The Hyundai Way: The Evolution of a Production Model

By Hyung Je Jo

During the recent financial crisis, automakers around the world reeled as one economy after another sank into recession, with American car makers especially badly hit. One automaker, however, weathered the storm better than others: South Korea’s Hyundai Motor Company.

Hyung Je Jo, a visiting professor of sociology at the University of California, San Diego, takes a look at the unique production model that has evolved at Hyundai and compares it to the much vaunted Japanese model.
IN 1989, ALICE AMSDEN, a noted political economist at the Massachusetts Institute of Technology (MIT), argued that South Korea was emerging as Asia’s next giant. Since then, the question of whether South Korea will become another advanced economy like Japan has been a hotly debated issue in academic circles throughout the world. The Korean auto industry is at the center of that debate, because it represents an important part of the national economy in terms of its impact on employment as well as its industrial linkage effects. The purpose of this essay is to explain the success of Hyundai Motor Company, because the company epitomizes the remarkable performance of the Korean economy as well as the Korean auto industry over the last several decades.

In 1990, the International Motor Vehicle Program (IMVP) group at MIT, which hailed Japan’s “lean production system” as the ideal manufacturing model, maintained that the prospect of South Korea becoming another Japan was virtually impossible. They cited the failure at the time of Hyundai to penetrate the US market. And yet, since the global recession that followed the financial crisis of 2008, Hyundai’s performance has been far superior to that of other major automakers. While General Motors (GM) descended into financial collapse and Toyota faced the crisis of massive recalls related to safety issues, Hyundai was the sole automaker that expanded both its sales volume and its US market share in 2009. Moreover, Hyundai vehicles have received favorable quality and reliability evaluations from various institutes over the last several years. Consumer Reports, for example, announced in April this year that Hyundai ranked fourth among automakers in a synthesis of multiple evaluations in the US market. This meant that Hyundai had already surpassed the performance of US automakers and was receiving evaluations similar to top Japanese automakers such as Honda and Toyota — long known for quality.

Hyundai’s transformation from being cited as an example of why South Korea could never become another Japan into being in the same league as Japan’s top auto manufacturers has attracted considerable interest from business scholars. What made Hyundai’s resurrection possible?

HYUNDAI’S PRODUCTION MODEL
I will use the concept of a “production model” to find clues to explain the puzzling success of Hyundai Motor. A production model is defined as a company governance structure that enables a durable implementation of a specific profit strategy. It is composed of production organization, product policy, and employee relationships. Applying the concept of a production model to the case of Hyundai, I will explain the characteristics of its particular production model as follows.

First, Hyundai has reduced its dependence upon direct labor, while increasing its dependence upon production facilities by raising levels of automation and information technology in the production process. Hyundai’s production model is largely led by engineers who take charge of the whole process, while the role of factory workers is limited to supporting the operation of the production facilities. Among the production workers, indirect workers play the main role in maintenance and quality control in the operation of the production facilities to ensure no stoppages, while direct workers play a minor role in preventive maintenance and monitoring — which complements the indirect workers’ job. Most of the direct production workers could be easily re-
placed by other workers, because they do simple jobs that don't require a high degree of skill.

Second, Hyundai has increased the importance of product development, while establishing unique procedures to improve the quality level during the late stages of product development. At the stage of “pilot production,” research center engineers work to meet the requirements of production lines in advance, while a small number of experienced workers produce test models in a large-scale pilot plant located near the research center. During pilot production, Hyundai solves about 90 percent of the problems that could be encountered during mass production. The use of a large pilot plant is, therefore, one important characteristic of Hyundai's production model.

Third, a significant portion of Hyundai's production process is outsourced to parts makers, and many outsourced parts are sub-assembled into modules before going to the final assembly line. Modular production is defined as a production method in which parts are sub-assembled into interchangeable units to be supplied to the final assembly line. At Hyundai, outsourcing has been facilitated by modular production. This is another characteristic of Hyundai's production model. By combining outsourcing with modular production, Hyundai has gained huge benefits not only in terms of cost savings but also in improvements in quality and productivity. Hyundai has therefore been able to concentrate on product development and marketing by reducing the burden of parts production.

These three characteristics of Hyundai's production model clearly contrast with the Japanese production model, which consists of the following: 1) heavy dependence on highly skilled direct workers who actively participate in the production processes; 2) development of products in close interaction with the requirements from factory production lines rather than in pilot plants; 3) low use of outsourced modular production because of long-term stable relationships with parts makers.

**THE EVOLUTION OF HYUNDAI'S MODEL**

Ironically, Hyundai's production model was an unintended consequence of its efforts to imitate the Japanese model. Hyundai pursued an independent strategy to develop and produce its own products after a failed effort to cooperate with the Ford Motor Company to produce Ford's Cortina model in the early 1970s. Through a process of trial and error, Hyundai gradually accumulated experience producing its own products, incorporating auto technology it imported from abroad.

Hyundai benchmarked its production model against the Japanese automakers Mitsubishi Motors, with which it had a joint venture for decades, and Toyota. Since the early 1980s, when it developed a vehicle to export to the US, Hyundai sought to adopt the Japanese production model, using highly skilled workers who participated actively in the production process on the shop floor. Over time, though, the different circumstances of manufacturing in South Korea caused Hyundai to evolve in a direction that now competes with Japanese automakers.

How did Hyundai's production model emerge and evolve? First, the industrial policy of the South Korean government contributed. In the early 1970s, the Korean government announced a “long-term promotion plan” to help domestic automakers develop original products, starting with local parts production. The policy helped give birth to Hyundai’s original model, the Pony. The Korean government also provided domestic automakers with generous amounts of financing and protected them from imports. When the domestic auto sector was suffering from over-investment, the government even stepped in to limit the number of automakers. With the help of these industrial policies, Hyundai was able to exploit the economies of scale in the domestic market, which it soon came to dominate, before casting its eyes abroad.

Second, the technological “nationalism” of Hyundai engineers contributed to the emergence of Hyundai’s own production model. Even though
Hyundai incorporated different foreign technologies in the early stages of its development (1967-1990), the company’s engineers aspired to develop and produce original products. This played a major role in the development of Hyundai’s production model. Moreover, Hyundai’s senior management gave engineers relative autonomy to develop new ideas, compensated them generously and promoted them within the company. As a result, by the later stage of Hyundai’s development (1991-present), the company began to rely on its own state-of-the-art technology to produce original products on a mass scale.

Third, unstable labor relations for companies in South Korea paradoxically contributed to the evolution of Hyundai’s production model. During the country’s early stage of industrialization, the Korean government didn’t allow workers to organize in order to keep wages low in the major industrial sectors, including the auto industry. However, with the advent of democracy in 1987, labor unions began to take root, including at Hyundai, whose union played a leading role in the Korean labor movement during the 1990s. The mass layoffs experienced during the 1997-98 financial crisis only hardened the determination of unions — including at Hyundai — to seek higher wages and greater job security.

The adversarial labor relations at Hyundai pushed the company to develop a model that was clearly different from the Japanese model’s reliance on high-cost workers. Japanese auto manufacturers have heavily invested in the education and training of their workers, because of the expected benefits. In contrast, Hyundai heavily invested in the automation of production processes rather than developing the skills of workers, because the company did not expect education and training to have positive effects given the deep distrust between management and labor. Consequently, Hyundai developed a “labor-exclusive” production model, which minimizes dependence on factory workers.

In summary, even though Hyundai tried to imitate the Japanese, it eventually developed its own model under the influence of South Korea’s institutional environment. The industrial policy of the Korean government provided Hyundai with a domestic springboard to take on the world market. This, combined with technological nationalism among company engineers and adversarial labor relations, resulted in Hyundai adopting a production model that minimizes its dependence on the workforce. In other words, unlike the Japanese, the company developed an innovative model that depends on the flexibility of automated production facilities, not the functional flexibility of workers.
Expansion of Overseas Production

Hyundai Motor has increased its share of the export market as well as the domestic market. As shown in Table 1, Hyundai produced 1,684,000 units and exported 1,131,000 units, despite the economic recession in 2009. The proportion of exports as a share of total production was 56.7 percent in the same year. Hyundai’s share of the US market — the world’s most competitive auto market — has also continued to increase. Hyundai Motor estimates that it accounted for 7.1 percent in the US market in 2009 (this figure includes Kia Motor Company).

The increase of Hyundai’s market share in the US reflects the success of its ambitious marketing strategy. Hyundai has used unique marketing strategies such as a 10-year, 100,000-mile warranty and the “Hyundai assurance program,” which allows a customer to return his car if he loses his job. However, these strategies would not have been possible without high-quality products. Hyundai’s production model has decisively contributed to the increase of its market share by continually improving quality.

Hyundai’s competitiveness has also been demonstrated in its overseas production since the late 1990s. The products that Hyundai produces at its US plant in Montgomery, Alabama, have reliability ratings that compare favorably with Japan’s top automakers. For example, Consumer Reports rated the Hyundai Sonata on a par with the Toyota Camry and the Honda Accord in the medium-size sedan segment in 2009. Also, Hyundai’s Montgomery plant ranked second in productivity among North American auto assembly plants in 2007. Considering that the Montgomery plant started production only in 2005, this performance is impressive. Japanese transplants took approximately 7-8 years before their quality or productivity levels approached that of similar plants in Japan.

Hyundai was previously indifferent toward overseas production due to its failure to properly manage its Bromont plant in Canada in the early 1990s. However, Hyundai finally decided in 2002 to build the Montgomery plant following success in the late 1990s with plants in Turkey and China. The decision to manufacture in the US was considered inevitable for Hyundai to prevent trade conflicts and to shield itself from exchange-rate fluctuations in the dollar.

Even though Hyundai was very anxious about building its US plant, the outcome has been a clear success and demonstrates that Hyundai’s production model is now easily transferable to other countries — more so than the Japanese production model. To transfer the Japanese production model to the US, for example, Japanese automakers needed to recruit and train American workers for a long time to raise their skill level and mobilize the active participation of workers. Because the Hyundai production model depends less on production workers than the Japanese model, it is easier to transfer. To recruit and train American workers was relatively easy for Hyundai, because its production model doesn’t require high skill levels and active participation. Hyundai’s transplant surpassed the performance of the original plants in South Korea within two years, because it benefitted from the flexibility of automated pro-

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**Table 1: Production, Sales and Overseas Production of Hyundai Motor Company**

<table>
<thead>
<tr>
<th>Year</th>
<th>Domestic Production (A)</th>
<th>Domestic Sales</th>
<th>Export Sales</th>
<th>Overseas Production (B)</th>
<th>% of Cars Exported</th>
<th>% of Cars Produced Overseas (B/(A+B))</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>1,513,000</td>
<td>707,000</td>
<td>801,000</td>
<td>260,000</td>
<td>52.9</td>
<td>14.7</td>
</tr>
<tr>
<td>2003</td>
<td>1,646,000</td>
<td>630,000</td>
<td>1,012,000</td>
<td>410,000</td>
<td>61.5</td>
<td>19.9</td>
</tr>
<tr>
<td>2005</td>
<td>1,684,000</td>
<td>571,000</td>
<td>1,131,000</td>
<td>699,000</td>
<td>67.2</td>
<td>29.3</td>
</tr>
<tr>
<td>2007</td>
<td>1,707,000</td>
<td>625,000</td>
<td>1,076,000</td>
<td>911,000</td>
<td>63.0</td>
<td>34.8</td>
</tr>
<tr>
<td>2009</td>
<td>1,607,000</td>
<td>703,000</td>
<td>911,000</td>
<td>1,493,000</td>
<td>56.7</td>
<td>48.2</td>
</tr>
</tbody>
</table>

duction facilities and a labor market in Alabama that did not have militant unions. This environment enables Hyundai to lay off workers in response to changes in market demand, or to make use of idle time for workplace innovation when the production line happens to stop. Through this experience, Hyundai’s management has learned that its production model functions even better in places where it does not face the same labor environment as it does in South Korea.

Hyundai has been rapidly increasing overseas production not only in European countries such as Slovakia and the Czech Republic, but also in developing countries such as Brazil and Russia. As shown in Table 1, the proportion of overseas production to total production was 48.2 percent in 2009, up from 14.7 percent in 2001. When new production facilities in Brazil and Russia come on stream, this will exceed half of Hyundai’s total output.

A ROSY FUTURE?
Is the success of Hyundai’s production model sustainable? Can Hyundai’s production model be established as another best practice distinct from the Japanese model in the long term?

The world auto industry is now experiencing a revolution driven by the emergence of alternative vehicles that are less polluting and by the fast growth of developing markets. These two factors are closely interrelated, because the latter makes the former inevitable. That is, rising automobile use in developing countries has made air pollution worse, which makes it imperative to develop alternatives.

Considering these challenges, Hyundai’s production model may not be sustainable in the long term, because Hyundai is a late-comer in the alternative market, even though it is competitive worldwide in rapidly expanding emerging markets in the medium term. To make its production model more sustainable, Hyundai needs to actively participate in setting favorable standards for alternative auto technology, and adapt its production model to the new auto industry paradigm.

In the short term, Hyundai also needs to transform unstable labor relations into cooperative ones to utilize the flexibility of both production workers and production facilities. With stable labor relations, Hyundai could maximize its human resources as well as its technological edge. Hyundai’s management needs to develop broad communication channels through which workers can voice their demands collectively.

By achieving these tasks, Hyundai’s production model would be sustainable as a long-term best practice.

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Notes
2 “Losing Its Shine,” The Economist, Dec. 12, 2009