2.6)	134(2.7)	303(2.8)	310(2.9)
Basic chemicals	20(3.0)	31(4.6)	78(0.9)	140(1.6)	531(1.2)	764(1.7)
Machinery	16(1.3)	20(1.7)	117(0.8)	142(0.9)	741(0.9)	1,048(1.3)
Transport equipment	34(2.2)	50(3.3)	230(1.5)	404(2.6)	1,581(1.9)	1,816(2.2)
Iron and steel	15(2.6)	29(5.0)	233(1.6)	505(3.4)	1,039(1.2)	2,189(2.5)
Nonferrous metal products	1(1.8)	2(2.0)	49(1.4)	75(2.1)	393(2.8)	477(3.4)
Cement	25(1.7)	75(5.0)	66(1.1)	136(2.2)	213(1.0)	380(1.7)
Fertilizers	12(0.8)	40(2.8)	38(0.8)	66(1.4)	105(0.7)	257(1.7)
Petroleum products	3(0.2)	75(5.1)	7(0.1)	64(1.0)	585(1.5)	926(2.4)
All manufactures	371(1.5)	637(2.5)	2,149(1.1)	3,120(1.6)	10,105(1.1)	13,798(1.5)

Source: Bank of Korea, *Financial Statements Analysis*, various issues.

Notes: Total loans represent the sum of domestic bank loans and foreign loans. Figures in parentheses represent loan/value-added ratios. Miscellaneous manufactures include furniture, pottery, clay products, and miscellaneous nonmetallic mineral products. Electronic products include radios and televisions.

Table 10.A.6 Exports of Manufactures in Korea, Taiwan, Hong Kong, and Singapore
(in billions of dollars)

	Korea		Taiwan		Hong Kong		Singapore	
	1970	1980	1970	1980	1970	1980	1971	1980
Clothing and footwear	0.2	3.7	0.2	3.8	0.7	4.8	—	0.4
Textiles	0.1	2.2	0.2	1.8	0.2	0.9	—	0.2
Elec. and telecom. equip.	—	1.6	0.2	2.5	0.2	1.3	0.1	2.0
Precision instruments	—	0.3	—	0.4	—	0.5	—	0.2
Misc. manufactures	0.1	1.0	0.2	2.9	0.6	2.6	—	0.2
Wood and furniture	0.1	0.4	0.1	1.1	—	0.1	—	0.3
Metal products	—	0.8	—	0.8	0.1	0.4	—	0.1
Food products	—	0.4	0.1	0.7	—	0.1	—	0.1
Nonmetallic mineral	—	0.4	—	0.5	—	0.1	—	0.1
Petroleum products	—	—	—	0.3	—	—	0.4	5.4
Chemicals	—	0.8	—	0.6	—	0.1	—	0.3
Steel products	—	1.3	0.1	0.3	—	—	—	0.1
Nonferrous metal	—	0.1	—	0.1	—	0.1	—	0.1
Machinery	—	0.8	0.1	1.8	0.1	1.2	—	0.8
Transport equip.	—	1.1	—	0.6	—	—	—	0.3
All manufactures	0.7	16.2	1.2	18.4	2.0	13.2	0.6	10.4
All commodities	0.8	17.5	1.4	19.7	2.0	13.7	0.8 ^a	12.6 ^a

Sources: United Nations, *Commodity Trade Statistics*; and Inspectorate-General of Customs, Taiwan, *The Trade of China (Taiwan District)*.

^aIncluding oil bunkers of \$1,199 million in 1980 and oil bunkers of \$78 million in 1971 (data from Department of Statistics, Singapore, *Yearbook of Statistics*).

Table 10.A.7 Exports of Machinery and Equipment: Korea and Taiwan (1981)

	Exports (millions of dollars)		Capital Intensity in Korea ^a
	Taiwan	Korea	
Electric motors, generators, and generating sets	100	14	10.42
Sewing machines and parts	202	16	6.23
Machine tools and parts for particular industries	97	17	6.68
Air pumps and gas compressors	34	2	5.78
Lifting and loading machinery and conveyors	59	19	8.62
Electrical equipment for internal combustion engines	29	2	9.24
Electromechanical domestic appliances	181	14	12.24
Apparatus for making or breaking electric circuits	158	67	10.15
Calculating and office machines and parts	271	94	9.97
Subtotal	1,131	245	9.23
Other machinery and parts	1,019	652	15.94
(Metal-cutting machine tools)	(183)	(28)	(17.22)
All manufacturing	—	—	11.74

Sources: Korean Traders Association, *Foreign Trade Statistics*; Economic Planning Board, *Report on Mining and Manufacturing Census*; and Inspectorate-General of Customs, Taiwan, *The Trade of China (Taiwan District)*.

^aCapital stock per worker in thousands of dollars in 1981.

Notes

1. By allowing tariff-exempt free imports of raw materials, intermediate inputs, and investment goods for export production activities, the Korean government has tried to prevent its own protectionist import-restrictive regime from adversely affecting the incentives for export activities. Furthermore, it has tried to reduce the degree of overall import restrictions as Korea's ability to earn foreign exchange becomes enhanced through export promotion.

2. In effect, this is an example of a general pattern of subsidized capital formation in fast-growing economies discussed by Bradford in chapter 7 of this volume.

3. According to the input-output data (Bank of Korea, *Input-Output Tables of Korea*), the proportion of manufactured goods in total commodity exports was 47% in 1960, rising to 86% in 1970 and to 95% in 1980. Apparently, the input-output tables regarded many primary products, which are only slightly processed, as manufactured goods. The fact that these types of commodities composed a relatively large portion of Korea's exports in the 1950s causes the differences between the SITC and input-output table classifications of manufactured goods exports as a percentage of total exports in the early period.

4. According to Hirschman (1958, 37), "In underdeveloped countries, . . . a readiness to save and invest exists, but is being frustrated. . . . [T]he total supply of savings is highly responsive to the appearance of new investment opportunities."

5. As a result of the exposure to the affluent living standards of advanced countries after the opening up to trade, the people in a poor country may desire a more rapid rate of economic growth, and consequently the structure of time preference changes in such a fashion as to make the savings propensity higher in the poor country than in the rich country.

6. The increase in real wages during 1962-66 was negligible: -4% per annum if the GNP deflator for the whole industry is applied, and 1% per annum if the wholesale price index is applied. (The consumer price index for the period 1962-66 is not available.)

7. The 1980 prices for capital stock were obtained by applying the GNP deflator for gross fixed capital formation in manufacturing, and those for wages by applying the GNP deflator for value added in manufacturing (instead of the consumer price index, because we are concerned with the cost aspect rather than with the workers' welfare aspect). Since the estimated point elasticity depends crucially on price deflators, the absolute magnitude of an estimated elasticity itself may not be very meaningful.

8. According to the I-O statistics, there were also significant exports of light electrical machinery and automobiles and parts in 1960. However, these exports might well have been listed as occasional reexports: exports of these items became negligible in the I-O statistics for 1963, 1966, and 1968.

9. In 1970 about 90% of miscellaneous manufactures exports consisted of wigs, and the rest consisted of toys, sporting goods, musical instruments, and travel goods.

10. In 1970 about 47% of Korea's exports went to the United States, about 28% to Japan, and about 10% to the European Community. Exports to OPEC countries expanded from less than 2% of total exports in 1970 to more than 10% by 1980. Exports to other developing countries expanded from about 11% of total exports in 1970 to about 22% in 1980. Exports to the European Community also expanded to about 19% of total exports in 1980, but the shares of the United States and Japan fell drastically to about 28% and 18% respectively.

11. In 1970 about 52% of Korea's imports of nonfuel primary products were from the United States, about 4.2% from Canada, New Zealand, and Australia, and about 24% from developing countries. In 1980 the share of the developing countries increased to about 31%, and the share of Canada, New Zealand, and Australia to about 12.4%. The share of the developing countries in Korea's manufactures imports increased from about 2.4% in 1970 to about 4.4% in 1980. As of 1981 about 30% of Korea's imports were mineral fuels, 27% were other primary products, about 22% were machinery and transport equipment, and 21% were other manufactures.

12. In the 1970s total domestic credits increased from a magnitude equivalent to about 50% of GNP (1974-76) to about 60% (1977-81). The proportion of securities in domestic credits increased from about 5% to about 8%. The proportion of domestic credits provided through nonmonetary financial institutions excluding KDB and EXIMB (i.e., provided through investment companies, savings institutions, life insurance companies, and the Korea Long-Term Credit Bank) steadily increased from a magnitude equivalent to about 3% of GNP in 1969 to about 12% of GNP by 1981.

13. They amounted to only about 12% of total loans in 1962-66 and about 19% in 1967-71.

14. The real interest rate applied to discounts of commercial bills amounted to -5.6% per annum on average in 1954-61, -3.2% in 1962-66, 9.4% in 1967-71, -2.5% in 1972-76, and -0.9% in 1977-81.

15. The weighted-average real interest rate on all loans provided by all banking institutions in Korea amounted to -14.4% per annum in 1962-64, 4.1% in 1965-71, and -6.2% in 1972-76, while the real interest rate applied to discounts of commercial bills amounted to -7.1%, 9.5%, and -2.5% in each period. This implies that the rates on discounts of commercial bills overestimate the real interest rates on total bank loans by 4%-7% (see Hong 1979, 162-201).

According to the IMF *World Economic Outlook* (Washington, D.C., 1983, 204), the (weighted average) long-term "real" interest rates in major industrial countries amounted to about 1.2% per annum in 1976-79, and those in Japan, which is believed to practice an extensive credit-rationing system, amounted to about 2.6% per annum.

16. Since 1980, there were significant devaluations and high interest rates worldwide, which effectively terminated the era of low-cost foreign borrowing for Korean businessmen.

17. The M_2 statistics of Korea include a substantial amount of corporate time and savings deposits. These are mostly forced savings extracted by the banks from corporations as a condition for bank loans. Their effect is to raise the statistics of both bank credits and time and savings deposits simultaneously. If we subtract these corporate time and savings deposits both from the aggregate time and savings deposit figures and from the aggregate domestic credit figures, the volume of total domestic credits provided through DMB, KDB, and EXIMB would be reduced by around 7% of GNP on average, and consequently, the magnitude of subsidies associated with domestic bank loan allocations would be reduced by about 1.6% of GNP per annum on average in the 1970s. Even in Japan, "traditionally banks offer loans to the firm on the condition that some proportion of the loan be deposited into time deposit balances. This implies a reduced availability from a given size, or equivalently, a higher effective rate of return to the bank."

18. In a relative sense, textiles and wood products (mostly plywood) were the leading export sectors of Korea only in the 1960s. In the 1970s Korea's

competitive power in synthetic fiber yarn seems to have been rather limited because of the expensive domestic supply of synthetic fiber materials. Korea's competitive power in synthetic fiber fabrics was limited by the requirement of sophisticated advanced technologies, and Korea's natural fiber yarn industry had to compete with other, less-developed countries (such as China). The plywood industry suffered from export restrictions on timber by resource-rich countries (such as Indonesia and the Philippines).

19. Among the three sectors included in this group, iron and steel revealed the highest elasticity (1.78). This reflects the construction of a large-scale integrated steel mill in the 1970s.

20. The export-output ratios of fertilizers and cement amounted to 29% and 17% respectively in 1980; however, the more important aspect of this group may be the drastic fall in the import dependence of fertilizers.

21. Some capital-intensive sectors revealed extremely high rates of elasticities. However, the increasing capital intensity of some of these sectors was mainly due to the introduction of new capital-intensive production within each sector, such as an integrated steel mill, petrochemical complexes, a modern shipyard, and automobile assembly lines. Therefore, unless there occur continual additions of extremely capital-intensive production, one may expect that the rates of increase in capital intensities of these sectors will significantly slow down in the 1980s and that the possible continuing allocation of subsidized loans will impact mostly the output-expanding effect rather than the factor-substitution effect.

22. Capital-intensive manufactures consist of chemicals, steel products, nonferrous metal products, electrical and nonelectrical machinery, and transport equipment.

23. Unlike the other advanced developing countries, clothing and footwear (including leather products) have never been a leading export sector in Singapore. The export of other labor-intensive products such as textiles, wood and furniture, metal products, and miscellaneous manufactures was also relatively insignificant. The leading export sector of Singapore was petroleum refining, and the second leading export sector was assembling of electronic products (see table 10.A.6). On the other hand, the distinct feature of Korean exports was the importance of steel products and transport equipment (especially ships) and the relative insignificance of electrical and nonelectrical machinery.

24. A low rate of inflation coupled with high real rates of interest on deposits in Taiwan seem to have been conducive to a rapid increase in the supply of loanable funds in Taiwan. The money/GNP ratio in Taiwan increased from about 16% in 1953 to 35% in 1962, to 65% in 1973, and to 83% in 1978. On the other hand, the money/GNP ratio in Korea jumped from about 12% in 1965 to 34% in 1970, but the ratio was still 34% in 1979.

25. In Korea the capital intensity of the (electrical and nonelectrical) machinery sector amounted to about \$13.5 thousand, while that of all manufacturing amounted to about \$11.7 thousand per worker in 1981. In Taiwan the capital intensity of the machinery sector amounted to about \$11 thousand per worker, while that of all manufacturing amounted to about \$12 thousand per worker in 1976 (in 1981 prices). In Taiwan steel products and rubber products could also be classified as relatively labor-intensive sectors, while in Korea these sectors had above-average capital intensities and, hence, could be classified as capital-intensive sectors.

26. General trading companies were formally introduced in 1976, but those companies had been actively exporting even before they were officially christened with the "general trading" title. All the firms which are owned by the same owner of a general trading company were grouped together here and then

regarded as a general-trading-company group. Approximately half of the exports of these groups consist of manufactures directly produced by the groups themselves. Small export producers who exported through the general-trading-company groups obtained loan allocations through these groups in the form of local loans and credits.

27. The share of the next forty-one largest groups of exporting firms did not change much in the 1970s. However, the share of the next 103 groups in total commodity exports declined from about 22% in 1970 to about 8% in 1981. Furthermore, the share of the remaining small firms that were not included among the 153 groups of exporting firms declined from about 45% of Korea's total commodity exports in 1970 to about 25% by 1981.

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