

**International Automobile Production:
How Will Firms Compete in the 21st Century?**

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I will talk tonight about recent developments in the automobile industry with respect to competitive advantage, particularly as these relate to capacity expansion at an unprecedented rate.

Worldwide Explosion in Production Capacity

Worldwide vehicle production ability is growing today more rapidly than it has in the last 20 or 30 years, and this has interesting implications for the world's auto makers. Clearly most automobile manufacturers are very optimistic about the willingness of consumers to buy up this capacity. While environmental issues exist, they are not being factored into investment decisions about increases in car production capacity. At present, the world has the capability of producing 15 to 20 million more vehicles than it is currently buying (approximately 56 million passenger cars and light trucks annually).

This growth in capacity is occurring primarily in the underdeveloped and developing nations. In particular, until recently, the East Asian Tigers have been growth markets for many consumer products including automobiles. These markets – Thailand, Malaysia, Indonesia – are dominated by Japanese automobile companies which effectively control 80 percent of the market in Asia. American and European manufacturers look to this region as the market of the future. Ford, General Motors (GM) and, to a lesser extent, Chrysler are now making investment decisions in this part of the world. In terms of the number of cars per thousand people, these markets are the least mature in the world. Whereas in the United States there is one motor vehicle for every licensed driver, in some of the developing world it is a tenth or twentieth of that level.

But this market has changed abruptly from the euphoria of February when everyone was predicting the record-setting potential of the Thai market this year. Projections for Thailand are now

down 40 percent or more for the year, indicating how fast and deep the market has fallen. Nissan and Volvo have closed their factories temporarily, and both Toyota and Honda are operating on a one- or two-day schedule. The Ford Motor Company has a brand new Thai plant, but how soon it ramps up is an open question.

Of course, these companies are looking at not only the market potential where their manufacturing capacity is located, but at the possibility for additional export growth. Ford plans to build pickup trucks in Thailand, the third largest pickup truck market in the world, and export them to other countries. GM is also opening a factory in Thailand next year and plans to export to other countries as well. However, Thailand is actually a high cost production source because more parts are imported.

There is also an enormous amount of capacity growth in Latin America where the opposite situation is occurring. The two major markets in that region, Brazil and Argentina, are dominated by American and European manufacturers, namely Fiat, Volkswagen, and GM, although the order is periodically reshuffled. In these protected markets, the dominant market players have been in business for 30 or 40 years. Other markets, such as Peru, Ecuador and Chile, are more open, with many Korean companies participating. However, new efforts by Brazil to lower import duties and establish a quota system have enabled other companies to set up factories there. Brazil is now viewed as a very exciting growth market for the future. Of course, none of the European or American companies want to give up their positions to newcomers, so again production capacity is increasing on an unprecedented scale. Some 40 billion dollars of new capacity (more than a million units) are going into Brazil alone.

With regard to other parts of the world, Korea alone plans to add some 3 million units of announced capacity between now and the year 2000. Whether or not that actually occurs, especially given the serious financial problems of some Korean companies, remains to be seen, but this represents one of the largest single pieces of capacity coming on line in the next few years. China also has tremendous aspirations of being a formidable player in the world motor vehicle market, not just for serving the Chinese home market but also for exporting vehicles from China. With its relatively low labor costs, China hopes to take over much of the motor vehicle export market from the Asian Tigers, just as it has done with other products such as textiles.

Why is the world so interested in motor vehicles? It is because of the wealth creation effect of this industry, and the profound importance for the industrial development of a country of what it means to be able to build a car. There is no other product that embodies as much technology as an automobile -- it is electronics, rubber, glass, plastics, steel, and aluminum; it is every conceivable way of bending or shaping or forming metal; it is robotics, automation, and machine tools; it is the need for a highly-skilled workforce; it is 8,000 to 10,000 parts (depending on the kind of car) coming together in an assembly line which coordinates the skill of many different people and supplier companies. The country that can create an automobile from scratch is a country that has a tremendous industrial infrastructure. That is why a car is important. A car is less important in its ability to take you from place to place, and more important in that it creates employment and encourages development of an industrial base.

Adjusting to Adversity: The U.S. and Japanese Industries in Comparison

The last four years have been extraordinary for U.S. auto companies, earning them every year between 13 and 14 billion dollars. This is not bad financial performance for an industry that was viewed as dead in 1990, when both GM and Chrysler were on the verge of filing bankruptcy. This year again will be an outstanding year both for Ford and GM.

In examining how the Japanese and U.S. auto industries have changed and adjusted to adversity, we find that the turnaround of the Japanese industry has had more to do with the value of the currency than it has had to do with fundamental change for several companies. While Japanese automobile companies have suffered fairly staggering losses over the last few years, both 1996 and 1997 showed improvement because of the stronger dollar.

What happened to Japanese manufacturers during the bubble economy? First, all had huge, very unrealistic expectations about where the Japanese market was going. Japan is as saturated with motor vehicles as the United States, and yet during the last 1980s virtually every Japanese automaker built another factory to expand capacity and maintain market share. Companies rationalized this massive increase in capacity by believing that somehow their company's market share would grow and another company's market share would shrink. But that theory works only if there are other companies around willing to give up market share. This, of course, is no longer the case; the world

has changed and it has changed very dramatically.

In the case of the U.S. industry, however, substantial fundamental changes have occurred within the automobile companies themselves, allowing them to reduce excess capacity and in the process adjust their break-even points. Over the last decade and a half, for example, GM has closed enough capacity to equal a company the size of Chrysler, essentially transferring it to the Japanese during the 1980s. GM was such a giant that it took a long time before the company even understood that its failure to respond to problems of cost structure and product was causing it to permanently lose market share (from 35 percent in 1989 to 31.8 percent today). Chrysler and Ford have also reduced large amounts of excess capacity.

Distinguishing Between Winners and Losers

Will every automobile company be successful in achieving its goals? Absolutely not. As we look at this explosion in production capacity, the real question is which companies will actually make money. From an economic standpoint, this industry is extremely capital intensive, and this is why capacity and capacity utilization are so important. There are enormous fixed costs associated with automobile assembly. GM, for example, is now putting in five factories around the world, which will give the company an incremental capacity of close to one million vehicles. The total investment for those factories is between 3 and 5 billion dollars, not including engine or parts plants. These gigantic investments with huge fixed costs are what motivate manufacturers to build because the only way to recover that investment is to produce. This is an industry, therefore, with high break-even points.

From the economic standpoint, it is also a cyclical industry. Consumers buy cars when they can afford to buy cars, but the fixed costs for manufacturers stay fairly high. This is the reason why profits in the industry go from feast to famine. The automobile is essentially a commodity product in an industry that is capital intensive, and certainly this presents problems as the industry expands.

What constituted competitive advantage in the 1980s is changing, and parity is being achieved across the major producers around the world. This is the process that is turning cars into commodities, and what is forcing fundamental adjustments in automobile companies. While there used to be 15 to 20 defects per North American built car and one defect per Japanese car, today in the JD power survey of American-made cars, quality is at par with that of Japanese cars in 1992.

Clearly, there are no longer huge differences in quality but small differences in degrees of perfection.

In terms of productivity in the factory, the Japanese understood as early as the 1950s and 1960s how to get maximum efficiency out of their assets -- whether it was people, machinery or floor space. Americans did not figure it out until MIT and others studied Japanese methods and wrote books such as *The Machine that Changed the World*. Then U.S. manufacturers suddenly realized that factory productivity had a lot to do with the way people were trained, machines were maintained, work was laid out, and vehicles were engineered and designed, that how many hours it took to build a car depended upon how many parts there were in the car and how hard they were to put together. Now that particular genie is out of the bottle, and though not every American assembly plant is at the Toyota-plant level, with every new model year and every new product, the factory efficiency gap narrows. Where GM previously spent 33 man-hours building a mid-size car, today's new crop of mid-size cars from GM takes about 22 man-hours to produce. Although still not as good as an Accord which can be built in 17 to 18 man-hours, this is close enough to make the differences not so important.

Japanese also have benefitted from very close relationships with suppliers. In fact, they were able to get new cars on the market every four years, mainly because their suppliers were linked to the automobile company in familial relationships that entrusted the supplier to do a great deal of the engineering work for the manufacturer. In effect, the Japanese shifted a lot of their fixed costs onto their suppliers and became variable cost assemblers. That has been hard to replicate outside Japan because U.S. automobile companies were very highly vertically integrated. But companies such as GM and Ford are no longer as vertically integrated. Almost monthly an announcement is made of yet another division being closed or sold. About two weeks ago, for example, GM announced the sale of three major divisions in its Delphi parts business, amounting to two billion dollars of revenues generated entirely within GM. The company is getting rid of this business, pushing the engineering responsibilities onto their suppliers. They, too, are looking to turn themselves into variable cost companies that have a different ratio of variable-to-fixed costs. There is one U.S. supplier of seats and interior systems that has 80 percent variable costs and 20 percent fixed, which is probably the epitome of a company that has shifted costs right down the supply chain. In sum, supplier relationships in the United States are firming up and look very much like the tier structure in Japan.

Parts manufacturers now have specific expertise and technical capability to absorb engineering work from the auto companies. As a result, companies are now looking to five-year product cycles.

Suddenly what factors things that have distinguished Japanese auto manufacturers in the past and enabled them to gain market share are being matched by U.S. and European companies. So what constitutes competitive advantage? For a long time the Japanese were able to offset their excess capacity at home with higher exports throughout the world but that export potential is no longer there, especially with regard to the developed markets of North America and Western Europe. And in most markets of the developing world, the growth of home auto industries has hampered the ability of Japanese manufacturers to shift surplus capacity away from Japan. Even though exports are up substantially this year because of the weak yen, they are no where near the levels of a few years ago and certainly not high enough to absorb the excess capacity. On top of this, the Japanese are suffering from a decline in home market demand, especially following the April 1 consumption tax increase.

How has Japan responded to this crisis of excess capacity? U.S. companies just shut down factories, but in Japan only the Nissan Zama factory has been closed. Other factories have been temporarily shut down or are now operating on a single shift basis. Consequently, there is no longer overtime for Japanese autoworkers who have become accustomed to this component of their pay in order to meet their standard of living. Equally important, Japan is still saddled with excess capacity (measured by various sources to be in the range of 3 to 4 million units). This translates to higher fixed costs for the industry and is one of the reasons it has been struggling to rebuild itself after the effects of the bubble economy. Certainly none of the Japanese automakers has been able to adjust as quickly to its domestic structural problems as has either Chrysler or GM. As a result, they can no longer export to the rest of the world.

At the same time, other profound changes are occurring. The American consumer no longer thinks all Japanese cars are created equal. The September sales picture shows that while Toyota sales were down because of lack of availability (Toyota is carrying the burden for the Japanese industry and only moderately increasing its exports to the United States), Honda sales were up due to increased imports from Japan. Also Nissan, Mazda, and Suzuki sales were down, while Mitsubishi sales were flat. So despite the strong dollar, Japanese automakers have not gained market share

widely this year. American consumers have begun to see parity on the previously important distinguishing factors such as price and quality.

U.S. auto manufacturers have also had some lucky breaks having very little to do with their own actions to lower break-even points. One was that the American consumer fell in love with light trucks, and the Japanese do not sell many light trucks. Second, Americans like the biggest of the light trucks, which is where the heart of industry profits are.

Developments in the U.S. light-weight truck market serve as an interesting microcosm for what we might expect in a world faced with a huge capacity glut. First, the light-truck market caught U.S. manufacturers by surprise, and it took them a long time to adjust to the fact that this new demand was not a fad. In 1992 light-weight truck sales in the United States were roughly 4.6 million. This year they will be about 6.8 million. Capacity to build light trucks has been slightly less than the demand for these vehicles for the last five years. Consequently, manufacturers who sell light trucks in this market have been able to increase prices each year. In 1988 about 51 percent of American households could afford the average truck, whereas today only 40 percent can. This is because the price of the truck has gone up so much. Now most companies are convinced they can bring out a slightly different or better light truck and some 800,000 new units of light truck capacity are coming to the market. Companies are converting car and heavy-duty commercial truck plants to build light trucks. On top of that, Mercedes Benz is now building all-activity vehicles; Toyota has launched 60,000 units of minivan productions and will begin importing Lexus sport utility vehicles; and Honda will go into production next year with a minivan sport utility vehicle. The market has suddenly become very crowded, and the pricing power that the industry once had to generate these astronomical profits is about to disappear. And much the same can be said for other segments throughout the world because of the capacity buildup.

What are the implications? In the United States it is massive price deflation; new car prices will not go up. Since auto companies have reached parity, product life cycles have been reduced to four or five years, and product development can take as little as 24 months. Quality is the same since engineering advances can be quickly replicated.

So how does a company find competitive advantage? The answer for many has been to go global. As a result, pricing pressure will make it difficult to achieve the returns on investment they

had initially planned. The growth of the Korean industry into an automotive superpower has not occurred on a particularly solid financial base, for example. Is the Korean auto industry going to be able to perform in terms of capacity and sales to the extent projected? Is there a worldwide market for their vehicles? Korean manufacturers currently are selling cars on the basis of low price. It is yet to be tested whether those cars can sell at a price that generates a return on investment. Eventually there will be a worldwide shake out, and it is only the financially strong, globally competitive companies which will survive. This is no longer an industry defined by the country; it is now an industry defined by the company.

What will be the new factors separating the winners and losers? First will be lower costs, and on a standard-setting scale of 20, 30, or 40 percent reductions per year. There are component manufacturers today that are achieving cost reduction on a double-digit scale year after year so the assemblers ought to be able to do it too. Second, all companies will look for the niche product which will light the consumer's heart on fire. Herein lies their greatest opportunity to control pricing. And the third factor driving production differentiation will be technology. Ultimately, however, the real winners in the game will be those companies that understand how to maximize their returns on assets. This is the standard by which the U.S. industry is now being managed, and this will be what distinguishes future winners and losers around the world.