
A Study on the Industrial Policies of Advanced Countries after the Global Financial Crisis

Hyeon Ju, In-cheol Kim, Young-Jin Ro, Hyeon-gyeong Choe,
Yeong-min Kim, Jong-il Kim, Hyeok-uk Gwon, G. Erber, P. Buigues

Chapter 1. Introduction

This study seeks to add to the body of knowledge on Korean industrial policy by analyzing discussions of the industrial policies adopted by advanced economies after the global financial crisis of 2008–09. In particular, it seeks to offer a vision for the future of Korean industrial policy through a multi-level analysis of the influences on industry of globalization and advances in science and technology, as well as megatrends concerning Korean industry.

For the purposes of this study, industrial policy is defined as policies by which governments intervene in the market in order to affect their own industries, directly or indirectly; in this case, the discussion will be restricted specifically to policies concerning manufacturing. Four countries will be considered—namely, the United States, Japan, Germany, and France—with a focus on the industrial policies that those countries implemented after the global financial crisis.

Chapter 2. Changing the Manufacturing Environment, Changing Competitiveness

1. Changes in the Manufacturing Environment

Since the global financial crisis, the global economy has been in a period of turbulence, and this has generated interest in trends affecting industries around the world. Among the major changes in the manufacturing environment cited in previous studies are an increased focus on services, the emergence of innovative manufacturing technologies, expansion of the global value chain, shifts in global economic power, and climate and resource issues. These factors do not merely affect manufacturing in any given nation or the advanced economies in particular, but also have a huge effect on manufacturing industries in all nations.

2. Changes in the Standing of Major Economies' Manufacturing Industries

While the advanced economies have continued to grow in quantitative terms, their growth rates have experienced a general decline. For advanced economies, manufacturing has maintained a general upward trend and this has helped to shore up growth for the economy as a whole. The role of manufacturing in those countries relative to other sectors, however, has been in a period of long-term decline, which some have interpreted as an indication of post-industrialization or a shift toward service economies. Notably, in Germany, the relative importance of manufacturing has not

fallen over the past two decades. Even as the global economy has succumbed to chaos in the aftermath of the global financial crisis, Germany has remained the only one of the advanced economies to achieve a swift and stable recovery. This suggests a crucial opportunity to reconsider the importance of manufacturing and the need for industrial policy in advanced economies.

Like the advanced economies in the past, the Korean economy has also exhibited declining growth rates both for the economy as a whole and for its manufacturing industry. While the country's overall economic growth rate and that of its manufacturing industry remain higher than the corresponding figures for the advanced economies, the current difference is not great, suggesting that a high degree of similarities now exist between the Korean economy and major advanced economies. Manufacturing also accounts for a higher proportion of the economy in Korea than in other advanced economies, although business conditions for that industry have declined notably since 2012. As manufacturing revives in the advanced economies and China and other emerging economies continue their rise, it has become difficult to predict what lies ahead for Korea's manufacturing industry.

3. Assessing the Competitiveness of Major Advanced Economies

The United States and Germany have consistently outranked the rest of the world in assessments of national competitiveness based on a number of criteria. Japan has been rated very highly, although its ratings are somewhat lower than either the United

States or Germany. In contrast, France has been rated consistently weaker than the United States, Germany, or Japan in terms of its competitiveness. Notably, it can be ascertained that the three acknowledged manufacturing powers, namely the United States, Japan, and Germany, also rank highly for national competitiveness; whereas France, which has a relatively weak manufacturing industry, rates low for national competitiveness.

Depending on the method of assessment, Korea has received ratings similar to those of France, or roughly on a par with those of the United States, Germany, and Japan. In terms of assessments of the environment faced by corporations on the ground (World Bank), as opposed to general country factors, Korea has been rated even more favorably than the major advanced economies—a fact that appears to stem in large part from its emphasis on industrial development, its traditionally business-friendly administrations, and its general social climate. Also noteworthy are the findings of a CEO survey to assess manufacturing competitiveness (Deloitte), which showed Korea ranking just after the United States, Germany, and Japan as a country with very high levels of competitiveness.

To sum up, it can be determined that Korea's lower ratings for general national competitiveness compared with those of the United States, Germany, and Japan stem from a perceived lack of maturity in its administration, corporate management, labor-management relations, and financial market; but that Korea's business environment has received very favorable ratings, and that in terms of manufacturing competitiveness in particular it is seen as comparable to the United States and Germany.

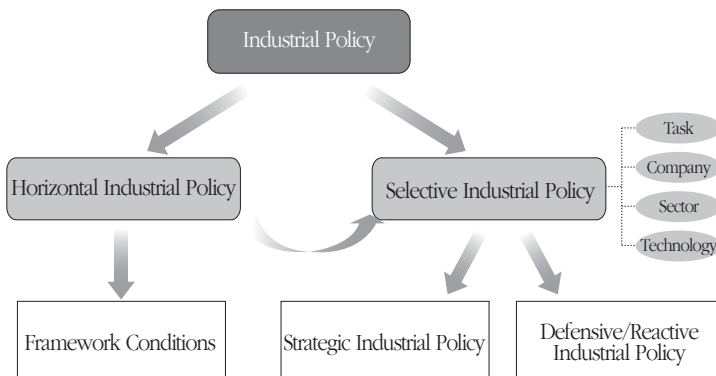
Chapter 3. Trends in the Industrial Policy Debate

1. Concept and Scope of Industrial Policy

For this study, industrial policy is defined as policies by which the government intervenes in the market to influence industry, either directly or indirectly.

Policy approaches intended to influence industry may be classified broadly into those intended to influence an industry in its entirety and those that affect only specific business areas or sectors within a larger industry. The use of the former method to improve the general corporate environment is referred to as horizontal industrial policy, while the latter approach is referred to as selective industrial policy. Selective industrial policy, which takes different forms according to the national situation, can be further classified as strategic or defense/reactive. Prior to the global financial crisis,

Figure 1. Forms of Industrial Policy



Source : Adapted from illustration in Warwick (2013), p. 29.

scholars defending industrial policy tended to emphasize its necessity in underdeveloped and developing countries as a means of offsetting market failures, while others criticized it as potentially harmful to a nation's economy through the distortion of market functions. The chief question in the past, then, concerned the effectiveness of industrial policy in offsetting market failures. The period after the global financial crisis, however, saw the start of calls, particularly from the advanced economies (the United States, Japan, and the European nations), for industrial policy measures to help usher in a revival of manufacturing and ensure competitiveness of future industries. With the understanding that most countries have some form of industrial policy in place, the debate has centered on how best to implement industrial policy rather than on whether it is needed.

2. The Manufacturing Debate

As a nation with a relatively large role for manufacturing since the global financial crisis, Germany was quick to overcome its difficulties and achieve stability. This fact provides an opportunity to consider anew the importance of a manufacturing base.

The service industry creates more employment than does manufacturing. Relative to manufacturing, however, it does not provide jobs of good quality. From a qualitative standpoint, in other words, manufacturing jobs involving labor with technical prowess are seen as superior to the majority of jobs in the service industry.

Another area in which manufacturing is important in employment terms is in its potential to induce creation of jobs in other

industries. As of 2012, the indirect employment inducement coefficients for manufacturing and services stood at 3.8 and 5.1 and the ratio of jobs created through indirect inducement effects to total jobs created through employment inducement stood at 52.2 percent and 28.1 percent, respectively. From this, it is clear that manufacturing is conducive to employment in other industries.

Yet another reason for viewing manufacturing as important has to do with its strong inter-industry effects. Examination of the 2010 table of production inducement effects shows an industry-wide 2.095 unit effect for each unit increase in final demand for manufacturing industry products, compared with a 1.664 unit effect for the service industry.

The service industry is also more limited than manufacturing in terms of improving productivity. A comparison between labor productivity in the manufacturing and service industries shows that the latter is lower and the gap is widening.

The fate of the manufacturing industry directly affects the future of innovation. Companies that outsource their manufacturing to countries in Asia or elsewhere with low personnel costs are unlikely to become innovation leaders in their respective business areas. This may result in turn in a loss of competitiveness for manufacturing as a whole. In other words, because innovation emerges from manufacturing, it is an important industry in terms of sustaining and building competitiveness.

3. The OECD Industrial Policy Debate

The OECD does not carry out industrial policy itself, but it

does debate the industrial policy of its member nations and play a leading role in related international discussions. Specifically, it has advocated for policies to promote “inclusive growth” (policies conducive to economic welfare so that member nations can overcome economic difficulties stemming from the global financial crisis); environmentally friendly growth; growth in which there is a more solid relationship between the financial and real sectors; growth aimed at boosting productivity from a long-term standpoint; and the recovery of trust between the government and the market.

Recently, the OECD has assessed industrial policies in six areas and outlined their implications: R&D policy, innovation-based government procurement, capital market intervention, sector-wide approaches, cluster and regional policy, and national industrial strategy. Suggested approaches for R&D policy include a mixture of tax incentives and direct support focused on early-stage enterprises with matching to private R&D; procurement methods in which transparent competition is ensured; and capital market policies allowing the leveraging of private sector investment.

While it is difficult to reach any consistent conclusion on the effectiveness of support for specific sectors, it was noted that communication between the private and government sectors is important. A desirable direction for cluster policy, it was argued, involves priority consideration of existing regions for clusters rather than the designation of new ones. At the same time, national industrial strategies should involve close scrutiny of the shift in focus from commodity markets to areas involving technology, personnel, and the establishment of private-public partnerships.

The OECD has discussed a range of other issues in an effort to

promote industrial innovation. In addition to trends in the generation of added value within the global value chain, studies have also focused on determining sources of competitiveness and the economic effects of knowledge-based capital. Amid discussions of the “next Industrial Revolution,” research is also under way on the potential effects of radical production technology developments on industries in different countries, along with government policies designed to control their impact.

4. European Union: Growth Strategy and Industrial Policy

Before the global financial crisis, the representative growth strategies in the European Union (EU) were the Lisbon Strategy and the New Lisbon Strategy. Having the stated goal of developing the EU into the most dynamic and competitive knowledge-based economy in the world, the Lisbon Strategy involved the development and execution of an implementation plan focused on R&D, innovation, development of company potential, investment in human capital, and green economic policy.

As a result of the global and European financial crises, the EU suffered a major blow to both growth and employment. Since 2010, it has emerged with “Europe 2020,” a new medium- to long-term growth strategy focused on the success of single markets and the resolution of structural issues. Industrial policy has played a key role in this Europe 2020 strategy.

The goals of EU industrial policy, as stated in the Treaty on the Functioning of the European Union, lie in hastening industry adjustments, establishing a suitable environment for production de-

velopment and cooperation by and between companies, and nurturing industry potential. Industrial competitiveness and sustainability have been recognized as priority issues, where efforts have been focused on using innovation and R&D to increase investment in strategic industrial areas, including cutting-edge manufacturing, major promotion technology, smart grids, and digital infrastructure. From this understanding of the importance of industrial policy, the EU has emerged with perhaps the most heavily emphasized of its Europe 2020 strategic plans, namely “Horizon 2020.” The EU’s single largest R&D support program, Horizon 2020 has the aim of generating innovation results across the union through the channeling of 80 billion euros in focused support to three priority areas between 2014 and 2020—namely, “excellent science,” “industrial leadership,” and “tackling societal challenges.”

Chapter 4. U.S. Industrial Policy since the Global Financial Crisis

1. The United States

The role of manufacturing in the U.S. economy has been in steady decline in terms of both employment and value added, and while the debate over manufacturing competitiveness and related industrial policy measures has not drawn political attention when the economy has been booming, it has resurfaced whenever the economy has struggled.

The U.S. economy suffered a severe blow after the global finan-

cial crisis erupted in 2008. Real value added in manufacturing experienced particularly sharp declines of 2.9 percent and 7.9 percent in 2008 and 2009, respectively, while the U.S. automotive industry was left on the brink of bankruptcy. Given the profound shock that the global financial crisis caused to the economy, many came to see a need for a shift in the economic policy paradigm.

Early on in its term, the administration of President Barack Obama worked to foster manufacturing through bailouts to help companies overcome the financial crisis, as well as large-scale tax cuts and infrastructure efforts; as the economy stabilized, the administration attempted to boost manufacturing competitiveness through gradual efforts to increase innovation capacity, financial support for cutting-edge manufacturing and new industry growth, and measures to promote export industries. The large-scale post-crisis bailout of the automobile industry was indeed a contributing factor in its recovery: General Motors and Chrysler avoided bankruptcy, and in December 2013 Obama declared that the industry had overcome the crisis and could start anew. Large-scale government investment and tax support were also provided to clean energy industries in the form of the American Recovery and Reinvestment Act, with the White House (2012) pointing to green industries as an active source of job creation. Many companies have reported relocation of their production facilities to the United States (A. T. Kearney, 2014), although it is not certain whether this is the result of U.S. policies to support the revival of manufacturing.

The debate over the competitiveness of manufacturing, policies to promote innovation, and other industrial policies under the Obama administration continues even now. Generally speaking,

U.S. economists acknowledge the need for support for specific industries (such as bailouts of the automobile industry) as a temporary response to crisis conditions, but argue that a number of other factors outweigh selective industry-fostering policies in importance, including basic investment in technology, production capabilities, and labor; financial soundness and crisis management; and the elimination of entry barriers and unfair trade practices.

Policies to support manufacturing have continued in the United States since the financial crisis—but, with the exception of the automobile industry bailout and support for cutting-edge industries such as green energy, the focus has arguably been more on horizontal than selective industrial policy. This may be regarded as a continuation of existing strategies to boost U.S. companies' competitiveness through support for R&D and innovative practices.

2. Japan

During its so-called “lost two decades,” the Japanese economy has struggled with a demand shortage. It was in this context that it suffered a roughly 9 percent decline in real GDP when the global financial crisis erupted in 2008. Real GDP fell heavily again in 2011, the year of the Great Tohoku Earthquake, although to a somewhat lesser extent. Those two shocks widened the gap between real and potential GDP. Additionally, the longstanding problem of deflation, which started in the late 1990s, has exacerbated Japan's economic struggles.

Many studies have identified aggressive government industrial policies as one factor behind the past success of the Japanese econ-

omy, which grew at a rate incomparably faster than other advanced economies. The increasingly widespread adoption of neoliberal economic thought, however, resulted in growing skepticism toward industrial policy. Between 2001 and 2006, the administration of Prime Minister Junichiro Koizumi implemented policies based on a course of structural reform aimed at boosting the market's competition function.

The global financial crisis, however, fueled doubts about market competition, and in September 2009—roughly one year after the crisis started—the opposition Democratic Party of Japan came into power on a platform of aggressive industrial policy. Believing that the country's international competitiveness had been undermined by excessive competition, the party hoped to change the industrial structure by promoting industries that were still strong and by creating new industries.

The so-called “Abenomics” approach adopted under Liberal Democratic Party Prime Minister Shinzo Abe has involved a mixture of stopgap measures and structural reforms to help overcome the sharp drop in profitability for Japanese companies as a result of deflation and a declining economic growth rate. An example of a stopgap policy measure is two-dimensional financial policy. Structural reform approaches have been based in quantified data clearly identified in analyses of the “lost two decades.” Rather than focusing on the distribution of resources among traditional industries, the new policy focus has been on boosting corporate profitability in order to rebuild the Japanese economic system.

Companies did show improved performance as a result of the two-dimensional financial policy and corporate tax reductions, but

corporate investment and wages have as yet failed to increase and consumption has not experienced the anticipated rise; accordingly, the measures have not led to an increase in GDP. Confronting this situation will require vigorous growth for SMEs and startups with low profitability and wages. For this reason, the recent focus has been on funds and technological support for those types of companies.

The current situation facing the Korean economy appears in some ways reminiscent of Japan's situation after its bubble burst. Abenomics, with its mixture of bold fiscal and financial measures to stoke demand and structural reform policies, holds many implications in terms of overcoming the Korean situation.

3. Germany

The success of Germany's manufacturing industry arguably dates as far back as the early nineteenth century. Over the past several decades, however, traditional German manufacturing has lost its comparative advantage internationally and been forced to undergo painful restructuring amid the rapid growth of many emerging markets. The country's attempts to achieve both economic and political stability through overseas direct investment and manufacturing plant relocation as a means of maximizing the value chain provided it with the firm foundation for growth that it enjoys today.

Germany's industrial policy has been oriented toward the long-term goal of sustaining international competitiveness amid a rapidly changing global environment. Its approach has been characterized less by central control than by a "bottom-up" form of interactive

industrial policy in which the opinions of different stakeholders are sought in order to establish a consensus. When clashes do arise among stakeholders in Germany, a guiding policy role for the federal government is viewed only as an approach of last resort—a system similar to the one applied in relations with other countries within the EU framework.

German industrial policy may be broadly classified into two types. The first approach is intended to achieve specific goals; because achieving specific goals requires a systematic approach to understanding complex industry ecosystems, the focus is more on building diverse channels for dialogue than on central planning by the government. Two examples cited for Germany concern its shift away from conventional energy sources and electricity transmission systems. To help usher in a shift toward new and renewable energy, the German government has introduced policies limiting the use of atomic energy and fostering new and renewable sources, despite objections from stakeholders in existing energy industries. The country has resolved to have one million electric cars on its roads by 2020, although it is facing considerable difficulties in achieving this goal because of low demand for the vehicles and inadequate standardization. A second approach has been industrial policy to achieve more general goals, which have chiefly included increased economic development and productivity, and, ultimately, greater international competitiveness. Two examples of industrial policies to achieve those general goals are the “Digital Agenda” and “Industry 4.0.” Germany introduced broadband networks later than other countries, but by building optical cables using new technologies it has recently been able to reduce costs significantly and

achieve greater competitiveness.

Industry 4.0, a joint initiative that the government is carrying out with industry representatives, is expected to result in improved efficiency for German production systems as a whole once it is in place.

Industrial policy is a difficult challenge that entails combining innumerable aspects like the pieces of a vast puzzle. This challenge can only be successfully met through the application of a dynamic process that takes into consideration the characteristics of the economy and innovation ecosystem. This requires constant efforts to establish a consensus among the various stakeholders, along with “cooperation” to reduce uncertainty and efforts to maintain an open innovation framework that incorporates new technologies.

Successful industrial policy demands close cooperation between government and industry and a high level of flexibility in constantly monitoring a changing industry terrain amid conditions of high uncertainty.

Owing to their historical and political differences, Korea and Germany have had rather different experiences with industrialization. Korea has been able to advance cooperation and trade with Germany since it signed a free trade agreement with the EU. It is likely that there will soon be opportunities for closer, higher-level cooperation between their corporate, technology, and industrial sectors.

4. France

Since 2005, three reports have been published in France with

recommendations for the national government in response to diminished manufacturing sector competitiveness. The BEPA report of 2005 promoted sweeping changes to the French government's approach to support for industries. Arguing that it was more important to advance the nation's industrial structure than to seek greater innovation through increased research activity by individual companies, the report suggested that the French government should change course and focus more on effective support for cutting-edge industries and long-term industrial technology programs. The Juppé-Rocard report of 2009 recommended a "digital society investment" of 4 billion euros, noting calls for public institutions to make appropriate efforts to ensure the prompt distribution of new technologies through the building of high-speed broadband infrastructure. This, the report argued, was an area where private investment represented an unsuitable option. Finally, a 2012 report by Gallois ushered in a debate in earnest on industrial competitiveness, a matter that had never been seriously discussed in France before then. The core of this report was a list of twenty-two proposals to simplify regulations and make French companies more competitive.

France's post-crisis "new industry" policy has involved clear public support for cutting-edge industries and SMEs; it incorporates three approaches pertaining to regions, sectors, and company scale. First, cluster policies were introduced, providing government support for regional competitiveness centers. As most of the participating companies in the clusters belong to the manufacturing sector, this approach has had the effect of establishing cluster policy as a form of industrial policy. Second, a sector-based approach

was adopted to target specific areas of development; rather than determining in advance which forms of technology are best, the state works to incentivize investment in technologies, thus fostering the conditions conducive to their development. Third, SME growth and development support policies have been introduced to improve the economic environment for smaller businesses that have suffered a disadvantage due to inadequate capital, poor market access, and regulatory burdens. These three approaches, combined, represent the core of France's new industrial policy, which differs substantially from past industrial policies emphasizing public funding for a select few leading companies. Other principal approaches to improving manufacturing sector competitiveness have included the introduction of a research cost tax credit system to support cost-external competitiveness; the boosting of cost competitiveness through CICE (a tax credit for employment and competitiveness); and the implementation of competitiveness policies for the entire French economy, along with reforms to labor market policies.

Chapter 5. Comparing Korea's Industrial Policies to Those of Major Advanced Economies

1. Characteristics of the Changing Korean Manufacturing Environment

In view of the historical context of Korea's industrial development and its path dependency, environmental factors with a great impact on the future course of the country's manufacturing indus-

try include trends of low fertility and an aging population, limits to input-driven economic growth, and structural changes to the trade environment.

2. Korean Industrial Policy since the Global Financial Crisis

As a result of Korea's increased economic scale and the growth of its private sector, the role of government industrial policy for application to market mechanisms has unquestionably weakened compared with the period before the first decade of the twenty-first century. Whereas the period after the foreign exchange crisis of late 1997 saw a greater emphasis on the role of the market and wariness of excessive government interference in market functions, the period since the global financial crisis of 2008–09 has seen government interventions for the sake of growth and expanded support as being more or less taken for granted. The result has been the coexistence of two seemingly conflicting policy emphases—namely, expanded market intervention and a loosening of regulations on corporate activity.

3. Assessing Korean Industrial Policy

Experts were surveyed by questionnaire and asked to assess Korean industrial policy. The findings showed a favorable evaluation of what industrial policy had accomplished in the past in terms of promoting economic and industrial development; while the government was recognized as having played a significant role in Korea's economic development, the role of the market was seen

as having expanded since then. Representative past examples of industrial policy—namely, measures to foster individual industries and restructuring policies for industries and companies—were typical examples they cited of areas displaying selective industrial policy characteristics.

The respondents still recognized the importance of manufacturing to economic development; accordingly, they stressed the ongoing need for industrial policy considerations in that area. The prevailing view, however, was that the current direction of industrial policy was inappropriate—not because of insufficient government intervention, but because the policies were seen as inefficient from a medium- to long-term standpoint. From the experts' perspective, many of the current examples of industrial policy are rooted in short-term, reactive to business conditions or in political goals rather than economic ones.

The experts also agreed that industrial policy should receive continued emphasis in the future. While advanced economies have also taken steps to strengthen industrial policy, those measures have been very different in nature to those adopted by Korea, and the experts did not support the idea that Korea should follow suit merely because the advanced economies were doing so. At the same time, the Korean experts expressed more favorable views than those in advanced economies toward the idea of selective industrial policy.

4. Korean Industrial Policy vs. Advanced Economy Industrial Policy

A comparison of the industrial policy approaches adopted by

the advanced economies with those adopted in Korea shows an identical pattern of emphasis. Korea has in no way been negligent compared with the advanced economies in terms of the amount of support that it has channeled into the fostering of future industries, R&D, or innovation, or into developing industry manpower, nurturing SMEs, and establishing clusters. At the same time, compared with the advanced economies, Korea has not generally shared the perception that competition policy is the most crucial means of shoring up industrial competitiveness. Furthermore, while regulation policies have been the subject of repeated emphasis, they have proven inadequate in terms of effectiveness.

Chapter 6. Proposing a New Direction for Korean Industrial Policy

1. Responding Preemptively to Changes in the Manufacturing Environment from a Medium- to Long-Term Perspective

First, Korea should attempt to achieve high added value through the “servitization” of its manufacturing industry. Past industry-specific policies are inadequate responses to the servitization of the national economy. Competitiveness that extends beyond mere production to the entire product cycle should be established through the application of service elements to manufacturing, including R&D, design, software, and content.

Next, measures should be taken to respond proactively to the emergence of innovative manufacturing technology and promote

a shift toward “smart manufacturing.” Despite decades of policy efforts to foster future industries, national investment in areas such as the Internet of Things, 3D printing, artificial intelligence, and big data continues to lag substantially. The current moment is one that calls for industry innovations through the establishment of next-generation smart manufacturing technology.

Third, strategies must be undertaken to lead the global value chain. In particular, there is a need for an accurate determination of potential areas of advantage and roles for individual industries within the global value chain and the formulation of a future vision and strategy. Fourth, there is a demand for market strategy from a long-term standpoint that takes into consideration the shifting of global economic power. In the long run, emerging markets are expected to maintain far higher growth rates than the advanced economies, with China, India, and Brazil in particular viewed as possessing vast growth potential. The formulation of an industrial strategy should take into account this shifting ground in global economic power in terms of both product markets and production bases in the global value chain.

Finally, climate and resource issues demand preemptive responses. Rather than a passive response to the Paris Agreement adopted in December 2015, the current situation demands a proactive acceptance of the inevitable change represented by greenhouse gas reductions and efforts to create a more environmentally friendly industrial structure. The Korean government should assume a guiding role in the shift toward an eco-friendly industrial structure and eco-friendly production methods.

2. Industrial Policy with a Focus on Boosting Market Performance

The manufacturing industry currently accounts for a larger portion of the Korean economy than ever before, and in that sense may be seen as possessing greater global competitiveness than ever before. The industry's growth has recently slowed, however, and with increasingly unclear prospects for leading industries dependent on large-scale production and large businesses, claims of a manufacturing crisis are gaining significant traction. Given the experiences of the advanced economies, Korea is also expected to see a gradual decline in the prominence of manufacturing relative to other sectors in the economy.

Just as the advanced economies gained a renewed understanding of the importance of their manufacturing industries after the global financial crisis, so there is a need in Korea for the industry's importance to be recognized once again. First, it should be understood that while the service industry is expected to grow more knowledge-oriented and account for a larger portion of the national economy as that economy grows in scale and national income standard rises, manufacturing will remain the most important growth engine for the economy. It should also be noted that in Germany, the country that has established the world's highest level of manufacturing industry competitiveness, the industry's role in GDP has not diminished for the past 20 years, and the ratio of exports to GDP has continued to rise. To date, the development of Korea's manufacturing industry has centered on large companies, but now the competitiveness of those companies—based as it is in bold facility investment for mass production and process effi-

ciency in the production stages—faces the challenge represented by China. The situation calls for the formation of an industrial ecosystem capable of consistently generating “hidden champions” through globalization of mainstay SMEs and improvements in innovation capabilities. In this regard, it is essential to enable prominent smaller enterprises to share roles hitherto performed by large corporations.

While Korean manufacturing is clearly in the unenviable situation of trailing the advanced economies with China in close pursuit, Korea may be possible in this case to consider the experiences of the advanced economies when deciding on a response. Particularly worthy of note is the fact that the major advanced economies responded with horizontal industrial policies to improve the corporate environment and strategic industrial policies to develop cutting-edge technology.

It is worth considering at the present moment whether Korean industrial policy has been too dependent on selective policy approaches. The areas in which advanced economies have commonly pursued industrial policy are support for science, technology, and/or R&D; support for training and human resource development; support for SMEs; and the establishment of clusters. All of these have been emphasized in Korea as well, suggesting that there is more of a need for improvements in the specific methodological approaches to industrial policy than for new areas of industrial policy.

3. An Industrial Strategy Reflecting Korea's Economic Characteristics

First, industrial structures and production methods should be reorganized in response to the trends of low fertility and an aging population. Current measures to improve productivity in response to the aging population and to prepare for higher retirement ages are not being implemented in a systematic way. Rapid changes in the demographics in the years ahead are poised to create a demand for revolutionary changes in numerous social systems and economic practices. There is also a need to establish appropriate systems and extend government support for the acquisition and industrialization of senior citizen-friendly future technologies.

Second, it is necessary to transcend the limits of input-driven economic growth and achieve a more efficiency-centered economy through product and process innovations. While industrial policy to date has indeed emphasized innovation, it has also tended to focus more on quantitative inputs and cost-cutting. A high level of dependence on government policy support has had the unintended effect of reducing the incentive of companies to pursue innovation independently in the medium to long term.

Third, balanced development between exports and domestic demand should be sought in response to structural changes to the trade environment. Policies to date have chiefly focused on promoting exports and export competitiveness, while consideration of domestic demand has been relatively lacking. The drop-off in exports should be addressed with a mixture of increased efforts to promote exports and balanced growth in terms of domestic and

external demand. Efforts are also needed to ensure that expansions in overseas investment and production by the manufacturing industry occur in a way that complements domestic investment, exports, and production.