During the last two decades, automobile manufacturers have been consolidating and trying to build low-cost supply chains spanning the globe. The 1998 Chrysler and Daimler-Mercedes Benz merger intensified the new company’s need for a global parts network to service its international network. Car manufacturers now have smaller production numbers in a greater number of plants around the world. Years ago, manufacturers produced their own parts for their own assembly plants. In today’s globalizing economy, scattered automobile production facilities means that outsourcing makes more sense.

Car makers themselves are exacerbating competition among auto parts producers by creating new players in the industry. Both Ford and GM have spun off their component divisions, Visteon and Delphi Automotive Systems, respectively. Delphi is now the world’s largest parts manufacturer with 200,000 employees and annual sales of $28 billion. (Knight-Ridder Tribune Press News, Detroit Free Press, January 13, 2000). GM sold off the parts maker to give the itself the opportunity to acquire parts at lower prices. Renault and Fiat announced in 1999 that they were blending their foundry activities in to a $2 billion-a-year systems supplier.

Mergers and acquisitions in the automobile manufacturing industry has been mirrored in the auto parts industry. Cleveland-based TRW became the world’s second-largest independent auto parts supplier, with annual sales around $13 bn when it purchase the United Kingdom’s Lucas Varity. (Financial Times, London, March 3, 1999) In 1998, Federal-Mogul Corporation doubled its size to $5 billion in sales after various acquisitions. In Europe, myriads of small
companies are clumping together into consortiums or being bought-out by larger companies. German auto-industry analyst Michael Schickling predicts that soon “there will be 10 to 15 assemblers worldwide, with a corresponding number of major systems suppliers, and the systems suppliers will keep buying and selling divisions as they define and redefine themselves.” (Time, February 22, 1999)

The following sections on Brazil, China and Mexico clearly illustrate how the consolidation trend is extending into emerging markets. Dinesh Munot, President of India’s Automotive Component Manufacturers Association, (ACMA) stated that the consolidation trend will occur in India as it has in other developing countries, “Many small locally-owned Indian companies can emerge as Tier 2 or Tier 3 companies if they meet the demands of a global economy, stable manufacturing processes and technology, strong research and development skills, low rates of defective parts-per-million, ownership of technology and synergistic relationships with multinational corporations. The companies that are successful at this level could become suppliers to multinationals or Tier 1 companies.” (FT Asia Intelligence Wire, Business Line July 4, 1999) (Tier 1 companies are the main suppliers and assemblers for car manufacturers with which they develop direct, long-term relationships. Tier 2 and 3 companies generally sell to Tier 1 suppliers.) Sundram Fasteners has become a Tier 1 company, with its success in the export of radiator caps around the world, winning quality awards in recent years from General Motors.

Another requirement for auto parts producers to become international suppliers is gaining international industrial standards certification such as ISO 9001 (the standard on quality management systems developed by the International Standard Organization, ISO) or QS 9000 (the Quality System Standard developed by a Chrysler/Ford/General Motors task force, which includes ISO 9001 requirements plus more stringent auto industry requirements.) Some analysts have interpreted the standards, especially the QS 9000, as a way to push the internationalization and consolidation of the market. “The smaller suppliers are having a harder time supplying all the data and completing all the paperwork. Perhaps their machines are having
a more difficult time meeting ever-harder requirements and standards. The auto companies want that. They desperately seek consolidation in their supplier base.” (American Metal Market, July 21, 1998).

**Modular Assembly**

Consolidation in the auto supplier market is in large part being driven by the cost-savings of modular assembly. Modular assembly is defined as “where the main supplier co-ordinates assembly of major systems or parts of the vehicle, leaving the car or truck maker with the simplified task of bolting together the final parts.” (Financial Times -London, May 22, 1999)

Low-cost suppliers do much of the pre-assembly work formerly done by high-wage union workers, as in the United States, for example. Easy-to-install pieces such as entire doors are then fitted into the automobile at the plant. The move from producing individual parts to assembling modular systems is the latest trend in auto-parts manufacturing. The modular assembly system affords the car maker other advantages besides redefined labor arrangements, such as faster delivery times, more flexibility and choice for the customer, as well as more manageable inventories. The technique typically cuts costs by as much as 20 percent in the early stages. Modular assembly means that the supplier must have competency and production capacity in a range of related products. Joint ventures, mergers and acquisitions are generally seen as the fastest ways of achieving this capacity. Thus, the intense competition in the automobile industry has pushed car manufacturers to look for low-cost parts as well as develop the modular system of assembly. The resulting competition among auto parts makers is forcing the consolidation of the auto parts industry.

TRW has already switched to modular assembly mode in the UK and Mexico. Ford Motor Co. and Volkswagen AG are already using some elements of the modular system in Germany. GM has used the system in its Gravatai, Brazil plant as well as its Saturn plant in Tennessee for
years. GM has estimated that using the new system reduced the loss of $1,000 on every new small car the company produces.

According to ACMA’s Munot, the shift to a tiered structure in the automotive component industry will take longer in India due to the cumbersome tax structure and laws. In addition, prices are already low enough that the savings from a tiered system are not enough to create the demand for modular production from car manufacturers. (FT Asia Intelligence Wire, Business Line July 4, 1999)

Some have criticized this new trend of modular production for several reasons. Shifting responsibility for assembly to suppliers reduces the original equipment manufacturer’s (OEM’s) control over the production processes and quality. (Financial Times -London, May 22, 1999) Executives from Ford and General Motors have stated that modular assembly is not a panacea for reducing costs. The system will be established on a case-by-case basis where it makes the most sense. The cost of switching over may not outweigh the savings in labor cost. However, these statements may have been influenced to some extent by the renegotiation of contracts with the US Union of Auto Workers (UAW) underway at the time. (Associated Press Online, April 23, 1999) The two-month UAW strike at GM’s Flint Michigan strike in the summer of 1998 was over the outsourcing of auto parts assembly to companies with non-union workers.

While outsourcing with imported parts is still widely used, the adoption of the modular assembly system means that suppliers with operations close to auto plants have greater opportunities to create links with domestic and in-country foreign car makers. Volvo, based in Goetnburg, Sweden, has turned an old shipyard in a nearby town into a “supplier village” where nine suppliers construct components and sub-systems and line them up in the proper order for final assembly in the Volvo plant. In still other examples to be cited below, suppliers actually conduct operations inside the car manufacturing plant.
China
Liberalization of the Chinese economy within the last decade has allowed for the entrance of several major car manufacturers. This investment is due in large measure to estimates of China being the 10th largest and fastest growing automobile market in the world. (China Daily, Dec 12, 1999) However, at present, annual production is just 13 million cars, with few private owners. Volkswagen has a majority, 54%, share of the domestic and export market. Even with the adjustments made over the years, the Chinese government still demands a lot from investors. US General Motors has had to commit to transfer of technology requirements and guarantee that 40% of components be made in China.

As part of the China-US deal for entry into the World Trade Organization, (WTO) China will reduce tariffs from the current 80-100 percent levels to 25 per cent in 2006, with equal cuts phased in each year. Specifically, China is expected to axe its tariffs on foreign auto parts from an average 50 percent to zero by 2005. (China Daily, December 1999). China has also agreed to eliminate quotas on imports of autos and auto-parts.

The WTO’s Trade Related Aspects of Investment Measures (TRIMS) agreement stipulates that by the year 2000 developing countries (and relatively lesser developed countries) must eliminate from their foreign investment policies all regulations imposing relative conditions on imports, exports or foreign currency balance, including those on local content. The US-China agreement therefore, also calls for an end to local content requirements (Automotive News, April 19, 1999). China still has a 40% requirement for domestic-made components. (China Daily, January, 2000)

Many auto parts makers will not survive the competition due to a lack of capability to develop new and advanced products. Consolidation will begin to take place in China as it has in other regions of the world for the last decade. “China’s auto parts industry is expected to benefit with
the elimination of duplicate construction, redundant plants and blind expansion” said W.J. Gesang, managing director of Delphi Automotive’s Shanghai Representatives Office.

Although protective barriers will come down, some parts makers are still optimistic due to low labor costs, “On the price side, we have a very large advantage. Our labor costs are cheap,” said Liu Yonglin, of Wiefu Fuel Injection Co Ltd, manufacturer of fuel pumps and carburetors. China still needs to complete deals with the European Union and other key WTO members and wait for the US brokered deal to pass the US Congress, where it will meet significant opposition related to human rights and national security issues.

China now has about 2,500 auto parts makers. (China Daily, Dec 12, 1999) Many of these companies lack the capital, management skills and technological knowledge to allow for large increases in production.

Delphi Automotive Systems and Shanghai SIIC Transportation Electric Co. Ltd, a subsidiary of Shanghai Delphi Automotive Industry Corp, recently announced a joint venture, Shanghai Delphi Automotive Door Latch and Security Systems Company. (PR Newswire, Dec 15, 1999) China Delphi provides a wide range of products to almost all of China’s major automakers. Overall, Delphi has invested over $400 million into more than 10 plants in China and has opened three representative offices in Beijing, Shanghai and Changchun. (China Daily, Dec 12, 1999)

Timken Company, a US-based auto parts company has invested more than $20 million in Yantia Timken Co Ltd a joint venture with the city of Yantai, Shandong Province. (China Daily, November 14, 1999)

Brazil
Overall economic growth in Brazil has exploded in the region since Argentina, Brazil, Paraguay and Uruguay formed the Mercosur trade zone in 1994.

Devaluation of the Brazilian currency, the real, in January, 1999 caused an economic downturn, reducing auto sales. According to industry figures, Brazil is estimated to have had the capacity to build 3 million vehicles in 1999 but with the economic downturn, production was probably only 1.3 million. (Journal of Commerce, September, 1999)

Due to the recession and high interest rates, auto parts sales were expected to decline 28 per cent, to about $10.5 bn in 1999. At the same time, the devaluation was expected to increase exports of auto parts to $4.5 bn in 1999 from $4 bn the previous year (International Trade Services, Auto Parts Report, March 30, 1999) Usually, Brazilian auto manufacturing is completed with 20% foreign parts. The devaluation made importing foreign auto parts 15% more expensive. However, this was not necessarily a boon to local manufacturers. VW increased the local content percentage while Fiat shifted some production to Argentina. (International Trade Services, Auto Parts Report, March 30, 1999) The Brazilian subsidiary of Ford even suspended production for two weeks in March, 1999, due to scarcity of parts and increase in the cost of imported parts. (Journal of Commerce, March 19, 1999).

Foreign competitors are buying control in or simply acquiring family owned-auto parts companies as part of an overall trend in the Brazilian economy during this difficult phase. For example, Federal-Mogul Corporation bought one of its main rivals Sabo Industria e Comercio Ltda. Federal-Mogul has now enlarged its market share for engine seals with the purchase of this $180 m company. (New York Times, August 4, 1999) Volkswagen had about 650 auto parts suppliers in Brazil two years ago, now that number has been slashed by 100. (Gazeta Mercantil, Inc. Gazeta Mercantil Online, May 10, 1999).
Brazil has emerged as the testing ground for modular assembly plants. Speaking of the new relationship between car manufacturer and major suppliers being developed in Brazil, GM President John F. Smith, Jr. stated “We believe that vehicle manufacturing will evolve in this direction here in North America” (New York Times, August 6, 1999). In Chrysler Corp.’s Dakota truck plant in the state of Parana, established in 1998, suppliers are actually making most of the finished vehicle. Dana Brazil’s president Ruperto Jimenez said “Chrysler should sell pens and shirts- promote their brand and worry about design and direction” suggesting that the supplier is better suited to actually building the vehicle. (Ward’s Auto World, August, 1998). Dana’s revolutionary rolling chassis (which represents 30% of the automobile value and is usually kept strictly in the domain of the car manufacturer) is just one of the many experiments under way in Brazil. Dana’s production of the chassis meant that the Chrysler plant did not need a certain type of conveyor system, significantly reducing the price of the plant to only $315m. PPG Industries, Inc. a paint supplier, operates inside the Chrysler Dakota plant as well at the Fiat SpA plant in Argentina. Modular assembly means that it is much easier to meet local content requirements. Brazil has a local content requirement of 60%. If a module has 60% of its parts locally made, it can be counted as completely locally produced. (Ward’s Auto World, August, 1998)

Industry analysts have explained the choice of Brazil as the laboratory for new production systems by pointing to the instability of Asian markets and the strong labor unions and heavy capital investment required by the mature markets of the US and Europe. (Wards Auto World, August, 1998).

Mexico

The North American Free Trade Agreement, (NAFTA) the accord between the United States, Mexico and Canada which took effect in 1994, has sped up economic liberalization in Mexico and significantly decreased protection afforded to local auto parts producers. Liberalization of
foreign investment requirements has meant that major auto parts companies can establish their
own or acquire auto parts suppliers.

The Big Three of the US (Ford, General Motors and Daimler/Chrysler) have been moving
south of the border not just for car manufacturing but for outsourcing of auto-parts. Since
1995, Mexico’s share of the US imported auto-parts market has increased from 23 to 27.5 per
cent, at times more than Canada which commands 28.3 per cent. (Financial Times (London)
October 5, 1999).

The strategy of auto-parts manufacturers in Mexico in the past was to build parts with high labor
input for export. “Now suppliers must produce more highly engineered, value-added parts,
because the domestic industry’s advantage in labor costs is bound to be temporary,” said GM’s
director of purchasing. (Crain Communications, Inc. Automotive News, June 1, 1998)
Analysts say that low labor cost is not the only factor in their success, Mexican workers are
simply very productive.

There are over 1,000 auto parts and accessories manufacturers in Mexico with approximately
40 percent of total production accounted for by foreign investment. Mexico has been
promoting investment in this sector. Several Canadian, Japanese, Italian, German and British
firms have announced investments totaling over $280 m during 1998 to 2000 in new plants and
plant extension. (US and Foreign Commercial Service and US Department of State, Industry
Sector Analysis, Mexico- Automotive Aftermarket Parts Market, November 19, 1998).

In Mexico, larger companies have been prospering while small and medium sized companies
struggle. Smaller companies lack the production capacity or technology to keep pace with
global competition. Some of the larger Mexican companies are demonstrating their maturity by
expanding into foreign markets, rather than remain prey for international competitors searching for acquisitions.

The largest supplier in Mexico is former GM subsidiary, Delphi, with 53 plants and $3.2 bn in sales in 1998. (Financial Times, London, October 5, 1999)

In 1998, Hayes Lemmerz International purchased Min-Cer S.A de C.A. a Mexican manufacturer of hubs, drums, and steel wheels, Brazilian Borlem S.A. Empreendimentos Industriais, a producer of cast aluminum wheels, as well as South African Automotive Overseas Investments, Ltd.

Companies like Rassini Autopartes SA de CV have been completing joint ventures with car manufacturers in Eastern Europe, expanding production capacity and trying to increase their North American market share. Rassini is also quoting business for GM in Europe and South Africa for the first time. (Crain Communications, Inc. Automotive News, June 1, 1998)

Sanluis Rassini, the auto-parts division of Rassini Autopartes, has invested in state-of-the-art technology in order to team up with original equipment manufacturers (OEMs) from the US, Italy and Japan and focused on light vehicles, the fastest growing sector of the automotive industry. Rassini invested $5 million in 1999 to upgrade its technical center in Plymouth, Michigan which backs up 12 plants in Mexico and Brazil. (Crain Communications, Automotive News International, January, 2000)

Sanluis Rassini is the world’s leading supplier of leaf springs with 62% of the North American market. Total sales for all divisions of are expected to reach $400m for 1999. Enrique Villasenor, Sanluis Rassini president, is considering a joint venture to move from producing individual parts to assembling modular systems.
Even though in 1998 Rassini saw its brake sales drop 19 per cent in 1998 due to cheap Chinese aftermarket imports, it still plans to invest in the expansion of a new brake plant to supply GM in the largest contract ever awarded to an independent brake producer. This contract is part of a larger strategy of moving into the original equipment market, adding brake contracts with Ford, Volkswagen, Nissan and BMW. (Financial Times (London), May 22, 1999) Note that the Mexican government subsequently implemented special import measures on products from China. Chinese aftermarket products have also been adversely affected by consumer demand for higher quality. (US and Foreign Commercial Service and US Department of State, Industry Sector Analysis, Mexico- Automotive Aftermarket Parts Market, November 19, 1998).

However, Rassini is one of the most leveraged companies in Mexico and foreign investors are scared off by its substantial net debt of $480m, representing a debt to equity ratio of 3 to 1. (Financial Times (London), May 22, 1999) Expansion is also seen to be hampered by a shortage of skilled engineers, the result of rapid auto expansion in Mexico (Crain Communications, Inc. Automotive News.)

Nemak, a subsidiary of Mexican conglomerate Alfa, has the largest output in the world of aluminum recycling rates for motor production. Its sales are forecasted to increase from $50m in 1993 to $500m by 2001, (revenue in 1990 was $330m).

The aluminum engine block and cylinder head manufacturer has also decided to invest abroad. The company is investing $30 m in a new plant in the Czech Republic, challenging European parts suppliers in their own market. Automakers have been switching from iron to aluminum for cylinder heads. Analysts forecast that by 2006, 94% of all cylinder heads will be made from aluminum rather than iron, (up from 74% in 1998) and Nemak plans to be a major player in this
market. At present, Nemak’s sales are concentrated in North America, where its market share is estimated at 17%. (Crain Communications, Automotive News International, January, 2000.) Nemak’s story is interesting in that at one point it was partially owned by its current main competitor in the US market, Teksid. In 1982, Nemak approached Teksid for technological advice which it gave at the same time buying a 20% stake in Nemak. Eventually, Teksid wanted to centralize engineering against the wishes of Nemak and its majority owner, Alfa and the two companies parted ways.

Uniko, Inc. a Mexico City company, opened an engineering office in suburban Detroit, Michigan in 1998. This stampings and engine parts company hopes technological innovations will keep it competitive.

Desc, through its auto-parts subsidiary Unik, is the largest manufacturer of manual transmissions in North America. (Financial Times, London, October 5, 1999)

The Internet

GM has created TradeXchange, a system that enables it to shop for the lowest-priced auto parts world-wide on the Internet. (Knight-Ridder Tribune Press News, Detroit Free Press, January 13, 2000). GM spends $ 87 billion on auto parts annually.

The first business-to-business auctions and purchases were conducted in December, 1999. GM has said that the website will help them to streamline orders and allow parts suppliers to get lower prices. Catalogs list 200,000 items. Toyota Motor Corp is to discuss the possibility of a tie-up with GM on this new supply strategy. Ford has a similar site under development, called AutoExchange.
Miracom Corporation announced the official change of its name to Parts.com at the beginning of 2000 due to its focus on becoming the dominant force in business-to-business auto parts sales on the Internet. Parts.com’s marketing agreements include some of the largest parts suppliers and manufacturers in the world. (PR Newswire Association, Inc. January 5, 2000)

In July, 1999, iaautoparts.com was launched by Hahn Automotive, a company founded in 1958 with $140 million in revenues. The New York-based auto parts wholesaler is using the web to sell replacement auto parts directly to consumers. The highly automated inventory-management system means that the company can fill 96 per cent of its orders the same day they are received. The website will guide consumers to the exact component they need for the make and model of their car (The Standard: Intelligence for the Internet, July 1, 1999, www.thestandard.net). These are some of the trends characterizing the global market for autoparts.