

Understanding the Korean Economic 'Miracle'*

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1. Introduction

Sixty years ago, South Korea (henceforth Korea) was one of the poorest countries in the world. Today, Korea is reasonably well-to-do, with a living standard comparable to that of lower-end advanced industrial countries. If ever there was a country deserving of the term economic 'miracle,' it is indeed Korea.

What happened, of course, was rapid economic growth. After having been devastated by war from 1950 to 1953, the Korean economy then stagnated for about a decade. However, Korea's economic growth took off in the mid-1960s. Korea's per capita GDP grew by about 7.0% from 1963 to 1979, and about 6.5% from 1980 up to 1996. Korea was then hit by a crisis in 1997 and growth slowed somewhat, but the growth rate still remains high relative to global standards. The growth of Korea's per capita GDP has actually been the fastest in the world over the last sixty years, as shown in Table 1. Considering that the growth rate worldwide is much higher in the last sixty years than in earlier periods, as can be inferred from Table 1, Korea's growth spurt is the single largest to date in world economic history.¹⁾

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1) Table 1 shows that, from 1950 to 2008, Taiwan comes as a close second to Korea. Since Korea grew faster than Taiwan in 2009 and is expected to do so in 2010, the gap will increase if we

<Table 1> Growth Rate of GDP per capita

Unit: percent

	1820-1913	1913-1950	1950-2008
World	0.89	0.88	2.24
Western Europe	1.15	0.76	2.72
Western Offshoots ¹⁾	1.59	1.56	2.05
Asia	0.19	0.08	3.62
Latin America	0.83	1.41	1.78
Africa	0.45	0.90	1.20
Former USSR	0.83	1.76	1.78
Austria	1.13	0.18	3.28
Belgium	1.26	0.70	2.56
Denmark	1.21	1.56	2.21
Finland	1.07	1.91	3.05
France	1.21	1.08	2.54
Germany	1.32	0.17	2.94
Italy	0.90	0.85	3.04
Netherland	0.85	1.07	2.47
Norway	1.21	2.18	2.90
Sweden	1.43	2.16	2.24
Switzerland	1.48	2.06	1.77
UK	1.15	0.93	2.14
Spain	0.77	0.17	3.86
Australia	2.50	0.99	2.14
Canada	1.73	1.35	2.17
USA	1.56	1.61	2.06
Argentina	n.a.	0.74	1.37
Brazil	0.24	1.97	2.35
Mexico	0.89	0.85	2.12
China	-0.09	-0.56	4.78
India	0.25	-0.22	2.74
Indonesia	0.38	-0.23	2.99
Japan	0.79	0.88	4.36
Korea	0.40	-0.05	5.55
Malaysia	0.43	1.50	3.31
Singapore	2.98	1.50	4.47
Taiwan	0.31	0.61	5.54
Thailand	0.42	-0.08	4.17
Egypt	0.69	0.02	2.46

Notes: 1) Western offshoots are Australia, Canada, New Zealand and the US.

2) GDP is at purchasing power parity in 1990 constant prices.

Source: Maddison (2010).

Korea's high growth performance is actually a part of the better performance of the capitalist global economy in the twentieth (and twenty-first) century. In the first

take 1950-2010 figures.

half of the twentieth century, capitalism was in crisis, with the Great Depression, two world wars, and two great revolutions, as can be inferred from Table 1. In the latter half of the twentieth century (and the first decade of the twenty-first century), capitalism has fared better than in the previous era. Thus, there were precedents to the Korean economic ‘miracle.’ In the 1950s there was German economic ‘miracle’—Miracle of the Rhine. The German miracle was followed by the Japanese economic ‘miracle’ in the 1960s, which first made double digit growth rate a familiar phenomenon. Germany and Japan are the more conspicuous examples. Continental European countries such as Italy and France have also shown ‘miraculous’ growth performance.

The nature of those miracles is the ‘catch-up’ growth of latecomer countries. In the last sixty years, not only the frontier – i.e. the US – economy has fared better than in the previous era but latecomers have also shown spectacular performance in their catch-up growth. Given their gap with the frontier country and their domestic capability, strong growth is natural. Of course, this was supported by the reconstruction of the world capitalist system after its collapse in the first half of the twentieth century.

However, the preceding cases of Japan, Germany, and Italy are all the “first world” countries, comprising the members of the imperialist powers before the Second World War. Korea’s high- growth performance is remarkable for being the first among the “third world” countries. Of course, Korea’s high growth performance has been followed by more such cases in the third world countries, notably those of China, India, and Vietnam. Korea’s growth performance is an intermediate one lying between the Japanese and European ‘miracles’ on the one hand and the Chinese, Indian, and Vietnamese ‘miracles’ on the other. Korea’s spurt is stronger and longer than the Japanese or European one because Korea started from a lower base. Likewise, China’s or India’s spurt may be stronger and last longer than Korea’s because they have started from an even lower base than Korea. However, that may happen in the future, and as far as the last sixty years are concerned, Korea holds the record for the highest growth. Korea actually has become the only country that has transformed itself from a “third world” country to a “first world” country within the last sixty years.

This paper will investigate how that has been achieved. Of course, much ink has already been spilled on this subject. This paper will do the job by incorporating some new historical perspective and utilizing updated evidence. The rest of the paper is

organized as follows: Section 2 will examine the causes of the strong growth performance that could be attributed to the period before the Korean economy began to grow rapidly in the 1960s; Section 3 will investigate the emergence of the developmental state together with outward-looking development strategy as a cause of this growth performance. Section 4 will examine Korean industrial policy; and Section 5 will discuss the liberalization process from the 1980s.

2. Background

Is some historical legacy from traditional society responsible for Korea's exemplary economic growth? This is the view forwarded by some prominent political scientists or sociologists. The argument mainly takes the form of relating growth performance to 'culture.' (see Huntington 2000, for example). However, it is not easy to understand the relationship between culture and economic growth. Culture may account for economic growth, but how? In the case of Korea, there are clear cases of the contribution of the 'culture' as historical legacy, such as ethnic homogeneity that should have made it easier to form a national consensus. Legacies of the past, such as the Korean alphabet 'Hangeul', should also have helped to enhance the level of education easily and quickly. On the other hand, there are less persuasive cases such as the role of Confucianism. Experts emphasizing the influence of Confucianism in East Asia tended to point to Confucianism as a source of backwardness when East Asian economies stagnated in the past; when they do well later, those experts again say it is because of Confucianism. There are also some embarrassing cases like the *ad hoc* observations by Francis Fukuyama. Fukuyama (1996) says that the level of trust among the people of the countries is a base upon which a country can build large modern corporations. South Korea stands out as a remarkable example where large corporations were built through government initiatives even though Korean society lacked the trust level needed to do so. If that is true, how can one explain Samsung and LG outshining Sony or Panasonic these days? How can Hyundai, though still behind Toyota or Honda, surpass GM or Ford? Culture, like all other aspects of human life, can change over the years, but it needs time, probably longer than a few years. Thus, cultural change cannot explain the changes in a short span of time, such as the sudden jump of Korea's GDP growth rate in the mid-1960s.

Meanwhile, ever since Theodore Schultz's famous observation (1964) that even the poorest peasants of the least developed countries can optimize, economists have

emphasized the universal nature of economic motivation. Human beings are the same in their ability for ‘rational choice.’ Thus, people respond to incentives, not only in North America and Europe but also in Asia, Africa and Latin America. What counts therefore is the structure of those incentives as determined by institutions and policies, which may, in turn, be affected most of all by political conditions.

On the other hand, the legacy of more recent history may have more clearly helped the growth performance. The Japanese colonial rule (1910-45) was unique in creating industrial capacities in its colonies such as Korea, though it created grievances politically and socially. Although it is questionable whether that physical capital survived the devastation of the Korean War, many of the human resources, including the very experience of industrialization, should have survived.

The post-liberation and Korean War period (1945-1953) saw the influx of enterprising and talented people from the North as the communist regime was consolidated there. This was less clearly visible in Korea than in Hong Kong, Taiwan and Singapore, but it should have helped the subsequent economic growth. During this period, Korea also carried out land reforms, in contrast with other countries in continental Asia such as Nationalist China or South Vietnam. Land reform, of course, subsequently brought political stability to the rural areas.

As noted earlier, the Korean economy stagnated for a decade after the Korean War. The growth rate of per capita GDP during the nine years from 1954 to 1962 was 0.9%, which was indeed low considering that Korea was recovering from the devastation of the war. However, this was mainly due to the stagnation of agriculture. The manufacturing sector grew by a respectable 11.7% from 1954 to 1962, and Korea underwent typical import-substituting industrialization with “light” industries (henceforth referred to as LIs) such as cotton textiles, sugar, and flour.

Import-substituting industrialization was financed by foreign aid. As a country at the forefront of the Cold War, Korea received more than 4.4 billion dollars of economic aid, mostly grants-in-aid from the US. The aid was concentrated in the period from 1953 to 1962, with 2.5 billion dollars received during those years. During that period, aid accounted for 14.6 percent of GNI and 146 percent of gross domestic fixed capital formation. Korea could thus build capacities in the LIs without the painful process of mobilizing domestic savings, especially from the rural area, in the early phase of industrialization.

This period (together with the 1945-53 period) also saw an explosive increase in

all levels of education, as shown in Table 2. Thus, by the early 1960s, while Korea was a lesser developed country economically, its education level was comparable to that of advanced countries. This was probably made possible by the maintenance of consumption levels of the majority of the population, which was in turn made possible by the access to foreign aid and implementation of land reform.

<Table 2> Number of School Enrollment

Unit: 1,000; %

	1945	1952	1960	1970	1980	1990	2000
Elementary school	1,336.0 (56.4)	2,369.9 (100.0)	3,662.7 (154.6)	5,749.3 (242.6)	5,658.0 (238.7)	4,868.5 (205.4)	4,020.0 (169.6)
Junior high school	50.31 (14.3)	291.6 (100.0)	528.6 (181.3)	1,318.8 (452.3)	2,472.0 (847.7)	2,275.8 (780.5)	1,860.5 (638.0)
High school	50.31 (14.3)	59.4 (100.0)	164.5 (276.9)	315.6 (531.3)	932.6 (1570.0)	1,473.2 (2480.1)	1,324.5 (2229.8)
High school (vocational)	33.2 (44.6)	74.5 (100.0)	99.1 (133.0)	275.0 (369.1)	764.2 (1025.8)	810.7 (1088.2)	74.7 (100.3)
College, technical college and beyond	7.8 (22.9)	34.1 (100.0)	101.0 (296.2)	193.6 (567.7)	597.9 (1,753.4)	1,466.9 (4,301.8)	2,829.0 (8,296.2)

Notes: 1) There was no distinction between junior high school and high school up to 1945.

2) Figures in the parentheses are percentage to 1952.

Sources: Ministry of Education and National Statistical Office.

3. Developmental State and Outward-looking Development

The growth rate of Korea's per capita GDP suddenly jumped from -0.6% in 1962 to 6.2% in 1963. Although this was mainly due to the recovery from the disastrous agricultural production in 1962, which accounted for about 40% of GDP at that time, strong growth was sustained thereafter.

There are basically two reasons for the sustained growth.

The first is the emergence of a 'developmental state.' After taking power through a military coup in 1961, President Park Junghee wanted to legitimize his power by economic growth. He wanted to build a state modeled after Japan's prewar and postwar developmental state. That was what he had been familiar with during his youth, including his tenure as an officer in the Japanese imperial army. More importantly, Japan was setting the best example of catch-up growth in the postwar period. Under President Park's quasi-authoritarian and subsequently authoritarian regime, Korea became a 'hard state,' capable of implementing a policy once it was decided.

The Korean developmental state went far beyond the role of the state commonly accepted in textbooks: providing secure property rights, political stability, macroeconomic stability, and controlling externality. It involved economic ‘planning,’ though it was no more than indicative planning to gather consensus among government agencies and between the government and the private sector. The fiscal system was mobilized to influence the behavior of the private sector, using tax deductions and exemptions, if not cash subsidies, as incentives. The degree of strictness in the surveillance of tax evasion was also an important means of setting incentives. The government nationalized banks and carried out credit rationing, setting the official interest rate at a level below a market-clearing rate. The government also employed ‘policy loans’ for particular purposes such as exports and industrial policy, which carried the interest rate further below a market-clearing rate.

The second reason for the take-off was the switch to export-oriented industrialization or, more generally, outward-looking development strategy. President Park’s government initially tried to move to the second stage import-substituting industrialization, based on the ‘backward linkage’ effect of the first stage import-substituting industrialization. However, it soon switched to export-oriented industrialization. Exports as a percentage of GDP rose rapidly through the 1960s and early 1970s. Total exports (exports of goods and services) was no more than 4.8 percent of GDP in 1963, but it came to account for 31.0 percent of GDP by 1976. Korea exported products of LIs that had been established under the import-substituting industrialization in the previous period. As the share exports rose, so the share of imports rose to meet their demands, that is, the demands for raw materials, intermediate goods, and machinery.

The switch was probably the feature of economic policy that most distinguished Korea – and other members of the ‘Gang of the Four’ – from other developing countries in the 1960s. The prevailing strategy then was still import-substituting industrialization or inward-looking development strategy.

Why did Korea deviate from convention? The answer is simple: there was no alternative because of dwindling foreign aid. By the late 1950s, there had already been a consensus among Korean businessmen and government officials that the only alternative left was promoting exports. The major stumbling block was that the US, whose utmost priority then was to revive the Japanese economy, was prohibiting Korean goods from competing with Japanese goods on US soil. But in the 1960s

the US decided to encourage rather than discourage developing countries' exports to its shores (Woo 1991: Chapters 3, 4).

Although Korea switched to export-oriented industrialization because of the lack of alternatives, this proved to be the right choice. The fundamental reason is that the import-substituting industrialization was anachronistic: it was based on the memories of the previous era. Those memories were composed of, first of all, the collapse of the world capitalist system in the first half of the twentieth century. The second memory was that of imperialism. Before the Second World War, for most developing countries, integration into the global capitalist economy meant becoming a colony or politically subjugated. When they achieved independence after the Second World War, they wanted to pursue 'economic independence' as well as political independence by reducing the degree of integration. As a result, Latin America was sticking to the import-substituting industrialization that they had embarked on in the inter-war period. India emulated the Soviet Union to build an 'independent' national economy. China became completely severed from the capitalist world economy with the installation of a strong nationalist-communist regime.

However, the age of imperialism was over with the Second World War. It is not easy to define the nature of the postwar world capitalist system that replaced the previous system of imperialism. However, the new system under the US hegemony was characterized by setting a broader area of influence through free trade but not by acquiring territories (Cumings 1987). As a result, being economically integrated came to mean not being politically subjugated. Indeed, being close to the rich and powerful is beneficial to the poor and weak if the former does not use violence.

Given this situation, integration is a necessary condition for successful growth. It is difficult to imagine that a latecomer country can develop without being linked to the market, capital and technology provided by advanced countries. All economic miracles in the last sixty years have occurred through raising the degree of integration.

Actually, by switching to outward-looking development, Korea could enjoy the benefits that developing countries still clinging to inward-looking development strategy had to forgo.

First, in the process of exporting goods, market discipline was introduced to Korean firms, providing an ultimate standard of performance. Export-oriented industrialization, with the objective standard of performance decided by competitiveness in the world market, left less room for 'X-inefficiency' and 'rent seeking' – pervasive

phenomena in developing countries.²⁾ It also enabled firms to realize economies of scale.

Second, increasing export earnings enabled Korea to continue borrowing from the international capital market to replace the role of decreasing foreign aid. Korea could avoid the ‘stop-go’ pattern of economic growth often observed in contemporary developing countries pursuing import-substituting industrialization, which suffered the recurring shortage of foreign exchange.

Third, outward-looking development was accompanied by a heavy learning and modernizing effect. A lot of ‘know-how’ and new attitudes of life were transferred by foreign (mostly, advanced countries’) buyers, sellers and investors. This was probably the most important effect of outward-looking development, which was quickly pointed out by Keesing (1967), but actually can be traced back to the elaboration by John Stuart Mill (1965: 581-2) in the nineteenth century.

Fourth, export-oriented industrialization created more jobs for larger number of workers. They were low wage jobs, but since these wages were higher than the level that was earned by the ‘underemployed’ workers in the countryside, they provided an escape route from poverty. This made a contrast with the situation under import-substituting industrialization, where a few privileged workers in the monopolistic (or oligopolistic) producers received higher wages but most other workers were unemployed. Export-oriented industrialization also made it possible to exploit the educational achievement that Korea had made up to the early 1960s: education could contribute to economic growth only when workers were provided with employment opportunity.

Moreover, Korea could benefit from the timing of the switch to export-oriented industrialization. In the 1960s, advanced industrial countries were enjoying an unprecedented boom, and Korea, together with other members of the “Gang of the Four,” were only a small minority among developing countries to switch to outward-looking development. They thus apparently enjoyed some ‘quasi-rent.’

More importantly, the early switch meant that Korea could control how it was integrated into the world capitalist economy. While exporting freely to advanced countries, Korea could protect its domestic market, give subsidies to industries, and

2) It may be useful to remember in this context that elaboration of the concept of X-inefficiency by Leibenstein (1966) and the concept of rent-seeking by Krueger (1974) rely heavily on the cases from developing countries. See also Krueger (1978) and Balassa and Associates (1982).

regulate foreign investment (both direct and portfolio investment). This international environment allowed such asymmetric relationships until the early 1980s. Multilaterally, the asymmetrical relationship between developed and developing countries was allowed under the IMF-GATT system. Bilaterally, the US, and to a less extent other developed countries, were willing to tolerate the asymmetric relationship, given their overwhelming economic prowess and the preoccupation with Cold War politics. During this period, developed countries were also quite liberal in transferring technology.

From the mid-1980s, the US and other developed countries were no longer willing to allow an asymmetrical relationship, but at that point it was not critical. By then, Korea was embarking on liberalization on its own. In other words, the early switch enabled Korea to 'sequence' the government intervention and liberalization at its own discretion.

4. Industrial Policy

Korea pursued outward-looking development with the government playing a role beyond the commonly accepted ones under the asymmetrical international relationship. This means that Korea implemented industrial policy, a policy to target more dynamic sectors of the economy.

Contrary to the international division of labor in the colonial era, outward-looking development in the postwar period was based on exporting labor intensive manufactured goods to developed countries. While absorbing this export is a sensitive political issue in developed countries, developing countries are not without their own problems. A typical defense of liberal policy towards imports of unskilled labor intensive goods from developing countries within developed countries is that their workers earn higher wages in export industries than in import competing ones (Bergsten 1997). This means that, as a corollary, developing countries pursuing an outward-looking development strategy cannot be satisfied with the static international division of labor, that is, specialization in unskilled labor intensive products. They have to avoid being 'locked in' with low skill intensive products.

Of course, as the economy grows, owing to the dynamics created by the outward-looking development, human resources are upgraded through experience, learning, and education. Firms also demand higher quality human resources, planning investment while taking the future trend of the economy as well as the present one

into consideration. Growing faster and pursuing more profit by investing in more dynamic sectors of the economy is the inherent objective of capitalist firms.

Problems arise only when private enterprise cannot do that - that is, when markets fail. This is indeed the essence of the infant industry argument, the venerable theoretical ground for industrial policy. If future benefit of an infant industry outweighs current cost, there is no reason that private enterprises should not invest. Only some discrepancy between private and social cost and benefit justifies government intervention. The sources of market failure in developing countries often cited include, first of all, the very shortage of entrepreneurial ability to take risk and make long term investment, capital market imperfections, externality in creating information training labor, and lumpiness in investment (Hausmann and Rodrik 2003; Melitz 2005; Sauré 2007; Harrison and Rodríguez-Clare 2009).

It is not easy to exactly address these sources of market failure. Apparently, for this reason, developing countries choosing outward-looking development differed in the degree of government intervention, ranging from the minimalist approach of Hong Kong to the very activist one of Korea. The Korean government was actually even more activist than the Japanese government in an earlier period, which did not pursue a proper industrial policy of targeting infant industries (Beason and Weinstein 1996). The 'hard state' nature of the Korean developmental state under the authoritarian rule of President Park apparently made this possible.

Korean industrial policy took the form of a "heavy and chemical industry" drive in the 1970s, though it was a move with precedents in the late 1960s. Although the policy targeted "heavy and chemical industries" (henceforth HCIs) as infant industries, its eventual aim was to foster high technology industries rather than smokestack industries. HCIs targeted by industrial policy consisted of chemicals, metals, machinery (including electronic machinery), and transportation equipment. LIs not targeted were the rest of manufacturing industries: food, textile, garments, footwear, and wood products, among others.

The government heavily protected HCIs. Liberal tax exemptions and reductions, if not cash subsidies, were offered to HCIs for the same reasons. The most important source of subsidy, however, was financial. The government treated HCIs preferentially in the credit rationing carried out by nationalized banks. There were also many 'policy' loans earmarked for industrial policy that carried interest rates further below market-clearing rate.

Table 3 gives effective rate of protection, effective corporate tax rate, and average cost of borrowing for HCIs and LIs from 1970. Effective rate of protection and effective corporate tax rate should reflect the incentives provided by trade and fiscal policies. The average cost of borrowing is no more than approximation of the exact amount of the margin of the subsidy provided through credit rationing. However, it should reflect, if not totally, the effect of government policy because the government had overwhelming influence through the credit rationing by nationalized banks and provision of policy loans. Their differences are also presented, since what matters as incentive in resource allocation is the difference rather than the absolute level itself.

Table 3 shows that Korea implemented industrial policy in the 1970s. HCIs targeted by industrial policy received higher ERP than LIs not targeted, as of 1970. 1978, the gap in the ERP widened to 43.1 percent points. The difference in effective corporate tax rate began to rise in 1973 to reach more than 30 percentage points by 1975 and stayed there until 1981. The difference in the average cost of borrowing rose from 1971 and stayed at a relatively high level from 1976 to 1979.

The government also built industrial parks and distributed factory sites to the first entrants at a subsidized rate to internalize externality. In Korea, until the early 1980s, a businessman could be arrested on the charge of poaching workers from other businessmen, that is, for stealing the training cost.

As it offered the favorable conditions for HCIs, the government restricted entry and selected the businessmen to take care of them. Since the selected came from existing businessmen, the government encouraged the diversification of firms, or the establishment of *chaebol*, Korean business conglomerates, in a full-fledged form. This policy aimed at utilizing the limited talent of entrepreneurship more intensively and creating an internal capital (and labor) market for long term investment. The restriction of entry could also be justified in terms of compensating early starters for the externality they created, as well as the narrowness of the domestic market.³⁾ Through these measures, the government aimed at fostering local firms as eventual 'global players', with their own brand names and technological capabilities.

Industrial policy inflicted a large cost on the Korean economy, the first of which being the welfare cost to consumers and taxpayers. No less important were macroeconomic instability in the short run, and a dysfunctional financial system

3) For the description of policies that Korean government undertook in this respect, see Jones and Sakong (1980).

<Table 3> Effective Rate of Protection, Effective Corporate Tax Rate and
Average Cost of Borrowing

Unit: percent

Year	Effective rate of protection			Effective corporate tax rate			Average cost of borrowing		
	Promoted	Non-promoted	Difference	Promoted	Non-promoted	Difference	Promoted	Non-promoted	Difference
1970	25.5	8.7	16.8	39.2	39.4	-0.2	17.7	15.5	2.2
1971				34.9	34.7	0.2	12.9	14.4	-1.5
1972				27.7	29.8	-2.1	10.5	13.3	-2.8
1973				33.5	38.6	-5.1	8.7	10.9	-2.3
1974				29.9	37.7	-7.8	10.4	10.6	-0.2
1975	6.8	-15.1	21.9	15.9	52.1	-36.2	10.2	12.2	-1.9
1976				18.0	51.0	-33.0	10.1	13.7	-3.6
1977				17.5	49.5	-32.0	11.5	14.3	-2.8
1978	37.4	-5.7	43.1	16.9	48.4	-31.5	10.1	15.9	-5.8
1979				18.3	48.5	-30.2	12.5	16.6	-4.1
1980	44.2	10.7	33.5	18.3	48.8	-30.5	17.6	20.1	-2.5
1981				20.6	51.1	-30.5	17.5	19.6	-2.2
1982				47.1	48.2	-1.1	15.3	16.9	-1.6
1983	26.2	8.7	17.5	40.4	42.2	-1.8	12.9	14.6	-1.7
1984							14.4	14.5	-0.1
1985	15.2	-2.5	17.7				12.7	14.8	-2.0
1986							12.0	13.5	-1.6
1987							12.1	13.4	-1.3
1988	9.9	-13.5	23.4				12.7	13.6	-0.9
1989							13.5	13.8	-0.2
1990	12.9	-5.8	18.7				12.5	13.1	-0.5
1991							12.7	13.5	-0.8
1992							11.9	13.2	-1.4
1993	6.6	-0.9	7.5				10.9	12.0	-1.2
1994							11.1	12.3	-1.2
1995	3.9	-1.3	5.2				11.3	12.8	-1.5
1996							10.9	12.2	-1.3

Data: 1) Effective rate of protection calculated from Kim and Hong (1982) and Hong (1997).

2) Effective corporate tax rate from Kwack (1985).

3) Average cost of borrowing from the Bank of Korea, *Financial Statements Analysis*.

emanating from the government influence in the longer run. The latter chronically produced non-performing loans for the banks, which became a source of recurring financial crises, including the crisis in 1997. However, the performance of Korean industrial policy has not been as disastrous as in other LDCs. Korean infant industries

targeted by industrial policy have matured and grown. As shown in Table 4, the growth rate of value added for targeted HCIs is consistently higher than that for non-targeted LIs. As a result, their share within the manufacturing sector rose from 31.2 percent in 1970 to 71.4 percent in 2000. Korea exported mainly garments, textiles, veneers, and toys in the 1970s, but came to export mainly automobiles, steel, ships, chemical products and electronic goods over the years. The share of targeted HCIs in total manufacturing exports was 37.5 percent in 1970, but it rose to 83.1 percent in 2000.

How did Korean infant industries mature and grow?

First, Korea's industrial policy was a part of an export-oriented industrialization rather than an import-substituting industrialization. The aim of industrial policy was 'creating the next stage export industries' rather than meeting the demand from the 'backward linkage' effect of existing industries. As a result, industrial policy targeted HCIs, but those immediately targeted in the 1970s were composed of smokestack industries or lower-end activities of higher technology industries. They were technologically easier to absorb, and caused less bottleneck. Their contents changed subsequently, but this happened side by side with another effort to develop the next stage export industries (or products) and the efforts to enhance technological capability (explained below).

Second, the government imposed 'effective contest' on firms. In Korea, contrary to most developing countries, subsidies and protection were not handed out for free without some performance standard attached. Increasing exports, or achieving international competitiveness in international markets, was the ultimate criterion of performance for the contest (World Bank 1993: Chapter 6; Wade 1995).

Third, export subsidy and price discrimination of large firms made 'infant industry exports' possible, which entailed intensive learning (Westphal 1982).

Fourth, effective competition emerged over time in the protected domestic market where firms, notwithstanding the industry or aggregate level concentration, began to compete actively on quality, new products, advertising, if not on price (Amsden and Singh 1994).

However, the key reason that the HCIs targeted as infant industries matured was the move towards liberalization starting in 1979. Korea "abandoned" industrial policy in 1979 and switched to liberalization in the 1980s (Krugman and Obsefld 2006: 255). It was only with this liberalization process that Korean infant industries began

to mature.

<Table 4> Growth Rate of Value Added and Output

unit: percent

	Value added				Composition of Exports	
	Growth rate		Composition		HCIs	LIs
	HCIs	LIs	HCIs	LIs		
1970	20.7	19.3	31.2	68.8	37.5	62.5
1971	17.5	14.1	32.0	68.0		
1972	18.3	10.8	28.0	72.0		
1973	45.5	21.2	32.9	67.1		
1974	30.2	9.5	42.1	57.9		
1975	13.6	10.5	40.5	59.5	38.8	61.2
1976	32.8	21.5	43.0	57.0		
1977	21.8	9.2	44.8	55.2		
1978	31.1	16.4	47.7	52.3		
1979	14.7	6.5	49.5	50.5		
1980	1.5	-1.8	48.5	51.5	52.0	48.0
1981	16.4	4.3	50.2	49.8		
1982	9.2	5.8	51.5	48.5		
1983	22.9	10.5	52.8	47.2		
1984	17.9	12.0	53.3	46.7		
1985	7.6	6.8	53.8	46.2	61.2	38.8
1986	22.5	18.3	55.1	44.9		
1987	23.8	16.0	55.2	44.8		
1988	18.4	8.0	58.8	41.2		
1989	8.1	1.0	59.3	40.7		
1990	15.2	3.1	60.3	39.7	61.2	38.8
1991	11.9	6.6	60.6	39.4		
1992	8.5	2.4	60.5	39.5		
1993	9.8	-0.6	62.6	37.4		
1994	12.5	6.6	64.0	36.0		
1995	14.5	4.6	67.7	32.3	76.4	23.6
1996	9.7	0.6	67.8	32.2		
1997	8.2	0.6	69.2	30.8		
1998	-7.4	-9.4	70.1	29.9		
1999	24.0	14.0	69.2	30.8		
2000	19.1	7.4	70.4	29.6	83.1	16.9
2001	2.6	1.6	69.8	30.2		
2002	10.0	7.7	70.1	29.9		
2003	6.9	-1.7	71.9	28.1		
2004	11.2	1.4	75.1	24.9		
2005	9.5	3.2	75.6	24.4		
2006	8.8	4.1	76.3	23.7		
2007	9.6	4.4	77.5	22.5		
2008	4.3	-1.7	78.9	21.1		

Notes: 1) At constant prices with 1975, 1985, 1995 and 2005 as base years for 1970s, 1980s, 1990s and 2000s, respectively.

Data: Calculated from the data provided by the Bank of Korea.

5. Liberalization and Enhancement of Technological Capability

Korea's move towards liberalization began out of the reflections on the excesses of the heavy and chemical industry drive in the 1970s. It was supported by the emergence of new leadership from another military dictator, President Jun Doowhan, with a new economic, if not political, orientation in 1980. The move was reinforced by the demand from the US and other developed countries for liberalization from the mid-1980s. The 'hard state' nature of the military government not captured by vested interests may have contributed to the implementation of liberalization, as such a nature of the developmental state contributed to the implementation of industrial policy earlier. The pressure from the US had some salubrious effect when cleverly used by the government to contain the powers of vested interests.

Protection was reduced by cutting tariffs and lifting quantitative restrictions. Fiscal incentives for HCIs were withdrawn. Banks were privatized, at least nominally, and credit rationing was phased out over time. Various policy loans were also phased out. As a result, interest rates moved closer to the market-clearing rate. This cutback of protection and subsidies is shown in Table 3. The gap in the ERP between the targeted and non-targeted industries, after peaking in 1978, narrowed from 1980. It continued to fall subsequently, though with some fluctuations. The difference in effective corporate tax rate was as large as 30 percentage points in 1981, but fell abruptly to less than 2 percentage points in 1982 and 1983. The difference in the average cost of borrowing peaked in 1978 and then fell subsequently, though more gradually than the difference in effective corporate tax rate.

Entry barriers were lifted, though the *de facto* situation was often different from the official position of the government. Instead of blindly fostering *chaebol*, the government began to regulate their behavior through the Monopoly Regulation and Fair Trade Act.

Even before the Asian financial crisis broke out in 1997, liberalization had proceeded quite significantly. Korea was not the developmental state that it had been in the 1960s and 1970s. Korea went on with liberalization while maintaining a high growth rate, not only for the whole economy but also for HCIs. Table 4 shows that HCIs grew faster than LI even as protection and subsidies were being cut back. In addition, the structure of exports changed in favor of HCIs in spite of the cutback of subsidies. Rising export share of HCIs accompanied by the reduction of subsidies meant their rising international competitiveness. Thus, the rising subsidies, rather than

improved international competitiveness, may have been responsible for the rising export share of HCIs in the 1970s, but rising international competitiveness rather than rising subsidies should be responsible for their rising share from the 1980s.

The corollary of the maturation and growth of HCIs as infant industries is the emergence of quite a few large Korean (mostly *chaebol*) firms as 'global players' within a short period of time, with their own brand names and technological capability in mid-to-high-technology industries like automobile, iron and steel, ship building, semi-conductors and petro-chemicals.

How did Korea achieve this?

First of all, liberalization strengthened market discipline. The firms that had entered HCIs under industrial policy had committed deeply to those industries, and thus were not in a position to give up production in HCIs and go back to LIs. Once they decided to stay in the HCIs under the environment of liberalization, they had to enhance efficiency for survival and when they decided to enhance efficiency, growth was the due option. Of course, this was possible because the Korean government managed the liberalization process in such a way that growth of targeted HCIs was not undermined. "Abandonment" of the industrial policy did not mean the abandonment of the targeted HCIs themselves.

It is not easy to comprehensively elaborate upon that process here. As shown in Table 3, fiscal and financial incentives were withdrawn rather drastically in the early 1980s; however, protection was reduced more gradually, through the "preannouncement system" for reducing quantitative control and tariff rates. What is clear is that the liberalization policy did not apply "shock therapy," which may have undermined the growth of targeted HCIs.

Second, liberalization from the 1980s was accompanied by new efforts to enhance technological capability, by both the government and firms. In the 1960s and 1970s, Korea relied largely on the imitative learning of mature technologies through learning by doing, by acquiring know-how from buyers of export goods and sellers of import goods (notably, turn-key project machines), limited reverse engineering and diffusion of imitated technology among domestic firms. When they needed more formal technology, they resorted to imports through licensing, often involving not much state-of-the-art technology. Firms felt little need to improve formal technological capability through their own research and development (henceforth R&D). The government played no significant role to encourage R&D efforts of firms.

However, over time, wages rose and advanced countries became more reluctant to transfer technology. Imitation and reverse engineering became more difficult because of strengthened intellectual property rights. Firms accordingly recognized the necessity of new strategy to enhance technological capability by the early 1980s. At the same time, the government, while phasing out protection and subsidies, began to encourage the development of indigenous technologies by subsidizing the R&D efforts of firms.

The government provided fiscal (tax deductions and exemptions) and financial subsidies (policy loans) to R&D efforts. The government also established government research institutes. Although the government had already established general research institutes in the late 1960s and early 1970s, the real proliferation of government research institutes came in the 1980s, with the establishment of the government research institutes in specific fields such as electronics and machinery. The government built science parks, where government research institutes were located together with private research institutes.

With this support, in the 1980s and 1990s, firms made intensive efforts to reduce the cost of existing products or to develop new products with the eventual aim of acquiring international competitiveness. As industrial policy was lifted, firms took over the job of targeting infant industries further, or, more often, targeting higher technology products within the industries they had entered. All firms, large or small, could do the job, but large *chaebol* firms fit the bill, given their dominant position in the economy. With external capital (and labor) markets still regrettably incomplete, the internal capital (and labor) market of *chaebol* was a strong advantage. *Chaebol* firms also had a strong advantage in the ability to internalize externality, owing to their size and diversified structure. *Chaebol* could also use their global contacts to recruit qualified personnel from overseas, by such methods as inviting scientists and engineers from collapsing Russia or financially stressed firms in the US. *Chaebol* could purchase financially stressed high technology firms in developed countries, and make strategic alliances with multinational corporations from developed countries.

Chaebol and other large firms established their in-house R&D institutes, which often collaborated with government research institutes for “technology targeting.” This was more frequent in infant industries than in mature industries, which was natural because infant industries were more technology intensive.

As a result, Korean R&D activity rose drastically. R&D expenditure was 0.38 percent of GDP in 1970 and 0.77 percent in 1980, but it rose to 1.95 percent in

1990 and 2.40 percent in 2000. Throughout this process, most Korean students who went abroad for higher education began to return en *masse* in the early 1980s (see Kim and Seong 1997). Korea thus managed to reverse the trend of “brain drain” on a massive scale, probably for the first time among developing countries in the postwar period.

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