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STRATEGIC OPTIONS FOR THE KOREAN AUTO INDUSTRY IN RESPONSE TO THE EMERGING NEW PRODUCTION SYSTEM, 1980-1992*

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This study attempts to undertake a comprehensive examination of the development of the Korean auto industry in the 1980s in relation to the changing international division of labor. This study adopts the theory of the neo-Schumpeterian school in order to overcome the limitations of the existing theories in the study of the development of the Korean auto industry in the 1980s. It focuses on the changes in the 'production system' adopted by the Korean auto industry in response to the changes in the international division of labor brought in by the emergence and expansion of the new production system. The Korean auto industry has responded to the international and domestic competition on the basis of a particular production system which is founded on three factors - 1) technology, 2) labor-management relations, and 3) assembler-supplier relations.

In the mid and late 1980s the domestic auto industry achieved relatively massive exports to the U.S. market on the basis of a typical mass production system. Since the late 1980s, however, the Korean auto industry began to face a 'relative stagnation' caused by a reduction in exports to the U.S. market. The fundamental reason for the decrease in Korean car sales in the U.S. market is that the domestic auto industry has found difficulties in maintaining even its mass production system due to two reasons: internally, rising trade union movement; externally, a world-wide expansion of the new production system

Up to now, the response of the domestic auto industry to this 'relative stagnation' is not an active adoption of the new production system, but a readjustment of the existing mass production system.

INTRODUCTION

The Korean auto industry experienced an exceptional growth in the mid and late 1980s, reaching an annual production volume of over one million units with up to 500,000 units exported to markets in the developed countries. Compared to other developing countries' auto industries how can such an exceptional phenomenon be explained? Can it be explained in terms of an exceptional external conditions, that is the international division of labor brought about by the competition among transnational

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corporations (TNCs)? Or can it be explained in terms of the state support policy which supplemented the high production cost of the domestic industry? Or is it due to the development of internal productive force of the domestic industry? A scientific examination and explanation of the high growth of the Korean auto industry in the mid and late 1980s has become a subject of heightened interest among researchers in and outside Korea.

However, since the late 1980s we have seen a rapid decrease in the export of Korean produced cars to the U.S. market, resulting in a 'relative stagnation.' Although the total sales of cars has continued to increase due to a 'motorization' trend in the domestic market, the export to the U.S. market has continued to decrease. This signifies an important change in the pattern of growth in the Korean auto industry. What are the causes of this phenomenon? Is it merely a temporary stagnation caused by cyclical factors such as the increased value of Korean currency (exchange rate), the wage increase, and the decrease of demand in the U.S. market? Or does it stem from a structural factor which necessitates a fundamental response? A study of the Korean auto industry limited to the period of growth in the mid and late 1980s cannot but fail the test of scientificity, because it fails to deal with the above concerns. A comprehensive understanding of the development of the Korean auto industry in the 1980s can only be achieved through a consistent examination of the various domestic and international factors which brought about the 'relative stagnation' since the late 1980s.

This research has an important significance in that it attempts to expand the field of the industrial sociology which has concentrated only on partial case studies in the areas of labor process, labor market, labor movement, etc. The industrial sociology up to now has built up considerable achievement through concrete research mainly on labor issues. However, it has fallen into a limitation of static description because it failed to respond to the changes in the conditions surrounding the various objects of their studies.

At the same time this research is a case study which is necessary for a scientific examination of the structural crisis confronting the Korean economy as a whole. The effort to explain the root of the crisis of the Korean economy requires an effort to build a model of typical case study rather than a general discussion on an abstract level.

This research of auto industry will contribute to the explanation of the dynamics of the Korean economy as a whole. This stems from the reasons below. First, auto industry is one of the major industries representing the Korean economy as a whole. Second, all the automakers are major enterprises which belong to the conglomerates known as *chaebol*. *Chaebol* regards the automaker as a major operating branch. Third, each domestic

automaker is incorporated into international division of labor through a relationship with the U.S. and Japanese TNCs. Fourth, auto industry is a complex industry based on a system of broad-ranging subcontracting between the assembler and the components suppliers. Last, the laborers in the auto industry make up the most dynamic sector of the working class directly responsible for production in the Korean economy.

On the basis of the above reasons, this case study of the Korean auto industry can reveal the dynamics of the Korean economy in the 1980s in a condensed form .

THEORETICAL FRAMEWORK AND RESEARCH METHOD

The contending theories for explaining the economic development of the newly industrializing countries (NICs) are 'new international division of labor theory' (Fröbel *et al.* 1980) and 'the product life cycle theory' (Verson 1966). Although these two theories are based on different theoretical foundations, they fail to provide a comprehensive explanation of the changes in the world economy caused by the emergence of new production system and the subsequent reorganization of the international division of labor. Furthermore, their emphasis on the external factors reveals a failure in the appreciation of the dynamic nature of local capital which has led the development of Korean economy.

Standing at the opposite end, the Institutionalist approach (Amsden 1989) which places emphasis on the internal institutional factors is vague in its treatment of the external factors of the world economy. Therefore, it leads to a wishful optimism for the future of Korean economy.

The methodological principles adopted in this research are influenced greatly by the neo-Schumpeterian school. Compared to other studies which undertake one-sided treatment of the various factors in the development of the Korean auto industry in the 1980s, the neo-Schumpeterians undertake a balanced explanation of the economic growth of the NICs such as Korea by focusing on the responses to the world-wide changes in the production system. Neo-Schumpeterians clearly point out that the world capitalist system is experiencing a structural reorganization based on the emergence of a qualitatively new paradigm of production system following the recession in the 1970s. Furthermore, the methodological principle of undertaking a comprehensive consideration of the institutional as well as technological aspects in a study of the economy of one country provides a valuable insight to the study of the development of the Korean auto industry in the 1980s.

However, even the neo-Schumpeterian bears important theoretical limits. First, the object of analysis is the world auto industry centering around the TNCs of the advanced countries. Naturally neo-Schumpeterians pay insufficient consideration to the domestic factors which have affected the development of the auto industries in the NICs such as Korea. The optimism or pessimism of the future of the Korean auto industry assessed on the basis of the transition to the new production system is not founded on sufficient material corroboration, but a general anticipation predicated on the economies of the advanced countries.

Second, although this theory adopts institutional aspects as well as technological aspects as necessary factors in the economic changes, it fails to explain clearly the central role of the finished car maker (that is, local capital) which is the organizational motivating force that promotes the growth of the auto industry on the basis of a combination of the technological and instituional factors. Despite its strength compared to other theories, the neo-Schumpeterian contains specific limitations in providing an in-depth analysis of the dynamic mechanism of the Korean auto industry led by the domestic automakers.

Therefore, in this research, I will attempt to undertake an analysis of the Korean auto industry in the 1980s on the basis of the following methodological principles.

1) Needed is a comprehensive understanding of the emergence and expansion of the new production system, and the subsequent changes in the international division of labor. The competition and cooperation amongst the TNCs are the objective conditions which critically influence the development of Korean auto industry. At the same time, TNCs have direct relationship with the domestic automakers in their activity. From this perspective, there emerges a need to undertake a comprehensive understanding of the changes in the international division of labor resulting from the emergence and expansion of new production system as external factors shaping the developmental patterns of the Korean auto industry.

2) Despite the importance of the changes in the international division of labor, the focus of the analysis is the internal dynamism of the Korean auto industry. This approach stems from the awareness of the uneven development among the NICs depending on the forms of responses undertaken by the subjective force responding to the same external conditions of the world economy. The most central factor is the domestic automaker. The fact that the automakers in Korea are not subsidiaries of TNC but domestic enterprises that control ownership and management has an important significance. The domestic automakers have been at the center

of the growth of Korean auto industry by undertaking appropriate responses to the external conditions brought about by the changes in the international division of labor.

3) An examination of the domestic automakers which have led the internal dynamism of the Korean auto industry is undertaken on the basis of the production system concept. A scientific explanation of the dynamic development of the Korean auto industry is possible only by focusing on the actual production process adopted in the automakers. The concept of 'production system' employed in this research signifies a unique system of accumulation, composed of 1) technology, 2) labor-management relations, 3) assembler-supplier relations maintained by a particular enterprise engaged in manufacturing finished products. In other words, 'production system' is composed of two axes. One is 'technology' which is a direct factor in the development of productive force. The other is 'social relations' which are necessary for transforming the technology into actual production. 'Social relations' are composed of the labor-management relations and the assembler-supplier relations. The efficiency of the production system determines the competitiveness of individual automaker. The difference in the efficiency is determined not only by the individual factors in the production, but also by the managerial capacity of the automaker in organizing the various factors. From this approach, the concept of production system is central to the explanation of the dynamic development of the Korean auto industry in the 1980s.

4) The state policy which has designated auto industry as a strategic sector of Korean economy through a sustained direct and indirect support to the domestic automakers is also an important factor. The state, despite its appearance of neutrality, is in reality a political factor which guarantees the profit of a nation's capital in general. The state in Korea, unlike in the advanced countries where its role remains in demand management on a macroeconomic level, has undertaken an active role in promoting the strategic sectors of Korean economy. The nucleus of the state policy on the auto industry, which is a strategic sector of the Korean economy, has been an active guarantee of the growth of the existing automakers.

5) The final effect of the development of the Korean auto industry, brought about by a combined effect of domestic and international factors, is revealed in the domestic and international market. This is the last area of my concern in this research. The space in which the goods manufactured in a certain production system realize their competitiveness in a capitalist society is the domestic and international market. Competitiveness is a capacity of a particular enterprise revealed in the process of selling the

manufactured goods in the market competing with other enterprises. The competitiveness of a particular enterprise is ultimately determined by the level of productive force based on its production system. However, the efficiency of its realization is achieved through unique marketing methods.

On the basis of the above consideration, the issues which will be dealt in depth in this research are as follows.

1) What is the changing status of the Korean auto industry in the context of the changes in the international division of labor brought about by the emergence of a new production system since the recession in the 1970s?

2) What was the cause of rapid growth of the Korean auto industry in the mid and late 1980s in relation to the changes in the international division of labor? And what was the effect of the mass production system of the domestic automakers?

3) What is the reason for the 'relative stagnation' experienced by the Korean auto industry since the late 1980s? What are the response strategies of the Korean auto industry in reaction to the world-wide diffusion of the new production system? What are the prospects of these responses?

This research, in an effort to establish a comprehensive understanding of the above issues, employs methods of literature survey and field reasearch. The effort to draw a comprehensive picture of the Korean auto industry in the 1980s requires a thorough analysis of the massive amount of primary and secondary materials concerning the auto industry, within and outside the country. However, an in-depth analysis requires field studies and comprehensive interviews with the personnel of the automakers. An analysis of such a mammoth object of research based only on the written materials can lead to merely a superficial understanding. Furthermore, the 'relative stagnation', which is an ongoing process since the late 1980s, cannot be understood in full based on the literature which contains only outdated information. This further necessitates field studies and comprehensive interviews.

THE REORGANIZATION OF THE WORLD AUTO INDUSTRY

The Crisis in the U.S. Auto Industry

The world auto industry is in the midst of a process of radical reorganization since the mid 1970s. Japanese cars, which emerged in the world market during the recession of the 1970s, have demonstrated an overwhelming competitive edge, forcing the U.S. and European auto industry into a serious crisis which had engaged in a stable capital accumulation on the basis of mass production system.

The external factor which brought about the advance of the Japanese cars in the U.S. market—the single largest market—was the oil crises in the 1970s. The demand structure of the U.S. market since the 1970s changed rapidly favoring small-size cars which demonstrate high gas mileage. This reflected the effort to reduce maintenance cost in response to the gasoline price hike. However the U.S. automakers, whose production traditionally have centered around medium and large-size gas-guzzlers, failed to respond effectively to the change in the demand pattern. In other words, they did not possess technological capabilities to develop and produce competitive small-size cars in short period of time.

By the late 1970s, the total sales volume of the U.S. passenger car market declined continuously. However, the number and market share of imported cars, which were mainly small-size cars, increased rapidly. In 1980, the share of imported small cars was 26.7% of the total passenger car sales in the U.S. market. Japanese cars comprised the overwhelming portion of the imported car market, reaching 79.5%. This meant that the share of Japanese cars was 21.2% of the total passenger car sales in the U.S. market (MVMA, *Motor Vehicle: Facts & Figures*). The Japanese automakers were able to achieve massive exports to the U.S. by demonstrating extreme competitive edge in the small car segment based on rapid response to the changing demand patterns in the U.S. market.

The Emergence of New Production System

What is the basis of the competitive edge demonstrated by the Japanese cars? Unlike the cases of the U.S. and Europe, the development of the Japanese auto industry after the World War II was conditioned by extreme competition among the domestic automakers aiming the small and fractured domestic market. This particular pattern of development gave rise to a unique production system, different from mass production. It was a unique 'Japanese production system' geared not to mass production of a standard model but to 'production of multiple models in small quantities.' The following is a description of the major factors involved in the formation of the 'Japanese production system.'

The first factor is the participatory labor process established in the auto industry based on an enterprise level trade union system that resulted from the experience of intense labor disputes in the 1950s. Workers were able to become multi-skilled and obtain comprehensive knowledge of the production process through job rotations on the production line and systematic education provided by the management. This led to increased flexibility in the labor force.

Furthermore, the management was able to establish a cooperative labor-management relationship through voluntary participation of the workers in the labor process. This was based on the promotion of Quality Control (QC) movement and a system of workers' suggestions which led to the activation of discussion within the work group (Totsuka *et al.* 1991).

The second factor was the 'Just In Time' (JIT) production system which was formed on the basis of multi-layered structure of components suppliers. Japanese automakers undertook various measures to maintain the supply of low cost, quality components in small but stable quantities. This was done through arranging components suppliers in the vicinity of the assemblers, providing technological training, capital support, and sometimes joint investment. This laid the foundation of a long-term and stable relationship.

The automakers promoted the participation of the first level subcontracting suppliers in the early stages of product development. This was combined with a sustained financial and technological support to the suppliers. Under this system, the first level subcontracting suppliers were responsible for the maintenance of cooperative relationship with the second-level subcontracting suppliers while they in turn maintained a similar relationship with the third level subcontracting suppliers. This led to the establishment of a multi-layered cooperative relationship in the auto industry with the automaker at the center and at the leadership position. The parts and components supplied by subcontracting suppliers in the production of a Japanese automaker make more than 70% of the total make up of a car (Womack *et al.* 1990, p.38).

JIT designates the parts and components supply system based on the multi-layered cooperative relationship with the components makers. Through developing JIT, Japanese automakers accomplished the 'production of multiple models in small quantities.'

Another notable source of the Japanese competitive edge is the adaptation of Micro Electronics (ME), new materials and other high technology brought in by accelerated technological innovation since the mid 1970s. If the participatory labor process and multi-layered relationship with the components makers can be termed 'social relations' in the new production system, the high technology, such as ME, is a factor which directly affected the growth of the productive force.

The 'Japanese production system' established by the Japanese automakers in the 1960s through effective integration of the various aspects of production organizations, such as the labor relations and supplier relations, rapidly increased the productive force. Nevertheless, this 1960s' system was not so different from the mass production system in terms of technology.

Since the 1970s' oil crises, there existed a selective affinity between the Japanese production system and the new technology as a direct factor in the growth of productive force. This development led to the formation of 'a new production system' which had an overwhelming advantage over the mass production system.

The Formation of the International Division of Labour among Korea, the U.S. and Japan

The advance of Japanese cars in the U.S. market put the U.S. automakers in one of their worst crises. In response to the crisis, the U.S. automakers and the United Auto Workers (UAW) began to call strongly for a restriction on the import of the Japanese cars. In May 1981, the Japanese government, in response to the request of the U.S. government which in turn moved by its concern for the collapse of the U.S. auto industry, could not but implement Voluntary Export Restraint Agreement (VRA) which set a quota of Japanese cars exported to the U.S.. Therefore, from 1981, Japanese automakers could not expand its exports through free trade, but export a limited quantity based on the export figures in 1979 and 1980.

The external conditions for the rapid growth of the Korean auto industry was provided by VRA. In an effort to confront the Japanese cars the U.S. TNCs initiated a offshore-sourcing strategy of producing and obtaining the small cars from overseas production plants for a temporary period. Furthermore, the Japanese TNCs began to adopt a strategy of export through a detour. This laid the foundation of the international division of labor among the U.S. and Japanese auto TNCs and the automakers in NICs such as Brazil, Mexico, Taiwan, and Korea.

Then, what was the concrete process which resulted in the formation of the international division of labor among Korea, the U.S. and Japan? The internal production base for the rapid growth of the Korean auto industry in the mid and late 1980s is to be found in the process of heavy chemical industrialization in the 1970s. This process revealed two characteristics of the Korean auto industry, different from cases of other developing countries. The first is, the state's auto industry policy for the realization of 'economies of scale' has been pursued with a relative consistency. Secondly, in consequence, domestic automakers, rather than a TNC, were able to hold central position in the domestic auto industry.

However, the severity of the recession in the late 1970s was serious enough to raise critical doubts over the independent development of Korean auto industry which was pursued through domestic automakers on the basis of 'Long Term Auto Industry Promotion Plan.' Therefore, in the

early 1980s, various contrasting views were presented within the state apparatuses over the plan of reorganization of the auto industry. This process concluded in early 1981, when 'Measures for Rationalization of Auto Industry' was released by the government. By this measure enforced till 1987 the only two companies, Hyundai and Saehan, were allowed to produce passenger cars (Shin 1990, pp.192-198). The Ministry of Trade and Industry (MTI) indicated that this measure was aimed at promoting a system of oligopolistic competition between Korean vehicles produced by Hyundai and 'World Car' produced by Saehan (GM) in order to strengthen the international competitiveness of the Korean auto industry (Cha 1981, p. 84). By banning the participation of any other companies in the production of passenger cars, this measure provided the institutional condition for Hyundai and Saehan to achieve 'economies of scale.

What needs to be stressed, however, is that the direction of the development of Korean auto industry for the 1980s proposed by MTI following the announcement of 'Measures for Rationalization of Auto Industry' was oriented to the domestic market. In view of the lack of export competitiveness of the domestic auto industry, the MTI proposed that the domestic automakers should concentrate on technological improvement and on the establishment of 'economies of scale' based on the domestic market expansion, aided by reduced taxation. The MTI anticipated that the preparation in the 1980s through the above measures would enable the auto industry to move toward the export industrialization in the early 1990s (KIET 1982, pp.647-665).

In contrast to the state policy, the domestic automakers, however, responded more positively and actively to the ongoing changes in the international division of labor in the early 1980s. That is, they reacted actively to the TNCs' offshore-sourcing strategy of obtaining the small cars from overseas production, leading to the formation of an international division of labor involving Korea, the U.S. and Japan. According to this international division of labor, the domestic automakers began, in the early 1980s, a massive investment for the development and production of strategic export models leading to the build up of an export industry by the mid and late 1980s.

This was a clear articulation of the changing relationship between the state and the automakers. In the 1980s, the Korean automakers overcame, within its international division of labor, the limit of the state policy which was oriented to domestic market. They were able, on the basis of the concentrated investment support and managerial leadership of the *chaebol* groups to which they belonged, to develop the Korean auto industry into an

export industry. The achievement of export industry in the 1980s through the initiative of the private enterprise marks the difference between the auto industry in the 1980s and that in the 1970s and before in which the state policy was in the controlling position.

Despite the active response of the domestic automakers, the basic characteristic of the Korean auto industry in this period was the integration of domestic automakers into the offshore-sourcing strategy of the U.S. and Japanese TNCs to supply small cars from overseas production base. The domestic automakers lacked the technology to develop a strategic model for export and the production skills and capital necessary for mass production of the model. Therefore, the domestic automakers could not but heighten its dependence on TNCs through technology license and joint capital investment. In this process, the domestic automakers could not but allow the TNCs to gain sizeable royalties for technology, remittance of profit, and profit from the sales of components and production facilities, etc.

However, it must be noted that the domestic automakers, as a common characteristic, maintained an independence in management. The domestic automakers have, despite the burden of dependence in the process of building an export industry in the 1980s, was able to undertake independent technology development and financial capacity. This enabled them to develop and deepen the internal division of labor in the Korean economy and to improve their positions within the international division of labor to some degree. This phenomenon is not to be found in most developing countries where subsidiaries of TNCs make up their auto industries.

THE EXPORT INDUSTRIALIZATION OF KOREAN AUTO INDUSTRY (1980-1988)

Establishment of a Mass Production System

Let us now examine in detail the domestic production base of the Korean auto industry which enabled the export industrialization in the mid and late 1980s within the international division of labor among Korea, the U.S. and Japan.

1. Product and Process Technology

The domestic automakers solved the problem of technology necessary for export industrialization through joint capital investment and technology agreement with TNCs. The domestic automakers developed strategic export models through a combination of technology provided by TNCs and

independent research and development (R&D). They established typical mass production system by building production plants through imports or independent development of production facilities and machineries needed for the production. The strategic export models produced by the three domestic automakers in this period were products of mature technology developed for mass production, in response to the lack of supply of small cars in the U.S. market in the early 1980s. Furthermore, most production machinery equipped in the production plants for the production of strategic

TABLE 1. DEVELOPMENT OF STRATEGIC EXPORT MODELS AND PLANT BUILDING BY THE THREE DOMESTIC FINISHED CAR MAKERS

	HYUNDAI	KIA	DAEWOO
Product Model	1,300cc, 1,500cc X Car (Pony Excel) Styling by Ital Design Underbody based on Mirage model of Mitshubishi	1,100cc, 1,300cc Y Car (Pride) Festiva of Mazda	1,500cc, 1,600cc T Car (Leman) Kadett of Opel
International Division of Labor	Model developed by Hyundai; production and sales by Hyundai (technology cooperation by Mitshubishi, as well as some sales in U.S.)	Model developed by Mazda; Production by Kia; Sales in U.S. by Ford	Model developed by Opel; production by Daewoo; Sales in the U.S. by GM
Announcement of Contract	October, 1981	May, 1985	June, 1984
Model Development Cost	27.3 billion Won	50 billion Won	46 billion Won
Facility Investment	396.9 billion Won	260 billion Won	340 billion Won
Plant Building	Ulsan, 21 months (Jun. 1982- Feb.1985)	Sohari, 27 months (Dec. 1984- Feb. 1987)	Pupyong, 24 months (Jul. 1984-Jul.1986)
Production Scale (p.a.)	320,000 units	150,000 units	167,000 units
Export Plan	110,000 units	85,000 units	100,000 units

Source: Hyundai Motors, *Twenty Year History of Hyundai Motors, 1987;* Kia Industry, *45 Year History of Kia, 1989;* and other resources from related companies.

export models were specialized machineries appropriate for mass production of standardized products (Hyun 1988, p.140). The establishment of 'economies of scale' in production of strategic export models required specialized machinery capable of mass production of the specified components and finished product with speed and precision.

Such production plants built for strategic export models were critical in the establishment of 'economies of scale' by the automakers. In this process, the domestic automakers were able to absorb and digest the product and process technology in the auto industry which were highly dependent on TNCs before.

2. Labor-Management Relations

The establishment of the mass production system of strategic export models was based greatly on the long working hours by workers engaged in simple repetitive jobs in the domestic auto industry. As we have examined above, the auto industry is highly capital-intensive. However, at the same time, it is highly labor-intensive industry which requires concentrated labor of a large scale workforce. In other words, the direct and indirect physical labor of workers in auto industry played a central role in the mass production system established in the mid and late 1980s.

The labor process undertaken by the workforce in the production of autos manifests typical Fordist character. Workers of automakers, dependent on the conveyer belt, undertake standardized simple and repetitive labor which can be easily mastered. While the 'conception' of work is monopolized by the management, workers are made to carry out standardized simple and repetitive jobs (Kim 1988, pp.19-20).

The maintenance of the long working hours in simple and repetitive jobs in the Korean auto industry in the mid and late 1980s was not a product of effective labor management by the individual automakers. Rather, it was based on the labor control policy of the state, on its direct physical intervention and on oppressive social environment (KAMA 1990, p.21).

On average, the workers in the automakers are high school graduates or higher, in their 20s with less than five years continued employment. In an environment of simple and repetitive labor process within a mass production system, they have a tendency to possess a strong mutual identification and collectivization (Korea Labour Research Institute 1989). The fact that the workers of automakers make up the central part of the labor movement since 1987, may stem from this particular labor process in the auto industry.

To summarize, the simple and repetitive labor of the workers in the

automakers, whose wage level, in this period, were one-eighth of that of the U.S and one-seventh of that of Japan, was the prime contributor to the establishment of mass production system by the automakers. This was based on the decrease in the labor cost of car production and based on the rapid improvement in productivity resulting from division of labor, borne by the workforce.

3. Assembler-Supplier Relations

Another important factor in the achievement of mass production system for strategic export models was the assembler-supplier relations (MTI 1988). The support of domestic components suppliers by the assemblers and the technology sharing agreement and joint investment between the domestic components makers and overseas components makers deepened the internal division of labor in the Korean economy. In the mid 1980s the production of strategic export models led to temporary lowering of domestic content ratio in the finished cars. However, this trend was soon reversed, based on the deepening of internal division of labor between the assemblers and domestic suppliers (The Bank of Korea, *Input-output Tables*, each year). The increased domestic content in the finished cars resulted in lowering the material cost as well as an effective components supply. Therefore, this contributed to the establishment of mass production system by the automakers.

The continued increase in the number of components suppliers and in the total sales of components to the three automakers in the mid and late 1980s demonstrate clearly that the growth of the auto industry in the 1980s was founded on the growth of the components suppliers (KAMA, *Automobile Industry Yearbook*, each year). However, the components suppliers are engaged in strengthening a vertical dependent relationship with the automakers, rather than a horizontal relationship.

Building an Export Industry

In the mid and late 1980s, Korean auto industry became successful in building up an export industry with strategic export vehicles. As discussed above, this became possible through appropriate action on the part of the Korean automakers in the context of changes in the international division of labor. The automakers were able to achieve 'economies of scale' through mass production of strategic export models. The total number of passenger cars produced by the three automakers in 1988 were 865,685. Of this, 81.1%, 702,208 were strategic export models (Hyundai Motors Company, *Automobile Industry).*

TABLE 2. TRENDS IN EXPORT OF PASSENGER CARS BY REGIONS (Unit: cars, %)

	1986	1987	1988	1989	1990	1991 (first half)
North America	268,462 89.8%	473,918 88.5%	513,307 90.9%	277,226 79.8%	251,179 74.0%	100,327 61.5%
(U.S.)	203,579 68.1%	442,557 82.7%	480,017 85.0%	233,515 67.2%	195,926 57.7%	77,621 47.6%
Europe	10,623 3.6%	26,783 5.0%	19,462 3.4%	21,048 6.1%	20,814 6.1%	22,199 13.6%
USSR/Eastern Europe	—	—	—	3,015 0.9%	9,490 2.8%	11,274 6.9%
Asia/ Oceania	6,841 2.3%	13,510 2.5%	15,108 2.7%	34,730 10.0%	43,851 12.9%	20,113 12.3%
Middle East	8,606 2.9%	10,585 2.0%	7,736 1.4%	4,212 1.2%	4,814 1.4%	3,241 2.0%
Mid/South America	3,725 1.2%	8,711 1.6%	6,520 1.2%	5,087 1.5%	6,284 1.9%	3,369 2.1%
Africa	621 0.2%	1,724 0.3%	2,378 0.4%	1,955 0.6%	3,224 0.9%	2,544 1.6%
Total	298,878 100.0%	535,231 100.0%	564,511 100.0%	347,273 100.0%	339,656 100.0%	163,067 100.0%

Source: Hyundai Motors Company, *Automobile Industry*, 1991;
KAMA, *Automobile Statistics Monthly*, June 1991.

In the mid and late 1980s, Korean auto industry was able to obtain appropriate level of demand for the realization of 'economies of scale' from the rapid increase in export. A close look at the trends in the export of passenger cars reveals the following points. The total number of annual export of the three automakers, up until 1983, did not exceed 20,000 cars. However, the figure began to increase fast since 1984, marking an explosive growth in the mid and late 1980s. In 1988, the exported cars numbered 563, 978. This is a 40 times increase from the 1980 export figure which reached only 14,646 (KAMA, *Automobile Industry in Korea*). Table 2 shows clearly the overwhelming importance of North America as the main export market for the Korean automakers. Until 1988, North American market centering around the U.S. market, absorbed some 90% of the total Korean passenger car export, surpassing all other regions combined overwhelmingly.

What needs to be stressed is that the success of the Korean auto industry in export was achieved in the context of an external condition of a lack of

supplies of small cars in the U.S. market which is the largest car market in the world. Korean cars filled a gap in supply of some 1 million cars in the subcompact car (small car) sector of the U.S. market without a direct competition with Japanese cars. The main consumers of subcompact car are people in the lower income bracket with an annual income of about $ 30,000 or young people. In such an environment, Korean cars were able to approach this bracket of consumers with mimimum quality and low cost, demonstrating a strong competitiveness compared to the products of other NICs. The share of Korean cars in the U.S. market enjoyed a rapid increase.

In sum, the success of the Korean auto industry in the mid and late 1980s in builing up an export industry lies in the establishment of domestic production base (mass production system) taking active advantage of the changes in the international division of labor that followed the reorganization of the world auto industry. A scientific analysis of the success of the Korean auto industry in building up an export industry must, therefore, focus on the domestic production base (mass production system) established in the process of its reaction to the changes in international division of labor.

However, the mass production system of Korean auto industry contains special characteristics different from the mass production system of auto industries in the U.S. and other advanced countries. First, domestic automakers face the task of expanded reproduction while squeezed from 1) massive amount of royalty payment for the use of technology, 2) interest on loans, and 3) profit transfer in the sales of components, machinery and finished products to the TNCs. Therefore, domestic automakers have very narrow breathing space in the areas of reduction in the cost of production materials and of improvement in productivity. In such a context, cost of labor becomes the primary target for cost reduction. This led to the coercive labor control of the workers in the auto industry. Continued operation of production plants on the basis of extended excessive labor hours was, therefore, a part of the efforts to maximize the improvement of productivity. This is the greatest difference between the mass production system of Korean auto industry and the auto industry of the advanced countries whose mass production system was combined with mass consumption pattern of their workers. The mass production system of the Korean auto industry in the mid and late 1980s was, unlike the situation in the advanced countries, established on the basis of low wages and long working hours of the workers in an absence of an internal labor market.

Second, the lopsided relationship of dominance-dependence that exists between the domestic automakers and the components suppliers can be

explained in a similar way. In pursuit of reduction of material cost and improvement in productivity, the automakers transferred great portion of the parts and components production to sub-contractors whose production cost is lower due to their practice of providing lower wages to their workers. However, unlike in Japan, the assembler-supplier relations failed to develop into a multi-layered mutual relationship. This stems from the failure of automakers to undertake active effort to cultivate the technological capacity of the components suppliers with a long term perspective. Components suppliers are organized in a vertical relationship with the automakers, in a dependent position. Components suppliers are no more than production lines shifted out of the production plants of the automakers in order to reduce the production cost. The components suppliers that have been integrated into the internal division of labor of domestic automakers in the mid and late 1980s have failed to obtain independent capacity for the development of components. In such a condition, the components suppliers are engaged in a pursuit to reduce the cost of production through building 'economies of scale' based on facilities expansion.

KOREAN AUTO INDUSTRY IN TRANSITION PERIOD (1989-1992)

Slow Down in Export

The Korean auto industry faces, since the late 1980s, a different situation from the high growth in the mid and late 1980s. Passenger cars exports to the U.S., which enabled the high growth in the mid and late 1980s, began to decrease markedly since 1989. What are the reasons for this phenomenon?

Table 2 above reveals that the reduction in exports to the U.S. is greater than the overall reduction in the total exports. That is, although exports to regions other than the U.S. increased at a slow pace, the export to the U.S. decreased by more than half, leading to the total reduction in the export volume. The rapid decrease in the exports to the U.S. signifies a great change in the sales pattern of the Korean made cars. The rapid reduction in exports to the U.S. indicates that the motivating force which propelled the growth of the Korean auto industry is facing a crisis of imminent extinction.

However, the trend of 'motorization' in the domestic market which began in earnest since 1987, led to an increase in domestic demand. Therefore, the rapid decrease in the exports has not poised as a serious crisis for the Korean auto industry since the late 1980s. It is rather faced with a 'relative stagnation.' The growth in the Korean auto industry is led by domestic

demand.

However, this phenomenon cannot be regarded as a stable situation. A shortage of the social infrastructure, such as road network and transportation/traffic system combined with the increase in the number of cars in use may lead to serious traffic and pollution problems, causing a contraction in the domestic demand in the near future. Furthermore, import liberalization of Japanese cars, which for the moment is restricted by the state policy of diversifying the source of imports, and the expansion in the liberalization of retailing system may ensure a situation in which the domestic makers cannot continue to enjoy a monopoly in the domestic market. Even if the Korean made cars continue to experience an increase in sales volume in the domestic market, increase in export is vital for obtaining great quantity of foreign exchange needed for the import of facilities and components. From this perspective, export of vehicles in large numbers continues to be a central factor, regardless of the current status of crisis, in determining the future of the Korean auto industry.

What, then, is the reason for the current rapid decrease in exports to the U.S.? Will this trend continue in the future? Or is it a temporary phenomenon? In our effort to answer these questions, we must examine the changes in the domestic and international conditions which originially contributed to the export success of the Korean auto industry.

Some of the direct and cyclical factors in the slow down in exports to the U.S. are, decrease in the demand in the U.S. market, weakening of competitiveness in price due to increased value of Korean currency and wage increase, weakness in marketing capacity, etc. However, these factors are not sufficient to be regarded as the fundamental reasons for the decrease in the Korean car exports to the U.S. in the late-1980s. In other words, even if the demand in the U.S. market is improved, the value of Korean currency decreased, wage increases controlled, and marketing methods improved, it is difficult to expect that Korean automakers would be able to regain export volume of the mid and late 1980s.

What, then, is the fundamental reasons for the reduction in exports of the Korean auto industry since the late 1980s? The fundamental reasons for exports to the U.S. is related to the trend of changes in the international division of labor which followed the diffusion of new production system. As we have seen earlier, Japanese TNCs have competitively built production plants in the U.S. through direct investment in order to overcome the restraints brought in by VRA and increased value of Yen. These Japanese car production plants in the U.S. (so-called transplants) reached an annual production capacity of 2 million cars in the late 1980s.

This has led to a rapid increase in the sales of Japanese cars manufactured in the U.S. Furthermore, subcompact sector of cars make up more than two-thirds of Japanese cars manufactured in the U.S. (FOURIN 1991, p.70). The Japanese automakers have obtained a capacity to produce more than 1 million cars in subcompact sector from the production plants in the U.S. as a result of their direct investment in the U.S.

One of the major factors for the decrease in exports of Korean cars to the U.S. is found in the changed conditions in the U.S. market caused by the production of Japanese cars in their U.S. production plants. The short fall in the supply of Japanese small cars experienced in the mid and late 1980s, was resolved by the operation of the Japanese production plants in the U.S.. The Japanese automakers succeeded in transplating their competitive edge based on new production system into the U.S..

Therefore, the Korean automakers began to face a direct competition with the Japanese cars in the subcompact sector. This was a critical factor in sales reduction of Korean made cars in the U.S.. The Korean cars manufactured on the basis of mass production system could not vie with Japanese cars manufactured on the basis of new production system.

The success of Japanese automakers in transplanting their production plants into the U.S. diffused new production system rapidly on a world-wide scale. U.S. TNCs suffered a great deal due to the massive advance of Japanese cars in the U.S. through their local production plants. This made the U.S. TNCs change their world strategy based on the extension of mass production system. U.S. TNCs could not but curtail or abandon the earlier offshore-sourcing strategy which they had pursued on a large scale in the mid and late 1980s. This epitomized an overall failure of this strategy. The OEM (original equipment manufacturing) sales method which had originally shown relative success is also abandoned due to the recent poor performance. As a result, this has had an important impact on the reduction of Korean cars exports.

In response, the U.S. TNCs have taken new steps. They include: 1) production of small cars based on new production system, like the Saturn program; 2) increase in OEM supply from the U.S. production plants of the Japanese automakers or subsidiaries in Mexico. Both of these two methods adopt a closer distance between the production base and the market enabling an immediate and sensitive response to changing demand patterns in the U.S. market. Furthermore, the second method is considerably different from the original offshore-sourcing strategy in that it is based on the supply of final products produced through an international division of labor within the same region based on new production system (KAMA

1989; FOURIN 1990, p.33). Belatedly, the U.S. TNCs began to undertake new efforts to adopt the new production system.

As discussed above, the changes in the demand and supply structure in the U.S. market based on the diffusion of the new production system since the late 1980s and the change in the offshore-sourcing strategy of U.S. TNCs are the structural causes for the reduction of Korean cars exports to the U.S. Given this, such cyclical factors as the reduction in demand in the U.S. market, and such domestic factors as increase in the value of Korean currency or wage increase, do not sufficiently explain the decrease in Korean cars exports to the U.S.

In such a situation of rapid changes in the world auto industry, the domestic automakers face serious structural limits domestically which would make it difficult even to maintain the mass production system of the mid and late 1980s. This limit is found in the lack of ability on the part of the domestic automakers to absorb and regulate the labor movement which has developed in earnest since 1987. Up until 1987, Korean auto workers produced low cost cars in relatively high productivity and quality based on relatively low wages and long working hours, playing a critical role in the export success of the Korean auto industry. However, workers of automakers and components makers, who have began to assert their rights through trade unions and massive labor disputes since 1987, have began to resist meek submittance to the mass production system based on coercive labor control.

Such an instability in the labor-management relations has brought not only simple disruption in production, but serious decrease in productivity. With the exception of Kia, which has succeeded in achieving a stable labor-management relations compared to other makers, Hyundai and Daewoo have, since 1987, suffered marked decrease in production of cars per worker (Kia Economic Research Institute 1990a, p.41). Such a decreasing trend in productivity is a notable phenomenon, given that rapid wage increase has continued in the same period. Furthermore, repeated labor disputes in the components makers has reversed a trend up to 1987 reducing stock of components, leading to a decrease in productivity. Prior to 1987, stock reached a level where general components held in stock mounted to only 2 days' need and 'ordering' components only 2 hours. However, since 1987, maximum of 1 month's needs of components which are produced by companies prone to labor dispute were held in stock causing decrease in the efficiency in stock management (Interview with K, Hyundai Motors Company, Sept. 21, 1990).

The unstable labor-management relations has also resulted in a serious

fall in the quality of Korean made cars. Relaxed job attitude of workers in the context of a lack of quality control skills of the domestic automakers led to a problem of deficient quality products in the export market (Hyun 1991, pp. 16-17). Due to such a deterioration in the quality of Korean made cars American consumers have come to favor Japanese cars despite 15-20% price difference.

Despite the maintenance of competitiveness in price, the Korean made cars suffered a weakening of export competitiveness due to disruption in production, decrease in productivity, and deficient quality. Such a situation is inevitable in the context of unstable labor-management relations. Furthermore, the unstable labor-management relations suffered by the Korean auto industry in the context of world-wide diffusion of the new production system has a critical impact on the export competitiveness.

The Response of the Korean Auto Industry

As we have seen, the slow down in exports in the late 1980s was closely related to the trend of reorganization of the world auto industry based on the expansion of the new production system. Therefore, the future of the Korean auto industry depends largely on how it would be able to absorb the new production system. How innovative or effective is, then, the strategy adopted by the domestic automakers in response to the new production system?

1. Product and Process Technology

The domestic automakers are exerting a concentrated effort in research and development for the development of a variety of strategic export model and for factory automation. The automakers are combining technology imports and independent development of technology to develop variety of model with use of high technology (*Han-Kyoreh Shinmun*, Sept. 28, 1991; *Joongang Economic Daily*, Feb. 28; Oct. 12, 1991; FOURIN 1990). They are also pursuing a high level factory automation through investment in facilities which are capable of 'small quanitity production of multiple models.' This process has led to a rapid improvement in the technological capacity of the domestic automakers. However, they continue to fall far behind technological capacity for rapid development of new models with application of high technology, compared to the U.S. and Japanese TNCs. Furthermore, factory automation, which is aimed at realizing Flexible Manufacturing System (FMS), is still limited to mass production of a single model.

2. Labor-Management Relations

The domestic automakers have obtained a capacity to withstand considerable wage increase without too great an impact on the management through their achievement of 'economy of scale' (KAMA 1990a). This signifies a change in the conditions surrounding the domestic automakers which had previously found the labor cost being the primary target for cost reduction due to the burden of their dependence on foreign TNCs. The domestic automakers are attempting to stabilize the labor-management relations through wage increases and support for cooperative trade unions, and through bureaucratic control. However, they continue to lack a strategy for labor management aimed at increasing work incentive and easing the alienation experienced by workers in the process of simple repetitive jobs in the mass production system. In such a situation, labor-management relations in automakers is still caught in a cyclical confrontation.

3. Assembler-Supplier Relations

The domestic automakers have exerted extended effort for the independent development of unique engines and strengthened technological and financial support for the components makers (*Hankook Economic Daily*, Feb. 14, 1991). Furthermore, the practice of unilateral determination of the substance of the contracts with components makers have gradually improved as the automakers have come to realize the need to respect the rights of the components makers in order to secure stable supply of components. However, the strategy of diversification of suppliers has led to the formation of horizontal relationship between the assembler and components suppliers which is detrimental to the development of multi-layered structure among the suppliers (*Business Korea*, Feb. 1989). Therefore, the assembler-supplier relations continue to be set in the mode of mass production system.

Prospects

The effort to restore the export competitiveness in response to the full-fledged reorganization of the world auto industry based on a world-wide diffusion of new production system calls for a transition to a new production system which is qualitatively different from the mass production system of the mid and late 1980s. However, the domestic automakers are engaged in an effort which cannot be regarded as an active adoption of a new production system. Rather, they are concentrating in reorganization of the existing mass production system which can, in the short term, maximize

the effect of 'economies of scale', aiming to restore export competitiveness.

The failure to appreciate the seriousness of the crisis which the auto industry faces appears to be the reason for this kind of responses. This is caused by the situation where the increase in the sales in the domestic market and the diversification of export markets have supplemented, to some degree, the decrease in exports to the U.S. market. Given such a situation, the domestic automakers have not felt the urgency to adopt the new production system.

However, it is clear that sales in the domestic market and exports to peripheral markets, such as Asia and Eastern Europe, cannot continue to increase in the long run in the context of weakening export competitiveness in the markets of advanced countries such as the U.S. and Japan. The insistence on maintaining the mass production system while the new production system is diffusing world-wide, may even lead to a reduction in the existing market position. Although the continued efforts of the domestic automakers to reorganize the existing mass production system, combined with delay in the adoption of the new production system may bring temporary growth, it will eventually face a serious limitation in its growth.

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