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Trend of International Reorganization Affecting the Japanese Automobile and Auto Parts Industries

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Contents

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Summary

1. Demand for automobiles in Japan has matured and sales volume has leveled off in the long term. Stiff competition and the preference for smaller cars have increased the share of low-priced cars. These factors, coupled with increasing development costs, have adversely affected the profits of automobile manufacturers.

2. In contrast with the buoyant economies in the U.S. and Europe, the sluggish economy in Japan has made conditions difficult. The Japanese automobile industry has responded by forming capital alliances with foreign companies in particular, as well as in-house restructuring. These strategic alliances are part of a trend toward business portfolio reorganization through complementary relationships, involving three aspects: car type, sales area and strategic technology (environment, safety, information). Most of the recent strategic alliances in Japan have also been flexible and partial, with a degree of autonomy.

3. U.S. and other foreign auto makers have changed their purchasing strategies toward outsourcing to take advantage of the labor cost differential with parts manufacturers. Meanwhile, Japanese car makers are increasingly moving away from their affiliated suppliers and procuring more from overseas, and have been adjusting their capital relationships with parts manufacturers. The transformation has been faster for companies affiliated with auto makers that have accepted foreign capital. Moreover, information technology may encourage reorganization of procurement and sales in the automobile industry.

4. In the auto parts industry, mega-suppliers have been formed in the U.S. and Europe through spin-offs of parts-manufacturing departments and M&A, and the sales of many of these suppliers exceed one trillion yen. In contrast, the sales of most major Japanese parts makers are around several hundred billion yen. Our survey of Japanese parts makers suggests that this difference in sales might make Japanese manufacturers less competitive than foreign ones, and hence lose out due to the weakened relationships between affiliated companies in the domestic market. There are concerns that American and European manufacturers will dominate the world market as competition and modularization intensify and technological development costs rise.

5. However, a closer look at the industry suggests that although American and European mega-suppliers are ranked top for many products, many specialized parts makers remain strong in specific fields. Japanese manufacturers are ranked highly for products such as power steering, air-conditioners, wiring harnesses, lamps, meters, fuel injection systems, air bags and piston rings. In general, the top three companies have a considerable share of the world market for individual components, and the oligopoly has increased for many products due to the recent international reorganization.

6. By product, reorganization in the car seat market in the U.S. and Europe has led to global operation in areas of consumption and expansion of business into interior equipment in general. Instrument panels, which are bulky and fragile, also need to be produced in consumption areas, but the market for this product is less oligopolistic than for other products due to the difficulty in generalizing its use and rationalizing installation work. Oligopoly has increased for brakes, a major safety device, following large-scale reorganization. As regards air bags, acquisitions of inflater manufacturers have progressed as safety standards have become more strict. The fuel injection industry, a capital intensive industry, is highly oligopolistic and the technology has changed due to environmental issues. Japanese manufacturers are strong in power steering, which is currently shifting toward electric operation. The production of wiring harnesses, which is labor-intensive, has been shifted to developing countries. Global operations are necessary for air-conditioners to ensure production near consumption areas. Japanese manufacturers are strong in technologies related to downsizing and precision processing for air conditioners. Reorganization has progressed for pistons and piston rings to integrate the two components in the design, as well as in oil seals and engine gaskets for supplying the two components as a package. In lamps, capital intensiveness has constituted a barrier to entry. However, the traditional Japanese practice of placing orders with affiliated suppliers is changing. Price competition in shock absorbers has intensified as related technologies have matured. The clutch market is highly oligopolistic with the advent of automatic transmission, and some manufacturers have already retreated. Thus, the competition varies widely according to the characteristics of individual products, making it difficult to discuss the current status of the car parts industry as a whole. Nevertheless, the following observations can be made.

7. In general, the Japanese auto makers highly evaluate domestic parts suppliers in terms of product quality and timely delivery, and are not entirely satisfied with the product quality of European and American mega-suppliers despite lower prices. In particular, they are reluctant to accept suggestions for modularization mainly due to concerns about losing technological expertise. However, Japanese car-makers admit the supremacy of American and European parts manufacturers in conducting basic development work and creating ideas. The difference in scale may cause a difference in competitiveness in the future.

8. Introduction of foreign capital and alliances between domestic companies have occurred in the Japanese auto parts industry, and such strategic alliances allow faster development than autonomous development. Among strategic alliances, the disclosure of secret information between partners is more limited in business tie-ups as compared with M&A, but such tie-ups are more appropriate to the Japanese corporate culture and provides more options.

9. Although modularization has not developed much in the domestic market, it will likely be required when supplying auto parts to foreign manufacturers or to overseas production facilities of Japanese auto makers, and Japanese parts manufacturers should be prepared for this eventuality. Their response has been bipolarized: some manufacturers have expanded to become primary suppliers while others have specialized to become secondary suppliers. Primary suppliers have greater sales opportunities but face increased risks in quality guarantee and investment; secondary suppliers can concentrate on core businesses but could be eliminated by competitors unless they fully utilize their strengths.

10. As the Japanese market matures, the long-term business relationships that have sustained product quality are giving way to an emphasis on lower costs, market principles and ad-hoc contracts. In view of the structural changes now underway, manufacturers must quickly enhance their advantages and reduce their weaknesses, but there is no simple solution. Individual companies will have to make their own choices, including whether to form strategic alliances, according to their situation.

I International Reorganization in the Automobile Industry

1. Stagnant Automobile Demand and Deteriorating Business Conditions

1.1 Long-term trend of automobile demand

Automobile production in Japan has been falling since the economic bubble burst. It stood at 9.97 million vehicles in fiscal 1998, just 70% of that in fiscal 1990 (13.59 million vehicles), and failing to reach the 10 million mark for the first time in 20 years since 1978. Production is expected to remain low in fiscal 1999.

Domestic sales have been falling due to recession since the peak of 7.8 million vehicles in fiscal 1990. Exceptional movements include the increase in truck sales in fiscal 1994 due to the tightening of rules against overloading and the eleventh-hour demand in fiscal 1996 before the consumption tax hike in April 1997, while sales of recreational vehicles have remained buoyant. Subsequently, however, domestic sales have declined due to sluggish personal consumption and capital investment: sales were 5.87 million vehicles in fiscal 1998, down 6.5% on the previous year and falling below the 6 million mark for the first time in 12 years since fiscal 1986.

By type of vehicle, domestic sales of mini automobiles in fiscal 1998 increased 20.5% on the previous year to 1.05 million vehicles as new models with greater safety and comfort were marketed at relatively low prices following the introduction of new standards in October 1998, the first time that sales of mini automobiles have topped 1 million vehicles. However, the outlook is bleak for standard automobiles: sales of high-end automobiles were particularly poor, amounting to only 0.74 million vehicles (down 9.1% from the previous year) as consumers opted for cheaper cars. Sales did not pick up either for small automobiles (2.36 million vehicles, down 6.0%) and for trucks and buses (1.72 million vehicles, down 17.4%). Sales for fiscal 1999 are expected to remain under 6 million vehicles as the demand for mini automobiles slows in the latter half of the year.

Exports are declining after peaking in fiscal 1985 (6.85 million vehicles) due to the expansion of production capacity overseas. In the early 1990s in particular, automobile exports plummeted as the American and European markets shrank. Although they picked up slightly in fiscal 1996-97 as the yen weakened and no major plants were established overseas, exports slid further in fiscal 1998 to 4.52 million vehicles due to the Asian economic crisis. This is the lowest level since fiscal 1993-94 and corresponds to the level recorded in fiscal 1976-77. Fiscal 1999 is expected to see a further decline in exports mainly due to the continuing yen appreciation.

Due to the yen appreciation since 1985, overseas production has grown based on four core regions: Japan, the U.S., Europe and Asia. Overseas production peaked in 1997 at 6.33 million vehicles, then fell back 7.2% in fiscal 1998 to 5.87 million vehicles mainly due to reduced production in Asia — the first decline since overseas production took off.

As the Japanese automobile market continues to falter, the 11 domestic manufacturers are competing fiercely with numerous foreign automobile makers for market share.

1.2 Mature demand

Despite their high prices, automobiles remain popular and selection is highly personal. Thus, although consumers take time when buying an automobile, they may replace it before the car reaches the end of its useful life.

Japan is the second largest car-owning country in the world, next only to the United States. The number of cars per person in Japan has reached 0.56, surpassing the level of the United Kingdom and Germany, but the number is unlikely to increase to the level of the U.S. (0.78), a much larger country.

Almost 80% of households now own a car. Furthermore, the percentage of households owning two or more cars exceeds 30%, and decreased for the first time in 1997. By income bracket, the car-owning percentage in the high-income households, which has led automobile consumption, leveled off in 1997, and furthermore, multiple car-ownership declined. As the younger population shrinks due to the falling birth rate, car demand in Japan will increasingly depend on replacement demand, as is already the case in other developed countries.

Recently, sales volume and unit price have remained low as employment conditions and income prospects have worsened due to the prolonged recession. The diversification of personal values has diminished the role of automobiles as a status symbol: more consumers consider them as mere commodities and do not replace them quickly, considering that older cars will suffice for short drives. Indeed, total travelling distance has leveled off. Moreover, cars have become less vulnerable to shocks largely due to improved quality. According to the Automobile Inspection and Registration Association, the average age of automobiles had risen to 5.6 years at the end of fiscal 1998.

The "Survey on Passenger Vehicle Market Trends" and other statistics indicate that the life of old cars previously owned by new car buyers (i.e. replacement cycle) has also become longer. This trend is particularly marked for mini automobiles, which are mostly used for daily life.

As regards the age of automobiles, those used for seven or more years now account for more than 40% of the total, and a high 23% of automobiles are used for nine or more years.

In light of this mature demand, domestic auto sales in Japan will mainly come from replacement demand and therefore are not likely to grow substantially in the future.

1.3 Worsening profitability

Numerous manufacturers with overcapacity are struggling to increase share, while consumers are opting for cheaper cars. The main growth markets are the developing countries as in Asia (India and China in particular), where demand will be for small cars due to affordability. Demand for small cars is also rising in environmentally-conscious countries in Europe. Thus, the unit price of automobiles will remain low. Light automobiles and certain models of small passenger cars, with excellent cost-performance and improved functions, are now popular not only with first-time buyers but also experienced consumers. Manufacturers of finished cars must therefore ensure profitability in small cars.

Car manufacturers will also have to step up R&D and capital spending on technologies related to the environment, safety and information. However, the higher costs of developing strategic technologies coupled with the decline in unit sales price makes it more difficult for car makers to secure profits.

To improve investment efficiency, finished auto makers are working to universalize platforms and parts and to pursue scale merits by forming "world strategic automobile" initiatives. Such strategies, however, may result in homogeneous products that do not attract consumers due to lack of differentiation.

In view of the deteriorating business environment, automobile manufacturers have recently embarked on strategic alliances to innovate and rebuild their business portfolio.

2. Developments in International Reorganization in the Automobile Industry

2.1 Difference of economic environment between Japan, the U.S. and Europe

The enormous U.S. car market was controlled by the Big 3 until the 1980s, when cheap, high-performance small cars made in Japan began to capture a substantial share. In response, the U.S. auto manufacturers started major reorganization in the late 1980s, based on detailed studies of

Japanese manufacturers as benchmark cases.

The U.S. economy has expanded since bottoming out in 1991, and is now enjoying robust growth. New car sales in 1999 increased 9% on the previous year to 16.96 million vehicles, boosting the cash reserves of manufacturers. As share prices have risen, M&As have increased rapidly since the late 1990s through stock swaps and other methods.

In Europe, car manufacturers firmly kept their distinctive brands under a fixed hierarchy. In general, car makers in northern Europe specialized in larger high-end cars while those in southern Europe were mostly family-owned SMEs producing smaller vehicles. The production systems of individual manufacturers remained within national boundaries.

With the recession in the early 1990s, European manufacturers undertook substantial restructuring, and following monetary union, the European Commission is trying to reduce the price differential among EU members for same types of cars. And other major changes are taking place. For example, the transition of East European states to market-based economies has not only enlarged peripheral markets but also provided a cheap, high-quality labor force for European companies. European auto parts makers are small and traditionally have expensive production structures with high personnel costs due to strong labor unions. Companies that cannot cope with such changes have been taken over by U.S. and other suppliers to increase their global presence.

Backed by the buoyant economy, new car sales in 18 European countries (15 EU members plus Norway, Switzerland and Iceland) rose 5% on the previous year in 1999 to 15.07 million vehicles, exceeding the 15 million mark for the first time. This represents the sixth consecutive annual increase in new car sales (with record sales for the last two years).

In Japan, automobile makers have restructured through consolidation of production lines, plant closure, asset disposal and personnel cutbacks to cope with stagnant demand and deteriorating economy, and some companies have even formed capital and business alliances with foreign companies.

2.2 M&A development among Japanese companies

International reorganization is progressing worldwide, and M&A has become an important means of maintaining corporate vitality and growth. Whereas money has accumulated in American and European companies, stock prices in Japan remain low, and foreign companies are rumored to be seeking to acquire Japanese firms at rock-bottom prices.

The number of M&As involving Japanese companies declined temporarily after the collapse of the bubble economy but has resumed recently, surpassing the level reached during the bubble economy to a record 1,169 cases in 1999.

Looking at the parties involved in M&As, most of the increase has come from M&As between Japanese companies (In-In). However, M&As of foreign companies by Japanese firms (In-Out) have declined since the bubble while M&As of Japanese companies by foreign firms (Out-In) have increased every year. The increase in Out-In M&As also applies to the transport equipment industry as a whole.

According to the Bowles Hollowell Conner, the M&A department of First Union, the number of M&As in the auto parts industry worldwide increased from 32 cases ($2.5 billion) in the first quarter of 1998 to 82 cases ($13.7 billion) in the first quarter of 1999. The rise is largely attributable to the increase in large-scale M&As such as the acquisition of Lucas Varity by TRW ($6.5 billion).

These developments may be partially explained by the creation of support systems, such as the establishment by a foreign investment bank of a specialist team for M&As in Japan.

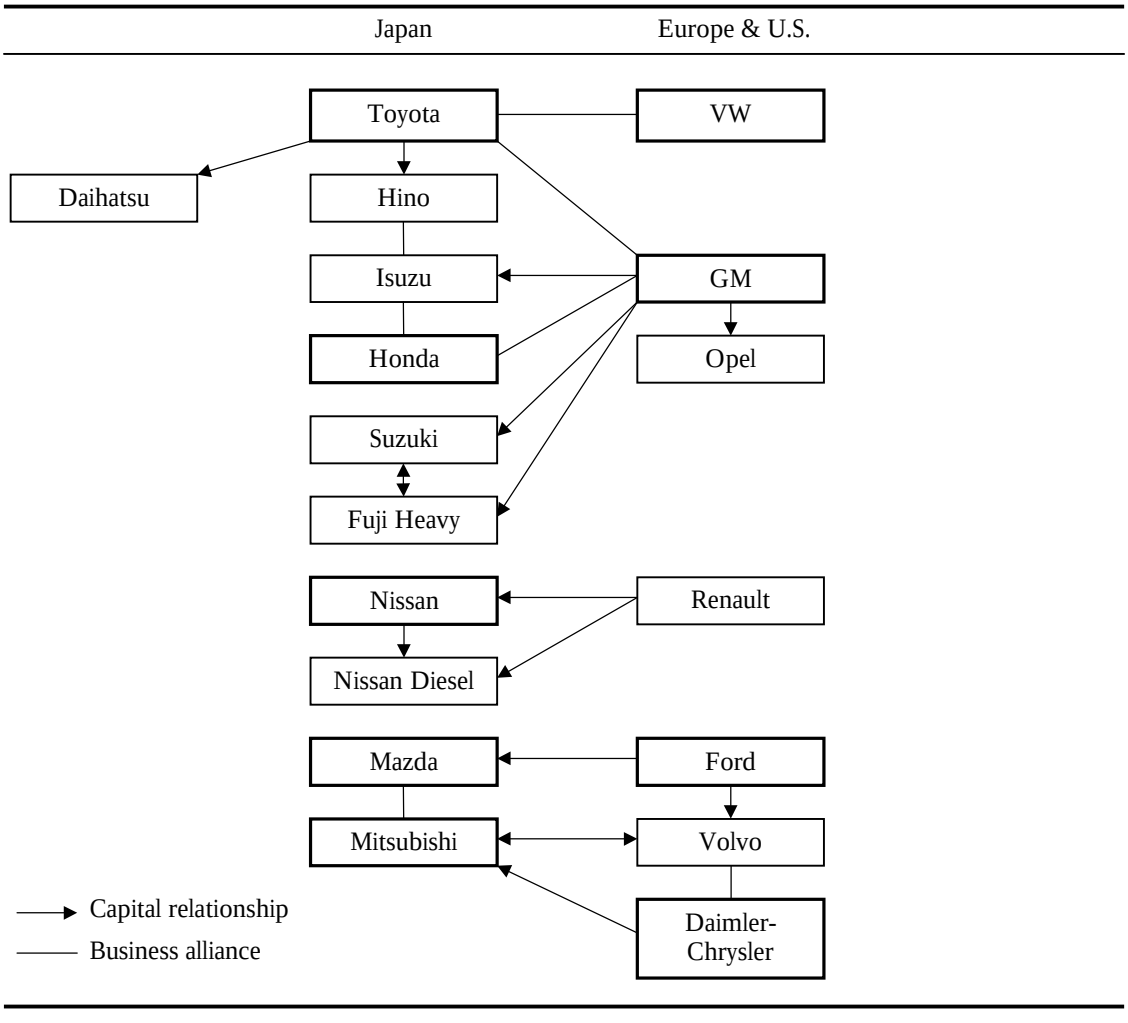
Recent M&As are different in character than those conducted in the 1980s as part of the

money game: most of them are intended to reinforce core businesses or for divestment of non-core businesses.

2.3 Reconstruction of business portfolio

As shown by the capital participation of Renault in Nissan, the Japanese automobile industry has been undergoing successive reorganizations; current strategic alliances are shown in Figure 1-1. The list, although complex, only includes major relationships involving Japanese auto makers, but actual relations are actually much more complicated as many alliances are not disclosed.

Figure 1-1. Major Strategic Alliances Involving Japanese Automobile Manufacturers



Most of the recent strategic alliances in the automobile industry are intended to achieve "mutual complementarity" through rebuilding the company's business portfolio, thereby expanding vertically (expansion of auto types) and horizontally (area composition) and developing strategic technologies. As regards vehicle types, the alliances allow a mix of multiple products and brands to be marketed, such as high-end and popular cars, sedans and recreational vehicles, thus overcoming fluctuations in popularity among different types of vehicles. As regards marketing areas, the alliances reduce the risk of local economic fluctuations in ways such as making profits in the U.S. when the Japanese economy is down and selling more in Europe when

the U.S. economy falters. In addition, automobile manufacturers are being forced to acquire technologies related to the environment, safety and information in order to survive. Strategic alliances also help share investment risk and improve investment efficiency.

2.4 Complementation of vehicle types (vertical alliances)

The first aspect of complementation concerns the types of vehicles.

During the period of rapid economic growth when full product ranges were effective, individual manufacturers tried to increase product variety on their own. Recently, however, the effect of introducing new models has become short-lived as demand has become more volatile and consumer preferences for design and performance have changed. Automobile makers must therefore identify the short-term needs of consumers when creating new products. However, individual manufacturers cannot offer a full product range under the current economic conditions because this would require exorbitant investment in development, production and sales. Indeed, the performance of some companies with a full product range has deteriorated. In contrast, American and European companies have concentrated managerial resources on their core businesses while adding other vehicle types through M&A.

The merger between Daimler and Chrysler is a good example. High-end passenger vehicles, large trucks and vans for commercial use produced by Daimler-Benz are complemented by Chrysler's main products: popular passenger cars and small trucks. Daimler-Chrysler's investment in Mitsubishi will add mini automobiles and other compact vehicles to its product portfolio.

Also, Suzuki, which is highly cost-competitive in mini automobiles, Isuzu (trucks) and Fuji Heavy (AWD: All-Wheel Drive) are now partially owned by GM, which is strong in medium and large passenger cars. In terms of environmental protection and progress in motorization in developing countries, mini automobiles are an important strategic product due to their low fuel consumption and price. Following GM's investment in Fuji Heavy, Suzuki and Fuji Heavy entered into a capital alliance to eliminate duplication in mini automobile development.

Renault's product portfolio mainly consists of small vehicles of 1,200 to 1,300cc while Nissan has a full product range from high-end cars to small cars of 1,000cc, and this match was one incentive for capital participation.

2.5 Complementation of marketing areas (horizontal alliances)

The second aspect of complementation concerns marketing areas.

Thus far, manufacturers have gone global independently, but starting a business overseas from scratch involves significant risks as well as time and costs. The fastest way to expand sales areas is through acquisition, by which existing sales channels of the bought companies can also be acquired. This is an effective way of gaining access to emerging markets in Asia, East Europe and Latin America as well as reducing the risks of foreign exchange and economic fluctuations.

Japanese automobile makers have established strong business bases in Asia, for Asian countries tended to restrict imports of finished cars to promote their own national models. Local operation through plant transfers and technical guidance has given the Japanese manufacturers an overwhelming share in the Asian car market, and it is this solid sales base established by Japanese companies in Asia that is particularly attractive to European and American manufacturers seeking access to this growth market.

For instance, GM, with solid bases in North America and Europe, has increased its ownership in Suzuki and Isuzu, both of which are strong in the Asian market, and invested in Fuji Heavy, thereby acquiring strong bases in Asia. Suzuki has good experience in developing countries including India, China and Hungary. GM also plans to market strategic models for Asia under its own brand name through the sales channels of Suzuki and Fuji Heavy.

Renault sold off its sales branches in the U.S. when it experienced financial difficulties, and the company did not have bases in Asia, either. On the other hand, the U.S. market is very difficult to enter due to strict exhaust gas regulations. Nissan was therefore an ideal partner for Renault for area complementation, because the Japanese manufacturer has plants and sales establishments in both the U.S. and Asia.

Similarly, the merger between Daimler-Benz and Chrysler was convenient as the former has bases in Europe while the latter is based in the U.S. Furthermore, having invested in Mitsubishi, Daimler-Chrysler can now utilize its sales channels in Asia.

2.6 Complementation of strategic technologies

The third aspect of complementation concerns strategic technologies.

Investment costs will rise further as technologies related to the environment (low-pollution vehicles including fuel cell cars), safety (tighter safety regulations in various countries and requirements as standard equipment) and information (ITS: Intelligent Transport Systems) progress. Recent alliances are intended to reduce this investment burden by combined efforts. Environmental standards in Europe, already strict, are likely to converge toward German standards or other highest standards in the region as market integration proceeds.

In this context, mergers have enabled Chrysler to utilize the leading technologies of Daimler-Benz for fuel cell cars and the low fuel consumption of diesel, while Mitsubishi is strong in low fuel consumption gasoline engines.

Similarly, GM increased its investment in the diesel-oriented Isuzu to improve its development and production systems for diesel engines which emit relatively low amounts of CO_2. Having been forced to abandon its unprofitable passenger car department, Isuzu will specialize in diesel engines under the guidance of GM. Also, Isuzu and Honda are combining forces, with Isuzu supplying low fuel consumption diesel engines to Honda, and Honda providing low pollution gasoline engines for GM.

For Fuji Heavy, environmental technologies would be too expensive to develop without a partner. The company will provide the GM group with AWD and CVT technologies in exchange for investment from this world-leading car manufacturer with huge financial resources. Demand for AWD vehicles is expected to rise in Europe and the U.S., and related technologies will be useful in Asia where there are many swamped roads.

Renault has found it difficult to meet stricter environmental regulations on its own, and so one purpose of investing in Nissan is said to be to acquire leading next-generation environmental technologies developed by the Japanese company, including catalysts.

2.7 Direction of technological development and orientation of strategic alliances

The future direction of environmental technologies is still unclear. Fuel cells are still very expensive, on the order of several million yen, and it is not certain whether the price can be reduced to an acceptable level as the next-generation power source, or whether gasoline engines and other internal combustion systems will remain dominant due to existing infrastructure restrictions. At the 1999 Frankfurt Motor Show, diesel engine vehicles attracted attention as environmentally sound cars, but it is still not clear whether environmental protection efforts in the coming decades will focus on diesel and other internal combustion engines or electric vehicles or hybrid cars.

Fuel cell vehicles derive electric energy from chemical reactions between hydrogen and oxygen to produce water, and this energy supplies power to the motor. Some argue that fuel cell vehicles are the most promising for next-generation automobiles as they emit only water (and trace carbon dioxide in the case of methanol reforming models). However, the development of

such revolutionary automobiles requires companies to work together to share the inherent risk. In the field of fuel cell vehicles, Daimler-Chrysler has already linked up with Ballard Power Systems, a Canadian venture company with numerous key patents, and intends to start a joint development project with Ford. Elsewhere, Toyota has been working with GM. The two corporate groups are battling for leadership in establishing de facto standards. According to a press release of Ballard and Daimler-Chrysler, however, the percentage of fuel cell vehicles in 2020 is estimated to be 25% at most, and maybe even as low as 5% (Nikkei Sangyo Shimbun Nov. 30, 1999).

Given the uncertain direction of future technological development, auto makers should perhaps retain autonomy rather than fixing partners through M&A involving capital. Makers could choose to build a loose network of alliances with different partners in different fields to ensure a flexible response to future technological innovations. As regards fuel cells, a company could maintain relations to enable it to use technologies developed by other companies, rather than commit itself to risky independent development.

Although some argue that only the "4 million sales club" will survive, Prof. Fujimoto of Tokyo University estimates that the minimum optimal production scale in the car industry is 200,000 to 300,000 vehicles. Consumer preference for automobiles differs significantly between geographical areas, and mass production of homogeneous vehicles for everyone does not necessarily bring success. It may be more effective to market differentiated products under original brands to promote long-term product recognition.

3. Changes in Purchasing Policy

3.1 U.S. and European manufacturers

By continuously improving production systems, Japanese auto makers became a serious threat to U.S. and European manufacturers in the 1980s. The U.S. manufacturers in particular undertook substantial reforms from the late 1980s through the early 1990s, based on detailed studies on the efficiency of Japanese systems including *keiretsu* and just-in-time delivery.

The U.S. auto manufacturers focused on the high ratio of outside orders, and decided that they could reduce procurement costs and improve investment efficiency by contracting out the production of parts traditionally manufactured in-house to take advantage of the labor cost differential between auto makers and parts manufacturers. Thus, downsizing and outsourcing were their solutions.

Also, U.S. automobile manufacturers introduced a Japanese-type pyramid structure in their relationships with parts suppliers, limiting their direct business partners to a smaller number of primary suppliers. The primary suppliers thus selected were given more business as well as responsibility under long-term contracts, while secondary and tertiary suppliers were positioned below the primary suppliers.

In addition, the number of auto parts has been reduced by integration of platforms, common use of parts and modularization. Modularization and other breakthroughs are particularly necessary in Europe, where profits are becoming elusive as demand shifts toward smaller cars. There is no established definition for modularization, but the term usually refers to the delivery of parts from suppliers to auto manufacturers in the form of partially assembled units (modules). Systemization refers to the delivery of parts in the form of functionally integrated units, with parts suppliers assuming responsibility for design and development as well as assembly.

Car manufacturers aim at "worldwide purchasing", which is to optimize global procurement

through bulk purchasing from the best suppliers transnationally.

In the United States, in-house parts manufacturing departments of car makers have been spun off as part of the outsourcing efforts, and Delphi and Visteon were created in this process.

GM spun off Delphi when restructuring its production system. Delphi has consolidated its own production system through repeated disposal and acquisition of businesses to become the world's leading auto parts manufacturer dealing in a wide range of products including brakes, suspension systems and electrical equipment. Following its IPO, the company is now planning to reduce its sales dependence on GM's North American Business to become a fully independent parts manufacturer.

Ford also spun off its in-house parts production department to create Visteon. In addition to air-conditioners and electronic parts, Visteon is expanding through acquisition, and plans to reduce its sales dependence on Ford.

3.2 Japanese automobile makers

With the resumption of the yen appreciation in 1999, the Japanese finished automobile manufacturers are being forced to review their production systems on a global level. Procurement has been overhauled to optimize global purchasing, and transactions with unaffiliated suppliers have become common as has the adoption of foreign parts. Some companies are reviewing their capital relationships with parts suppliers, while drastic reforms have taken place at companies affiliated with car manufacturers that received foreign capital.

Under its "Revival Plan", Nissan is overhauling relations with its parts suppliers: primary suppliers will be slashed from 1,145 to 600 companies, and parts suppliers are being urged to reduce prime costs by 20% on average.

Nissan will also dispose of shares in affiliated companies to reduce liabilities. Reorganization efforts have intensified among affiliated parts makers, such as the merger between Calsonic and Kansei, the establishment of Jatco Transtechnology, the capital alliance between Tachi-S and Fuji Kiko and the joint venture of Unisia Jecs and Valeo.

Under Ford's guidance, Mazda will introduce the Full Service Supplier (FSS) system to contract out the development, design and quality guarantee of auto parts to suppliers. By ordering out all parts except engines, transmissions and body frames, the company plans to concentrate development expenditure and human resources on the core components of automobiles.

Mazda is reviewing its capital relationships with local suppliers to improve its balance sheet through stock disposal. Thus, its shares in Naldec, an electronic parts maker, were sold to Visteon, and its shares in Delta Kogyo, a sheet maker, were also disposed of.

3.3 Impact of information technology (IT)

Information technology (IT) can have a strong impact on the reorganization of the automobile industry.

The assembly process, which has been considered the core function of auto manufacturers, is only a part of the value added to automobiles. The work of producing and selling an automobile involves many other sectors including parts procurement, product development, assembly, sales, financial services (car loans, leasing, insurance), spare parts and used auto sales, and the money spent on such peripheral services is estimated to be several times the cost of the automobile itself. Ford and GM envisage moving away from being merely simple assembly companies to providing integrated services related to automobiles. The two companies will rationalize their assembly lines through modular delivery to concentrate financial and human resources on core activities such as engine development.

As regards parts procurement, efforts have been made to accelerate office work concerning ordering, delivery and inventory management by using the Internet. The ultimate goal is to reduce procurement costs through competitive on-line bidding among parts suppliers. GM and Ford have taken the lead by planning to integrate their respective on-line procurement networks, and are inviting Japanese auto makers to participate. For parts manufacturers, integrated on-line procurement has the merit of simplifying specifications and billing forms, which differ from customer to customer. In Japan, investments have been made in response to the different procurement networks of individual *keiretsu*, so the integration of such networks may consolidate and simplify procedures. This trend toward B2B electronic commerce between companies transcends traditional affiliations.

The major challenge in product development is to respond quickly to changing market needs by reducing the lead time before starting production, i.e. the time for product planning, design, blueprint creation, prototype evaluation, die and cast design, etc. One solution is simultaneous engineering, which relies on three-dimensional CAD/CAM/CAE (Computer-Aided Design/Manufacturing/Engineering) to produce electronic drawings. By sharing this information, departments can simultaneously design products and related production processes.

As regards sales, it is becoming increasingly important for automobile makers to sell their products directly without intermediate dealers and thus to directly obtain customer information for product development. The automobile industry is thus changing from the traditional supply-push method to a demand-pull mechanism. “Production-on-demand” is also envisaged in the future, whereby orders will be taken directly from customers over the Internet. Customers could then search for desired vehicles and check prices on-line, thus obtaining less expensive cars more quickly. This is a movement toward B2C electronic commerce between companies and consumers, and so-called “net dealers” that specialize in intermediary and agency functions on the Internet are already operating not only in the United States but also in Japan. Some automobile manufacturers have tied up with independent net dealers that sell multiple brands, but others are developing their own systems.

Regarding used car sales, large display forecourts are needed to hold inventory, so sales efficiency must be improved. Recently, however, some Internet dealers specializing in used cars have been reducing inventory period by putting information on second-hand cars on-line. A large market for spare parts has emerged in the U.S., and companies dealing in spare parts have set up on the Internet accordingly.

Will such IT trends also continue indefinitely in the Japanese automobile industry?

In Japan, there are close consultations on parts procurement from the initial stage between automobile makers and parts suppliers to reduce the development period, which is one of the reasons for the competitiveness of Japanese automobiles, along with strict inspections after delivery. Highly sophisticated parts are particularly difficult to handle on-line. The just-in-time delivery system has also been established. In this light, on-line procurement is not likely to increase substantially for key parts for product differentiation, even though it may reach the level of the United States for bolts, nuts and other parts for general use as well as for low value-added materials.

As regards sales, U.S. consumers tend to welcome the convenience of the Internet and regard buying a car as a “waste of time” involving tedious and unpleasant negotiations. Suppliers, too, are positive about introducing Internet marketing. In Japan, young consumers are increasingly only visiting car dealers to look at the products found on the Internet before making a decision. However, many people still believe it is important to talk with auto dealers, and many dealers still do not have e-mail addresses and so have to send inquiries from customers via conventional methods such as facsimile and telephone. It is also difficult for Japanese auto

manufacturers to market their products on the Internet over the heads of their many affiliated dealers.

Information technology will certainly encourage industrial reorganization, but the impact in Japan may be somewhat limited due to the circumstances.

II International Reorganization in the Auto Parts Industry

1. Comparison of Sales among Mega-Suppliers

Huge auto parts manufacturers are emerging in the world market with sales amounting to several trillion yen. Delphi and Visteon are former in-house parts manufacturing departments of GM and Ford, respectively. Bosch has obtained various patents due to its excellent development skills, and has established solid bases around the world including Japan. Denso and Aisin Seiki are the two Japanese manufacturers ranked among the top 10 parts makers in the world. Lear, Dana, TRW and JCI are all based in the U.S. and, along with Valeo of France, have rapidly boosted sales through active M&As.

In contrast, sales of Japanese parts makers are on the order of only several hundred billion yen, with the exception of Denso and Aisin Seiki. This gap in sales compared with American and European counterparts could cause a gap in international competitiveness. The overall picture is not so simple however, because such mega-suppliers deal in various parts and may not be able to compete with specialized suppliers in some areas.

This chapter examines the conditions of competition by product area.

2. Survey of Business Sentiment of Japanese Auto Parts Manufacturers

In September 1999, we surveyed the views of Japanese auto parts manufacturers on international reorganization. Questionnaires containing multiple-choice questions (multiple answers allowed) and descriptive questions were sent to manufacturers, and the collected responses were tabulated. The survey covered 19 major Japanese parts makers; this section outlines the results.

The first question concerned the reasons and background for the rapid increase in M&As by American and European parts manufacturers. Many companies cited intensification of global competition, modularization/systemization, and increasing burden of investment in technological development. As finished automobile makers expand production overseas, parts suppliers are being forced to supply their products to automobile plants all over the world. As a result, competition is intensifying in the whole automobile industry as suppliers compete among auto makers.

As regards the purpose of M&As by American and European parts manufacturers, many cited scale advantages, the response to globalization, modularization/systemization and technological development. The Japanese parts suppliers are concerned that U.S. and European suppliers are seeking to improve competitiveness through expansion.

The largest number of companies answered that American and European parts manufacturers are improving competitiveness in response to modularization/systemization, and to supply the global market. Thus, the primary objectives of such M&As are vertical integration for modularization of products and horizontal integration to widen marketing areas. Many companies cited the ability of technological development and cost competitiveness, while some manufacturers also selected corporate strength and profitability.

The next questions concerned the impact of the reorganization and enlargement of parts suppliers in the U.S. and Europe on overseas and domestic markets. As regards overseas markets, companies expressed concern that Japanese manufacturers will lose out to American and European competitors in terms of costs and customers. Attacks on Japanese companies by foreign manufacturers including by M&A will increase competition in the domestic market, leading to the demise of weak Japanese parts suppliers.

As regards future changes in *keiretsu* relationships, most companies believe that relationships will only be maintained and reinforced with specific major suppliers. Thus, Japanese parts suppliers recognize that selection and concentration will also apply to the relations between

affiliated companies. Some companies envisage more drastic changes, and answered that "*keiretsu* will be disbanded or substantially weakened."

A more specific question asked about likely changes in the *keiretsu* relationships resulting from industrial reorganization including alliances of finished auto makers with foreign capital. Many companies answered that relationships will diverge greatly between suppliers that are admitted as partners and those that are not. That is, relations will strengthen with partners that can contribute to joint development of products or technologies, while business with other suppliers will simply depend on price.

As regards possible changes in the structure of auto parts procurement induced by industrial reorganization including alliances of finished autocar makers with foreign capital, Japanese suppliers believe that competition will become borderless, prices will converge worldwide and global optimal procurement will become the norm.

How will industrial reorganization proceed in Japan? Multiple-choice answers indicated that many companies foresee drastic changes, including a substantial number of M&As. The most common answer, however, was that reorganization will tend to be through business alliances (collaboration) than M&A.

The companies were also asked to describe the possibility of M&As and business alliances of parts manufacturers in Japan, and the responses varied: some view that business alliances will dominate given the traditional Japanese managerial culture and affiliations, while others consider that such obstacles will be cleared, paving the way for rapid M&A in Japan.

Finally, the survey asked what strategy Japanese auto parts manufacturers should adopt. The companies replied that they should focus on their core businesses and what they do best, and compensate their weaknesses through tie-ups to improve responsiveness to modularization, cost competitiveness and technological ability. In practice, strategies will vary among companies according to individual circumstances.

3. Developments in International Reorganization and Conditions of Competition by Product

From October to December 1999, we conducted interviews with major auto parts manufacturers. Based on the results, this section examines the conditions in individual product areas.

Figure 2-1 outlines the characteristics of the whole auto parts industry.

Figure 2-1 Comparison of Competition in Individual Product Areas

Product area	World share of top 3 makers (%)	Change in last 5 years	World top 3 makers		
			No.1	No.2	No.3
Seats	50		JCI	Lear	Magna
Instrument panels	30		Delphi	Textron	Visteon
(of which: meters)	40	Slight increase	**Denso**	Visteon	Mannesmann VDO
Brakes	50		Continental Teves	TRW	Bosch
Air bags	50		Autoliv	TRW	**Toyodagosei**
Fuel injection systems					
・gasoline	60	Slight increase	Bosch	Delphi	**Denso**
・diesel	70		Bosch	Delphi	**Zexel**
Power steering	50	Increase	TRW	**Koyo Seiko**	Delphi
Wiring harnesses	50	Increase	**Yazaki Corporation**	Delphi	**Sumitomo Electric**
Pistons	50+		Mahle	Rheinmetall	Federal Mogul
Piston rings	N.A.		Federal Mogul	Dana	**Riken**
Oil seals & engine gaskets	60	Large increase	Freudenberg-**NOK**	Federal Mogul	Dana
Air-conditioners	50	Slight decrease	**Denso**	Delphi	Visteon
Lamps	40		**Koito Manufacturing**	Valeo	**Stanley Electric**
Shock absorbers	60		Delphi	Tenneco	Mannesmann Sachs
Clutches	60	Slight increase	LuK	Valeo	Mannesmann Sachs
Tires	50		Goodyear	**Bridgestone**	Michelin

Note: All numbers are estimates from interviews.

Looking at the top three companies in each category, it is clear that mega-suppliers including Delphi and Visteon are ranked highest in many product areas. However, some companies are particularly strong in specific areas. Japanese companies are ranked among the top three suppliers in such areas as power steering, air-conditioners, wiring harnesses, lamps, meters, fuel injection systems, air bags and piston rings.

The level of oligopoly by the top three companies is generally high, and is highest in fuel injection systems for diesel engines and lowest in instrument panels. Fuel injection systems for diesel engines constitute a capital intensive industry and require processing technologies for high pressure as well as sophisticated electronic control technologies. These constitute entry barriers, but the market scale is small, therefore the level of oligopy is quite high. In contrast, the level of oligopoly in instrument panels is lower than in other areas because it is difficult to generalize its use or to rationalize related installation works.

In the last five years (mainly from 1993 to 1998), the level of oligopoly rose in many product areas due to international reorganization. Oligopoly progressed particularly in oil seals and engine gaskets as the top three companies were actively involved in acquisitions. Oligopoly in air-conditioners by the top three companies was reversed slightly as European manufacturers raised their rankings backed by expansion of the regional market.

Individual product areas have the following characteristics.

International reorganization in seats has progressed in line with expansion of outsourcing by car makers as parts suppliers acquired the in-house production departments of auto manufacturers and other seat makers. In particular, major suppliers in the U.S. and Europe have expanded from seats to interior equipment in general. In Japan, many small suppliers have competed for share under the *keiretsu* system. The reorganizational movement has just begun.

Typically, seats are expensive to transport and production facilities must be located in consumption areas in line with the worldwide strategies of auto makers. This is a major burden for parts suppliers. As the merit of scale has become important in the U.S. and Europe due to stiff price competition, reorganization has advanced rapidly for seats. Faced with lower profitability, manufacturers now mass-produce the capital-intensive structural parts while producing the labor-intensive cover parts in developing countries for assembly in consumption areas. Related technologies have matured, making production management technologies more important than research and development.

Seat prices in Japan are traditionally higher than in other developed countries, reflecting consumers' preference for quality. This, along with the practice of supplying to affiliated companies, has allowed the coexistence of numerous parts manufacturers. Recently, however, suppliers have been increasingly requested to lower prices.

Instrument panels and meters are cosmetic parts that affect the image of the automobile. It is difficult to devise general-use products because different models have different specifications. The large number of component parts and the need for manual labor in installation have allowed lower-ranked manufacturers to survive in the market. For the same reason, the top companies hold only about 10% of the world market, considerably lower than for other auto parts. Although there are scale benefits in the development of instrument panels, mass production is unlikely to be advantageous since the panels are bulky and fragile and should be produced near automobile plants. It is also difficult to rationalize assembly lines.

Modularization of instrument panels has been promoted, but in practice system design is difficult, integrating all components including resin, air-conditioners and electronics. Other challenges for modularization include the reduction of weight and cost.

As for brakes, huge suppliers are emerging due to reorganization in the U.S. and Europe as part of complementation for systemization. Related technologies have almost matured, but brake-squeaking remains a problem for this important safety component as do the different requirements of individual markets.

Regarding air bags, related suppliers are progressively restructuring to meet tighter safety standards in the U.S. and Europe. All of the major module suppliers intend to become safety system manufacturers.

The air bag market has been oligopolized through corporate acquisitions. Technical expertise is required for the inflater rather than the air bag, and gunpowder/gas generation technologies are required. Such technologies are supported by the munitions industry in the U.S. The excessively strong impact of explosion needs further improvement.

Oligopolization has reached a substantial level for fuel injection systems for gasoline engines. Since prices have declined due greater competition, manufacturers must pursue scale advantages, and so must boost production volume through globalization. The fuel injection system is a key component in meeting fuel consumption regulations. Although direct injection development has progressed, some problems remain.

The fuel injection system for a diesel engine requires processing technologies including vibration control under high pressure as well as sophisticated electronic control systems. Being a capital intensive industry, large-scale investment in plant and equipment is required, and so scale merits are essential. Oligopoly by large companies has become entrenched as the market is somewhat smaller and unattractive for newcomers compared with fuel injection systems for gasoline engines. Existing market shares would not change if traditional techniques remained dominant, but in practice there have been new entries as the common rail method becomes the norm.

As regards power steering, there has been a transition from hydraulic to electronic control to

reduce the environmental impact, and this has been a major objective of international reorganization. (Hydraulic power steering entails excess pumping, whereas electric power steering uses less energy, and is also lighter and more compact as there are fewer parts.) The diffusion of electric power steering is led by Europe, with its strict environmental regulations, as well as by Japan, where small cars are common. Technically, it is necessary to combine electronics with the mechanical technologies of power steering gear manufacturers (i.e. application of mechatronics).

International reorganization in power steering is encouraged by the transition to the electric method. An important safety component, power steering requires not only basic development skills but also suitable production technologies, and in this sense, Japanese manufacturers can compete against mega-suppliers.

The wiring harness is a component related to electronics and requires a fine balance between quality and cost. Its production is labor-intensive. Sufficient quality can be achieved by workers in developing countries. Wire harnesses used to be produced near the plants of car manufacturers. Yazaki Corporation led the shift to overseas production by utilizing low-cost labor in Southeast Asia to reduce cost, but recently U.S. and European manufacturers have been closing the gap in quality and cost by using cheap labor in nearby developing countries. The future depends on electronic and even optical technology development skills as well as on innovative ideas.

Modularization of wiring harnesses has been addressed by American and European manufacturers, although there has been little progress because sophisticated know-how is required to integrate the electrical system of automobiles.

Reorganization and oligopoly have advanced in the piston industry to achieve a design that integrates the piston ring with the piston pin. In order to address environmental problems, it is technically necessary to reduce the weight of the piston under high pressure to improve the combustion efficiency of the engine, so design improvements will inevitably become necessary.

Regarding piston rings, large-scale acquisitions were made in the past mainly for integrated design with the piston. Already reorganized and highly oligopolistic, the manufacturers are now enjoying benefits of scale.

The oligopolistic nature of the oil seal and engine gasket market is increasing with further acquisitions. Japanese manufacturers excel in quality and have the technological edge. In terms of cost, however, the U.S. leads with lower material (rubber) and personnel costs, followed by Europe and then Japan.

As regards air-conditioners, these have rapidly become popular in Europe, a market traditionally focused on heating. With the expansion of the regional market, European manufacturers are gaining strength to the detriment of Japanese firms.

Due to their considerable weight and size, air-conditioners are not profitable if exported and therefore must be produced in the consumption area, so alliances and other measures are necessary to achieve global operation. In Europe, the market is expanding as automobiles become equipped with air-conditioners as standard. In the U.S., auto manufacturers are increasingly outsourcing production, as a result of which air-conditioner makers are struggling for market share in this newly-created market segment.

Air-conditioners are relatively easy to outsource because they are a luxury feature rather than a core function for running, turning and stopping. Japanese manufacturers have a competitive edge in air-conditioning systems. Costs must be reduced by increasing scale and pursuing global supply as related technologies have matured. Parts manufacturers must increase output to reduce the burden of fixed costs.

In terms of technology, Japan and the U.S. have the advantage over Europe, a relative newcomer. Japanese manufacturers have the edge over their U.S. counterparts in weight reduction and downsizing, which are important for environmental protection, and are particularly

competitive in the high precision processing required to produce variable capacity compressors.

Lamp production is capital-intensive, and plant and equipment investment constitutes a barrier to entry, especially since frequent die and cast replacement is necessary due to model changes. The market is mature, with manufacturers having established shares in the world market, so the front-end module is the only remaining part for reorganization. HID (high intensity discharge) lamps are likely to be used in the next generation of lamps. Cost competition is particularly intense in Europe, where small vehicles are common. While European manufacturers have scale merits with facilities that have largely depreciated, Japanese companies are struggling in terms of cost due to the excessive quality of their products.

In shock absorbers, reorganization has progressed mainly through acquisitions; the market is technically mature and competition is now focused on price. The world market for shock absorbers is highly oligopolistic as a result of past reorganization, and price competition is also intense in the domestic market. Entries from foreign companies are unlikely as they have no foothold in Japan.

The trend toward automatic transmission (AT) in Japan and the U.S. gives European manufacturers a competitive edge in clutches. The clutch market has not been expanding due to the advent of AT vehicles. Further demand, if any, will come from commercial vehicles as well as from Asia including China and India. ATs are mostly produced in-house in North America.

Scale merits are important in producing clutches, but substantial reorganization is unlikely as the market is highly oligopolistic and not expanding, forcing many OEM manufacturers to withdraw from the market. Although potential demand for replacement will ensure the survival of the market for spare parts, new entry into this after-sales servicing market is difficult because sale channels are already controlled by the major three European firms. As the link between the engine and transmission system, the clutch cannot be easily integrated into the modularization process, either.

Technically, Japanese and European manufacturers are at similar levels. Emerging technologies include automatic clutches and electric MT (Manual Transmission). In order to make up for the substantial loss in hydraulic ATs, those technologies will create an evolved type of MT that simplifies driving in congested traffic while saving fuel and keeping driving enjoyable. Research in automatic clutches and electric MT is particularly advanced in Europe. New entry might be possible as electronic control technologies will be necessary. In Japan, future development will be focused on CVT (continuously variable transmission) as AT-related technologies have already reached a substantial level.

Though tires are classified as a rubber product rather than a car component, let us mention to the tire industry because international reorganization began in the 1980s, earlier than in other parts industries. Tire production is a capital intensive industry, and scale merits through intensive production are necessary to increase cost competitiveness. In response to the globalization of the car companies, tire makers must secure orders through overseas operations, and so international reorganization has been encouraged.

4. Views of Automobile Manufacturers

We conducted interviews with seven automobile manufacturers in November and December 1999 concerning international reorganization.

Although the answers varied regarding the changes in procurement policy and its future direction, some companies indicated that they would seek global optimal procurement. In general, companies have been reducing the number of suppliers, some even advocating global single-sourcing. However, no company actually intends to select only one supplier for each product area.

In principle, they are planning to deal with two or more suppliers to ensure competition among parts manufacturers and to avoid risks such as supply stoppages and instability due to plant fire.

As auto makers themselves are facing fierce competition, attention is increasingly focused on price. The traditional procurement policy will certainly change as global competition intensifies.

As in the past, changes in the relationships among affiliated companies differ in individual corporate groups, but are becoming looser in general. Although some auto makers are trying in the long term to develop affiliated suppliers into core partners with joint technological development, most auto makers cannot afford to support other suppliers as auto makers themselves face increasingly fierce competition.

Nonetheless, companies prefer some sort of preferential relationship to ensure the high quality that is a lifeline for Japanese cars. Auto makers are increasingly focusing on the merits provided by parts manufacturers.

The companies cited severe demands on Japanese parts suppliers. The first is lower prices. As automobile prices are falling mainly due to the shift toward smaller vehicles, cost reduction is top priority for the survival of many auto makers, and parts manufacturers are similarly affected.

Next comes global supply capacity and enhanced ability to provide flexible suggestions. As regards the latter ability in particular, auto makers require suppliers not only to produce single products, but to voluntarily provide flexible and ambitious ideas, as happens with American and European parts manufacturers.

Some companies strongly believed that slow-moving Japanese parts manufacturers will be forced out of the market. Japanese suppliers will have to cease or change businesses unless they respond seriously to the structural changes of recent years, such as by enhancing global supply capacity, expanding scale, and reinforcing core competencies. If they fail to do this, the Japanese automobile industry as a whole will lose competitiveness in the world market. Whereas American and European parts manufacturers are taking risks in initiating voluntary reforms, Japanese suppliers are still currying favor with their customers.

As regards the strategy of parts manufacturers toward international reorganization, many companies stated that concrete action for business restructuring is needed. In particular, they must set their own strategies before structural change restricts the available options, otherwise suppliers will be forced to cease or change business. (In contrast, M&As in the U.S. and Europe have strategic purposes. Even if a department is disposed of, it can expect to develop under the acquirer.)

Reorganization methods include acquisition, merger and business alliances. Regardless of the method, auto manufacturers generally welcome such restructuring because suppliers will be able to obtain far more information, although auto makers are worried about the increased negotiating power of enlarged suppliers. Companies consider that Japanese suppliers will lose competitiveness against foreign counterparts unless they collaborate more among themselves by forming alliances composed of two or three companies. In the case of modularization, loose collaboration entails litigation risk as the responsibility for quality guarantee is not clear. Auto makers demand that Tier 1 (primary) suppliers take responsibility in this respect. Auto makers also stated that mere capital alliances would not be satisfactory and that fixed costs needed to be reduced by consolidation of plants or other streamlining methods.

As regards the relations with foreign capital, the companies warned that suppliers should be wary of being used by American and European parts manufacturers, which are experienced in M&As, and should maintain autonomy in contracts and be ready to take the majority stake.

One auto manufacturer criticized the departmental alliances of comprehensive auto parts manufacturers with foreign capital, as such a piecemeal approach would hinder functioning as a business. Suppliers operating in various fields with no strength in any particular field will be

absorbed by foreign capital, because their individual divisions do not have independent plants or development systems and therefore are unable to take leadership. In short, alliances originally intended to boost business may end up weakening them. It was also indicated that general parts makers are more likely than specialized manufacturers to adopt a defensive attitude in existing fields.

From the viewpoint of technological development, the survey results suggested that smaller Japanese suppliers have a disadvantage chiefly in terms of available financial resources compared with their larger American and European counterparts. However, the direction of technological development is changing constantly, and there are various possibilities in combining elementary techniques, where smaller suppliers may have an advantage because larger companies tend to be slow and rigid in their response. It is important to take advantage of strength in commonly-needed elementary techniques.

In product areas whose progress is led by electronics, a certain scale of development is required to catch up with state-of-the-art technologies. On the other hand, simple products such as window frames undergo little technological innovation and do not require further investment until the manufacturer withdraws from the market or changes business. Due to the different development investment required among product areas, some companies predicted bipolarization of the auto parts industries.

In general, the finished automobile makers highly evaluate the QCD (Quality, Cost and Delivery) of the Japanese suppliers and want this remarkable strength, particularly quality, to be maintained. They believe that Japanese suppliers excel by far in delivering quality products at a known cost on time. However, the companies are not satisfied with this alone, and many gave higher marks to European and U.S. makers in terms of their ability to offer ideas and for their forward-looking development approach.

One of the auto makers pointed out that Japanese manufacturers in general are dedicated to their work and almost too meticulous about producing goods. Since old habits die hard, it might be better to stick to traditional practices than to forcibly adapt themselves to hypothetical concepts such as systemization. High quality should not be abandoned too easily.

On the other hand, another auto maker noted that even among Japanese parts manufacturers, basic techniques traditionally handled by skilled workers in factories have not been passed on effectively to the present workers. Basic mistakes related to product quality are an ominous sign, pointing to a possible loss of vital strength of Japanese manufacturers.

Companies consider that the ability to make creative suggestions depends on the ability of Japanese manufacturers and their managers, who must voluntarily make efforts in this regard.

One of the auto manufacturers expressed the following opinion: although it is sad to see Japanese companies acquired by foreign capital, it may be a welcome move to help improve competitiveness, also due to the fact that the Japanese market has far less foreign capital penetration than the European and U.S. markets. Although Japan excels in manufacturing goods, it lags behind in the internationalization of human resources and capital as the competition has moved from the domestic market to the world market. Even if Japanese companies are forced to dispose of their businesses now, they may be able to buy back those businesses when they regain strength.

Another auto manufacturer also stated that acquisitions by foreign capital should be accepted provided the development cost can be shared and employment and corporate names can be maintained.

Thus, the auto manufacturers have severe views regarding Japanese parts suppliers as procurement policies change along with the relationships among affiliated companies. Industrial reorganization appears unavoidable if the Japanese auto industry is to remain competitive.

5. Improving the Competitiveness of Japanese Auto Parts Manufacturers

As discussed above, individual companies face different conditions and so must adopt different strategies. During the period of rapid economic growth, parts manufacturers could expand their businesses on their own, but under the current harsh economic environment, it seems more effective to specialize and concentrate on core businesses when comparing businesses performances.

There is thus a growing need to rebuild business portfolios. If quicker response is the principal requirement, the traditional autonomous development policy should be replaced by M&As and alliances. However, Japanese companies are still not accustomed to M&A, in contrast with American and European firms which consider this normal practice. Indeed, Japanese companies lack expertise concerning post-acquisition management. U.S. and European companies are aware of the difficulties in acquiring Japanese companies including the impracticability of mass lay-offs and other drastic rationalization measures as well as the heavy burden of pension liabilities. Schemes such as stock swaps are only just becoming established. In Japan, different methods may be required from those established in the U.S. and Europe through trial and error. Many companies indicated that partial business tie-ups will be the main reorganization method in Japan rather than M&A.

What are the pros and cons of business alliances compared with M&A? A business alliance involves less conflict in employment and between organizations, and therefore is more acceptable to Japanese corporate culture. With uncertainty in environmental and other strategic technologies as well as the direction of modularization, business alliances are convenient because they give a company flexibility to enter into contracts with two or more partners at the same time and consider various possibilities. On the other hand, the level of secret information disclosure is necessarily lower in a business alliance than in M&A, which involves capital participation. Also, a business alliance may create a mutually irresponsible regime mainly in terms of quality guarantee, unless leadership is clearly defined, and also may not be sufficient for implementing fundamental reform.

Within the framework of modularization and systemization, the key concern of parts manufacturers is whether to become Tier 1 (primary) suppliers or survive as Tier 2 (secondary) suppliers. Tier 1 suppliers will have more sales opportunities and substantially increased information, but will assume greater risk in terms of quality guarantee, technological development and capital investment. They will be also required to undertake complex coordination with other parts manufacturers as well as with related department and divisions of finished auto manufacturers. Meanwhile, Tier 2 suppliers can concentrate on core businesses under existing policies, and additional investment will not be necessary. However, they face lower sales or even loss of individual products during the product integration process. Also, Tier 2 manufacturers are more likely to be the target of M&A due to their smaller size, and so must maintain absolute competitiveness in related technologies and prices to survive as specialized manufacturers.

What strategies have been adopted by Japanese parts manufacturers? Although there have been some cases of acquisition of foreign affiliates, M&A of U.S. and European manufacturers is difficult for SMEs in general. Many of the recent cases involve the acceptance of foreign capital or joint ventures to utilize the excellent development skills of foreign firms. Alliances between Japanese manufacturers are also possible if a relationship with foreign capital is difficult, and many such alliances have been formed. Some manufacturers have been involved in mergers or business alliances in view of modularization. Some argue that alliances between Japanese manufacturers do not lead to fundamental reorganization and have little meaning if

complementary or synergistic effects are insufficient. It is also true, however, that financially weak Japanese parts makers must take emergency measures as demand continues to stagnate.

One of the reasons why modularization was adopted in the U.S. and Europe was to simplify assembly processes due to the shortage of skilled workers required to produce automobiles with consistent quality. In Japan, the merit of modularization is not so significant because parts plants are already located near assembly plants to ensure just-in-time delivery.

Nonetheless, American and European parts manufacturers are actively promoting modularization to gain access to the overseas production plants of Japanese auto makers. Japanese parts manufacturers are therefore likely to be required to offer modular deliveries when supplying products to overseas auto manufacturers or overseas plants of Japanese auto makers, and should be prepared for this eventuality.

To win orders from auto manufacturers, it is effective to make suggestions at an early stage of development, and to demonstrate technological superiority. Some American and European manufacturers are planning to establish technological centers in Japan.

With the maturity of the domestic market, the traditional long-term corporate relationships that have supported the high quality of Japanese products are being replaced by relations focusing on cost and based on market principles and contracts. In response to the current structural changes, Japanese auto parts manufacturers must reinforce their strengths and overcome their weaknesses as quickly as possible. However, there is no simple solution, and individual companies will have to choose strategic alliances or other relevant measures according to their individual conditions.

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