



**A SMART 21ST CENTURY DEVELOPMENT MODEL IN THE MAKING**

**KOREA LEADS THE WAY**

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## **A Smart 21st Century Development Model in the Making: Korea Leads the Way**

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The Republic of Korea's economic performance over the course of four decades remains a source of inspiration for developing countries. If Korea, an economy that in the 1960s was ranked among the poorest in the world, could ascend the income ladder and achieve high-income status in just 30 years, then there is hope for other low-income and middle-income countries aspiring to a similar status. Hence the Korean model of development rightly attracts the attention of theorists and policy makers alike. The keen interest in the model arises in no small part from a better understanding of how the role of industrialization as a driver of growth has changed between the last quarter of the 20th century and the second decade of the 21st century. It is sharpened by a mounting appreciation of how the model has evolved as Korea seeks opportunities presented by information and communications technologies (ICT), greening technologies, and urban development to sustain its growth momentum in a rapidly changing global environment.

This paper argues for the continuing relevance of Korea's experience for middle-income countries. Several of those countries have completed the first stage of industrialization and need to move beyond assembly and processing activities to the production of complex products and services and to the promotion of home-grown innovation. A number of industrializing middle-income economies took their cues from Korea's strategy during 1965–90, a strategy that focused on investment to widen and deepen the manufacturing base and on exports using a mix of industrial and trade policies. This export-led growth model served as the workhorse for policy makers from across the developing world. In a globalizing world economy in which trade dominated by manufacturing was expanding at a 7 percent a year clip, the export of manufactured goods offered late starters the surest pathway to development.

Now there is a new Korean model in the making. It began taking shape in the 1990s as Korea approached and then crossed the high-income threshold and became a member of the Organization for Economic Co-operation and Development (OECD). Although the manufacturing sector and exports remain among the principal drivers of growth, this model recognizes and exploits the possibilities inherent in smart digital technologies that are making deep inroads in many services, in greening the urban economy, and in an innovation system that harnesses the potential inherent in the "triple helix"<sup>2</sup>: that is, synergies arising from the interaction among government institutions, academia, and the business sector.

Manufacturing activities—now morphing into product-service systems<sup>3</sup>—and investment remain integral to the growth strategies of developing countries. But it is becoming abundantly clear that a mix of tradable products and services assisted by productivity gains will determine the pace of long-term growth (Yusuf forthcoming 2016). Thus, the still

embryonic “new” Korean model is more compelling and relevant: a knowledge-based, productivity-enhancing approach that exploits the potential of ICT and green technologies is a preferable approach for all economies and a necessity to secure the future of the planet.

This paper has five sections. It starts with a brief overview in section 1 of the two stages of Korea’s economic transformation from the mid-1960s through the late 1980s and from the 1990s to the present. Section 2 reviews the external factors supporting Korea’s growth. Section 3 examines and quantifies the drivers that are responsible for the economic performance in the first stage and that continue underpinning Korea’s transition to a learning-based and innovation-based economy. Section 4 examines the several elements of Korea’s new model that include a forward-looking science, technology, and innovation system of the first rank that can enable it to benefit from early mover advantages; urban development that maximizes the gains from agglomeration in line with changing industrial composition and demographics; and a proactive entrepreneurial approach to extending and mobilizing digital technologies in a variety of areas to render Korean cities smarter and the workforce more productive.

What other developing countries, especially middle-income ones, can learn from Korea’s efforts to devise a new growth model is the topic of the final section, 5. The model is a work in progress, and whether it can deliver long-term growth mainly through increments in productivity<sup>4</sup> remains to be established. But Korea’s bold experimentation is an example for other nations, rich in lessons and providing developing—and developed—countries with a template to adapt, refine, and extend.

## **1. Achieving Economic Stardom**

As is now widely known, Korea’s economic ascent can be traced to decisions made in the mid-1960s to abandon import substituting industrialization, a recipe adopted by numerous developing countries, and to hitch the country’s fortunes to the production and export of labor-intensive manufacturing (Kim and Roemer 1979, 118–23). A number of factors forced the government’s hand. Rapidly improving Korea’s economic performance was critical to legitimizing the recently installed government of President Park Chung Hee and to demonstrating that a market-based approach was superior to the tightly controlled socialism adopted by North Korea. The small size of the domestic market meant that Korean firms needed to look overseas for growth. Also, increased foreign exchange earnings could lessen Korea’s dependence on western donors. That exports could help to accelerate and sustain growth was also becoming apparent from the experience of Japan, which was the iconic economy of the 1960s and 1970s.

During the 1960s, Korea exported food products, various mineral ores, and labor-intensive textiles, plywood, metal products, footwear, furniture, and other light consumer items. These goods were in line with Korea’s resource endowment. Rising exports complemented by increased investment in manufacturing capacity and more efficient utilization promptly raised the growth rate from 4.1 percent a year between 1953 and 1962 to 9.6 percent a year between 1963 and 1974 (Mason and others 1980, 98). By the mid-1970s, the manufacturing sector accounted for 29 percent of gross domestic product (GDP)—compared with 11 percent in 1960—and the share of manufactured exports had risen to 85 percent from just 17 percent in 1960–62.

An ambitious industrial policy introduced in the late 1960s initiated the diversification of the manufacturing sector into the production of iron and steel, transportation equipment, machinery, and chemicals. This policy went against the grain of the Korea's comparative advantage and was criticized by foreign observers, but it was doggedly pursued in the interests of industrial upgrading, to maintain the tempo of exports, and to meet defense requirements.<sup>5</sup> The development of heavy and chemical industries increased capital investment to 27 percent of GDP and initially proved to be costly, loss-making ventures for both the state enterprises and private businesses. However, it enlarged the footprint of the manufacturing sector to 29 percent of GDP, raised the share of complex manufacturing in total exports, and enabled Korea to maintain an average growth rate of 8.46 percent between 1970 and 1979 (Mason and others 1980, 102–3; Eichengreen, Perkins, and Shin 2012, 44).<sup>6</sup>

The pursuit of diversification saddled Korean conglomerates with large debts. An economic crisis triggered by the second oil shock and the assassination of President Park in 1979 tipped a number of the most highly leveraged companies into bankruptcy and forced the government to impose stabilization and restructuring policies that slowed growth during 1979–83 (Cho 2015). An easing of the pace of industrial transformation proved advantageous because it gave Korean industry time to absorb the new investment and to move up the learning curve in recently established activities, such as consumer electronics, shipbuilding, automobiles, chemicals, and others. By 1983 a surge in exports led to an acceleration of growth, and until the end of the decade, Korea's GDP averaged a 9.5 percent annual increase.

During this period and through the 1990s, growth averaged 7.3 percent (until 1997), and the decision to diversify into complex, capital-intensive and technology-intensive products proved its worth.<sup>7</sup> To use the terminology popularized by Hausmann and others (2013),<sup>8</sup> Korea took a long step from the thinly networked fringes of the “product space” populated by light manufactured goods such as textiles and garments to the core dominated by heavy industry, which spawns numerous links to suppliers of intermediate products and services and offers greater scope for innovation. Absent this move from labor to capital and to technology-intensive activities, it is likely that Korea would have made much slower progress up the income ladder.

Successful diversification of industry paved the way for a diversification of exports into semiconductors, computers, automobiles, chemicals, and ships—the top exports in 2000 (Lim 2010). Vertical—or hard<sup>9</sup>—industrial policy delivered the sought-after results albeit after a difficult decade during which companies struggled to come to grips with new production technologies and were kept afloat by tax breaks, soft loans from state-controlled financial institutions, and government procurement. A number of other factors specific to the Korean situation and to the 1990s vindicated the Korean government's faith in industrial policy (section 2). These factors are not available to late-starting low-income or to middle-income economies today. In fact, overstretch and indebtedness by the *chaebol*<sup>10</sup> were partly responsible for precipitating a second crisis in 1997–98, with a number of conglomerates going out of business or being merged with healthier companies.

Once again, as in 1979–82, tough macroeconomic and structural reform policies retrieved the situation. The Korean economy recovered quickly and regained its stride, but since 2000 growth has averaged 4.6 percent a year, and since 2010 it has trended downward into the

2.3 percent to 3.7 percent range.<sup>11</sup> These rates are a far cry from the rates achieved in the last quarter of the previous century, and they reflect the maturing of the Korean economy as well as a dual transition process.<sup>12</sup> Korea is moving from an economy that relied extensively on the export of increasingly advanced manufacturing to one in which domestic consumption plays a larger role and from an economy that derived its momentum mainly from investment and productivity gains in manufacturing to one that is attempting to source more of its growth from innovation, the application of digital technologies, and smart urbanization. In other words, Korea is again diversifying into activities that promise handsome returns over the longer term. Furthermore, Korea is reducing its exposure to products that are subject to commodification and declining profitability or to increasing competition from East Asian economies, where the production costs are lower, and from Japan, where since 2014 a depreciation of the yen has increased its export advantage.<sup>13</sup>

This process of diversification has been ongoing for two decades (section 4). Current trends point to a falling share of manufacturing from 30 percent of GDP in 2014,<sup>14</sup> to an increasing emphasis on product-service systems, and to an economy that will come to rely on high-tech telecommunication-based transportation and urban solutions. Given its strength in key advanced manufacturing and manufacturing process technologies, and its early start at laying the groundwork for a knowledge economy, Korea is well positioned to benefit from technologies and trading opportunities that are likely to prevail during the coming decades. This new approach can inform the course of development in other countries.

## **2. The Global Environment Supporting Korea's Growth**

A growth rate of over 7 percent a year from 1971 to 2005 is a remarkable achievement (Eichengreen, Perkins, and Shin 2012). Among East Asia's high fliers, only China can lay claim to a superior performance. As Pritchett and Summers (2014) show, countries tend to regress toward the mean global growth rates ("abnormally rapid growth is rarely persistent"); growth accelerations tend to peter out; and, similarly, a spell of low growth can be followed by a growth spurt. Thus, a decade of rapid growth does not provide much of a clue to what will happen in the following decade; the correlation between one decade and the next is weak (Pritchett and Summers 2014). Nevertheless, Korea prevailed against all odds, and some of the factors that were responsible for past performance will influence growth under a new strategy.

Four external developments facilitated Korea's adoption of an export-led model focused on manufacturing. First was the globalization of trade that resulted from the dismantling of tariff and nontariff barriers, starting with developed countries and gradually extending to developing ones as well. The "trade rounds" expanded market opportunities for industrializing countries: the more productive entrepreneurial firms were presented with additional options and the freedom to grow far beyond the confines imposed by domestic markets.<sup>15</sup>

Second, a steady decline in transportation costs as a result of containerization, the construction of larger vessels, and the advent of stronger and more efficient diesel engines reduced the costs of shipping goods and lowered one of the big hurdles that exporters had hitherto faced. The arrival of larger fuel-efficient jet aircraft permitted the speedier delivery of high-value items and, as a consequence, widened industrial choices.

Third, codifying industrial technologies facilitated diffusion and adaptation by newcomers. Standardization of parts and components and modularization opened pathways for the disintegration of the production process for certain kinds of manufacturing (such as garments, electronic products, and transportation equipment), but the combination of the two developments enabled production in specialized plants to be dispersed and then recombined in strategically located assembly facilities. Hence, labor-intensive operations could be farmed out to producers in developing countries where wages and fixed costs were lower, and the more capital-intensive downstream activities could be retained in the advanced economies.

Fourth, the globalization of trade, the disintegration of production, and advances in both telecommunications and in the organizational capacity to manage dispersed operations led to the evolution of global value chains often controlled by multinational corporations (MNCs). These global value chains now channel 80 percent of global trade (UNCTAD 2013) and influence the participation of countries in trade, the volume of exports, entry of firms, product upgrading, and diversification (De Backer and Miroudot 2014, Baldwin 2006).

The implications of these developments have been vast. Early starters, such as Korea, were greatly advantaged and were able to establish a foothold in U.S. and European markets that later became a stepping-stone into more sophisticated products and the creation of brand images. First movers absorbed new technologies and reaped productivity advantages by scaling the learning curve; countries that profited from the “unbundling” of production and carved out strategic positions in major value chains found it easier to learn from their MNC partners, to upgrade, and to expand their trade. The East Asian economies that followed in the wake of Japan—the flying geese—capitalized on the globalization of trade and adapted their industrialization accordingly. They were the winners, and all four have attained high-income status.<sup>16</sup>

One external inducement that Korea shared with some of its “tiger” brethren was linked with the political economy of the East Asian neighborhood. Japan’s rapid postwar recovery and reindustrialization not only provided a developmental template but also encouraged policy makers in Korea and elsewhere in East Asia to raise their sights and set ambitious targets. Military threats and ideological competition were additional inducements: rapid industrialization was a means to bolster defense capabilities and to underscore the economic potential and inclusiveness of the market-based capitalist system. With the Japanese model as a reference point, and in response to pressures from its immediate neighborhood, Korea was more enterprising than most other economies in pursuing the fruits of globalization.

Other countries were presented with similar opportunities—although the neighborhood effects may have been less demanding of economic performance—and several were better placed than Korea to engage in export-led growth, but they failed to use their advantages. The Korean edge can be traced to a number of factors that continue to be important and that will determine how well Korea fares under a new strategy.

### **3. Internal Drivers of Growth**

It almost goes without saying that rapid growth is rarely a spontaneous grassroots-driven phenomenon. In both capitalist and socialist economies, state leadership, policy initiatives,