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Two problems arise. First, the total depreciation from the FOF data is consistently smaller than the total given by BOK or EPB in the National Income Accounts. The discrepancy ranged from less than 1 percent of total gross investment to as high as 10 percent in a few years. The average was 3 percent of total gross investment. The discrepancy was assigned to corporate depreciation, which is therefore measured as the residual.

The second problem is that of the FOF disaggregation is currently available only through 1982. For 1983 and 1984 the decomposition of depreciation was estimated based on the average shares of each sector in the total during 1976–82.

Korean GDP is computed from the expenditure side. Therefore, the residual appears in the expenditure side of the accounts and is not included in the savings estimates. This explains why the column for statistical discrepancy appears in the tables.

Finally, the method for computing National Income Accounts data has recently been revised. The data used in this chapter are based on consistent data, using the old method, through 1984. These figures are unfortunately not comparable with figures based on data using the new method. In particular, the two methods give very different figures for fixed investment as a share of GNP during 1980–84. However, the trends in the two series are similar.

Disposable income data were computed from the BOK National Income Accounts. The data subtract direct taxes and net transfers from the household sector to the government and to the rest of the world.

9 Exchange Rate, Trade, and Industrial Policy

The Korean economy has been one of the world's most rapidly growing economies in recent decades. Since Korea launched its first five-year plan in 1962, it has grown at over 8 percent per year on average. The growth pace has slowed on occasion when the economy was faced with oil shocks and sluggish world demand, but, overall, exports have fueled growth even in periods when adverse situations abroad reduced foreign demand for export goods and raised domestic inflation. Simply on the basis of growth performance, the adoption of an outward-oriented growth strategy in place of import substitution could be considered an epochal change in trade and industrial policies.

The period from May 1960 to 1965 is regarded as a time of transition during which Korean trade and industrial policies were reoriented toward

active export promotion instead of the import substitution of the 1950s. The Chang Myon civilian government took office in May 1960, just after President Syngman Rhee was ousted by the student revolution. The new government opened the way for export promotion by implementing two devaluations. By that time, import substitution in nondurable consumer goods had been completed and further import substitution in machinery, consumer durables, and intermediate products seemed inappropriate due to the small domestic market and the large capital requirements involved. Rather than pursuing the slow growth path with import substitution, policymakers chose export-driven high growth. The military government of General Park that replaced Chang Myon's civilian government reinforced the policy switch toward export orientation by further devaluing the won, extending the scope of export incentives, and reducing quantitative restrictions on imports.

Although the government encountered many difficulties, such as accelerating inflation during the transition, it revealed its strong intention to pursue consistent export-promotion policies by implementing monetary and fiscal reforms. Nineteen sixty-four may be identified as the watershed year after which the government depended on a comprehensive, export-driven policy.

As a result of the strong export promotion, the nominal value of commodity exports increased about 480 times from U.S. \$55 million in 1962 to \$26.4 billion in 1985. The annual growth rate of nominal exports averaged 31 percent, substantially higher than the 20 percent growth of nominal imports. Despite this remarkable export growth, the trade balance continued to show a deficit, reflecting the huge initial deficit which was about ten times as large as exports.

In this chapter we investigate the role of exchange rate, trade, and industrial policies.¹ Section 9.1 describes the pattern of changes in trade and industrial structures since 1962. In section 9.2 we investigate the exchange rate policies that were crucial to export promotion. Further discussion of the link between exchange rates, wages, productivity, and competitiveness will be given in chapter 10. Export incentives and import restriction measures are analyzed in section 9.3, with a brief chronology of those measures. In section 9.4 we discuss the industrial policies that have been pursued up to the present in association with trade and growth.

9.1 Changes in the Trade and Industrial Structure

Economic development since the early 1960s can perhaps best be described as export-oriented industrialization. Economic growth has been led by exports of manufacturing goods. As can be seen in table 9.1, the rapid contraction of the primary sector was roughly counterbalanced by the rapid expansion of the manufacturing sector, while the tertiary sector constituted a relatively stable portion of GNP. The share of agricultural, forestry, and

Table 9.1 Industrial Origin of GNP (composition and growth rate, in percentages)

	1962	1965	1970	1975	1980	1984
Agriculture, forestry, and fishing	43.3	42.9 (7.8)	30.4 (1.0)	24.2 (5.3)	14.4 (-6.1)	15.1 (3.5)
Mining	2.0	2.0 (8.7)	1.6 (6.0)	2.0 (8.6)	1.4 (0.1)	1.4 (4.4)
Manufacturing	9.1	11.0 (15.4)	17.8 (22.6)	21.6 (17.8)	28.8 (11.3)	34.1 (13.4)
Light	6.8	7.4 (11.6)	10.4 (18.9)	12.3 (15.1)	14.1 (8.4)	15.0 (10.0)
Heavy	2.3	3.6 (25.3)	7.4 (28.9)	9.3 (22.1)	14.7 (14.5)	19.1 (16.5)
Others ^a	45.6	44.0 (6.8)	50.1 (13.4)	52.3 (7.1)	55.4 (7.5)	49.4 (5.3)
GNP	100.0	100.0 (8.2)	100.0 (9.8)	100.0 (8.6)	100.0 (5.7)	100.0 (7.6)

Note: Data prior to 1970 are based on 1975 constant market prices. Data beginning from 1971 are based on 1980 constant market prices.

^aOthers include wholesale and retail trade, restaurants and hotels, social and personal services, transport and communications, and construction.

fishing products in GNP decreased from 43 percent in 1962 to 15 percent in 1984, while the share of manufacturing products increased from 9 percent in 1962 to 34 percent in 1984. The service industry also expanded, but its gain was small compared with changes in the primary and manufacturing sectors. The changing composition of GNP among industries shows that manufacturing grew much more quickly than the GNP growth rate, the primary sector grew more slowly, and other sectors grew at approximately the same rate as GNP.

It is also interesting to focus on the development of the manufacturing sector in terms of production factor intensity. The light manufacturing industries that were generally labor intensive had higher export ratios and produced more than the heavy manufacturing industries did until 1980 (tables 9.1 and 9.2). At the same time, it should be noted that the heavy industries grew faster than the light industries after 1962, exceeding the light industrial output by 1980. The export ratio of the heavy industrial output rose constantly, equaling that of the light industrial output by 1983. As we have discussed in previous chapters, there were clearly some unfavorable aspects of the Big Push toward HC industries. We will return to these issues in section 9.4.

The rapid expansion of capital-intensive industries in a labor-abundant economy raises issues of efficiency because the industrial mix may result from excessively protectionist policies. In fact, arguments both for and against protection on efficiency grounds were advanced during the debate over the optimal growth strategy: import substitution or export promotion. As we shall see, protectionism did play a role in the development of the HC industries. Korea's experience provides an interesting episode to be used in assessing favorable versus unfavorable aspects of extensive government intervention. In table 9.3 we describe changes in Korea's manufacturing

Table 9.2 Value-Added, Export, and Import Dependency Ratios by Industry (in percentages)

	Value-Added Ratio				Export Ratio				Import Dependency Ratio			
	1970	1975	1980	1983	1970	1975	1980	1983	1970	1975	1980	1983
Agriculture, forestry, and fishery	74.0	75.8	69.8	69.6	2.7	5.8	5.6	5.0	1.1	2.4	2.2	1.4
Mining	74.9	69.4	68.6	65.3	19.8	12.4	5.5	3.2	1.6	4.0	0.6	0.9
Manufacturing	25.9	22.8	22.8	23.9	10.6	18.2	19.2	21.2	17.3	22.0	22.7	22.2
Light	(24.1)	(21.5)	(23.4)	(24.4)	(11.9)	(20.8)	(20.8)	(21.7)	(12.3)	(14.2)	(15.0)	(14.7)
Heavy	(30.1)	(24.7)	(22.2)	(23.5)	(7.4)	(14.5)	(17.6)	(20.7)	(29.1)	(33.1)	(30.2)	(28.2)
Average for all industries	49.7	42.5	39.6	40.5	6.9	12.4	13.3	14.4	8.6	12.8	14.2	13.5

Source: BOK, *Compilatory Report on 1980 and 1983 Input-Output Tables*, 1983, 1985.

Note: Value-added ratio = (value-added amount/domestic production) × 100. Export ratio = (export amount/domestic production) × 100. Import dependency ratio = (amount of imported intermediate input/domestic production) × 100.

Table 9.3 Value-Added Ratio in Principal Manufacturing (composition, in percentages)

	1962	1965	1970	1975	1980	1984
<i>Light industries</i>	(74.2)	(67.0)	(58.2)	(56.9)	(49.0)	(43.9)
Food, beverage, and tobacco	37.7	35.6	30.2	24.1	19.8	18.5
Textile, wearing apparel, and leather	23.0	18.2	16.4	20.6	17.1	15.1
Wood and wood products, including furniture	3.2	2.7	2.7	1.7	1.3	1.1
Printing and publishing	4.8	4.8	2.6	2.0	1.8	1.5
Rubber and plastic products	1.8	1.9	2.3	3.4	4.1	4.2
Miscellaneous ^a	3.8	3.9	4.1	5.2	4.9	3.6
<i>Heavy industries</i>	(25.8)	(33.0)	(41.8)	(43.1)	(51.0)	(56.1)
Paper and paper products	2.8	3.1	2.5	1.9	1.9	1.8
Chemical and petroleum products	5.0	11.6	21.6	16.2	17.5	15.1
Nonmetallic mineral products	4.5	5.4	5.6	5.1	5.1	4.8
Basic metal	2.9	2.9	2.4	4.6	6.5	7.0
Fabricated metal products, machinery, and equipment	10.6	10.0	9.8	15.4	20.0	27.4
<i>Manufacturing</i>	100.0	100.0	100.0	100.0	100.0	100.0

Source: BOK, *National Income Accounts*, 1985.

Note: Data prior to 1970 are based on 1975 constant market prices. Data beginning from 1971 are based on 1980 constant market prices.

^aIncludes miscellaneous products of petroleum and coal and professional and scientific measuring and controlling equipment.

structure. The most salient features were a decrease in the share of food, beverage, and tobacco industries among the light manufacturing and an increase in the share of fabricated metal products, machinery, and equipment among the heavy manufacturing.

This pattern of change in industrial structure is also reflected in the changing pattern of exports and imports by commodity group. In 1962, exports of food, live animals, and crude materials such as iron, tungsten ores, raw silk, and agar-agar, were 75 percent of total commodity exports. In 1985 these commodities of SITC Group 0 and 2 were only 5 percent of total exports, whereas commodities of SITC group 6–8—manufactured material goods (iron and steel products, textile fabrics, textile yarns, and plywoods), machinery and transport equipment, and miscellaneous manufactures (mostly clothing and footwear)—constituted 89 percent of total exports (table 9.4).

The changes in imports by commodity groups were not as distinctive as those in exports, but imports of some commodities such as mineral fuels, mainly comprised of petroleum, and machinery and transport equipment, increased quite rapidly as shown in table 9.5. The increase in mineral fuels can be largely explained by the quadrupling of oil prices in 1974 which led to about a threefold increase in the share of crude oil (table 9.6). The share increased further in 1980 as a result of the second oil shock and thereafter declined with the fall in oil prices to reach 18 percent in 1985.

Table 9.4 Exports by Commodity Groups (composition, in percentages)

SITC Group	1962	1965	1970	1975	1980	1985
(0) Food and live animals	40.0	16.1	7.8	11.9	6.6	3.8
(1) Beverages and tobacco	0.3	0.5	1.7	1.3	0.7	0.4
(2) Crude materials, inedible (except fuels)	35.2	21.2	12.0	2.8	1.9	1.0
(3) Mineral fuels, lubricants, and related materials	5.0	1.1	1.0	2.2	0.3	3.1
(4) Animal and vegetable oils and fats	0.1	0.0	0.0	0.0	0.1	0.0
(5) Chemicals	1.8	0.2	1.4	1.3	4.3	3.1
(6) Manufactured goods classified by material	11.3	37.9	26.4	29.4	35.7	23.3
(7) Machinery and transport equipment	2.6	3.1	7.4	15.0	20.3	37.6
(8) Miscellaneous goods	3.6	19.7	42.2	35.8	29.9	27.6
(9) Not classifiable	0.1	0.1	0.0	0.2	0.3	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: EPB, *Major Statistics of Korean Economy*, various issues.

Table 9.5 Imports by Commodity Groups (composition, in percentages)

SITC Group	1962	1965	1970	1975	1980	1985
(0) Food and live animals	11.5	13.7	16.1	13.0	8.1	4.5
(1) Beverages and tobacco	0.0	0.0	0.1	0.2	0.4	0.2
(2) Crude materials, inedible (except fuels)	21.3	23.7	0.4	15.4	16.3	12.4
(3) Mineral fuels, lubricants, and related materials	7.3	6.7	6.9	19.1	29.9	23.6
(4) Animal and vegetable oils and fats	0.9	0.8	0.8	0.7	0.5	0.5
(5) Chemicals	22.4	22.3	8.3	10.7	8.1	9.0
(6) Manufactured goods classified by material	17.3	15.3	15.4	11.9	11.0	11.4
(7) Machinery and transport equipment	16.5	15.9	29.7	26.5	22.4	34.2
(8) Miscellaneous goods	2.4	1.5	2.4	2.3	3.1	4.0
(9) Not classifiable	0.3	0.0	0.0	0.1	0.3	0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: EPB, *Major Statistics of Korean Economy*, various issues.

Table 9.6 Imports by Type of Goods (composition, in percentages)

	1962	1965	1970	1975	1980	1985
Capital goods	16.5	12.9	29.7	26.2	23.0	35.6
Raw materials for export	—	2.2	19.5	20.0	17.0	21.9
Raw materials for domestic use and others	76.7	78.6	44.1	36.3	34.7	24.5
Crude oil	6.7	6.2	6.7	17.5	25.3	17.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: EPB, *Major Statistics of Korean Economy*, 1982, 1986.

The share of machinery and transport equipment among total imports in table 9.5 is roughly the same as the share of capital goods in table 9.6, since machinery and transport equipment are imported to be used largely as capital goods. The share of capital goods did not increase steadily but was quite variable, even if imports of crude oil are excluded from total imports. A large part of the variability of capital goods can be explained by heavy industrialization in the 1970s and, more importantly, by imports of raw materials for exports or domestic use, which in turn are sensitive to fluctuating raw material prices.

The input-output structures that were summarized in table 9.2 suggest that the variability of the capital goods share should not be attributed to changes in the input-output structure. The import dependency ratio increased sharply between 1970 and 1975 and, as a mirror image, the value-added ratio decreased by a substantial margin during the same period. Afterward, however, the two ratios remained relatively stable, although import dependence was higher in the late 1970s than in the 1980s.

9.2 Exchange Rate Policies

After export promotion policies were adopted in the early 1960s, the exchange rate emerged as a major economic policy variable with significant influence on the volume of exports and imports. Before the government shifted from import substitution to actively promoting exports, the exchange rate remained overvalued. Two arguments for the overvaluation during the 1950s were to avoid inflation acceleration and to earn more foreign currency in exchange for the sale of won currency to UN forces. As Korea's major exports were primary goods such as tungsten ore and agar-agar, policymakers overlooked the export incentives from devaluation, depending instead on tight quantitative restrictions on imports. Exporters were granted import rights and could obtain foreign exchange premiums on the domestic market. Furthermore, they were provided with sizable export subsidies.

This exchange rate policy was altered in the early 1960s as foreign aid was reduced and the government dedicated itself to the goal of export-driven growth. In 1961 the official exchange rate was devalued 104 percent from 62.5 won to 127.5 won per dollar. This drastic devaluation contributed to absorbing the import premiums caused by quantitative controls and unifying the multiple exchange rates for commodities. However, the expansionary monetary and fiscal policies of the military government caused accelerating inflation. This lessened the effect of currency devaluation, so that another devaluation was soon needed to depreciate the real exchange rate. The second large devaluation from 130 won to 256 won per dollar was carried out in 1964, but it was accompanied by fiscal and monetary reforms to reduce the inflationary pressure of devaluation.

In March 1965 the government implemented a floating, unified exchange rate to maintain real exchange rate stability. However, the regime was interrupted by government intervention near the end of 1965, after which the won was maintained at approximately 271 won per dollar. The real exchange rate appreciated by 14 percent during this period. As shown in table 9.7, nominal depreciations maintained a constant real exchange rate during 1968–71. These adjustments were accelerated during 1971–73, leading to a 32 percent real depreciation.

During the Big Push (1973–79), the focus of Korean exchange rate policy shifted from maintaining competitiveness. Inflation had jumped to 24 percent during 1974, following the rise in oil prices. Although the won was devalued by 21.3 percent vis-à-vis the U.S. dollar in December 1974, it was then pegged at 484 won/\$ until January 1980, even though inflation averaged

Table 9.7 Exchange Rates (in won per U.S. dollar) and Terms of Trade

Year	Nominal Exchange Rate ^a	Index of Exchange Rate	Nominal Effective Exchange Rate ^b	Purchasing Power Parity ^b	Real Effective Exchange Rate ^b	Terms of Trade
1963	130.00	21.40	18.20	95.42	81.16	111.00
1964	255.00	41.98	34.78	139.33	115.43	111.90
1965	271.00	44.61	36.96	138.11	114.40	114.40
1966	270.00	44.45	36.19	130.96	106.63	127.70
1967	268.00	44.12	35.32	123.83	99.12	132.20
1968	276.65	45.54	36.58	119.83	96.25	137.70
1969	288.16	47.44	37.88	119.81	95.66	132.60
1970	310.56	51.13	41.09	122.64	98.56	133.80
1971	347.15	57.15	46.78	127.16	104.09	132.70
1972	392.89	64.68	56.04	129.78	112.44	132.10
1973	398.32	65.58	60.40	141.76	130.58	125.40
1974	404.47	66.59	59.46	126.16	112.65	102.10
1975	484.00	79.68	70.57	125.90	111.50	92.10
1976	484.00	79.68	70.37	118.15	104.35	105.10
1977	484.00	79.68	74.15	113.34	105.47	112.40
1978	484.00	79.68	83.18	104.40	108.98	117.80
1979	484.00	79.68	80.38	96.31	97.15	115.30
1980	607.43	100.00	100.00	100.00	100.00	100.00
1981	681.03	112.12	117.54	98.87	103.65	97.90
1982	731.08	120.36	118.66	104.67	103.19	102.20
1983	775.75	127.71	126.62	111.51	110.56	103.10
1984	805.98	132.69	129.85	116.91	114.41	105.30
1985	870.02	143.23	138.47	125.39	121.22	105.90
1986	881.45	145.11	164.37	122.93	139.24	114.7
Coefficient of variation ^c		0.44	0.52	0.12	0.10	

^aYearly average.

^bUsing as weights each year's trade volume of seven major trading partners, i.e., U.S., West Germany, Netherlands, Japan, U.K., Canada, France. Purchasing power parity = (index of exchange rate) × (relative price). Real effective exchange rate = (nominal effective exchange rate) × (relative price).

^cStandard deviation/mean. It covers the period 1963–85.

16.6 percent during 1975–79. Consequently, Korea's real exchange rate appreciated by 13 percent.

The pegging of the won to the U.S. dollar ended in 1980 with Korea's 20 percent devaluation in January and the subsequent adoption of a new exchange rate regime called a double basket system in February. Under the new regime, the won-dollar exchange rate was to be determined on the basis of movements of the exchange rates of major trading partners and other factors affecting Korea's external position. With this currency basket system, the exchange rate has been managed more flexibly to maintain external competitiveness. As shown in table 9.7, significant further real depreciations occurred during 1985 and 1986. It is notable that the won continued to depreciate against the U.S. dollar during much of the dollar's 1985–86 depreciation.

Thus, two major switches of the exchange regime—from unified float to dollar peg in 1974, and from dollar peg to basket system in 1980—involved one-shot devaluations of approximately 20 percent. Each was part of a policy package in response to current account difficulties following an oil price shock. However, in contrast to the devaluation in 1974 which ended in a five-year peg, there was a further substantial real depreciation during 1983–86.

Korea has succeeded in maintaining external competitiveness throughout most of the period since 1962. Notice that the 1980 base year follows a 20 percent nominal devaluation and that the real exchange rate was considerably more depreciated than this base during the mid-1960s, most of the 1970s, and since 1983.

Korea's experience with real exchange rates contrasts sharply with that of its Latin American counterparts. Table 9.8 shows the variable real exchange

Table 9.8 Real Exchange Rates in Latin America (index 1980–82 = 100)

Year	Argentina	Brazil	Chile	Mexico	Venezuela
1975	66	123	66	107	94
1976	81	122	74	106	97
1977	64	119	79	93	96
1978	74	108	72	94	93
1979	101	97	79	98	89
1980	116	85	95	104	91
1981	107	103	108	114	109
1982	76	112	97	82	109
1983	71	86	87	78	116
1984	80	86	90	92	86
1985	71	85	79	90	93
1986	63	75	72	68	94

Source: Morgan Guaranty (1987); also from Dornbusch (1986).

Note: Higher values mean real appreciation.

rates in Latin America. In particular, Argentina, Chile, and Mexico experienced extremely variable real exchange rates and, even more damaging, massive appreciation during 1978–81, the years prior to the current debt crisis. Korea's real effective exchange rate also showed variations. We divided the period from 1960 to 1985 into five subperiods as shown in table 9.9, according to the behavior of the real exchange rate.

The real appreciation during the 1964–69 and 1973–79 periods stemmed largely from the slow depreciation of the nominal exchange rate. For example, the nominal exchange rate depreciated by only 2.5 percent per year during 1964–69 and 3.3 percent per year on average during 1973–79, while it depreciated 40.7 percent annually during 1960–64 and 8.4 percent during 1969–73. The reason for this is that the government was concerned about the domestic inflation caused by an exchange rate depreciation. The authorities tried to avoid further devaluation whenever they thought that export incentives, other than currency devaluation and the favorable external conditions, would allow them to achieve the year's export target. We return to this point below.

9.3 Trade Liberalization Policies

Developing countries typically implement exchange rate policies with accompanying changes in trade measures other than an exchange rate adjustment. Sometimes commercial policies (export subsidies, tariffs, and quotas) have a greater impact on trade than exchange rate policies. The complicated picture of exchange rate with subsidy policies has been a focal point of analysis.

Korea is not an exception in this respect. Its periodic devaluation has sometimes been accompanied by enlarged export subsidies or tightened quantitative restrictions on imports. But, from a long-term perspective,

Table 9.9 Exchange Rates, Wages, and Productivity in Manufacturing
(average annual percentage change)

Period	Nominal Depreciation	Real Depreciation	Nominal Wage	Consumer Price Index ^a	Real Wage ^b	Labor Productivity ^c	Unit Labor Cost(W)	Unit Labor Cost(\$) ^d
1960–64	40.7		13.6	15.6	-1.7	7.5	5.8	-24.8
1964–69	2.5	-3.7	23.8	11.9	10.6	16.9	5.9	3.3
1969–73	8.4	8.1	18.6	11.0	6.9	9.9	7.9	-0.5
1973–79	3.3	-4.8	32.3	17.9	12.2	11.5	18.6	14.9
1979–85	10.3	3.8	14.5	10.4	3.7	11.2	3.0	-6.6

^aUsing consumer price index for Seoul City for the 1960–64 period.

^bNominal wage/consumer price index.

^cKorea Productivity Center figures.

^dUnit labor cost in won currency/nominal exchange rate.

foreign trade has been liberalized throughout the period. In particular, the periods 1965–67 and 1978–79 exhibited rapid liberalization mainly due to the relaxed quantitative restrictions on imports. It is interesting, however, that real appreciation of the currency occurred during those periods. In this section we describe briefly the export and import liberalizations in terms of export subsidies, import restrictions, and tariffs.

9.3.1 Export Subsidies

The concern here is how important the various export incentives were to the management of the official exchange rates. In table 9.10 we summarize net and gross export subsidies estimated in terms of won subsidies per U.S. dollar of export. The export incentives considered in the table are: (1) direct cash subsidies (abolished since 1964); (2) export dollar premium attained by linking export performance to imports (abolished since 1964); (3) direct tax reduction on income earned from exporting (abolished since 1973); (4) export credit at preferential interest rates (abolished since 1982); (5) indirect domestic tax exemptions on intermediate inputs used for export production and export sales; and (6) tariff exemptions on imports of raw materials for export production (drawback system).

The first four incentives (col. 2–5 in table 9.10) represent subsidies which directly decrease the costs of exporting firms. As shown, there was a dramatic reduction in these direct subsidies over 1960–64, primarily because of the elimination of special exchange rates to exporters. Since 1965 the subsidies have come primarily through preferential interest rates. The subsidies ranged from 6 to 7 percent during 1968–71 and 2 to 3 percent during 1972–81, and were eliminated during 1982–83 (see col. 10).

Declines in direct subsidies have been partially offset by indirect tax exemptions and tariff exemptions. As shown in column 11, there is no persistent trend in the gross subsidy to exporters between 1961 and 1980. It rose to a high of 30 percent in 1971, declining to 17 percent during 1975–76 and returning to 21 percent by 1980.

It is interesting that exchange rate policy has often offset reductions in export subsidies. This was particularly true during 1967–73. From 1967 to 1970 the real exchange rate was appreciating (see table 9.7), however, other incentives for exporters (tax benefits, interest rate preferences, and tariff exemptions) were all increased. During 1970–73 the decline in export subsidies coincided with a real depreciation.

During 1961–62, net export subsidies declined greatly because of the decrease in export dollar premiums as the government devalued the domestic currency and unified the exchange rates. As inflation negated the effect of the two devaluations in 1961, the government reintroduced the full-scale export-import link system in 1963 under which nonaid imports were constrained to export earnings. The export dollar premiums again became the major content of export subsidy during 1963–64.

Table 9.10

Export Subsidies, 1958–85 (annual averages)

Year	Won Subsidies Per U.S. Dollar of Export									Ratio to Exchange Rate(%)	
	Official Exchange Rate(won/\$) (1)	Direct Cash Subsidies (2)	Export Dollar Premium (3)	Direct Tax Reduction (4)	Interest Rate Preference (5)	Net Subsidies (6 = 2 + 3 + 4 + 5)	Indirect Tax Exemptions (7)	Tariff Exemptions (8)	Gross Subsidies (9 = 6 + 7 + 8)	Net Subsidies (10 = 6/1)	Gross Subsidies (11 = 9/1)
1958	50.0	.0	64.0	.0	1.2	65.2	.0	.0	65.2	130.4	130.4
1959	50.0	.0	84.7	.0	1.3	86.0	.0	.0	86.0	172.0	172.0
1960	62.5	.0	83.9	.0	1.2	85.1	.0	.0	85.1	136.2	136.2
1961	127.5	7.5	14.6	.0	1.0	23.1	.0	.0	23.1	18.1	18.1
1962	130.0	10.3	.0	0.6	.9	11.8	5.1	4.7	21.6	9.1	16.6
1963	130.0	4.1	39.8	0.8	2.9	47.6	5.3	6.6	59.5	36.6	48.8
1964	214.3	2.9	39.7	0.7	6.0	49.3	7.6	10.1	67.0	23.0	31.3
1965	265.4	.0	.0	2.3	7.6	9.9	13.9	15.4	39.2	3.7	14.8
1966	271.3	.0	.0	2.3	10.3	12.5	17.8	21.3	51.6	4.6	19.0
1967	270.7	.0	.0	5.2	14.7	20.0	17.8	24.6	62.4	7.4	23.1
1968	276.6	.0	.0	3.0	15.2	18.2	19.9	39.6	77.7	6.6	28.1
1969	288.2	.0	.0	3.7	14.7	18.4	27.4	34.3	80.1	6.4	27.8
1970	310.7	.0	.0	3.5	17.3	20.8	27.0	40.4	88.1	6.7	28.4
1971	347.7	.0	.0	4.8	18.1	22.8	32.2	48.0	103.0	6.6	29.6
1972	391.8	.0	.0	1.9	10.5	12.5	26.4	66.3	105.2	3.2	26.9
1973	398.3	.0	.0	1.4	7.4	8.7	21.0	64.4	94.2	2.2	23.7
1974	407.0	.0	.0	.0	8.6	8.6	22.5	55.1	86.3	2.1	21.2
1975	484.0	.0	.0	.0	12.9	12.9	33.8	34.3	81.0	2.7	16.7
1976	484.0	.0	.0	.0	12.3	12.3	33.6	35.9	81.8	2.5	16.9
1977	484.0	.0	.0	.0	9.4	9.4	53.1	30.6	93.1	1.9	19.2
1978	484.0	.0	.0	.0	11.0	11.0	53.6	30.0	94.6	2.3	19.5
1979	484.0	.0	.0	.0	11.0	11.0	56.6	30.3	97.9	2.3	20.2
1980	618.5	.0	.0	.0	20.6	20.6	74.6	36.4	131.6	3.3	21.3
1981	686.0	.0	.0	.0	15.0	15.0	n.a.	n.a.	n.a.	2.2	n.a.
1982	737.7	.0	.0	.0	3.0	3.0	n.a.	n.a.	n.a.	.4	n.a.
1983	781.2	.0	.0	.0	.0	.0	n.a.	n.a.	n.a.	.0	n.a.
1984	807.1	.0	.0	.0	.0	.0	n.a.	n.a.	n.a.	.0	n.a.
1985	871.7	.0	.0	.0	.0	.0	n.a.	n.a.	n.a.	.0	n.a.

Source: Westphal and Kim (1977) for 1962–75 data; Nam (1981) for 1976–78 data; and K. S. Kim (1986).

Note: n.a. = not available.

Substantial changes occurred in 1965. The drastic devaluation in 1964 and the following transition to a system of unified floating exchange rates choked off export dollar premiums, but the interest rate reform of 1965 substantially widened the interest rate differential between export credits and nonpreferential bank loans. Thus, export credit at a preferential interest rate became a major subsidy from 1965 until 1982. The tariff exemptions on raw material imports for exports and indirect domestic tax exemptions on intermediate inputs for exports substituted for export dollar premiums, and so gross subsidies remained substantial, ranging from 17 to 30 percent during the 1970s.

9.3.2 Import Restrictions

The most important aspect of import liberalization has been the loosening of quantitative restrictions. Government approval was required for all imports until 1955. As can be seen in table 9.11, the semiannual trade program in the first half of 1955 listed 207 import-permissible commodities. Among these, imports of 22 commodities were restricted to prior approval of the government and imports of the other commodities were automatically approved.

The degree of import liberalization, measured as a ratio of the number of automatically approved items to the number of total permissible items, has not shown a clear pattern of increase or decrease. The number of automatically approved items increased rapidly until 1958 as foreign aid replenished the foreign exchange resource for imports. After 1958 no obvious trend in import liberalization could be found until 1965.

The government started to follow a consistent trade policy of liberalization as of 1965. The number of automatically approved items increased from 1,447 in the first half of 1965 to 2,950 in the first half of 1967. In the second half of 1967 the government changed the semiannual trade program from a positive list system into a negative list system, a major step for import liberalization. Under the negative list system, only the prohibited or restricted items were listed, so imports of nonlisted items were considered to be automatically approved. Introducing the new system, the government adopted the commodity classification method of the UN's Standard International Trade Classification (SITC). No specific method of commodity classification had been applied under the positive list system. The system of commodity classification again changed from SITC to the four-digit Customs Cooperation Council Nomenclature (CCCN) in the second half of 1977, followed by the eight-digit CCCN in the second half of 1981. The adjusted import liberalization ratios based on the four-digit CCCN are provided in the last column of table 9.12 for comparison. Based on this index, the rate of import liberalization jumped from about 12 percent in the first half of 1967 to 59 percent in the second half of that year with the introduction of the negative list system.

Table 9.11 Import Restrictions by Semiannual Trade Program, 1955-67
(in number of commodities)

Period	Import Permissible (1)	Restricted (2)	Automatic Approval (AA) (3 = 1 - 2)	Prohibited (4)	Total (5 = 1 + 4)	Index of Number of AA items (1967:1 = 100) (6)
1955:1	207	22	185	**	207	6.3
II	298	51	247	**	298	8.4
1956:1	558	172	386	**	558	13.1
II	1,145	242	903	**	1,145	30.6
1957:1	1,678	291	1,387	**	1,678	47.0
II	1,916	282	1,634	**	1,916	55.4
1958:1	2,243	410	1,833	**	2,243	62.1
II	2,155	562	1,593	**	2,155	54.0
1959:1	2,296	725	1,571	356	2,652	51.4
II	1,812	622	1,190	297	2,109	40.3
1960:1	1,836	619	1,217	315	2,151	41.3
II	1,878	613	1,265	326	2,204	42.9
1961:1	1,581	35	1,546	305	1,886	52.4
II	1,132	17	1,015	355	1,487	34.4
1962:1	1,314	119	1,195	366	1,680	40.5
II	1,498	121	1,377	433	1,931	46.7
1963:1	1,489	713	776	442	1,931	26.3
II	1,033	924	109	414	1,447	3.7
1964:1	1,124	*	1,124*	617	1,741	38.1
II	496	*	496*	631	1,127	16.8
1965:1	1,558	111	1,447	624	2,182	49.1
II	1,633	138	1,495	620	2,253	50.7
1966:1	2,240	136	2,104	583	2,823	71.3
II	2,446	139	2,307	386	2,832	78.2
1967:1	3,082	132	2,950	362	3,444	100.0

Source: Korean Ministry of Commerce and Industry, *Semi-Annual Trade Programs*, for respective periods. Also, K. S. Kim (1986).

*Not divided between automatic approval items and restricted items.

**Not specified.

Following the substantial progress toward import liberalization in 1967, the pace for liberalization slowed down until 1978-80. The push toward liberalization resumed in the second half of 1981. By 1985 the liberalization ratio had reached 87.7 percent. The government planned to raise the ratio to 95.2 percent by 1988.

The ratio of automatically approved items to total commodity items has limitations as the true measure of import liberalization, and it may overestimate the extent of liberalization. Nonetheless, it points to the general trend in Korea's import liberalization when detailed data are difficult to obtain.

Table 9.12 Import Restrictions by Semiannual Trade Program, 1967-86 (in number of commodities)

Period (Original Program) ^a	Prohibited	Restricted	Automatic Approval (A)	Total (B)	Rate of Import Liberalization (%)	
					A/B	Adjusted ^b
1967:I	42	1,114	156	1,312	11.9	11.6
II	118	402	792	1,312	60.4	58.8
1968:I	116	386	810	1,312	61.7	60.0
II	71	479	756	1,312	57.6	56.0
1969:I	71	508	728	1,312	55.5	54.0
II	75	514	723	1,312	55.1	53.6
1970:I	74	530	708	1,312	54.0	52.5
II	73	526	713	1,312	54.3	52.8
1971:I	73	524	715	1,312	54.5	53.0
II	73	518	721	1,312	55.0	53.5
1972:I	73	570	669	1,312	51.0	49.6
II	73	571	668	1,312	50.9	49.5
1973:I	73	569	670	1,312	51.1	49.7
II	73	556	683	1,312	52.1	50.7
1974:I	73	570	669	1,312	51.0	49.6
II	73	574	665	1,312	50.7	49.3
1975:I	71	592	649	1,312	49.5	48.2
II	66	602	644	1,312	49.1	47.8
1976:I	66	584	662	1,312	50.5	49.1
II	64	579	669	1,312	51.0	49.6
1977:I	63	580	669	1,312	51.0	49.6
	(54)	(499)	(544)	(1,097)	(49.6)	
II	54	496	547	1,097	49.9	49.9
1978:I	50	458	589	1,097	53.7	53.7
II	—	424	673	1,097	61.3	61.3
1979:I	—	349	748	1,097	68.2	68.2
	—	(335)	(675)	(1,010)	(66.8)	
II	—	327	683	1,010	67.6	69.1
1980:I	—	312	698	1,010	69.1	70.6
1980:II/1981:I	—	312	693	1,010	68.6	70.1
	—	(2,282)	(5,183)	(7,465)	(69.4)	
1981:II/1982:I	—	1,886	5,579	7,465	74.7	75.5
1982:II/1983:I	—	1,769	5,791	7,560	76.6	77.4
1983:II/1984:I	—	1,482	6,078	7,560	80.4	81.2
1984:II/1985:I	—	1,203	6,712	7,915	84.5	85.4
1985:II/1986:I	—	970	6,945	7,915	87.7	88.6

Source: Korean Ministry of Commerce and Industry. Also, from K. S. Kim 1986.

Note: The classification of import items was based on SITC basic codes through the first half of 1977, on the four-digit CCCN codes during 1977-81 (until the first half), and on the eight-digit CCCN codes thereafter. Figures in parentheses indicate the number of commodity items based on the new system of classification used beginning in the following period.

^aOriginal import program based on positive list system is reclassified to make it comparable with the trade program for the following periods which are based on a negative list system.

^bThe rate of import liberalization is adjusted to make it comparable over time on the basis of the same system of classification as the four-digit CCCN codes (1,097 items) used during 1977-79 (until the first half).

9.3.3 Tariffs

There have been eight major tariff reforms from 1952 to 1984, as shown in table 9.13, during which the simple average tariff rate initially rose and then gradually declined from the peak of 40 percent in 1962 to 22 percent in 1984. The coefficient of variation in tariff rates showed only minor change.

Although the simple regular tariff rate decreased by 18 percent during 1962–84, the actual tariff rates (estimated by dividing actual collections of tariffs and equivalents by the won value of commodity imports) did not show any discernible decreasing trend during the same period (table 9.14). This implies that the imports of high tariff items increased. On the other hand, the actual tariff rates were substantially below the legal tariff rates. The difference between the average legal rate and the average actual rate can be explained by the large portion of raw material and machinery and equipment imports on which tariff charges were exempted or reduced.

9.3.4 Summary

To summarize, exporters have received substantial incentives throughout most of Korea's industrialization. With the exception of the overvaluation during the Big Push, the exchange rate has been maintained at extremely competitive levels. Furthermore, exports consistently received special subsidies throughout the 1960s and 1970s. While the total gross subsidy has remained relatively constant, the major sources shifted from direct export premiums to access to loans at preferential rates and to indirect exemptions from taxes and tariffs.

On the import side, the broad characterization highlights three periods. The years 1967–68 were an early period of substantial liberalization. The Big Push in 1973–79 was a period of retrenchment and increased restrictiveness. Since 1979, as part of an overall policy shift away from interventionism, import liberalization has been resumed. It is, of course, difficult to quantify the actual effect of changes in regulations, but most observers conclude that the trade liberalization has been substantial. For

Table 9.13 Structure of Regular Tariff Rates, 1952–84

Year	Simple Average (%)	Coefficient of Variation
1952	25.4	0.70
1957	30.3	0.70
1962	40.0	0.77
1968	39.1	0.71
1973	31.5	0.70
1977	29.7	0.61
1979	24.8	0.69
1984	21.9	0.61

Source: MOF, *Tariff Schedules of Korea*, various years. Also, from K. S. Kim (1986).

Table 9.14 Estimation of Actual Tariff Rates, 1958–85 (in millions of current won and percentages)

Year	Actual Collections of Tariffs and Equivalents	Imports ^a	Actual Tariff Rates (%)
1958	4,394	18,910	23.2
1959	8,281	15,190	54.5
1960	10,196	22,328	45.7
1961	5,557	41,093	13.5
1962	6,824	54,834	12.4
1963	6,358	72,839	8.7
1964	8,231	103,526	8.0
1965	12,576	126,091	10.0
1966	17,635	194,503	9.1
1967	25,413	273,557	9.3
1968	37,881	411,806	9.2
1969	44,724	555,286	8.1
1970	50,924	628,333	8.1
1971	52,187	893,792	5.8
1972	59,106	1,006,026	5.9
1973	82,371	1,685,519	4.9
1974	126,698	3,316,271	3.8
1975	181,004	3,520,810	5.1
1976	275,512	4,246,422	6.5
1977	385,871	5,232,282	7.4
1978	646,425	7,246,400	8.9
1979	732,294	9,843,882	7.4
1980	766,063	14,710,292	5.2
1981	890,615	18,305,045	4.9
1982	1,012,564	18,158,999	5.6
1983	1,463,200	20,835,895	7.0
1984	1,593,959	25,344,454	6.3
1985	1,686,852	27,716,961	6.1

Source: K. S. Kim (1986).

^aMerchandise imports in U.S. dollar terms multiplied by the official exchange rate for respective years.

example, Y. C. Park (1985a) argues that liberalization has proceeded much further in international trade than in financial markets. We return to this discussion below.

9.4 Industrial Policies

Industrial policies have interacted with export promotion strategies in promoting Korea's rapid growth. Each phase of the development can be distinguished by policy concern about specific industries and by active provision of tax and financial incentives. A major aim of these protective measures was to enhance labor productivity and thereby increase export competitiveness. In particular, the government promoted HC industries during the 1970s. However, this focus led to imbalances among industrial sectors and to high inflation, and contributed to the deterioration of the trade

balance. This section turns to a discussion of Korea's industrial policy and to the background which gave rise to policy changes.²

9.4.1 Export-Oriented Growth, 1962–72

With the initiation of the first five-year economic development plan in 1962, Korea embarked on a policy of outward-oriented growth. The new government took the initiative in redirecting the economy from the import substitution of the 1950s to export promotion based on the abundant labor supply. The first five-year plan set up as major objectives the development of basic infrastructure, the modernization of the industrial structure, the development of several key raw-material-supplying industries, and the growth of exports. Measures adopted to achieve these objectives included the sizable devaluation of the domestic currency, the liberalization of quantitative import controls, and monetary and fiscal reforms. Various export incentives were also introduced—export loans at preferential interest rates (abolished since 1982), tariff exemptions on raw material imports for exports, and the reduction of corporate taxes for exporters (abolished since 1973).

These policies of the 1960s contrasted with those of the 1950s in that the government played an active role in export promotion. Major policy changes were adopted to improve the trade structure, and the industrial policies implemented during this period were closely interrelated with trade policies. Although import substitution was also accomplished in key raw-material-supplying industries, such as fertilizers, petroleum refining, cement, and chemical fibers, by offering tax incentives, there was little intervention in specific export items or industries. Export incentives were provided for all export-oriented industries. Even import restrictions were not used to protect specific industries. They were generally prohibitive. Furthermore, import-substituting efforts were focused only on very infant industries such as fertilizers and chemical fibers where foreign investors were motivated by the incentives of domestic tax exemptions. But few foreign investments were made in the 1960s. Foreign investors showed little interest in Korean markets until the early 1970s when the various incentives, including the opening of a free export zone, took effect.

9.4.2 Shift to Import Substitution, 1973–79

In the early 1970s the external situation turned unfavorable for Korea's export-led growth. The commodity boom brought the gloomy prospect of importing raw materials at an increasing price. The breakdown of the Bretton Woods system aroused worldwide protectionist sentiments rather than stimulating free trade. In addition, Korea's comparative advantage based on labor-intensive exports was threatened by the emergence of new competitors such as China. These unfavorable economic conditions abroad

coincided with the announcement of the Nixon doctrine in 1971 in which a partial withdrawal of American forces from Korea was threatened. Faced with these adverse situations, the president of the Republic called for the development of HC industries in January 1973 to strengthen export-led growth and to develop national defense industries. The major items of new measures taken to develop the "strategic" industries were as follows.

First, quantitative restrictions on imports were reinforced for heavy industries and even more so for the strategic industries. The (nonadjusted) import liberalization ratio decreased from 61.7 percent in 1968 to 50.5 percent in 1976 (see table 9.12). For the machinery industry, which includes most of the strategic industries such as industrial machinery, electronics, automobiles, shipbuilding, and metal product, it declined from 55.9 percent in 1968 to 35.4 percent in 1976.

Second, the "strategic" sectors were subsidized excessively through preferential financing and tax incentives. Investment projects of the HC industries were financed by long-term loans from commercial banks and public finance institutions like the KDB. Furthermore, the National Investment Fund (NIF) was established to provide loans at preferential interest rates.

Domestic tax incentives in the form of direct tax exemption, tax holidays, special depreciation, and temporary investment tax credit have been utilized effectively to direct investment resources into several key industrial sectors. These incentives were rearranged by the Tax Exemption and Reduction Control law in 1975 under the heading of "Special Tax Treatment for Key Industries."

Third, the government announced its General Guidelines for Foreign Direct Investment to reinforce entry restrictions. Joint ventures became more acceptable than wholly-owned foreign firms, except that the joint-venture firms could not compete with domestic firms in overseas markets or take on technology-intensive projects.

The restrictions on foreign direct investment were based on a fear that the various encouragements in place until the early 1970s might result in foreign firms' dominance of domestic industries, and on the difficulty in implementing efficient development strategies. Thus, the government became more stringent on export requirements and foreign ownership. These strong attitudes toward foreign direct investment made Korea rely less on foreign direct investment in the pursuit of strategic development and in the related financing of imported capital goods.

Foreign capital inflows and economies of scale each played an important role in the rapid growth of HC industries. Motivated by the promise of high returns, foreign capital inflows supported high rates of investment in the capital-intensive industries. At the same time, production in these sectors was concentrated among a few firms, leading to monopolistic or oligopolistic

market structures. On the one hand, the concentration was justified by economies of scale; on the other hand, it was used to justify increased government intervention.

Heavy and chemical industries as a share of total manufacturing value added rose from 42 percent in 1970 to 51 percent in 1980. There was also a jump in the export ratio of light industries during 1970–75. This suggests that exports in the labor-intensive industries were promoted despite the shift of emphasis to import substitution. However, the rapid change in industrial structure produced distortions in resource allocation. The push for the capital-intensive projects of the HC industries and the provision of a large amount of low-cost funds through various sources resulted in a shortage of skilled labor and rapid money growth, which in turn raised wages and inflation. Large firms rapidly expanded their power in the domestic market. Moreover, a number of public enterprises began to manage several investment projects on social overhead capital, further complicating the market structure.

Overall, the shifting of the industrial structure and the development of strategic sectors through a strong government's protection and assistance did not come without cost. In particular, because the changes in policy direction of the 1970s originated from unfavorable external conditions in the early part of the decade, and because the 1970s were jolted by two oil shocks, it is very difficult to measure the true cost of the policy changes toward more intervention in resource allocation and the backward linkage of the capital-intensive industries with the labor-intensive industries. The question is whether the government could have avoided some of the undesirable outcomes of the 1970s and what the optimal extent of government intervention in the 1970s would have been. The general consensus at the time of the second oil shock seemed to be that the costs borne by the domestic economy during the heavy industrialization process were excessive.

9.4.3 Restructuring Industrial Growth, 1980 to the Present

Toward the end of the 1970s, the government's promotion of HC industries gave rise to internal and external imbalances in the economy and less efficiency in resource allocation. The overcapacity problem in those sectors appeared as massive investments in strategic sectors were countered by the declining worldwide demand for, and international competitiveness of, exports. To make things worse, the oil price hike, social and political turmoil, and a rice crop failure during 1979–80 had a stagflationary impact on the economy. In 1980 the GNP shrank 4.8 percent, wholesale prices rose 38.9 percent, the current account deficit widened to \$5.3 billion, and foreign debt increased by \$6.9 billion.

The poor performance of the economy forced the government to reevaluate the industrial policies implemented during the 1970s. To remedy the overinvestment in HC industries and the distortions in resource allocation

caused by strong legislative protection and support, the government intended to rely more on market mechanisms by liberalizing the economy both internally and externally and by reinforcing antimonopoly and fair trade.

We have already mentioned that the government carried out substantial liberalization of imports, raising the import liberalization ratio from 68.6 percent in 1979 to 91.6 percent in 1986. Also effective were the tariff reforms to reduce the average nominal tariff rate for all commodities from 35.7 percent in 1978 to 18.1 percent by 1988.

In the financial sector the number of government-controlled policy loans has been reduced since 1980. Furthermore, preferential interest rates applicable to policy loans were abolished in June 1982. Financial liberalization efforts, which have been stepped up since 1982, include turning over the government's equity share of commercial banks to the private sector, minimizing government control over banking operations, reducing entry barriers to the financial sector, and adopting policies to encourage the development of a universal banking system. We return to financial policies in chapter 11.

Domestic tax incentives given to strategic sectors were sharply reduced in the early 1980s. The number of strategic industries eligible for tax incentives declined from fourteen to six. The content of tax incentives also changed to indirect tax preferences through accelerated depreciation instead of direct exemptions of corporate taxes.

Foreign direct investment policies were reexamined. To promote competition in the domestic market, many new industries were opened to foreign investors in the early 1980s. This liberalizing trend culminated in the establishment of the new Foreign Capital Inducement Act in December 1983 which introduced a negative list system. Foreign investments were allowed unless they were directed toward the listed industries. Furthermore, projects that satisfied certain requirements were automatically approved without procedural difficulties imposed by bureaucratic custom.

These new policies, the correction of the distortions created by the strongly protectionist policies of the 1970s, and the favorable economic conditions in the 1980s all contributed to a strong recovery of economic growth. Both light and heavy industries expanded. In fact, heavy industrial output surpassed light industrial output in the 1980s. Exports of heavy industrial products accelerated causing a rapid increase in the ratio of heavy to light manufactured exports (see table 9.2). From this perspective, it is misleading to assert that the heavy industrialization in the 1970s played an insignificant or detrimental role in Korea's industrial growth.

We do not believe there is a simple answer to the question of whether the Big Push was a mistake. While it is possible to list both favorable and unfavorable consequences of the strategy to date, and while many observers feel that the unfavorable ones dominate, the jury is still out on the ultimate costs versus benefits of the resource shift toward heavy industry.