

Kim, Joo-hoon

Research Report

Promoting Good-Quality Job Creation in the Sector of SMEs

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For Inquiry: KDI Communications Unit

Address: 263, Namsejong-ro, Sejong-si 339-007, Korea

Tel: 82-44-550-4030 **Fax:** 82-44-550-0652

Writer | Joohoon Kim, Executive Director of Economic Information and Education Center (82-44-550-4126)

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Promoting Good-Quality Job Creation in the Sector of SMEs

Joohoon Kim, Executive Director of
Economic Information and Education Center at KDI

“Why are low-quality jobs created at SMEs? It is because the large companies hand over labor-intensive production to lower-level companies, causing exponential creation of new businesses amongst the lowest-paying bracket.”

I. The Expected Role of SMEs

Korea is currently witnessing pan-national efforts to relieve polarization in the economic structure and in income distribution. Despite these efforts, little progress has been made in resolving these issues, leading to argue for expanded social welfare as a means of alleviating polarization. At the same time, concerns are also being raised about its resulting effects in relation to fiscal soundness and sustainability. Despite their differences, both parties agree on one point, namely that the fundamental solution to these issues lies in job creation.

At present, initiatives to promote job creation are underway in the service industry and at SMEs in the manufacturing sector, but the created jobs are of low quality. Thus, the ultimate solution to this polarization will lie in structural improvements to boost

* This is the translated version of *KDI FOCUS* released on March 12, 2013.

innovation capability and productivity in these sectors to enable creation of high-quality jobs.

Moreover, it is difficult to be optimistic about the future of the Korean economy when viewing its future growth prospects through the lens of SME growth. These businesses require the dynamism to progress through the stages from small to medium and finally to large businesses, yet such dynamism has been difficult to find.

The question that arises, then, is why such low-quality jobs are created in SMEs. Any vague calls for creating high-quality jobs by improving SME innovation capability could be seen as an example of circular reasoning. This paper aims to analyze internal structural factors observed in SMEs to provide a basis for identifying suitable directions in government policy.

II . Causes of Declining Job Quality at Manufacturing SMEs

Large firms have transferred a portion of their production process to lower-level companies in order to boost their price competitiveness.

Korean industries underwent intensive restructuring in the early 1990s amid close pursuit from the rapidly growing Chinese economy. Many companies went bankrupt as labor-intensive industries such as textiles and footwear became less competitive. The solution was believed to lie in promoting technology-intensive industries, and the resulting focus on boosting technological ability helped usher in the success that the country currently enjoys.

It is now generally thought that this successful restructuring of industry along technology-intensive lines, which was spearheaded by large firms, had the ultimate effect of increasing the gap between these corporations and SMEs while encouraging polarization in the economic structure.

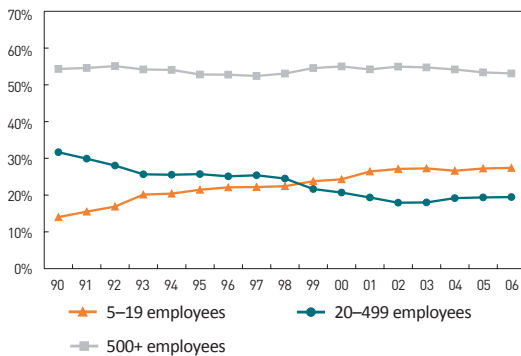
Another significant aspect of the industrial reorganization in the 1990s was the division of labor between companies, and in particular, the increasingly vertical division of labor between large firms and SMEs. Faced with challenges from emerging developing economies including China, as well as rising wages at home, corporations outsourced production processes to low-paying SMEs in an effort to boost price competitiveness.

[Figure 1] shows data regarding the share of employment for companies of eight different sizes (those with 5–9, 10–19, 20–49, 50–99, 100–199, 200–299, 300–499, and 500+ employees) as recorded in Statistics Korea's *Mining and Manufacturing Survey Report*. The data are presented in a way that highlights the trends of increase and decrease in the share of employment for companies of varying sizes.

The employment share declined for large firms with 500 or more employees and increased for companies with 5–9 and 10–19 employees. No change was observed in the other categories.

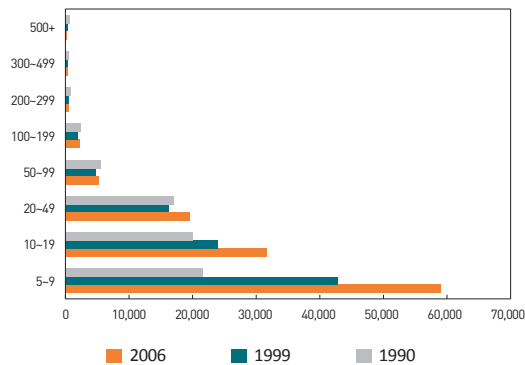
These allow for a very simple inference to be made: Faced with external and domestic

[Figure 1] Changes in Employment Share by Business Size



Source: Mining and Manufacturing Survey Report, Statistics Korea.

[Figure 2] Changes in Number of Companies by Size, 1990–2006



Source: Mining and Manufacturing Survey Report, Statistics Korea.

<Table 1> Increase in Number and Employment for Manufacturing Companies with 1–4 Employees

(Units: No. of companies, no. of employees, percentage)

	Number of companies (percentage)	Employment (percentage)
1993	170,230 (65.7%)	380,924 (11.5%)
1998	196,937 (71.2%)	419,530 (15.2%)
2003	188,314 (62.6%)	385,319 (12.3%)
2010	212,139 (64.9%)	450,563 (13.2%)

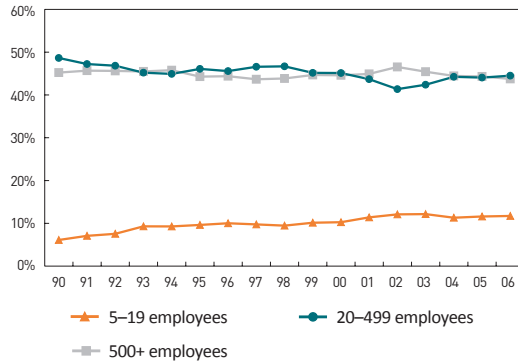
Source: Industrial Census Report, Statistics Korea (2010 figures from Economic Census Report).

threats deriving from declining overseas exports and domestic market liberalization, large firms (those with 500 or more employees) attempt to boost competitiveness in general, and price competitiveness in particular, by passing on a portion of their production processes to lower-level companies and pressuring them to lower the unit price.

To meet the demands of the larger corporations, mid-level companies (those with 20–499 employees), in turn, pass on part of their production processes to lower-level companies with 5–9 or 10–19 employees that pay even lower wages. The overall share of employment for these mid-level companies does not change, however, as they have been transferred work from large corporations.

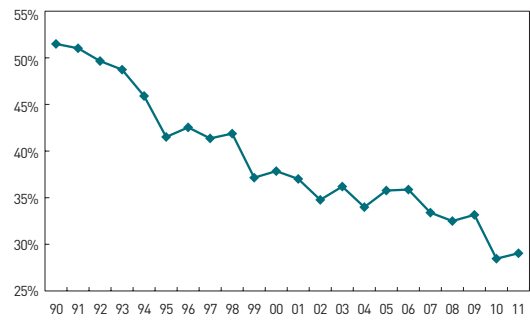
Finally, the downward shift in production processes results in an increase in the establishment of very small-sized companies (those with 5–9 and 10–19 employees) with the lowest wages and an increase in demand for low-wage workers. Even influx of foreign laborers occurs due to shortage in labor force. [Figure 2] shows the change in the number of companies over the past 20 years for each category of company. As it indicates, increases were observed primarily among companies with 5–9 and 10–19 employees.

[Figure 3] Changes in Shipment Value by Business Size, 1990–2006



Source: Mining and Manufacturing Survey Report, Statistics Korea.

[Figure 4] Labor Productivity Gap between Large Firms and SMEs (Large Firms = 100%)



Note: For the sake of statistical consistency, SMEs are defined as companies with no fewer than 10 employees and no more than 300.

Source: Mining and Manufacturing Survey Report, Statistics Korea.

This pattern of downward shifting in production processes can also be observed by analyzing the number of microenterprises (those with 1–4 employees) and the increase in employment at this scale. While yearly statistics are not available for companies of this size, relevant figures can be found in the *Industrial Census Report*, which is carried out every five year. As shown in <Table 1>, a pattern of increase in the number of companies and total employment in this category (companies with 1–4 employees) can be observed over the entire period, with the exception of 1998, when the Asian Financial Crisis occurred.

The sharp increase and subsequent drop in the number of companies and employment in 1998 appears to stem from the fact that many companies in the categories with 5–9 employees and higher were forced to downsize during the Asian Financial Crisis, shrinking to teams of 1–4 employees before eventually returning to their original size.

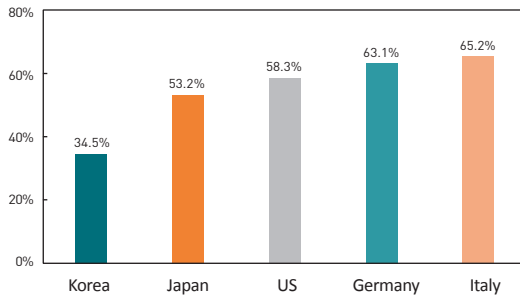
Because the jobs created at SMEs today appear precisely in this category, the quality of employment is inevitably low. As the number of companies in this category increases and its share of employment expands, these jobs come to represent a greater percentage of the total. This manifests as a decline in the average standing for SMEs as a whole, as well as a widening gap between SMEs and large firms.

One noteworthy aspect of this shift is the change in the share of production by companies at different scales. A comparison between changes in employment share and changes in production share clearly shows the structural characteristics of the Korean economy that are affecting SME structure.

[Figure 3] shows that the production share (in terms of shipment value) of companies with at least 500 employees has decreased slightly, while their share of employment has shown a significant decrease. The fact that production share decreased less than employment share indicates that production methods at large firms have become more capital-intensive. One likely reason for such shift is because the expenses of acquiring

Because the jobs created at SMEs today are found in low-level companies, such as those with 5-19 employees, the quality of employment of SMEs as a whole is inevitably low.

[Figure 5] International Comparison of Labor Productivity Gap for Large Businesses and SMEs (Large Businesses =100%)



Note: For the purposes of country comparison, SMEs are defined as companies with fewer than 500 employees.

Source: Korean figures from *Mining and Manufacturing Survey Report*, Statistics Korea; overseas figures from *SME White Paper* by the Japanese Small and Medium Enterprise Agency.

<Table 2> Rate of Increase in Per Capita Value-added for Large Businesses and SMEs

	Value-added		Employees		Per capita value-added	
	SMEs	Large firms	SMEs	Large firms	SMEs	Large firms
1981–1990	21.5%	16.1%	6.4%	1.3%	14.2%	14.6%
1991–2006	9.9%	8.5%	1.0%	-2.9%	8.8%	11.7%

Source: *Mining and Manufacturing Survey Report*, Statistics Korea.

capital have probably been less than those of maintaining a workforce. This, in turn, can be traced to the nature of the Korean capital market, which is particularly hospitable to large businesses, and the presence of policy support to promote investment.

This forms a precise symmetry with the labor intensification¹⁾ that has taken place among companies with workforces of 5–9 and 10–19 employees. At these companies, however, the increase in the share of production has failed to keep pace with the increase in the share of labor, a difference that has resulted in poverty among these companies and its employees.

Worryingly, the SME labor intensification that began in the 1990s has continued into the present. [Figure 4] shows the level of labor productivity of SMEs (i.e., per capita value-added), where the labor productivity for large firms is taken to represent 100 percent. Apart from a slight decrease in the wake of the Asian Financial Crisis, the downward trend can be observed to continue through today. The gap between large businesses and SMEs in Korea is notably higher than that of other developed industrial economies (see Figure 5).

The increase in the labor productivity gap between large businesses and SMEs stems from reduced employment at large firms. As <Table 2> shows, slowing growth in the 1990s resulted in a decline in the rate of increase of value-added and employment for both large businesses and SMEs. However, the decline in the rate of increase was asymmetrical. While the rate of increase in value-added for large firms was slightly lower than for SMEs, the rate of increase in employment fell more sharply, allowing the rate of increase in per capita value-added for large firms to overtake that of SMEs.

The rate of increase in per capita value-added for large firms was made possible by a steep decline in the rate of increase for employment.

1) For the purposes of this paper, “labor intensification” does not refer to more labor-intensive production methods than in the past for individual companies but refer to an increase in the percentage of SME employment due to reduced hiring by larger businesses and increased production by smaller businesses that are more labor-dependent than their more capital-intensive large counterparts. The term “labor intensification” is used merely for terminological simplicity. It should also be noted that the capital equipment ratio at individual SMEs is higher now than in the past.

This phenomenon can be attributed to shift in relationship between large businesses and SMEs that began in the 1990s. The understanding to date among government policymakers and the general Korean public is that the increasing productivity gap between large businesses and SMEs stems from the fact that large firms have become more technology-intensive, whereas SMEs have not.

The part of this explanation that raises questions, however, is that if increased technical development at large businesses was responsible, the rate of increase for value-added should have also increased. Instead, it fell to half of its level in the 1980s, as shown in <Table 2>. At the least, it seems unwarranted to conclude that the productivity gap between large firms and SMEs widened because of an increase in value-added from greater technological development at large businesses. Moreover, an examination of the increase in R&D investment (which will be addressed later in this paper) signifies that the rate of increase in R&D investment at large businesses was not higher than that of SMEs.

Moreover, SMEs, in contrast with large firms, continued to undergo labor intensification even at the risk of decrease in the rate of increase for per capita value-added. In other words, while large businesses responded to worsening business condition—the slowdown of growth—by downsizing, SMEs were unable to do this because they were not in the position to reverse the labor intensification process.

Globalization, and the consequent reform in industry structure may be the single most important and direct cause of the widening gap between large businesses and SMEs. The influx of China and other developing countries into the world export market resulted in a collapse of Korean labor-intensive industries including textiles and footwear, while the workforce ejected from these industries became a catalyst for the labor intensification at SMEs.

At the same time, integration of global markets resulted in a structural concentration of Korean industry on specific products such as electronics and automobiles, which the country has a competitive advantage. Major export products rely on an assembly-type manufacturing industry in which they are produced under a vertical, pyramid-shaped structure of the corporate division of labor. While the companies in this industrial structure must cooperate to survive in the market, they are also in a competitive relationship in terms of profit distribution.

Because of the nature of production, company relationships in an assembly-type manufacturing industry are transaction-specific. As a result, the large firms that stand atop the division of labor pyramid have been able to exercise a large amount of control. The extent of that control, however, is determined by the bargaining power of the lower-level companies, which in turn is based on their capital and technology.

<Table 3> R&D Investment Trends for Large Businesses and SMEs in the Manufacturing Industry

	SMEs	Large firms
1990	KRW 0.2 billion	KRW 1.9 billion
1997	KRW 0.7 billion	KRW 6.7 billion
1999	KRW 0.9 billion	KRW 6.1 billion
2010	KRW 5.9 billion	KRW 22.9 billion
1990–1997 CAGR* (average share of total)	17.2% (10.0%)	19.6% (90.0%)
1999–2010 CAGR (average share of total)	19.5% (19.2%)	12.7% (80.8%)

Note: *Compound annual growth rate.

Source: Research and Development Survey Report, Korean Ministry of Education, Science and Technology.

<Table 4> R&D Investment Trends by Company Size in the Manufacturing Industry

	Fewer than 99 employees	100–299	300–999	1,000+
1990(A)	KRW 0.07 billion	KRW 0.1 billion	KRW 0.2 billion	KRW 1.7 billion
1997 (B)	KRW 0.3 billion	KRW 0.4 billion	KRW 0.8 billion	KRW 5.9 billion
1999 (C)	KRW 0.4 billion	KRW 0.5 billion	KRW 0.7 billion	KRW 5.5 billion
2010 (D)	KRW 3.7 billion	KRW 2.2 billion	KRW 2.2 billion	KRW 20.6 billion
1990–1997(B/A)	3.9 times	2.6 times	3.7 times	3.5 times
1999–2010 (D/C)	10.2 times	4.7 times	3.4 times	3.8 times

Source: Research and Development Survey Report, Korean Ministry of Education, Science and Technology.

III . Vitalization of Technology Development in SMEs

Recently, SMEs have shown signs of increased technology development. In the case of manufacturing R&D investment, which accounts for the majority of technology development investment by companies (87.5 percent in 2010), the figures show a higher rate of increase for large firms than for SMEs in the period before the Asian Financial Crisis. Following the crisis, however, the trend reversed, as SMEs began to catch up with large firms in terms of rate of increase in R&D investment (see Table 3).

A similar increase was observed in the employment of research staff. Since the Asian Financial Crisis, the rate of increase in the research workforce has been greater for SMEs than for large businesses, resulting in a steady rise in share amongst the total component (Figure 6).

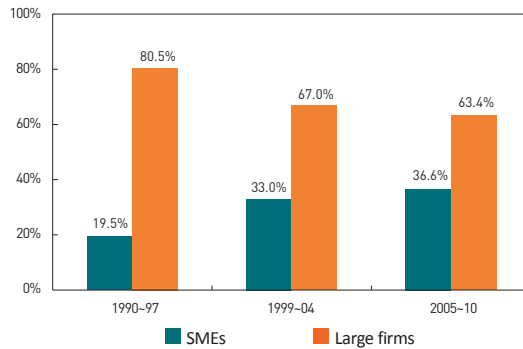
The technical development boom for SMEs has been driven by smaller companies with fewer than 99 employees. As seen in <Table 4> on R&D investment data by company size, no significant change was observed for companies with 300–999 employees, or more than 1000 employees for the periods before and after the Asian Financial Crisis, whereas companies with a staff of fewer than 99 people showed a marked increase. The result was an increased share of R&D investment for SMEs and a decreased share for large firms (see Table 5).

The companies with fewer than 99 employees are likely to have short firm age, meaning that the high rate of increase in R&D investment by these companies could significantly improve the SME structure in the nearer future as they grow.

The increase in the number of SMEs involved in R&D since the Asian Financial Crisis has resulted in them accounting for an ever larger share of all SMEs. For example, the percentage of total SME sales for companies engaged in R&D increased from 15.3% in

After the Asian Financial Crisis, SMEs began to catch up with large firms in terms of the rate of increase in R&D investment.

[Figure 6] Share of Research Workforce for Large Firms and SMEs in the Manufacturing Industry



Source: Research and Development Survey Report, Korean Ministry of Education, Science and Technology.

<Table 5> Share of R&D Investment by Company Size in the Manufacturing Industry

	Fewer than 99 employees	100-299	300-999	1,000+	Total
Average from 1990 to 1997	3.7%	6.3%	9.7%	80.3%	100.0%
Average from 1999 to 2004	10.2%	7.8%	9.3%	72.7%	100.0%
Average from 2005 to 2010	12.4%	8.1%	8.7%	70.8%	100.0%

Source: Research and Development Survey Report, Korean Ministry of Education, Science and Technology.

<Table 6> Scale and Rate of Increase for Sales and Employment for SMEs Involved in R&D

	Sales (KRW million)		Employment (No. of workers)	
	Companies involved in R&D (percentage of SMEs)	Total SMEs (percentage of SMEs)	Companies involved in R&D (percentage of SMEs)	Total SMEs (percentage of SMEs)
1990	8,664,930 (11.3%)	76,500,745 (100.0%)	123,899 (6.5%)	1,897,922 (100.0%)
1997	24,324,898 (12.0%)	203,053,739 (100.0%)	145,650 (7.7%)	1,887,116 (100.0%)
1999	35,109,433 (15.3%)	229,248,762 (100.0%)	138,568 (7.6%)	1,829,593 (100.0%)
2006	115,729,540 (25.7%)	450,746,187 (100.0%)	356,664 (16.1%)	2,210,725 (100.0%)
CAGR (1990~1997)	15.9%	15.0%	2.3%	-0.1%
CAGR (1999~2006)	18.6%	10.1%	14.5%	2.7%

Note: This table compares and analyzes figures through 2006. Statistics Korea stopped publishing figures on companies with 5-9 employees in 2007.

Source: Research and Development Survey Report, Korean Ministry of Education, Science and Technology; Mining and Manufacturing Survey Report, Statistics Korea.

1999 to 25.7% in 2006. A similar pattern of increase can be observed in employment, with the percentage of all SME employees working for companies involved in R&D increasing sharply from 7.6% in 1999 to 16.1% in 2006 (see Table 6).

Prior to the Asian Financial Crisis, the average yearly rate of increase in sales for companies engaged in research was 15.9%, which was more or less identical to the overall 15.0% rate of increase for SMEs in general. After the crisis, the rate of increase in sales for these companies rose to 18.6%, compared to a 10.1% rate of increase for SMEs as a whole. An identical pattern can be seen in the rate of increase in employment (see Table 6). From this, it can be deduced that the reason for the more pronounced R&D effect in the wake

<Table 7> International Comparison of Average Company Size and Number of Companies in Manufacturing Industry Compared to GDP

	GDP (US\$ billion)	Share of manufacturing industry (%)	Production scale in manufacturing industry (US\$ billion)	Multiple	No. of companies in manufacturing industry	Multiple	Scale of production per company (US\$ million)	Multiple
US	10,383.1	14.2	1,474.4	9.2	641,208	2.1	2.30	4.3
Japan	3,993.4	20.4	814.7	5.1	536,591	1.8	1.52	2.9
Germany	1,984.1	22.9	454.4	2.8	197,000	0.7	2.31	4.3
France	1,431.3	18.2	260.5	1.6	248,000	0.8	1.05	2.0
UK	1,563.7	17.4	272.1	1.7	165,000	0.5	1.65	3.1
Italy	1,184.3	20.4	241.6	1.5	549,000	1.8	0.44	0.8
Canada	716.7	19.7	141.2	0.9	54,000	0.2	2.61	4.9
Korea	605.4	26.4	159.8	1.0	300,976	1.0	0.53	1.0

Note: 1) Company number statistics for the US, Japan, and Korea include companies with at least one employee. As it is not clear whether the statistics for the other countries include companies with at least one employee, direct comparisons may result in error.

2) Korean statistics are from 2003, while statistics from other countries are from 2002.

Source: Figures for manufacturing company numbers found in *2002 Economic Census*, US Census Bureau; *Census of Manufactures: Report by Industries*, Japanese Ministry of Economy, Trade and Industry; and *Industrial Census Report*, Statistics Korea. Other statistics from *OECD in Figures*, OECD.

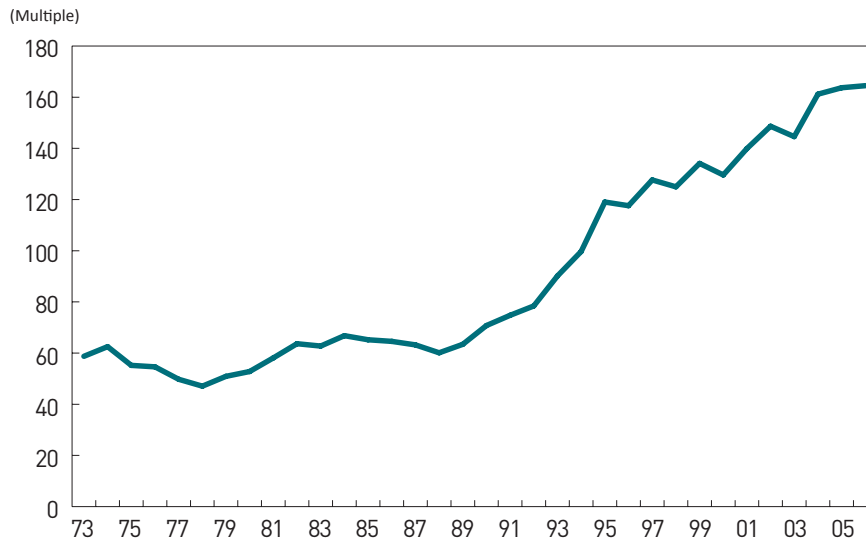
of the Asian Financial Crisis was a synergy effect from the growing number of companies involved in R&D.

Despite the increase in R&D investment by SMEs, the productivity gap between large businesses and SMEs has increased, as shown in [Figure 4]. On the whole, SMEs have been unable to achieve the level of R&D progress that would enable them to reverse the growing productivity gap.

One possible scenario that might be able to explain this trend is that SME R&D performance was minimal. A second is that, while certain individual companies may have had clear results from their R&D efforts, they represented such a small share of all SMEs that overall R&D results by SMEs were minimal. Third, individual companies may have had clear R&D results and also represented a significant share of SMEs, but overall SME performance was offset by the higher rate of labor intensification at other SMEs that were not involved in R&D. An empirical analysis of these scenarios should be conducted once the relevant statistics become available.

While further empirical analysis is needed in the future, some policy recommendations can be identified from the discussion thus far. They suggest that the priority should be on slowing the rate of labor intensification at SMEs while reorganizing the industry division of labor to allow for increased growth of technology-intensive SMEs.

[Figure 7] Per Company Value-added for Large Businesses as a Multiple of SMEs (Manufacturing)



Source: Mining and Manufacturing Survey Report, Statistics Korea.

IV . Identifying a New Corporate Division of Labor

Compared with other developed and industrialized countries, Korea has an excessively high number of businesses in its industry relative to the size of its economy (see Table 7), a phenomenon that is assumed to be a by-product of the aforementioned labor intensification among SMEs. The number of new companies has increased exponentially as large firms have become more capital-intensive, passing on labor-intensive production to the companies below them, companies that in turn pass on that work to lower-level companies (see Figure 2).

The fact that Korea has excessive number of companies in comparison with other countries implies that Korean companies are generally smaller in scale. It is very likely, then, that Korean SMEs are manufacturing at below the optimum scale.

In addition, the proportion of value-added represented by large firms and SMEs has scarcely changed at all over the past twenty years, yet the gap between large businesses and SMEs in terms of value-added per company has grown (see Figure 7). At the same time, the number of large businesses has decreased while the number of microenterprises has rapidly increased.

The pyramid shape of the specialization structure, with the number of companies increasing farther down, can be attributed to the antiquated outsourcing management practices of large firms and their adherence to the subcontracting system of the past. Because of concerns regarding potential interruptions in parts supplies, these companies tend to do business with multiple subcontractors. At the same time, they forbid these

The fact that Korea has excessive number of companies in comparison with other countries implies that Korean companies are generally smaller in scale than those in other countries.

subcontractors from executing work for other large firms to keep management secrets and to prevent technical information leak, resulting in a one-to-many relationship.

The subcontracting system, which may be considered the example par excellence of vertical division of labor, became fully established with the enactment of the Promotion of Alliance between Small and Medium Enterprises Act in 1975. When the government undertook its ambitious plan to promote chemical and heavy industries in 1973, its policies focused only on large firms. Once policymakers belatedly realized that the nature of chemical and heavy industry, specifically its need for multiple parts, as well as the necessitated support for SME growth, they took action to develop SMEs as exemplified by the aforementioned legislation.

The model adopted at the time was the subcontracting system that was already in place in Japan. It was generally believed that the Japanese subcontracting system had been an important factor in enabling Japan to become globally competitive in assembly-type manufacturing industries such as electronics, automobiles, and machinery. Not only did the system enable large businesses to establish price competitiveness through lower wages at SMEs but it also reduced the financing burden on the part of large firms as they did not have to manufacture spare parts. In this way, the system fostered the development of mass production system in large businesses.

From the standpoint of industrial competitiveness, one of the most important contributions of this system was the speed with which it distributed technology to small parts suppliers. In order to bridge the technological divide after the Second World War, large Japanese corporations worked vigorously to import advanced technology from the West, which was then passed along to SMEs. The production of inexpensive, high-quality parts by SMEs that had received technology transfers from larger corporations became a cornerstone to Japan's strong industry competitiveness.

Such technology transfers, however, have a crucial prerequisite: Business relations between large firms and SMEs must be long-term and continuous. It is because technology transfers cannot be applied to one-time transactions—i.e. market transactions—in which there is no guarantee that the business relationship will continue in the future. As such, the subcontracting system was introduced to promote long-term business relationship between large firms and SMEs.

The subcontracting system may have been very useful during the period of technological transfer, but doubts remain about its continued utility in a period of technological innovation. The industry is no longer at the stage of unidirectional technology transfers, but rather at the one in which mutual technological collaboration is required.

It also appears that the division of labor between companies should be changed from its current vertical structure, as represented by the subcontracting system, to a more horizontal and an open one. Relationships between companies should be made open enough that new partners for collaboration can be freely located as innovation occurs.

Most crucially, many-to-many relationships must be formed so that companies can achieve the minimum scale necessary for innovation to continue taking place.

SMEs that are specialized in terms of key capabilities should establish a new group in which labor is divided on an equal footing.

Shifting from the current vertical relationship that exists between large businesses and SMEs to a horizontal division of labor will be no easy matter. Indeed, it may be more practical for SMEs that are specialized in terms of key capabilities to establish a new group in which labor is divided on an equal footing.

The reason that large firms are able to establish superior bargaining power to SMEs in the Korean industrial structure (which developed around manufacturing) is that these businesses are also able to oversee marketing overseas, as well as various other services that play a crucial role in establishing a competitive edge in the industry.

Lower-tier companies should be able to form business relationships with multiple high-level companies.

Small and medium subcontractors, which have finally begun to design and produce their own parts and generally acquire innovation capabilities, should not be forced to deal exclusively with large businesses; instead, they should be allowed to collaborate with other small and medium service enterprises. Supporting growth in the service industry, particularly in business services that are directly connected to the manufacturing industry, would not merely lead to the creation of jobs in the service industry but might also help SMEs escape their vertical relationship with large firms.

V . Policy Suggestion

The most urgent task is eliminating unfair subcontracting transactions.

As the economic environment deteriorates both domestically and abroad, the trend has been for SMEs to become more labor-intensive while large firms attempt to increase their own competitiveness. Clearly, it will not be easy to reverse this trend and improve SME productivity to lay the groundwork for creating high-quality jobs. Indeed, this will amount to a full-scale remodeling of the entire Korean economic structure. Nevertheless, creating high-quality jobs at SMEs is a task that must be accomplished, not only for the sake of social cohesion but also to enable sustainable economic development.

Price calculation method must be developed that reflects intangible creative and innovative activity.

The first and most urgent step is to increase the monitoring capability of government authorities and their ability to eradicate unfair subcontracting transactions. Large businesses must be prevented from unfairly shifting the burden that they themselves should bear on to SMEs and other lower-tier businesses.

Second, steps must be taken to change the structure of the division of labor. The current vertical pyramid structure with large firms at the top makes it relatively easy for burdens to be shifted downward to lower-tier companies. Even if it is understood that large firms will continue to shift the burden to lower-tier companies, preventing these companies from shifting the burden in turn to companies even farther down the hierarchy will require assistance to enable lower-tier companies to achieve sufficient economies of scale in their own production to reasonably absorb the burdens that are shifted to them.

The close relationship of the corporate division of labor may actually exacerbate the shifting of the burden to lower-tier companies during times of economic instability, such as the industry restructuring of the 1990s or the outbreak of the global financial crisis in the 2000s.

Achieving this will require a freer structure to the division of labor so that lower-tier companies are able to form business relationships with multiple higher-level companies. In particular, the artificial exclusivity of transactions, in which large firms prevent their subcontractors from doing business with other companies without permission (even when transactions between large businesses and their subcontractors do not require exclusivity), run counter to fundamental principles of the market economy.

Third, the contractual format should be converted to one in which intangible creative activities are reflected. Because the companies that commission work will always seek lower prices, they will almost certainly try as much as possible to recognize only tangible production costs. If the value of intangible creative activity is to be properly recognized, companies must be able to deal directly with customers in the market, or at the least be able to engage in multiple transactions with multiple client companies.

The greater the progress toward a knowledge-based industry, the more urgent the need becomes for intangible activities to be reflected in contract. In the software industry, prices for small and medium-sized subcontractors have been calculated according to physical time inputs by people involved in the projects, a fact that has already been identified as one reason for the software industry's lagging performance. Because Korean industry is at the stage of industry development where high value-addition is taking place from the fusion of service and the manufacturing industry, new format of contract must be developed that reflects intangible creative and innovative activity.

Fourth, fostering the growth of the service industry can serve as leverage not only for establishing high value-added in the manufacturing industry but also for strengthening the bargaining power of small and medium-sized subcontractors. The growing number of innovative SMEs that specialize in R&D and production should be able to establish partnerships with service sector companies that allow them access to the methods needed for overseas exports without going through large businesses. Collaboration between manufacturing SMEs and service companies may offer a new diversification opportunity for the Korean industry structure, which currently specializes in assembly-style manufacturing.

In conclusion, a horizontal division of labor must be propagated to allow a long-term transition from a vertical industry structure based on subcontracting to one based on market transactions. One advantage of market transactions is that it becomes difficult for companies to burden others with their own responsibilities.

Innovative SMEs must be able to establish collaborative relationships with service firms without going through large businesses.