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Industrial Policy in an Export-Propelled Economy: Lessons from South Korea's Experience

Larry E. Westphal

Korea provides an illuminating case of state intervention to promote economic development. Like many other third world governments, Korea's government has selectively intervened to affect the allocation of resources among industrial activities. It has also used similar policies: taxes and subsidies, credit rationing, various kinds of licensing, and the creation of public enterprises, for example. But these policies have been applied in the context of a radically different development strategy, one of export-led industrialization. Moreover, Korea's economy has experienced exceptionally rapid development with relatively equitable distribution of the gains.

This paper argues that the government's selective industrial policies have contributed importantly to Korea's rapid achievement of international competitiveness in a number of industries.¹ Though accepted by many knowledgeable observers, the conclusion is controversial. It is inherently so owing to insufficient historical information and lack of agreement about the required counterfactual. Reasons for believing that the benefits of selective intervention must have outweighed the costs also are considered. The discussion flags the policy implications of a Schumpeterian approach that views industrialization as a cascade of interlinked technological changes. The implications are no less controversial than is the interpretation of Korean experience.

¹Many of the arguments advanced in this paper have been put forth in greater detail in Westphal (1978, 1982) and Pack and Westphal (1986). Specific references to the sources of factual statements made in the paper are generally omitted. Sources include the items listed as references and standard Korean government and World Bank statistical publications. Some of the statements reflect well-founded knowledge that is common among close observers of the Korean economy.

The arguments presented here do not suggest that selective industrial policies must necessarily succeed, either to foster international competitiveness or to increase welfare. Indeed, from my reading of the evidence around the Third World, I am fully persuaded that such policies have generally inhibited effective development (Bell, Ross-Larson, and Westphal, 1984). Thus it is critical to specify the underlying differences that would explain how and why Korea's government has succeeded where many other governments have failed.

The differences are found in policies and in politics. Policy differences relate to the ways that similar policies have been used, where the most important—but by no means the only—difference is in development strategies. Political differences, in turn, pertain to political processes that have conditioned the use of policy. Primary significance attaches to the political differences, for they imply that attempts to institute effective industrial policies elsewhere in the Third World would generally require drastic changes in domestic political processes before they could succeed. Correspondingly, one has to be extremely skeptical about the prospects for replicating the Korean government's successful use of selective intervention.

The discussion below proceeds as follows. The first section presents a brief sketch of Korea's economic development since the Korean War ended in 1953.² The second examines Korea's industrial policies. The contribution of these policies is considered in the third section. The concluding section discusses the lessons to be drawn from Korea's experience.

Korean Development Performance

Observers of the Korean economy in the late 1950s did not expect it to become one of the world's most dynamic. Quite the contrary, it was considered something of a basket case. The economy had been sustained by large inflows of foreign assistance, with annual inflows exceeding two-thirds of both imports and investment. Moreover, its growth had been erratic, and the trend was clearly downward. Because of its apparent inability to generate adequate levels of exports and savings, the economy was expected to remain in a dependent status over the foreseeable future. Policy makers behaved in ways that were consistent with this view and helped to reinforce it. Their overriding concerns, apart from controlling inflation, were to solicit foreign aid and to manage the flow of imports. With respect to foreign trade, these concerns prompted policies of substantial currency overvaluation, high tariff rates, and quantitative import restrictions, policies that discouraged exports and encouraged import substitution.

²Mason et al. (1980) provide the most comprehensive review of Korea's economic development through the mid-1970s. There is no comparable reference covering the last 15 years, though Amsden (1989) and Corbo and Suh (forthcoming) provide notably insightful accounts of industrial and macroeconomic development, respectively, over the period.

Korea's economic takeoff occurred toward the end of a period of major policy reforms, a period that began after the ouster of its first president in 1960 and continued for several years after Chung Hee Park took control of the government in 1961. The reforms were motivated by the views of those who thought the only way to negate Korea's dependent status was by fundamentally changing the economy's trajectory, away from one of industrialization focused on the domestic market. Underlying these views was a recognition of the poverty of Korea's natural resource base and a perception of the rapidly diminishing returns that characterized the existing trajectory. The reforms had two major effects; they led to rapid increases in the rates of savings and investment and they initiated a change in development strategy.

Having adopted a strategy of export-led industrialization in the early 1960s, the Korean economy has experienced remarkable development over the past three decades. The compound annual growth of per capita income was well in excess of 7 percent, making it one of the fastest growing economies in the world during this period. Though income inequality increased, the change was modest, so that Korea was at least among the better performers with respect to distributing the fruits of development widely. More generally, Korea's economy has experienced one of the most rapid structural transformations ever to have occurred.

In 1960, the Korean economy was dominated by agriculture and mining. With few exceptions, the manufacturing sector supplied only simple consumer products. Exports amounted to about 3 percent of GNP and consisted almost entirely of primary products such as seaweed, ginseng (a medicinal herb), and various minerals. Today the economy is dominated by the manufacturing sector. Major industries established since 1960 range from chemicals and electronics to automobiles and heavy electrical equipment. Exports exceed 40 percent of GNP, with manufactured products constituting over 90 percent of the total.

The composition of Korea's manufactured exports has changed dramatically over the past 30 years. Early export successes in simple manufactures such as wigs, textiles, and plywood were followed by rapid gains in other products like shoes, steel, ships, and electronic products. More recently, Korea has penetrated markets for sophisticated durable goods such as automobiles and computers (including memory devices). Multinational corporations have played a distinctly supporting role in the evolution of Korea's comparative advantage. Quantitative evidence indicates that their contribution to industrialization in Korea has been less than in many middle-income countries, like Brazil and Taiwan (Westphal, Kim, and Dahlman, 1985). Korea's export performance thus attests to the speed at which Korean firms have acquired increasingly more diverse and more sophisticated industrial capabilities. They quickly established a position among the world's most competitive suppliers of many skill and technology intensive products.

Korean Industrial Policy

Since the early 1960s, Korean industrial policy has had two proximate objectives: encouraging exports and promoting infant industries. Exports from well-established industries have been encouraged using policies that are largely neutral. Here and below, “neutral” refers to the absence of differential effects on the allocation of resources among activities relative to the putative circumstances of perfectly free trade. Non-neutral policies have focused on promoting infant industries. Insofar as government policies have affected economic outcomes, Korea’s outstanding development performance stems from the coordinated use of both kinds of policy. Thus they are first described separately and then considered jointly.

Encouraging Exports Using Neutral Policies

The policy reforms that put Korea on a path of export-led industrialization centered on fostering exports. For well-established industries, those in which Korea had either a real or a readily achievable comparative advantage, the reforms insured that production for export would be profitable, no less profitable than production for the domestic market. They did not achieve this result by the conventionally prescribed approach, which is to reduce greatly (if not eliminate) the domestic market’s insulation from import competition.³ Instead, they accomplished it by insulating export activity from the otherwise adverse consequences of policies motivated by other concerns.

A virtual free trade regime for export activity was established, so that capital and intermediate inputs used in export production could be imported without tariffs and outside the quotas which applied to imports for other purposes; regardless of their source, tradeable inputs were exempt from indirect taxes. The existing multiple exchange rate system was abolished, and the new, unitary exchange rate was set and then managed to maintain relatively close agreement between domestic and world prices for the output of “comparatively advantageous” activities. In addition, through its control of the banking system, which was in the public sector, the government assured availability of adequate finance, by enabling exporters to borrow working capital in proportion to their export activity. All of the foregoing export incentives have remained largely intact down to the present. Though the banking system was converted to private ownership in the early 1980s, export

³Luedde-Neurath (1986) provides the most detailed description of the protectionist policies that remained in place after the reforms. However, his interpretive analysis is frequently overstated or misguided. In turn, this paper’s emphasis on export growth in the context of protectionist measures should not be taken to imply that Korea has practiced openness only on the export side of its balance of trade. In fact, Korea’s pursuit of its dynamic comparative advantage has entailed tremendous openness to imports of raw materials, intermediate inputs, and capital goods. Imports have grown almost as rapidly as exports, so that Korea’s balance of trade surplus is a relatively recent phenomenon.

financing continued to be regulated by the central bank, under government direction.

The foregoing incentives do not confer real subsidies insofar as they simply exempt export activity from the effects of distortionary policies applied to other activities. But additional incentives, ones that would be real subsidies if they did more than compensate for currency overvaluation, were also granted (most of them were either withdrawn or greatly reduced in value during the 1970s). They were given primarily in the form of direct tax reductions, preferential interest rates (see footnote 4), and privileged access to import licences. In 1968, a reasonably representative year and one for which ample data are available, these incentives amounted to more than 8 percent of total merchandise exports, about equal to the degree of currency overvaluation (relative to free trade), which is estimated to have been roughly 9 percent (Westphal and Kim, 1982, pp. 217, 245). More generally, the value of these incentives appears to have fluctuated so that it roughly compensated for the changing (but never large) degree of currency overvaluation.

Except for privileged access to import licences and several other specific incentive schemes, all largely meant to increase exports with low profit margins and to develop new export markets, the export incentives so far discussed were administered uniformly across all industries. Moreover, unlike similar export incentives in nearly all other Third World countries, they were granted equally to "indirect exports"—inputs produced and sold domestically that are destined to be used in export production. The most important incentive apart from the exchange rate was the virtual free trade regime, which accounted for more than two-thirds of total export incentives in 1968 (Westphal and Kim, 1982, p. 217). Such a regime does not discriminate among export activities in the sense that it does not distort the relative values of net prices—output prices less respective intermediate input costs, or value added (per unit of output) coefficients—from what they would be under free trade at the existing exchange rate. Nor, applying the same norm, does such a regime distort the prices of capital inputs relative to output prices. The other non-specific incentives were discriminatory, but only incidentally so, because they were administered in relation to some base other than net price; credit preferences being granted in proportion to gross export receipts, for example. In sum, the export incentives discussed here have been largely, but not wholly, neutral in their combined effect.

But the government has not relied solely on market forces acting in response to incentives. It has also used publicly announced, quarterly export targets for individual commodities, markets, and firms. Contact between government and business in the day-to-day implementation of these targets has been close. Next to the responsible minister's office, an "export situation room" was established, laid out so that potential export shortfalls could be identified at a glance. A large staff has maintained almost daily contact with major exporters, and it has not been uncommon for the minister to intervene in difficult

situations; for example, to obtain immediate customs clearance for imported inputs being delayed on some pretext. Progress toward targets and the current trade situation have been regularly reviewed at a Monthly Trade Promotion Conference, chaired by the president and attended by ministers, bankers, and the more successful exporters, large and small.

The highest export achievements have brought national awards as well as material benefits bestowed through discretionary means. The latter have included additional preferences in the general allocation of credit under a system of government directed bank lending and relaxed tax surveillance under a revenue system that gives government officials considerable latitude in determining tax liabilities. Material benefits have also been used more generally to reward extraordinary efforts to increase exports; they have not gone simply to the largest exporters. Conversely, indolence has been deterred by the perception that discretion could be—indeed, sometimes was—exercised in ways that impose material costs or deny potential benefits in other areas of a firm's activity.

It would be incorrect to conclude that the government has independently set export targets to determine export levels by command. The targets have been indicative, negotiated jointly between the government and export producers, sometimes in combination with specific export incentives to insure acceptance of the targets. Moreover, targets have often been exceeded. But, although the effect of the targeting system is impossible to determine quantitatively, it has not been negligible (Rhee, Ross-Larson, and Pursell, 1984). At a minimum, the targets have kept the government well-informed about export performance so that timely changes could be made in incentives. Beyond that, operating as a means of moral and material suasion, the targets have undoubtedly led firms to pursue many marginally profitable export opportunities, opportunities that would not otherwise have been thought worth the effort. Where profits on exports have been distorted to enable the achievement of simultaneously determined targets, as they have been for promoted infant industries (discussed below), the effect of the targeting system has been correspondingly greater.

The government has clearly exercised some degree of selective intervention in encouraging exports. Non-uniform export incentives have been important for some industries in some periods. Export targeting has influenced firms' decisions in an intrusive way, certainly in comparison to direct incentives. Additionally, with respect to the growth of exports over time, recognition must be given to the government's central involvement in the allocation of investment finance through its control of the banking system and foreign capital inflows. Did these interventions do more than simply offset distortions arising from policies directed toward other objectives? Or to put the question another way, did these selectively administered interventions have a non-neutral impact? The available evidence indicates that with one possible exception, they generally did not. The possible exception arises in the case of infant industries

being promoted by additional means of selective intervention, to which the discussion now turns.

Promoting Infant Industries Using Non-neutral Policies

For nearly three decades, the Korean government has selectively intervened to promote targeted infant industries, typically by supporting the creation of large-scale establishments which were accorded temporary monopolies. Notable examples include cement, fertilizer, and petroleum refining in the early 1960s; steel and petrochemicals in the late 1960s and early 1970s; shipbuilding, other chemicals, capital goods, and durable consumer items in the mid-to-late 1970s; and more recently, critical electronic and other components previously sourced from Japan. At their inception, targeted industries have received preferential access to long- and short-term credit on preferential terms as well as reductions or exemptions with respect to most or all direct and indirect taxes (including tariffs). Per unit of sales being promoted, these incentives, given in relation to total sales, have typically been at least comparable to the incentives given generally in relation to export sales. Even so, credit and tax preferences have not been the most important promotional inducement.

Protection has been the dominant incentive in infant industries, except in the few industries, such as shipbuilding, that initially lacked a significant domestic market. In Korea, owing to the nearly inviolable policy of maintaining a virtual free trade regime for exporters, infant industry protection has almost always meant protection only for non-export sales; that is, protection has rarely been extended to indirect exports and, when extended, it has been to only a small fraction of them. At their inception, targeted industries have been granted "absolute" protection by means of import controls designed to guarantee them an adequate level of non-export sales as well as a satisfactory rate of return on investment. These controls have most often been in the form of quotas that set ceilings on imports. But they have sometimes been imposed through a *de facto* "law of similars," under which an import license would be granted only if it could be shown that the specific term could not be procured domestically on reasonable terms. This approach is known to have been used in promoting several machinery-producing industries, for example.

The government has constrained infant industries to pursue rapid productivity growth by using the export targeting system to insist that infant industries sell a swiftly growing proportion of their output at world prices, either as direct or indirect exports. Selective export subsidies given to these industries have fallen far short of equalizing profit margins between exports (direct and indirect) and protected non-export sales. But this does not imply that their exports were necessarily unprofitable. By sheltering their non-export sales, the government enabled infant industries to practice discriminatory pricing on these sales, which had the lower elasticity of demand with respect to price. As a

result, exports were profitable as long as marginal revenue exceeded marginal cost. Where necessary to sustain discriminatory behavior leading to this result, the government appears to have sanctioned non-competitive market arrangements. In turn, the government has followed a policy of giving selective subsidies on a declining schedule over a limited period. Thus, by insisting on fast export growth, the government made the continued profitability of exports contingent on an infant industry's efforts to reduce marginal cost through rapid productivity growth.

In fostering infant industry development, the government has also selectively intervened to mold and even to create market agents. Conspicuous products of its efforts are the *chaebol*, Daewoo, Hyundai, Samsung and other extremely large conglomerate groups whose activities span all sectors but are concentrated in manufacturing and construction. They initially evolved through entrepreneurial responses to market opportunities, but government interventions during the 1970s significantly contributed to their present form and stature (Jones and Sakong, 1980; Amsden, 1989). In the role assigned to them as trading companies, the *chaebol* were the government's vehicle for decentralizing its administration of export incentives as well as for undertaking the activities needed to strengthen Korea's export marketing capabilities. In their role as producers, they were the chief agents for implementing the central thrust of government planning in the mid-to-late 1970s, which was to develop heavy industry. Their large-scale investments have been subject to government efforts, sometimes quite forceful but not always successful, to encourage specialization among them and to promote their use of subcontracting. The automotive sector, now dominated by the *chaebol*, has been an especially frequent target of intervention. The government has compelled its reorganization several times during the past 30 years by reassigning licenses to produce particular vehicle types and by forcing substantial changes in foreign partnership arrangements.

The government has exercised strong control over inflows of foreign investment (debt as well as equity) and proprietary technology in its efforts to fashion industrial structure at the firm level. Since every infant industry has been heavily dependent on such inflows, the government has been able to select among the potential entrants and to affect the detailed outline of the initiating venture. It has likewise been able to influence the industry's subsequent evolution; for example, by constraining the emergence of additional entrants and by becoming involved in decisions to develop related lines of activity. Industries producing chemicals and those manufacturing machinery and equipment have been special objects of this kind of intervention.

Using other means, the government has promoted vertically integrated industrial development at the national level. Local content regulations have been imposed on various industries, requiring them to obtain a progressively increasing share of their inputs from local sources. In the 1970s, for example, to support indigenous suppliers of capital goods and engineering services, local

content provisions were instituted for all major investment projects. Working in a complementary direction, the government has sometimes nominated a limited number of medium scale firms for cultivation as suppliers of particular inputs to designated final product manufacturers. Such intervention has been focused on the machinery industries.

Private agents have not been exclusively relied upon to implement key undertakings in Korea's industrial evolution. The first producers of fertilizer, petrochemicals, and refined petroleum products, for instance, were public enterprises. So was the first integrated steel mill, which is generally considered to be one of the most efficient mills in the world. Decisions to use public enterprises to launch new industries have been made pragmatically, on a case-by-case basis, and appear to have been reached on several grounds, including the absence of private parties willing to undertake the venture; the desire to exercise direct control over the start-up and operation of an industry with multiple linkages to other industries; and the expectation that a public agent could achieve a far more favorable outcome in negotiations with foreign suppliers of capital and technology. Like their private counterparts, pioneering public enterprises have been expected to achieve international competitiveness quickly. Moreover, like all public enterprises in the manufacturing sector, they have been constrained to operate as market agents. They have been managed as autonomous profit-seeking entities and have contributed materially to government revenues.

More generally, the share of public enterprises in Korea's nonagricultural output has been comparatively high, similar to that in India. Many public enterprises—mining and manufacturing firms as well as utilities—have been established for a variety of reasons unrelated to the creation of new industries (Jones, 1975). Some of them came into being as a transitional phase in government actions to regenerate moribund firms. In a number of these cases, some involving quite large firms (a producer of diesel engines, for example), bankruptcy has led to public sector ownership as a consequence of government debt-repayment guarantees. Typically, the firms have been quickly restructured and then sold to private interests, so the set of such enterprises has undergone continual change.

Evaluation of the Policy Mix

One can best comprehend the mix of Korean industrial policies by first examining quantitative estimates of their impact on net prices relative to what these prices would be under a regime of free trade. Such estimates are available for 1968 and 1978 in the form of "effective incentive rates," which extend the effective protection concept to include the impact of all readily quantifiable incentive mechanisms that indirectly influence market allocations. Because the underlying details are accessible in published form (Westphal and Kim, 1977; 1982), the estimates for 1968 are used here. Though these estimates are confined to a single year, I am quite confident that they are representative of

Table 1

Effective Incentive Rates for Manufacturing Industries in 1968*(in percent)*

<i>Type of industry</i>	<i>Exports</i>	<i>Non-exports</i>	<i>All sales</i>
Non-import competing	-4.6	-32.4	-31.8
Export	0.8	-33.9	-22.7
Import competing	12.4	64.1	63.4
Export and import competing	-4.9	35.4	20.6
Average	-0.3	-19.1	-16.9

Source: Westphal and Kim (1977), Table 6.B (p. 3-65), Balassa method.

the central tendencies of Korean industrial policy since the reforms in the early 1960s. I do not, for example, find any fundamental differences—relative to the stylized facts being portrayed here—between them and the estimates for 1978 given in Nam (1981).

The estimates shown in Table 1 are weighted averages (using value added at world prices) derived from a disaggregation of the Korean manufacturing sector into 150 industries. With two exceptions, they incorporate all of the incentive policies operative in 1968, including currency overvaluation. The exceptions—advance deposits on imports and special import privileges linked to the penetration of new export markets—are known from other information to have had relatively small effects. In the study from which these estimates come, industries were classified as follows using 1968 data: “export,” more than 10 percent of output was exported; “import competing,” more than 10 percent of domestic supply was imported; “export and import competing,” both export and import shares exceeded 10 percent; “non-import competing,” neither share exceeded 10 percent. Table 2 indicates the division of manufacturing production among these industries in 1968. Industries in which Korea had a well-established comparative advantage in 1968 are included among the export and non-import competing industries. Industries that were infants as of 1968 are found primarily among industries that are either import competing or export and import competing—industries which were being promoted with varying levels of intensity.

In Table 1, the neutrality of Korean export incentives for well-established industries is evident in the fact that the average effective incentive rate on exports from export industries is only 0.8 percent. In turn, the impact of selective export subsidies can be seen in the average effective incentive rate, 12.4 percent, for exports from import-competing industries. Average effective incentive rates for exports from other industries are negative, but only moderately so; in these industries, export incentives failed, on average, to offset the impact of the policy regime on the prices of nontradeable inputs. Also impor-

Table 2
Percentage Shares in Manufacturing Value Added at World Prices in 1968

<i>Type of industry</i>	<i>Direct Exports</i>	<i>Domestic Sales</i>	<i>Total</i>
Non-import competing	1.2	57.5	58.8
Export	8.7	18.3	26.9
Import competing	0.1	10.5	10.6
Export and import competing	1.3	2.3	3.7
Total	11.4	88.6	100.0

Source: Westphal and Kim (1977), Table 3.C (p. 3-14), Balassa method. Totals may not reconcile due to round-off error.

tant, but not shown in the table, is the fact that effective incentive rates on exports for individual industries are very narrowly dispersed around the overall average, particularly when compared with the dispersion of effective incentive rates of non-export sales (Westphal and Kim, 1982, table 8.10). Relative to free trade, then, export incentives are indeed largely neutral, except among import-competing industries. However, the policy regime that is reflected in Table 1 can be characterized as having a pro-export bias insofar as average effective incentive rates on exports exceed those on non-export sales for well-established (export and non-import competing) industries.

The effects of selective intervention to foster new industries are apparent in the average effective incentive rates on non-export sales. Well-established industries have large negative rates owing primarily to import protection granted to other industries, which in turn have high positive rates. Protection of other industries has discriminated against established industries by increasing their intermediate and capital input costs in producing for non-export sale. Moreover, because of competition (and government price controls in some cases) on the domestic market, established industries have not benefitted from the import protection which they have formally enjoyed. In fact, on average, tariff rates on competing imports in 1968 were no less for export and non-import competing industries than for industries of the other two types. (The weighted average, using protected sales valued at world prices, of tariff rates across all manufacturing industries, was 68 percent.) But prices on the domestic market were generally a good deal lower than world prices plus applicable tariffs. Domestic prices of products produced by export and non-import competing industries were on average considerably less than 10 percent above world prices, while domestic prices of products produced by other industries were on average more than 30 percent higher than world prices (Westphal and Kim, 1982, pp. 220-8, 231).

Two additional important central tendencies of Korean industrial policy are also represented in the tables. As can be inferred from the negative average

effective incentive rate on all manufacturing sales in Table 1, incentive policies have not discriminated against the agricultural sector. On the contrary, largely by protecting agricultural producers from competing imports and exempting them from income taxes, the government has subsidized them to a larger extent than it has manufacturing producers, something almost never observed in other developing countries. In turn, Table 2 illustrates the fact that selective intervention to promote infant industries has indeed been selective in the sense of being narrowly focused. Import competing together with export and import competing industries can be seen to account for a relatively small share of manufacturing production, only 14.3 percent. (Of course, the individual industries grew in relative importance over time, as they matured into well-established industries in which Korea had acquired a comparative advantage; as they changed status to become either export or non-import competing industries, they were replaced by new infant industries.) Although there is considerable dispersion around the average effective incentive rates on non-export sales given in Table 1, the bulk of the highly subsidized production falls within these two types of industry. More generally, their production share can be considered a generous upper bound on the extent—at any one time—of the government's selective intervention using direct controls.

The preceding estimates of effective incentives do not capture the full effects of selective intervention. They do not reflect the government's direct controls over the operation of market forces in allocating resources, nor do they indicate how the allocation of resources responded to selective intervention. Well-established industries have generally been subject to only two forms of direct control: export targeting and capital market intervention. Exceptions involve industries that have suffered a loss of international competitiveness, where the government has responded by using additional direct controls. The textile industry, where the government has several times orchestrated investments in new machinery to upgrade technology, is a prime example. Except in such cases, the direct effect of the export targeting system on well-established industries appears to have been rather small.

As previously indicated, the government's influence over flows of domestic and foreign funds has stemmed from its control of bank lending and international capital movements. Financial reforms in the mid-1960s substantially increased real interest rates on bank deposits and nonpreferential loans. By attracting deposits into the banking system, away from a large number of enterprising, unregulated intermediaries, the reforms greatly increased the government's authority over domestic financial flows (Cole and Park, 1983). However, funds not channeled through the banking system have accounted for a sizeable share of total domestic credit outstanding in the economy—the share appears never to have been less than 25 percent. In turn, the government has exercised only loose command over short-term foreign capital inflows. Thus, the government has not had complete control over the flow of funds. Short-term capital inflows and the activities of non-bank intermediaries have provided a

significant margin for the operation of market forces not directly constrained by government controls. Nonetheless, credit rationing has been associated with sizable differentials between market-clearing interest rates on non-bank funds and nonpreferential rates on bank credit.⁴

Government controls over the flow of funds to established industries do not appear to have been selectively exercised. That is, controls have been administered on something approximating a first-come, first-served basis using market criteria. Thus, their impact on well-established industries has been the result of the limit imposed on the supply of funds available to them relative to their demand for funds on market clearing terms. Demand has undoubtedly exceeded supply, more so in some periods than others, but the extent of the discrepancy seems generally to have been rather small. Established industries have typically not suffered low rates of capacity utilization, and there are good reasons for believing that the marginal efficiency of investment would generally have fallen rapidly in response to additional capacity creation. Here it is very important to recall that selective intervention to promote infant industries has been narrowly focused and to recognize that the Korean government has relied very heavily on foreign capital inflows to finance the economy's development, so much so that it is one of the biggest debtors in the Third World.

To summarize, the Korean government's industrial policies have been used within the framework of a consistent strategy of industrialization, one that treats specifically targeted industries very differently than it deals with other, internationally competitive ones. The objective of the strategy has been to build (or sometimes to rebuild) a comparative advantage in the former industries while exploiting the comparative advantage of the latter. Non-neutral policies have not been the sole instruments for implementing the strategy. They have been used selectively in an environment where prices in actively functioning segments of the capital market and in labor markets generally have appropriately reflected relative factor scarcities. Market forces acting in response to policies that have been largely neutral, but that have clearly favored exports (in part due to import protection given to promoted industries), have been used to allocate resources in internationally competitive industries. Thus, the Korean government has not attempted either to make or directly to constrain most

⁴Bank interest rates on nonpreferential loans were between 25 and 30 percent (per annum) in the late 1960s, when the interest rate on time deposits was 30 percent. These interest rates have been reduced over time, reaching the low teens in the mid-1980s. (Real rates fluctuated between positive and negative values as the inflation rate varied.) Interest rates in the unregulated "curb" market have also fallen, but appear to have generally been more than twice the highest nonpreferential bank lending rate. However, the importance of the curb market as a source of non-bank funds has declined greatly over time, as other non-bank forms of intermediation have emerged and rapidly grown in significance. Interest rates to borrowers from these very loosely regulated sources have typically been much lower than curb market interest rates. The preferential bank interest rate on working capital loans to exporters was 6 percent in the late 1960s. The spread between it and the highest nonpreferential rate was gradually reduced during the 1970s. Interest rate preferences for exporters were abolished in 1982.

decisions about resource allocation. Its policy toward nontargeted industries has either been promotional, primarily in relation to exports, or permissive; it has not been overtly restrictive. More generally, the government's policy toward activities not being promoted has been one of the benign neglect.

The Contribution of Industrial Policy

The facts of Korean experience are sufficient testimony that industrial policy need not be inimical to industrialization. But are they testimony to the effectiveness of selective intervention? Knowledgeable observers do not agree, nor are they ever likely to—witness the endless debate on Japanese industrial policy, the model from which the Korean government designed its own approach. But to me, the answer is straightforward: selective intervention has greatly contributed to Korea's remarkable success. It has done so by accelerating the rate of growth with little if any compensating loss in efficiency terms. Evidence to support this assertion is found in Korea's exceptional record of realizing export success in a wide variety of industries as well as in the strong overall performance of its industrial sector. In particular, I interpret the export record to mean that Korean industry has rapidly achieved and maintained international competitiveness in a wide variety of industries.

Because of the way targeting of both exports and infant industries has operated, non-neutral policies have not been used in any industry to encourage exports on a sustained basis. There has necessarily been a great deal of uncertainty in selecting infant industries for promotion and in setting export targets for all industries. There is ample evidence that this uncertainty has been progressively resolved by using information gained during implementation to evaluate and, where deemed appropriate, revise intentions. For example, plans to build the first integrated steel mill were postponed several times during the 1960s on the basis of information contained in successive feasibility reports, and targets for exports of automotive products were substantially reduced more than once in the 1970s to reflect emerging market trends. Moreover, the government has apparently paid careful attention to international competitiveness, meaningfully evaluated. It has understood that exports are not necessarily indicative of international competitiveness when non-neutral policies are in force. Thus the government has closely monitored the magnitude of incentives, the relationship of domestic to world prices, and other relevant information including indicators of product quality. The evidence suggests that the monitoring process has assured that exports are both privately profitable and internationally competitive, at least in the medium run.

However, important theoretical questions remain largely unresolved. In particular, what market failures has selective intervention successfully overcome in the Korean case? Theory suggests many possibilities, but empirically the answer is unknown—or, if known, hardly acknowledged. But some observers

of the Korean economy, myself included, would emphasize (without excluding other possibilities) one source of market failure that has recently received considerable attention in firm-level case study research (as amplified in Pack and Westphal, 1986, part 3) and that appears to have been a particular object of the government's selective intervention.

Market imperfections associated with technological change are generally thought to be unimportant in the context of industrialization because less developed countries face an abundant supply of available technology. Of course, there is abundant international trade in the elements of technology, through transactions involving licenses, capital goods, direct investment, technical assistance, and the like. But elements of technology are far from being perfectly tradeable in the sense that purchase is not sufficient for effective possession. Moreover, the tacitness of much technology creates problems in communication over long distances and across social differences, problems which can be overcome only at some cost. Thus the price that is paid for importing a given element from a particular location exceeds the price that would be received for exporting it to the same location. In addition, the tacitness of circumstantial knowledge makes some elements inherently non-tradeable. Peculiarities in local resources, institutions, and local technological practices cannot be comprehended without being experienced in some way.

Efforts to acquire technological capability and to tailor technology to the circumstances often coincide. In part this is because purposefully monitored experience plays a prominent role in both kinds of technological effort. Most of the resulting technological changes can be characterized as minor insofar as they increase technical efficiency or modestly alter processes and products. But they often occur in cumulative sequences such that productivity increases of 100 percent or more within a decade do not appear to be atypical among firms that have rapidly achieved international competitiveness. Correspondingly, the returns to investments in technological development are potentially very high. But it also appears that the costs are far from negligible.

Because of the imperfect tradeability of technology, externalities related to technological development can be quite extensive. There are pronounced economies of scope in the application of many of the capabilities acquired in the course of industrialization. As industrialization proceeds, transactions between domestic agents that involve elements of technology greatly increase in relative frequency, and there is increasing specialization with respect to technological efforts among various agents. Additional externalities can result because demonstration effects from an initial entrant's investments to master new technology may greatly reduce costs for subsequent, nearby entrants. The returns to particular technological efforts may be largely inappropriable because a significant share of them derives from the application of the newly acquired element in a cascade of subsequent technological changes.

In sum, micro empirical research done over the past 15 years, some of it in Korea, suggests a strong theoretical case in favor of selective intervention to

promote infant industries in less developed countries. If appropriately used, selective intervention may greatly increase a country's ability to capture dynamic economies associated with the introduction and exploitation of modern technology. In any event, the research leaves no doubt that investments in the successful assimilation and adaptation of industrial technology are vitally important in the development process.

Of course, even if latent externalities are huge, it does not necessarily follow that selective intervention as practiced in Korea is an appropriate means to ensure their realization. That it is a possible means can hardly be denied, however. Credit rationing, import protection, and other unorthodox policy measures do not conform to the conventional prescription for dealing with the "technological spillover problem," which is to use "direct and selective policy measures" (Baldwin, 1969, p. 304). But these instruments can be coupled with coercive interventions in decision making to compel warranted investments in technology. Indeed, such coupling has been an integral part of the Korean government's conduct of industrial policy, as Enos and Park (1988) convincingly demonstrate. Thus, a strong heterodox case exists for the use of unorthodox policy in the pursuit of industrialization, where functioning markets and capable agents are being created rather than simply being acted upon.

Lessons

Korea's industrial performance owes much to the government's reliance on free market institutions to provide for flexibility in resource allocation. It has resulted in many highly profitable ventures (socially as well as privately) that were either not foreseen or not actively promoted by the government. Included among the successful outcomes are industries that were established by private initiative and became quite significant as generators of income, employment, and foreign exchange. For example, wig exports rose from nil in 1960 to about 12 percent of commodity exports in 1970. Moreover, some highly successful, once-targeted industries—overseas construction, for example—were identified by the government on the basis of their initial and profitable inception by private agents.

But it is equally the case that Korea's industrial performance owes a great deal to the government's promotional policies toward exports and to its initiatives in targeting industries for development. If nothing else, the policies toward exports have created an atmosphere—rare in the Third World—in which businessmen could be certain that the economic system would respond to and adequately reward their efforts aimed at expanding and upgrading exports. In turn, selective intervention has driven the fast-paced evolution of Korea's industrial structure by fostering vertical integration at the national level, promoting greater diversification of end-product mix, and the like. The most visible result, but by no means the only one, has been the rapid develop-

ment of Korea's heavy industry, which now accounts for more than half of its exports.

One way to sort out the important characteristics of Korean success with selective intervention is to look at what happened in the late 1970s, when the success was least. Various mistakes, largely ones of implementation, were made in developing the heavy engineering industries which produce such things as plant equipment and construction vehicles, like steel furnaces and earth movers. These mistakes were a primary cause of the dramatic deterioration in Korea's industrial performance at the end of the 1970s. Moreover, their effects lingered after the rapid overall recovery. Differences in how intervention was managed in these and other industries suggest several principles for the conduct of selective intervention to promote infant industries. The same principles can also be found in cross-country comparative evidence.

First, the overriding objective of the intervention must be the achievement of dynamic efficiency in the sense of attaining international competitiveness within an explicit medium-term time horizon. In the case of the heavy engineering industries, there was an additional goal of achieving a considerable degree of self-sufficiency in military procurement (not an inherently unreasonable objective in the geopolitical context of the time).

Second, information relevant to judging potential comparative advantage must be sought continuously from every possible source. In the case of the heavy engineering industries, the disparate views of many knowledgeable individuals were not sought, nor was there adequate consultation with private industry concerning the formulation of plans for their development.

Third, detailed industry-specific strategy should be reformulated as needed to reflect the accumulation of pertinent information and experience acquired during the course of implementation. Plans were rigidly pursued for lengthy periods in the late 1970s without regard to the accumulating evidence of problems that were being encountered.

Fourth, only a small number of industries should be targeted at any one time, so as not to spread scarce and specialized technical and entrepreneurial talent too thinly. The number of industries that was targeted in the mid-to-late 1970s was too large to permit the achievement of a critical mass of human resources in most of them.

Fifth, the government's intervention should not overly constrain the exploitation of comparative advantage in well-established industries. These industries were excessively crowded out of markets for labor and capital in the late 1970s by the large demands of the targeted infant industries; the result was a sharp decline in export growth.

Of course, no set of guidelines will rule out all mistakes. Given the uncertainties associated with developing new industries, mistakes are to be expected even under a highly effective strategy of selective intervention. But what counts is the total (economic, or social) return on the entire portfolio of government-directed investments.

The relevance of these guidelines for other less developed countries is limited, mainly because following them requires an overriding commitment to meaningful economic development, a commitment that few political leaders of less developed countries appear capable of making. Taiwan is one of the few exceptions, though its use of selective intervention is not widely acknowledged (Scitovsky, 1986; Wade, 1990). One episode in Korea's history well illustrates the commitment of its political leaders. It also serves as an example, no doubt an extreme one, of the kinds of changes that would be necessary to implement a program of effective selective intervention.

Mention has already been made of the fact that import liberalization was not an important element of the reforms that put Korea on the path of export-led development. But the rules of the importing game were nonetheless radically changed. Prior to the reforms, rent seeking in relation to import licensing and tariff exemptions had provided a major source of revenue for businessmen and government officials alike. To redirect the focus of their activities, President Park had a number of preeminent businessmen arrested shortly after he came to power, and then threatened them with the confiscation of their ill-gotten wealth. They were restored to grace only after effectively agreeing to employ their wealth in socially productive development activities. Park's authority depended on military support but he sought political legitimacy through the economic achievements of his leadership.

The Korean government's practice of selective intervention has entailed tradeoffs between realizing dynamic economies and creating institutions that will be viable in the long run. Credit rationing has denied financial institutions the experience needed to develop adequate processes of independent decision making. The important role given to the *chaebol* has produced a highly concentrated industrial structure that is unpalatable to many Koreans. Recognition of the price being paid and a belief that selective intervention had outlived its usefulness led the Korean government to attenuate its practice starting in the late 1970s. Though major elements of selective intervention still remain, others appear to have been virtually eliminated. For example, the government still retains significant control over bank lending, but imports have been greatly liberalized. Korean political reality has also changed dramatically since the assassination of President Park in 1979. Selective intervention has lost the support of important segments of the Korean public who prefer democratic government to economically enlightened dictatorship. Thus the trend appears to be away from the practice of selective intervention. It remains to be seen whether Korea's economic performance will continue to be exceptional.

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