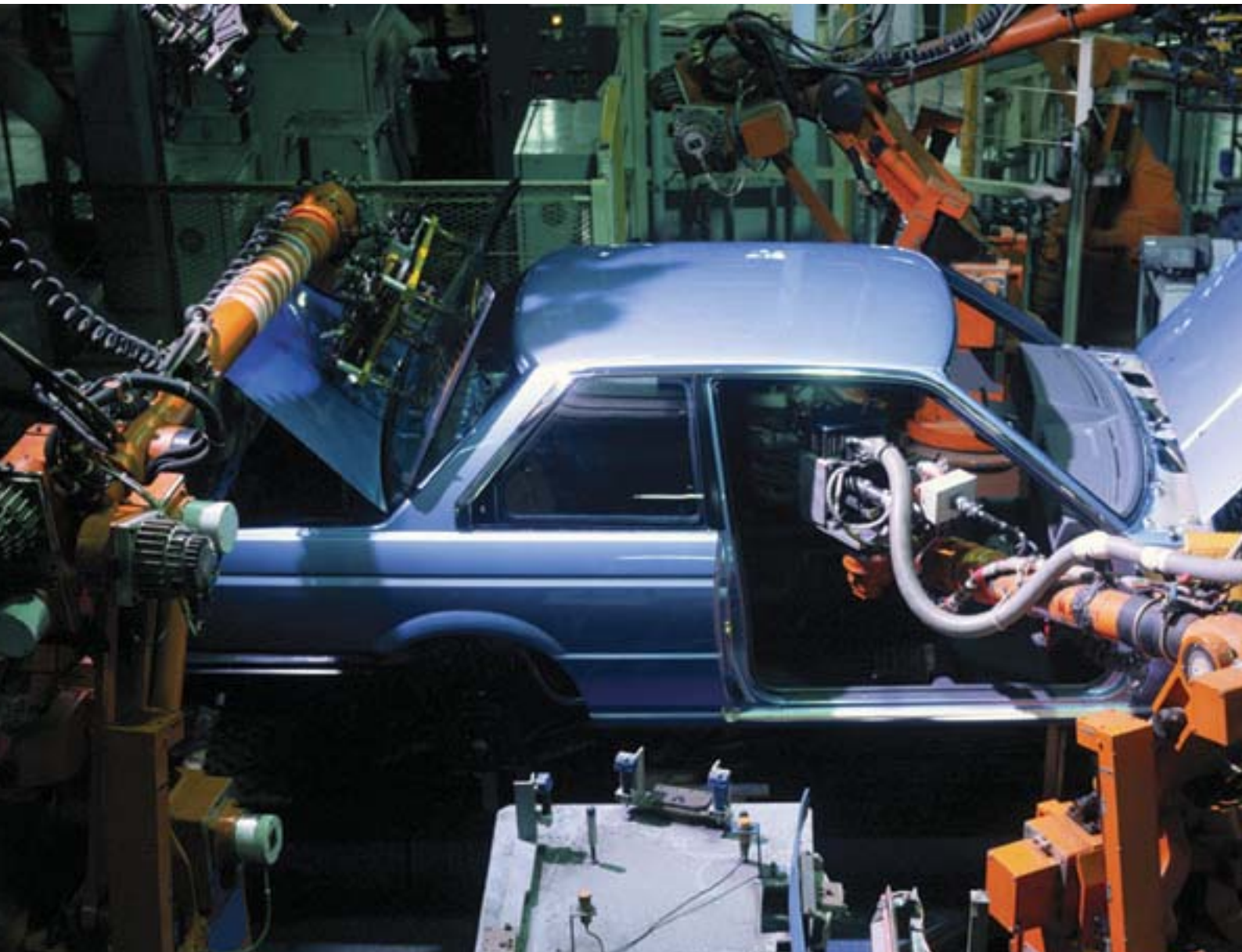




Establishing Production in North America

Challenges for Overseas Assemblers and Suppliers
and Implications for the Domestic Automotive Industry



Establishing Production in North America

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Introduction: Tracking the Impact of Globalization on the Automotive Industry

THE CHALLENGES NEW ENTRANTS IN NORTH AMERICA HAVE OVERCOME PROVIDE INSIGHT INTO THE TYPES OF CHALLENGES ALL AUTOMOTIVE COMPANIES WILL CONFRONT AS GLOBALIZATION PROCEEDS.

Since the 1970s, the investment and activity of new entrant or offshore-based vehicle assemblers in North America has rapidly expanded, comprising 18 plants, plus another three joint-venture plants with the traditional domestic Big Three manufacturers (Figure 1). While the plants vary in size, total capacity now exceeds 4 million vehicles, 25 percent of the current market.

Traditional business considerations such as sales volume growth, incremental worldwide sales capture, and insulation against currency fluctuations brought early offshore assemblers to North America.

But North American entry timing was also influenced by political tensions. A number of trade regimes and agreements developed as a result of political trade friction between the United States and Japan in the 1970s. For example, in 1980 the Carter administration rejected any quota arrangements on Japanese imports, believing that the negative effects of such arrangements outweighed their benefits. However, the administration secured the Ministry of International Trade and Industry's (MITI's) endorsement of a "principle" that

Japanese companies with high exports to the United States should build factories here. While this agreement lacked any force in law, it was a powerful signal to the Japanese industry.

A dispute over agricultural tariffs ("Chicken Tariff") with the European Community led to a retaliatory U.S. tariff of 25 percent applied primarily on imported light trucks from Volkswagen. Later, in 1980, courts ruled that the tariff should also apply to Japanese vehicle imports, and the tariff remains in effect to this day. Soon after, in 1981, the U.S. and Japanese governments established an initial three-year Voluntary Restraint Agreement (VRA)—the most wide-ranging automotive trade agreement between Japan and the United States, and probably the most influential in the establishment of new entrant facilities in the United States. Moreover, its allocation of shares to assemblers was based on Japanese companies' market share in the United States, and hence differentially constrained their U.S. sales levels.

Today, traditional business considerations drive the building and expansion of foreign-based companies

in the United States. Assemblers like Honda and Mercedes have opened plants to meet demand for minivans and SUVs, respectively. And generally, foreign-owned suppliers have opened U.S. plants as part of their globalization strategy or to follow their customers, much the same reasons U.S. suppliers themselves go abroad.

OSAT, with the support of Capgemini, developed an interview instrument to investigate how new entrants approached the challenges they faced in establishing North American operations. We identified the major lessons learned from these challenges and grouped them into the following five categories: site selection, general organizational structure, human resources, value chain, and manufacturing. Many of the challenges the new entrants overcame have direct implications for the traditional, long-established suppliers here in North America, though the parallels are not always exact.

This report builds on our prior research that examined the key decisions four early Japanese new entrant assemblers—Honda, Mitsubishi, Nissan, and Toyota—

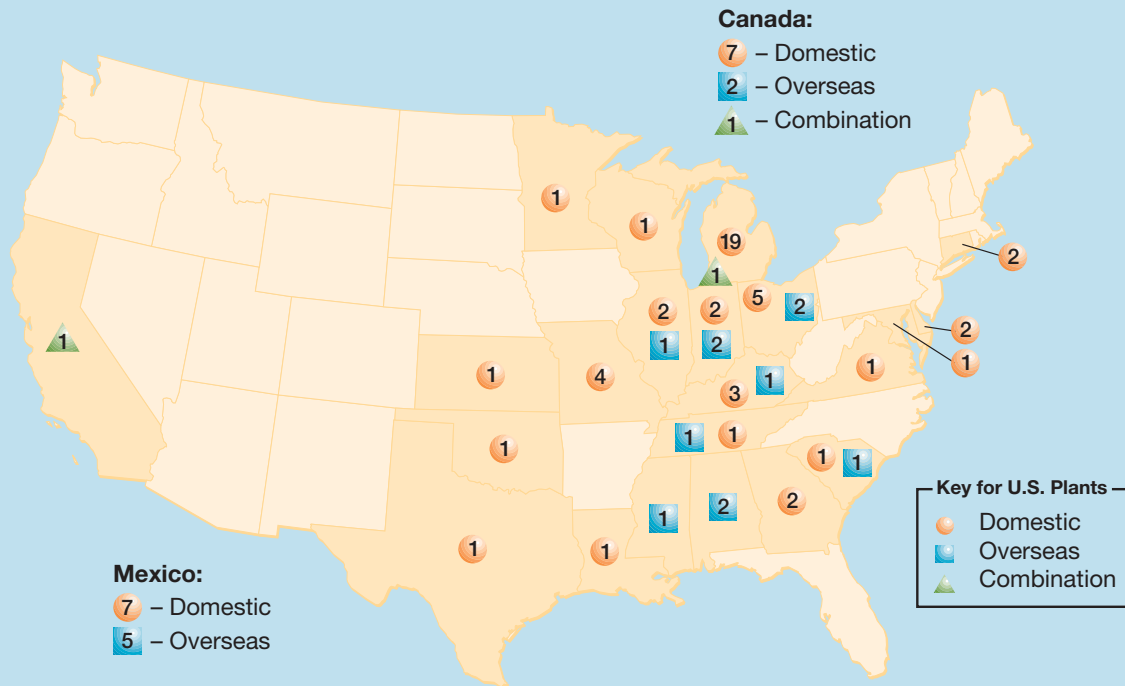


Figure 1. Distribution of domestic, overseas, and joint-venture assembly plants in North America. (Location of numbers does not necessarily indicate locations of plants within a state.)

faced in selecting their U.S. plant sites, the general organizational structure of their efforts, their human resource challenges and practices, their approach to the production value chain, and their manufacturing products and processes.¹ This report supplements those findings with Honda's recently established Lincoln, Alabama, facility; Mercedes' Tuscaloosa, Alabama, facility; and supplier facilities consisting of Brose North America's Chicago, Illinois, facility; and Brose Mexico's Puebla and Querétaro, Mexico, facilities; Denso's Battle Creek, Michigan, facility; Valeo's Greensburg, Indiana, facility; and Yazaki's Griffin, Georgia, facility.

We chose Honda's Alabama plant because it provides us an example of a well-established assembler that has recently expanded its operations; Mercedes because the company provides a perspective on the European experience; Denso, Valeo and Yazaki because each has worldwide operations and a diverse North American customer base; and Brose because its Chicago plant is currently under development and because its customer base is primarily comprised of European assemblers.

We hope our findings help support the future success of all North American suppliers and assemblers, whether the traditional, long-established companies, or the newer

entrants to the North American industry that constitute the focus of this report. Just as Japanese and European assemblers and suppliers experience a great many challenges starting production in North America—from selecting an appropriate construction site to managing a supply chain—traditional U.S. assemblers and suppliers also experience the challenges of globalization. We believe the challenges new entrants in North America face will provide insight into the types of challenges all automotive companies will confront as globalization proceeds. (For a detailed look at historical industry trends in production, sales and profit, see Appendix.)

¹Alkire, Kara F.; Flynn, Michael S.; Sims, Maitreya Kathleen; Senter Jr., Richard; and Kang, Yookyung. *Moving from Market to Production: Lessons from Recent U.S. Automotive Entrants*. University of Michigan Transportation Research Institute, 2002.

Executive Summary

THE NUMBER OF OVERSEAS ASSEMBLERS AND SUPPLIERS IN NORTH AMERICA IS GROWING. THIS RESEARCH REPORT EXAMINES THE IMPACT OF THIS TREND AND INVESTIGATES HOW NEW ENTRANTS OVERCAME CHALLENGES IN ESTABLISHING THEIR U.S. OPERATIONS.



“The more quickly you can localize product, the more successful and competitive you will be.”

When Nissan Motor Co. looked to North America as a potential location for new production operations, Mississippi offered the automaker \$363 million in tax breaks and incentives to locate in the state, according to a report by the World Markets Research Center (WMRC). It's not surprising then that the company chose Mississippi over other southern state hopefuls in which to build one of its new plants.

Nissan is not alone. Incentives such as these are just one of the factors driving a number of overseas assemblers and suppliers to open operations in the U.S. There's no question that these automotive new entrants are a competitive threat to traditional domestic firms, but the new entrants' experiences offer lessons both about the changing state of the automotive industry and the competitive requirements for company success today.

Two broad trends currently dominate the automotive industry's reorganization: consolidation and globalization. Despite the ongoing, if slow, growth of the industry, the

number of independent assemblers and suppliers is decreasing. In addition, assemblers and, to some extent, suppliers are establishing a manufacturing presence in nations beyond their home countries.

This second trend is clearly evident in the United States, where Japanese entrants and, more recently, European and Korean entrants have expanded the U.S. production base and market choices, making the U.S. market much more competitive. In fact, the traditional domestics have lost 22 points of market share since 1978, mostly to Japanese assemblers. Moreover, the market has improved its product offerings, as vehicle prices have been restrained, quality, reliability, and durability have improved, and the sheer number of choices in the different vehicle segments has grown.

Our research was designed to examine the impact of these trends and investigate how new entrants approached the challenges they faced in establishing U.S. operations. The study uncovered a number of key findings.

Major Lessons: Penalties, Handicaps—and Opportunities—Come With Newness

If there is one over-riding lesson from the collective experience of the nine new entrants we have examined, it is that the opportunity to “start with a clean sheet,” “establish a greenfield operation,” “avoid unions,” or even “receive enormous government subsidies” does not eliminate all the challenges in establishing successful North American automotive operations. In fact, the problems facing new entrants may not be any less serious or that different from those facing traditional operations, but how the transplants overcame problems is different. Indeed, penalties and handicaps, as well as opportunities come with newness.

Site Selection

Location. Overseas firms are increasingly choosing locations in the South or Mid-South, and often favor small-town or rural settings for their U.S.-sited plants. In terms of both assembly and supplier activity, these locations now constitute a second automotive concentration, beyond the Detroit-centered, Midwestern location

of the traditional U.S. industry. Indeed, the South and Mid-South regions are rapidly developing both the advantages and disadvantages of such concentration.

The new entrant suppliers and assemblers we interviewed considered a number of factors before selecting a specific plant construction site. Aside from customer location, the most frequently mentioned criterion was location infrastructure, including the availability of natural resources, power, and proximity to major highways and airports.

Incentives. Our respondents voiced some strong cautions regarding site selection. Perhaps the most telling is the caveat that new entrants must have a business case that is robust enough to support the factory after any initial financial incentives and subsidies end. However large and enticing the incentives may be, they do terminate, and effective site selection must reflect more long-term business considerations and plans.

Supplier Parks. Proximity to suppliers has its advantages, but supplier parks adjacent to assembly

activities can also create tensions, such as wage pressures and worker recruitment conflicts. Fortunately, the U.S. transportation infrastructure can usually support supplier locations some distance from the often multiple customers a supplier’s plant must serve.

General Organizational Structure

Balancing Roles. New entrants are offshore relatives of foreign companies, but also players in the North American industry. Some level of plant autonomy is important so that appropriate plant adaptations and changes can be implemented. However, some level of integration, coordination, and communication with the offshore parent company is equally critical for effective operation as part of the company. Balancing these somewhat contradictory demands for autonomy and integration is an important challenge for new entrants.

Management Autonomy. We asked to what degree the new entrants experienced management autonomy relative to their headquarters. The assemblers we interviewed indicated that they have had and continue to have moderate to full autonomy in the United States. While most

suppliers indicated that they earned autonomy over time, surprisingly, one supplier indicated that as the home company experienced international growth, headquarters exerted more control.

Information Technology

Implementation. IT implementation in the U.S. automotive industry is progressing more rapidly than in the Japanese market, and probably somewhat more than in the European industry. To integrate with the U.S. industry, a new entrant must progress at a feasible but rapid rate. Yet if a new entrant's parent company integrates IT solutions slowly because of diluted resources or an inability to establish an implementation team, the new entrant risks incompatibility with and estrangement from the rest of the company, its suppliers, and its customers.

Human Resources

Management Mix. The ratio of expatriate managers (foreign managers relocated to assist in the development of, in this case, a North American-sited plant) to local North American managers varies. There is a consensus that managers' assignments should drive the mix, with some targeted increase in the number of local managers over time.

Management Assignments. Across all the companies we have studied, no functional assignment has been exclusively filled by either expatriate or local managers at startup or soon thereafter. However, local managers may best serve areas such as human resources, purchasing, and operations, while expatriate managers are often needed to share parent company culture, provide process support, and inculcate quality approaches. Initial assignments should reflect the culture the plant hopes to achieve, and that can sometimes mean that local industry experience can be a negative.

Local Management Retention.

The U.S. labor market is quite open, and many executives and managers believe they should follow a professional career path across companies, rather than a company career across professions. This open labor market has made retention of successful local managers a major issue. A new entrant needs to assess how attractive its employment is and design flexible career paths, because that will determine its holding power.

Workforce Recruitment. The new entrants tended to rely on a very long workforce selection process, involving multiple steps. Part of this was deliberate: It was designed to test the applicants' commitment to working

for the company. The most frequently mentioned pleasant surprise among both suppliers and assemblers was their American labor forces' work ethic, enthusiasm, and morale.

Workforce Training. Both suppliers and assemblers supplemented on-the-job training with some classroom education. In total, the recent supplier new entrants we interviewed trained their initial workforce between 80 and 160 hours, while assemblers trained their initial workforce considerably longer—in some cases, up to six months.

Value Chain

Supplier Selection. Both new entrant assemblers and suppliers need to exercise considerable care in selecting their suppliers. Blending traditional, offshore suppliers with new ones can be a difficult challenge. While new entrant assemblers said cost was a selection factor, most were more concerned with effective processes than delivery price when selecting a new supplier, counting on improving processes to reduce cost.

With the exception of one supplier, most of the companies experienced high supply chain stability at startup. Some actions that new entrants took to maintain low supplier turnover included inventory buffering, providing

the supplier early engineering support, and implementing just-in-time and just-in-sequence production.

Supplier Relations. When asked what kind of relationship assemblers and suppliers expected with their suppliers and customers, respectively—a customer-supplier partnership or an arm’s-length relationship—all expected a partnership. Suppliers agreed, though, that this was a mere expectation. The actual relationship varied with the customer. All the suppliers described their offshore-based customers as maintaining a partnership and their traditional domestic customers as falling short of a partnership.

Supply Chain Management. Supply chain management (SCM) raises particular challenges for new, offshore operations, and new entrants must address these in order to succeed. First, high logistics costs come with offshore suppliers. As a result, inventory buffering at startup is almost always required. Second, only a small proportion of business should be given to a new supplier at startup. Third, modifying specifications for new suppliers can prove costly. In one instance, the problem was solved only after developing expensive proprietary tooling.



New and Inherited Customers. Most new entrant suppliers must add new customers to their traditional customer base to survive in the North American environment. This may create tension between a supplier and its legacy customers.

Competitive Pressures. Suppliers tell us the cost-reduction pressures they experience vary, and that some of their assembler customers are more concerned about quality and just-in-time, especially at startup, than with generic cost-downs. This is consistent with differences in supplier relationship philosophies across the assemblers.

Manufacturing

New vs. Old. New entrants generally appear to operate better if they begin operations by building established, rather than new products and by starting out with established, rather than new manufacturing processes.

Schedule Stability. Rapidly achieving schedule stability was not a major

problem for most of the assemblers and suppliers we interviewed, especially given that the companies initially built to inventory.

Time to Full Operation. New entrants’ time to full operation, defined in terms of rated jobs per hour operating on one shift, was typically short, representing another competitive challenge to traditional domestics.

Information Technology. Some plants found it quite difficult to implement and integrate the IT system simultaneously with manufacturing startup. Early adoption of the IT system seems to work better.

While this topline review provides a summary of the key findings of our research, the pages that follow offer more in-depth analysis of the experiences and challenges faced by overseas assemblers and suppliers as they established operations in North America.

Challenges: What it Takes to Enter a New Market

AUTOMOTIVE TRANSPLANTS IN NORTH AMERICA POSE A STRONG COMPETITIVE THREAT TO DOMESTIC MANUFACTURERS AND SUPPLIERS, BUT THEIR EXPERIENCES OFFER VALUABLE LESSONS ABOUT THE CHANGING STATE OF THE AUTOMOTIVE INDUSTRY AND THE REQUIREMENTS FOR COMPANY SUCCESS TODAY.



The great effort that both suppliers and assemblers put into supplier identification and development suggests that they want long-term relationships with their suppliers.

Industry performance statistics provide evidence of the success new entrants have experienced in North America over the last three decades (see Appendix). The statistics do not, however, detail how the new entrants achieved such success. We believe the following pages, which describe the challenges successful new entrants faced as they entered the North American market, can provide valuable insight to any supplier or assembler opening, expanding, or reorganizing plants in North America or abroad.

Site Selection: Traditional Business Considerations Drive Decisions

Location

Traditional business considerations drove the building and expansion of the new entrant plants we studied. Among other reasons, Honda and Mercedes opened plants to meet demand for minivans and SUVs, respectively. Honda specifically chose to build in the Southeast because a large proportion of the company's minivans are sold in that region of the United States. Generally, new entrant suppliers have opened North American plants as part of

their globalization strategy or to follow their customers—much the same reasons U.S. suppliers themselves go abroad.

Like many new entrants, the companies we interviewed often selected plant sites in the South, Mid-South, or Midwest and typically selected rural or small-town settings in those regions. Other areas have been avoided, for the most part. The new entrants are absent from the Southwest and the West Coast, with the exception of Toyota's operation in San Antonio, Texas, and the NUMMI operation, an early GM-Toyota joint venture effort placed in an existing General Motors factory in California, closer to Toyota suppliers in Japan. And the new entrants have abandoned some areas, such as the Northeast, in particular, Pennsylvania, where Volkswagen built a plant that is now closed. Hyundai also left Canada, although Canada has become a popular site for other new entrants.

We think this pattern is in part due to the way automotive manufacturing operations are structured at this time. Forty years ago, Chevrolet, a single division of a single assembler, had

such high volumes that it often needed multiple assembly plants for a particular vehicle. As a consequence, it made sense to disperse those plants throughout its market area—that is, all over the United States. Today, with total automotive vehicle sales in the United States spread across a much greater number of assemblers, very few automotive makes require more than a single assembly plant. Thus, from the point of view of distributing finished vehicles to all markets fairly promptly—and to minimize logistics issues like distance and time for inbound supplier parts in a just-in-time environment—it generally makes sense to place new assembly plants in more central locations, rather than on the East or West Coasts.

The new entrant suppliers and assemblers we interviewed considered a number of factors before selecting a specific plant construction site. Aside from customer location, the most frequently mentioned criterion was location infrastructure, including the availability of natural resources, power, and proximity to major highways and airports. An adequate labor supply was the next most frequently mentioned selection factor. Case in point, one supplier said his



company experienced difficulties staffing in the mid-1990s when the unemployment rate was very low. Additional location considerations included the lack of a strong union presence, plant expansion possibilities, and state financial assistance, including workforce training dollars and tax abatements.

Incentives

Our respondents voiced some strong cautions regarding site selection. First, financial assistance does not last indefinitely. Training subsidies usually terminate and tax abatements are

Most suppliers and assemblers started their operations with at least 50 percent of their management team being expatriates.

often limited to a certain number of years. Therefore, an operation must look beyond temporary financial incentives and prepare a sufficiently robust business case to perform profitably. Second, training subsidies are not a cure-all for an educated workforce. As we will discuss in the Human Resources section, the locations the new entrants selected do exact some penalties, specifically related to the recruitment and retention of employees.

Traditional domestic companies often point to the advantages of newer companies and their own disadvantages, noting that many are rooted in U.S. public policies and regulations. But this is oversimplifying the situation, and may divert traditional domestic assemblers' attention from matters they can better control. New entrant companies certainly enjoy some competitive advantages because they are younger and growing, but they face disadvantages, as well. They must transfer their own company culture to a new site; hire and train a workforce often not used to the discipline of large-scale manufacturing; and, as we will see, incorporate North American suppliers while assisting their own suppliers in adjusting to a

different business and regulatory climate here.²

Supplier Parks

It merits mention that the way new entrants organize their factory site and plants is increasingly being adopted by the traditional domestic assembly plants. Centralized stamping is yielding to adjacent stamping, and just-in-time suppliers are increasingly locating closer to the assembly plant. However, suppliers have shown resistance to concentrated adjacent locations, called supplier parks. As one interviewee noted, this may reflect suppliers' reluctance to enter into wage competition with the assembler or other suppliers. Fortunately, the U.S. transportation infrastructure can usually support supplier locations some distance from the often multiple customers a supplier's plant must serve.

General Organizational Structure: Confederate or Competitor?

Balancing Roles

New entrants are both offshore relatives of foreign companies and also North American players. Some level of autonomy is important if the plant is to play its role as a part of the

North American industry, implement appropriate adaptation and change, and be an effective producer. However, some level of integration, coordination, and communication with the offshore parent company is equally critical for the plant's effective operation as part of the company.

How the home plants of the parent company view the new entrant—as a confederate or a competitor—affects the level of integration a new entrant has with its headquarters. If the home plants of the parent company view the new entrant as a competitor, headquarters may not provide the new entrant with the assistance it will at times require. To prevent this, company headquarters must oversee relationships between the new entrant and other parts of the firm. One way a parent company can communicate the value of transplant operations to home-based plants is to reward managers or executives that relocate overseas (aka expatriates), in this case, to North America, by promoting them when they return to the home country. For example, Fujio Cho was the general manager of Toyota Manufacturing, U.S.A.'s Georgetown, Kentucky, plant before returning to Japan and later becoming president of Toyota Motor Company. An assembler

²Flynn, Michael S.; Sims, Maitreya Kathleen; and Alkire, Kara F. "Big 3 remain mostly responsible for own problems." *The Detroit News*. 20 April 2003: 13A.

in our study said that his company valued international experience in all its employees. In contrast, a supplier said that an expatriate in his company's North American plant may have difficulty immediately advancing once he or she returned to the home country.

Management Autonomy

We asked to what degree the new entrants experienced management autonomy relative to their headquarters. Generally speaking, assembler autonomy does not appear to change much over time. On a scale from 1 to 5—where 1 indicates headquarters considers the plant to be a quite independent operating entity and 5 indicates the plant is regarded as a unit whose decisions and directions primarily come from headquarters—the assemblers we interviewed indicated that they have had and continue to have moderate to full autonomy in the United States. Most suppliers appear to have “earned” autonomy over time. That is, most suppliers rated their startup autonomy between 3 and 5 and their autonomy today between 2 and 3.

Both the assemblers and suppliers had a difficult time answering this question because they felt management had more autonomy in particular functional areas than

others. Thus, their ratings probably reflect an “average” amount of autonomy over all functional areas. For example, one supplier had a great deal of autonomy in workforce recruitment and workforce training at startup, but little decision-making responsibility in selecting a general contractor. Given that this plant's headquarters was unfamiliar with U.S. workforce issues, workforce recruitment and training autonomy was appropriate. In the Human Resources section of this report, we will discuss the importance of assigning the appropriate manager—local or expatriate—to a particular functional area.

Interestingly, as time passed, not all the new entrants acquired more autonomy. One supplier indicated that as the home company experienced international growth, headquarters exerted more control. This supplier rated startup autonomy at 1 and rated the plant's autonomy today at 3.

Information Technology Implementation

The companies we interviewed did confront some IT problems. Some of the problems were familiar: integrating incompatible software, catching up to the U.S. industry in IT implementation, and trying to get purchasing up to speed to handle engineering changes.



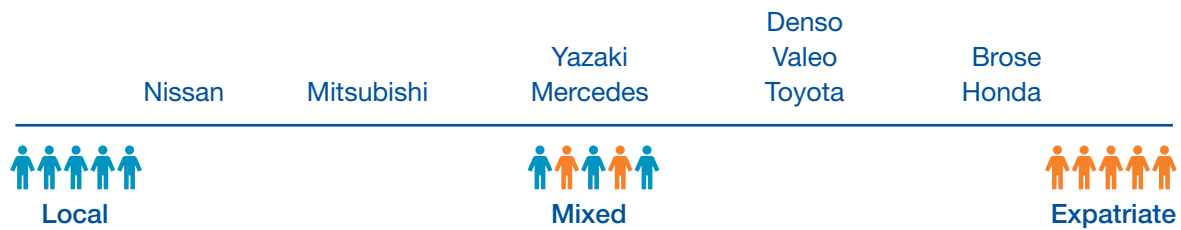


Figure 2. Managerial models at startup.

Yet some difficulties were less common. In one case, no home-base ERP solution existed to transfer to U.S. operations. The company faced its biggest IT challenges in operations data quality, specifically in production control, purchasing, and inventory, and needed an ERP system to manage such data. The new entrant was forced to become the company ERP pioneer, and the parent company later standardized on the plant's ERP solution in North America.

This example highlights a more general dilemma: IT implementation in the North American automotive industry is progressing more rapidly than in the Japanese and European markets. To integrate with the North American industry, a new entrant must progress at a rapid, but feasible rate. Yet if a new entrant's parent company integrates IT solutions slowly because of diluted resources or an inability to establish an implementation team, a fast-moving new entrant risks incompatibility with

and estrangement from the rest of the company. At the same time, slow movement could create problems with its suppliers and its customers. This situation may change if more of the major European and Japanese assemblers and suppliers meet the level of IT implementation of their leading competitors. Indeed, this may be occurring now. Toyota, in fact, has announced that it will be taking major strides in this direction.

Human Resources: Balance Required for People Considerations

Management Mix

Figure 2 illustrates the managerial mix at startup that we found among the companies we interviewed. The mix varies considerably, but most suppliers and assemblers started their operations with at least 50 percent of their management team being expatriates. Interestingly, suppliers were more likely to have an expatriate-dominated mix at startup.

The ratio over time differed among companies, with most interviewees indicating that the number of expatriates should and did decrease over time. Most of the supplier firms we interviewed seem to strive to increase the proportion of local managers more so than the assemblers do. This probably reflects the greater challenge posed by the suppliers' need to staff more plants and the somewhat scarcer human resources from home. Valeo, for example, began its operations with a 2:1 ratio of expatriate to local managers, but today maintains a 1:5 ratio. An assembler hired an equal number of expatriate and local managers at startup, but while the ratio today favors local managers, the proportion of expatriate to local managers is still 2:3.

Management models represent critical choices, each with its own strengths and weaknesses. In general, the local model risks organizing a plant that is too independent of the company

culture and approach; however, it permits local resolution of many issues, typically by managers better versed in local conditions, culture, and circumstances, but less integrated into the company culture. The expatriate model inverts these strengths and weaknesses, demanding remote resolution of issues by managers not typically well versed in local conditions, culture, and circumstances. The exact strengths and weaknesses of the mixed model depend on its degree of mix. Such a model could offer the strength of balancing the local plants' and headquarters' concerns, but may require time-consuming negotiation among managers at the plant and between the plant and headquarters.

Management Assignments

Japanese and European suppliers and assemblers seem to agree that manager assignments, rather than a simple numeric ratio, should drive the mix of managers. For example, most suppliers and assemblers agree that local managers should fill human resource and plant management positions given their knowledge of and experience with American workers, while expatriates are often better equipped to fill financial and operating systems, particularly quality, positions. Across all the companies



we have studied, no functional assignment has been exclusively filled by either expatriate or local managers at startup or soon thereafter.

Of course, there is a potential downside to assigning local managers to human resources and purchasing. If the new entrant wishes to adopt a different, less traditional relationship with labor and/or suppliers, the price for the local managers' knowledge and experience might be that it becomes more difficult to adopt the new relationship. Indeed, Japanese respondents in our prior research commented on the local managers' background of emphasizing cost over quality, surely a handicap for

purchasing positions at the more quality-driven new entrants. Comments also were made about the trouble some local managers had in understanding and adopting the more participatory management style of the new entrants.

An early Japanese new entrant from our previous study made an important general point: The stronger the operating system of the company, and the more the parent company expects it to be replicated here, the more important it is that key functions be led by expatriate managers. They will have the understanding and experience of the company system to be able to inculcate it into the



“If a supplier fails, we fail. We cannot be successful without our suppliers.”

American workforce, both to managers and production workers (including both direct operators and indirect maintenance/repair workers). Other interviewees from the same company also stressed the importance of managers understanding the company philosophy and approach, and one specifically indicated that this indeed required that the managers be expatriates.

The new entrants we studied used a range of mechanisms to address management assignments. One approach was to assign expatriate managers as advisers, mentors, or trainers to local managers. Another approach was to assign expatriates to the locals as coordinators, and the final option was actually to have expatriates function as shadow managers. It seems that subterfuges are unlikely to work, but also that most local managers are willing to accept supervision and training from an expatriate colleague. The more critical issue is to have a plan that tells the local management cadre how long the training period will last and what their promotional opportunities may be.

Local Management Retention

The U.S. labor market is quite open, and many executives and managers believe they should follow a professional career path across

companies, rather than a company career across professions. The company needs to offer clear career paths for its local managers, especially insofar as those careers may or may not realistically involve opportunities beyond the plant and even North America. We believe that career opportunities are an important motivator for managers, and the clearer the company makes these opportunities known, the better the chance of hiring managers whose goals appropriately fit the company.

Ideally, a company should probably provide both vertical and horizontal paths, and freedom to move between plants, at least within North America. Surprisingly, most of the companies we interviewed had flexibility like this built into their management career paths. A representative from Valeo said his company offered a vertical path, several branch paths, and a formal expert program for engineers to gain the benefits of managers and directors while remaining in their path of expertise. An assembler described his company's career paths as seamless and having few ceilings. He added that his plant's youth translated into many opportunities.

Only a couple of companies seemed to lack clear paths. The interviewees within these companies even

disagreed as to the amount of opportunity built into the company's career path, revealing in and of itself the lack of clarity.

For many managers, the rewards of the job are so intertwined with career advancement that the structure of those careers must be evident. A new North American entrant needs to assess how attractive its employment opportunities are because the amount of opportunity will determine the company's holding power.

Workforce Recruitment

Like the results we attained from our previous study of early Japanese entrants, the most frequently mentioned critical challenges for offshore suppliers and assemblers are the identification, selection, training, and retention of a quality workforce. All suppliers and assemblers we interviewed partially relied on state funding for quality workforce recruitment and/or training processes. Much like their Japanese counterparts, European new entrants place an enormous emphasis on workforce selection.

Generally, state offices helped both suppliers and assemblers define workforce hiring criteria, pre-screen applicants, and deliver aptitude and dexterity tests. Yazaki, for instance,

received subsidies for partnering with a local technical school to train supervisors and toolmakers. Hiring criteria at plant startup were similar among suppliers and assemblers, as well as across Japanese and European new entrants. These criteria included: reading, writing, arithmetic, communication, and problem-solving skills; a high school education or GED; and the ability to work with a team.

Most of the new entrants tended to rely on a long selection process, involving pre-screening, aptitude and dexterity tests, and even pre-hiring classroom and simulation training. Part of this was deliberate: It was an effort to test the applicants' commitment to working for the company. The assumption was that people with real commitment would come back for all the interviews and tests over a period of time that, for some early Japanese new entrants, lasted as long as six months, whereas those who were less committed would drop out of the process. This selection process also gave the new entrants a chance to evaluate the applicants in great depth. The lengthy process must have paid off, as the most frequently mentioned pleasant surprise among both early and recent suppliers and assemblers we interviewed was their North

American labor forces' work ethic, enthusiasm, and high morale. One hiring criterion that varied among the early Japanese new entrants we interviewed was prior work experience. Some new entrants specifically sought applicants with no industrial experience, while others preferred prior industrial or manufacturing experience. And still others sought applicants with specific auto industry experience. Of course, location often determines the availability of such workforce characteristics, but there does not appear to be a standard experience preference.

Our research on early Japanese new entrants suggests that recruiting workers familiar with the discipline of industrial life reduces the number of applicants who withdraw from the recruitment process or workers who leave the company. Still, some early new entrants avoided workers with industrial experience for fear that such workers retained poor habits from traditional domestic auto assembly cultures. If a new entrant is looking to establish its own philosophy, it may find it difficult to break the habits of experienced auto industry workers and may prefer applicants with other industrial experience or even no industrial experience at all.



Interviewees in our recent study experienced a number of hiring challenges. First, while companies were able to use state funding to help select workers, some found they were only able to hire a small proportion of the applicants because many lacked basic reading, writing, and arithmetic skills. This lack of an educated workforce in some areas required new entrants to design basic education classes in-house. Securing a sufficiently educated workforce is a daunting recruitment challenge for any assembler or supplier; however, given suppliers' lower wages and benefits, the challenge is probably more daunting.

Second, recruiting and retaining technicians also proved difficult for one company that located midway between two major cities. The location is too long a commute to attract and keep talented technicians, especially since it is not sufficiently far away to convince people to relocate. Another company experienced difficulty recruiting and retaining management

at startup because the plant location's struggling education system made relocation unattractive.

Third, attaining accurate labor and development cost estimates can be difficult when those estimates are provided by local officials motivated to attract new business. One supplier received artificially low cost estimates in a tight labor market. The interviewee said the data should have been presented more specifically to reflect more realistic estimates. The distorted estimates would make financial planning for the plant difficult.

Workforce Training

All of the suppliers and assemblers we interviewed used on-the-job training with workers. On-the-job training was accomplished through some combination of sending team members to their home plants overseas, to their company's other U.S. plants, or established partnerships with local technical schools to facilitate training. Mercedes, for example, sent some of its first hired employees to Germany for six months.

When the trainees returned, they trained new hires on-site. Also, Honda sent workers from Alliston, Ontario, to train and assist its startup in Lincoln, Nebraska. Yazaki used another North American plant to instruct new workers, as well as a local technical school to instruct toolmakers. Both suppliers and assemblers supplemented on-the-job training with some classroom education. This training usually included a standard company introduction, as well as computer and procedure training. In total, the recent supplier new entrants we interviewed trained their initial workforce between 80 and 160 hours, while assemblers trained their initial workforce considerably longer—in some cases, up to six months.

Value Chain: Strong Supply Chain Stability at Startup

Supplier Selection

Assemblers identified a number of attributes they look for during supplier selection: management process, training process, technical competence, quality, financial viability, and delivery price. While the assemblers said cost was a selection factor, we sensed that they generally weighted effective processes more heavily.

We asked interviewees to identify success factors for new entrant suppliers from their home countries. The most frequently mentioned success factors were providing customers with a differentiating technology, replicating the factors that made the supplier successful in its home country, and understanding the U.S. business culture.

Supplier Relations

Toyota and Honda have long had a reputation for close and supportive interaction with their suppliers. Mercedes now also has a reputation for close supplier interaction in the United States. While many new entrants initially sourced parts and components from suppliers inherited from headquarters, Mercedes sought many new suppliers for the new product they intended to introduce to the U.S. market. The company developed new U.S. suppliers by fully integrating them into its daily business processes, including sending Mercedes engineer support teams to work at supplier plants. Mercedes felt supplier support was critical in order for the company to implement its modular construction assembly approach.

Surprisingly, the new entrant suppliers we interviewed also implemented a number of development processes with their suppliers, including regular evaluations of quality and production control, certification processes, workshops, and organizing teams to work with suppliers experiencing difficulties. One supplier is specifically helping its suppliers implement a web-based EDI system and Toyota's lean manufacturing approach.

In part, supplier development processes appear to depend on the product bought from the supplier. For example, one supplier said that working with raw materials suppliers was rarely problematic and that there was very little turnover in this segment. Parts and components suppliers, on the other hand, experienced higher turnover and needed more development attention from the customer, including determining best transportation routes and in-house assistance with production and quality tasks.

With the exception of one supplier, most of our respondents experienced high supply chain stability at startup. In fact, Mercedes experienced no turnover at startup, despite selecting almost all new suppliers. Some actions

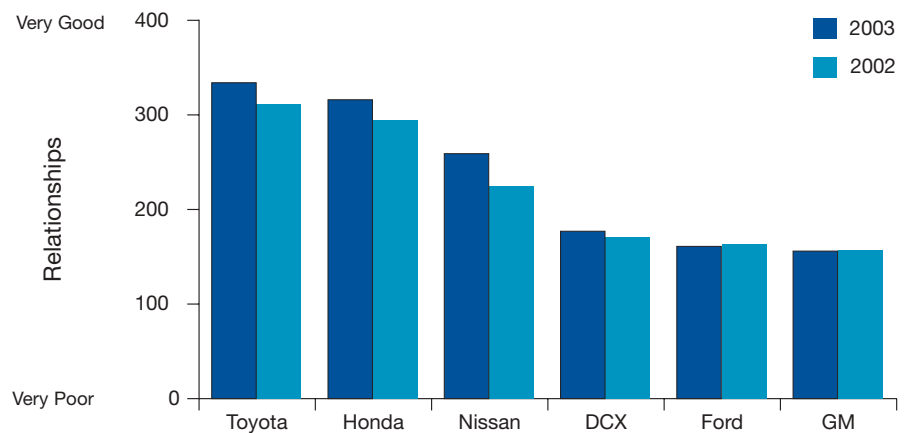
that new entrants took to maintain low supplier turnover included inventory buffering, providing the supplier early engineering support, and implementing just-in-time and just-in-sequence production. A Mercedes interviewee suggested that his company's high stability may be related to its fact-based selection process. Specifically, this company visited potential suppliers and evaluated them on technical competency, hiring and training process, and financial viability.

The great effort that both suppliers and assemblers put into supplier identification and development suggests that they want long-term relationships with their suppliers. Nonetheless, we detected a willingness to terminate relationships, especially when a company deems that a supplier has performed poorly or been unable to keep abreast of changes in manufacturing technology and practice. A recent *Automotive News* report suggests that DaimlerChrysler may be thinning the ranks of its suppliers at its M-Class plant in Alabama, as it automates its operations more fully and attempts to gain yet more control over the quality of its SUV production.³

³Kochan, Anna. "Mercedes cuts role of suppliers in Alabama." *Automotive News*. 30 June 2003.

We asked some suppliers and assemblers where they would place their plant's expectations on a scale from 1 to 5, where 1 means their company expects a customer-supplier partnership and 5 means their company expects an arm's-length relationship. New entrant suppliers and assemblers expected a customer-supplier partnership. Suppliers agreed, though, that a partnership was a mere expectation—the actual relationship varied with the customer.

All of our supplier respondents described their traditional U.S. domestic customers as maintaining a more arm's-length relationship (scores ranging between 3 and 4.5), and described their offshore-based customers as maintaining a full or nearly full partnership (scores ranging between 1 and 1.5). As Figure 3 depicts, these findings are consistent with the 2003 results of a customer-supplier relationship survey that found suppliers prefer Japanese customers on 17 measures ranging from trust to perceived opportunity to making acceptable profits. Furthermore, the survey results indicated that suppliers' preference for Toyota, Honda, and Nissan had risen since last year, while their preference for two of the traditional domestics—Ford and GM—had fallen.



Source: *Automotive News*, May 12, 2003, page 1

Figure 3. Suppliers' perceived relationships with customers.

As business at new entrant assemblers has grown, companies like Honda and Mercedes have attracted more American suppliers. The suppliers that have captured business with the new assemblers have shifted their focus and begun to consider alternative ways of doing business. Some suppliers, but not all, have themselves become advocates of a developmental model of sourcing, and a few of these have even extended the concept to their own transactions with their supply base. These suppliers have often profited by their association with one or more new entrant customers, and have developed strengths in areas such as quality and productivity that were areas of weakness in the past.

Supply Chain Management

We asked assemblers and suppliers what supply chain management challenges they faced and lessons they learned as new U.S. entrants. They mentioned a number of costly problems.

The most frequently mentioned challenge was the steep shipping and logistics costs that accompanied offshore suppliers. One new entrant supplier said that if a legacy supplier is unable to support a customer's remote operations, the customer should encourage the supplier to build local support or change suppliers and revalidate before production. The supplier added that the more quickly a company localizes suppliers, the more successfully that company's supply chain will operate.

To reconcile shipping costs, some new entrant suppliers needed to buffer inventory.

Two suppliers cautioned against giving a large proportion of business to one new supplier. An assembler agreed, adding that it was very easy to rely too heavily on new entrant suppliers that also face the challenges and problems of startup and scarce resources. Specifically, one supplier suggested only giving 25 percent to 30 percent of business to a new supplier. Another suggested hiring a minimum of two new suppliers for each component. Third, some new entrants warned that modifying specifications for U.S. suppliers and locating necessary materials in the United States can pose a challenge. In one instance, a specification problem was solved only after developing expensive proprietary tooling.

Traditional domestic assemblers and suppliers planning to set up operations overseas would be especially wise to learn from the shipping and logistics experiences described by our interviewees. The additional cost of buffering for North American Tier N suppliers (that is, lower-tier or indirect suppliers) may lead assemblers and suppliers that are globalizing to source from their new plant locations in places like China. But these assemblers and suppliers

should also be forewarned that while production and labor costs may be cheaper in China, the additional costs of hiring and developing more than one new supplier for each component may outweigh the costs of maintaining relations with their North American legacy suppliers. Legacy suppliers may be able to avoid a supplier switch by ensuring accurate delivery timing and safe shipping processes, and perhaps by opening operations in China.

Companies relied on assistance from North American headquarters, home country headquarters, consultants, and the suppliers themselves to resolve their challenges. Given the complexity of the supply chain, it is not surprising that every company we interviewed experienced some supply chain management issue. The variety of issues leads us to believe that supply chain problems are difficult to predict; however, as globalization increases, companies new to global operations should take note of such difficulties to try as best they can to find a solution to the problems as early as possible.

New and Inherited Customers

Our earlier work with four Japanese assemblers reviewed some of the tensions that can develop when a new entrant supplier “follows” a customer here, but then needs to expand its



“You try to limit your variables at startup. We used established processes, established equipment, and an established supply chain. The only variable was the largely U.S. labor supply.”



volumes by adding other customers, or when suppliers enter new markets with existing facilities and inherited customers. One of the plants we interviewed in this project was originally owned by an American company. When the new entrant bought that company, the new owner was able to continue supplying the company's prior customers. Years later, this plant also inherited a relationship with a European customer—a relationship that was originally formulated in Europe. The supplier also added customers that were already purchasing components from its other U.S. plants. We think this timeline is relatively typical: Successful new entrant suppliers are established only after a sufficient number of likely customers are well in view.

The suppliers we interviewed offered several cautions about acquiring new accounts. First, seek growing companies (this includes several of the new entrant assemblers). Second, seek companies with a reputation for sustaining positive supplier relations. Third, diversify across customers.

The second and third points have become more feasible as the North American landscape includes more and more assemblers that, to some extent, must compete for high quality suppliers. For example, reports suggest a domestic tire manufacturer with a successful aftermarket business declined a potential customer's contract based on the customer's supplier relationships. The tire manufacturer believed its business volumes were sufficient without adding a customer known for weaker supplier relationships.

Competitive Pressures

The emphasis on cost reduction varied considerably among the companies we studied. For one supplier, the multi-year contracts the company signs with its customers are based on flat prices, with the exception of fluctuating raw material costs. To attain a profit, therefore, the supplier generates cost reduction programs to increase labor efficiency and reduce scrap. Yazaki did not make cost reduction a priority during the first 18 months of operation. Instead, the supplier focused on its product quality and delivery. An assembler reduced cost by excluding automation in some areas of the plant to keep depreciation cost down. The plant also searched worldwide for underutilized equipment in its company's other plants to use on its own line.

We asked our interviewees how they implemented cost reduction programs without damaging customer-supplier relations. The answers varied and included setting targets for suppliers and sharing cost savings. One assembler explicitly indicated that cost reduction efforts vis-a-vis its own suppliers were not initially important. The assembler's startup goal was to maintain product quality.

Manufacturing: Begin With a Proven Product and Process

New vs. Old

Our past research suggests that new entrants perform best in terms of operational efficiency when their process and first products are those that have already been successfully produced up to mid-cycle at the company's other plants. Most of the companies we interviewed began operations with a proven product and process, except one supplier that began its operations with a new process and one assembler that began with a new modular process and a new product. These companies seemed to agree that beginning operations with a proven product and process relieved some startup stress.

Some early Japanese entrants did not substantially change or alter their company's traditional ways of organizing and operating production processes, although there was discussion of incremental improvement and the need to innovate (as is true among our newer entrants), but they clearly did not believe there was any fundamental change required to adapt to the American production environment. One interviewee characterized Honda's Lincoln plant as a footprint of its sister plant in Ontario, aside from including incremental improvements like the

latest technology in stamping and welding, and building engine assembly in the plant. On the other hand, Nissan Smyrna relied on higher levels of automation than is typical in its plants in Japan. And Diamond Star was itself a curious hybrid of Mitsubishi process equipment and Chrysler operating methods and procedures.

Schedule Stability

Schedule stability did not pose the challenge we thought it might. Our respondents indicated that production was rather stable at startup. This is partly due to the fact that these firms were building inventory initially, but a growing demand for many of these products soon followed. In fact, most assemblers and suppliers we studied needed to expand their production facilities within a few years after startup. But these tended to be steady ramp-ups, not the wide fluctuations in demand that really constitute schedule instability.

Occasionally a supplier or assembler experienced disruptions. For example, during the Gulf War, the cyclical nature of the American market led to short-term, but steep, order declines for the suppliers.

Time to Full Operation

Most of our respondents spent a year or less ramping up to full operation,

defined in terms of rated jobs per hour operating on one shift. One supplier even had a line fully operating successfully within three weeks of its plant opening for production. Given the supplier's phased startup plan, however, it took more time before all the production lines were operating.

The new entrants' rapid production ramp-up was often preceded by rapid factory construction. We were impressed by how quickly one assembler completed the first phase of its factory and how rapidly it finished a major expansion of its factory. We stress this because new entrant nimbleness represents another competitive challenge to traditional domestic companies, both assembler and supplier.

Information Technology

IT implementation timing appears to have been another challenge among new entrants. One interviewee cautioned against simultaneously implementing ERP and production at startup. In hindsight, the interviewee believed the company should have developed its ERP system further before plant startup. The growth of the company's production facilities led to a strained IT infrastructure. The software in use, however, performed as expected.

Conclusion: Implications and Recommendations for the Industry

THE NEW ENTRANTS REMIND THE TRADITIONAL INDUSTRY THAT IT CAN BE MORE PROACTIVE IN SHAPING ITS SUCCESS AND LESS REACTIVE TO SOME INEVITABLE OUTCOME.



The workforce can change its skills and attitudes, and the best tools for accomplishing this are training and changes in managerial and company cultures.

There are numerous challenges facing new entrants in the North American automotive assembly and supplier industry. Many of these are particular to a given company, site, and product, but many of them are more general and therefore likely to apply to a greater or lesser degree to virtually any company, site, or product. Indeed, some lessons learned by foreign-based entrants into North America almost certainly have important implications and useful suggestions for traditional domestic assemblers and suppliers as they themselves go abroad to establish their own new entrant operations. Moreover, some of these lessons even apply to traditional domestic companies' own activities in the North American industry. This section provides our estimation of some of the key lessons revealed by our research, and our best judgment as to where they may apply.

Implications for New Entrants

A major balance challenge for new entrants develops in the plant's initial staffing decisions, where the ratio and exact assignments of expatriate and local managers play a key role in setting the parameters for the new

entrant's culture and role in the North American industry and in its home company. There is no question that it is difficult to balance out managerial skills and assets across local knowledge, company experience, and task competence. Our report suggests that companies indeed vary widely in how they address this challenge, but that successful operations have developed stronger local management teams over time.

A second major challenge comes to the fore as the new entrant tries to balance the participation and career opportunities for its expatriate and local U.S. managers, both locally and globally. If local managers see themselves as restricted to local opportunities they may leave for better career opportunities. On the other hand, as the experiences of U.S. companies attest, it can be quite difficult to manage successfully a truly international management cadre.

New entrant assemblers and suppliers also face a major challenge in balancing the organizational independence necessary to participate in the North American industry with the organizational integration they

must have to participate as a good citizen in the home company. Achieving this balance is difficult and there is no one solution that works well in all instances. This is especially the case since this tension between independence and integration is reflected in numerous decisions—decisions that must themselves often alter and change with shifting circumstances. This challenge is especially difficult in IT, where new entrants must meet North American industry expectations that are often higher than the home industry requirements.

A fourth major balance challenge comes as the new entrant suppliers typically find they must develop additional customers in order to meet their own business objectives. These new customers can upset the delicate balance and chemistry of supplier/customer relationships, and the business decisions that are viewed as necessary in either the home or North American industry context can turn out to be problematic in the other.

The fifth major balance challenge comes as the new entrants, both assemblers and suppliers, develop and manage their own supply chains.



They must manage some suppliers from the company's traditional home base supply chain; others that are themselves new entrants, perhaps drawn to North America because of the company's demands that they do so; and still others that are traditional, in-place North American suppliers. This is a complex challenge and often requires extensive sourcing and re-sourcing. Again, there are business and political considerations and constraints to these decisions that may differ between the North American and home operations.

How the new entrant resolves these tensions will in large part shape its twin roles as a member of the North American industry and a unit of its company.

Some of the challenges that new entrants face are the same ones traditional companies face as they reorganize, expand, or change product or locations.



Established domestic companies face real challenges, but unfortunately automotive customers are for the most part uninterested in legacy challenges.

Implications for Traditional U.S. Companies Going Abroad

The U.S. industry is making major investments abroad, especially in China. China differs enormously from the United States in terms of its business, political, and economic climate, and the specific challenges of adjusting successfully to China will likely be very different.

However, the five general challenges discussed above are likely to be present for North American companies going abroad, whether to China or elsewhere. And if companies view China as more difficult to enter than North America, we would expect these challenges to be only more severe. Company management must see the resolution of these challenges and their associated tensions as a major part of the challenge of going abroad, and pay appropriate attention to them. Reflecting on the experiences of foreign-based companies coming here may well suggest issues and possible responses that can be useful to U.S. companies going abroad.

Implications for Traditional U.S. Companies in North America

Just as we think the lessons learned by new entrants into the North American industry can help U.S. companies as they go abroad, we think that they can also be useful

to established, traditional domestic assemblers and suppliers. It is worth remembering that some of the challenges that new entrants face are the same ones traditional companies face as they reorganize, expand, or change product or locations.

Most of the new entrant lessons with implications for established North American industry participants involve some reconsideration of the conventional wisdom about the inevitability of the obstacles facing the industry. In a sense, conventional wisdom calls attention primarily to the legacy competitive disadvantages of the established players, including a more unionized (and therefore presumably more recalcitrant) workforce; older workforces, brownfield plants, and equipment; a high ratio of retirees to actives and its associated costs; and so forth. To be sure, these are real challenges, and some are even almost as bad as the conventional wisdom portrays them. At the same time, automotive customers are uninterested in these challenges and demand that auto companies meet the competition using whatever changes are necessary.

Conventional wisdom also identifies the competitive advantages of the new entrants, ranging from a less unionized (and therefore presumably

more cooperative) workforce; younger workforces, greenfield plants and equipment that reflect the latest knowledge and technology; few retirees; heavy incentives from state and local governments; and so forth. Again, most of these advantages are real, and some are even almost as good as conventional wisdom asserts. Yet they ignore the fact that these plants operate in the same country, with the same laws and regulations, and use domestic North American labor in achieving their success.

We firmly believe that conventional wisdom errs not so much in the details, but in the degree to which they are described as fixed and immutable. And that is why we think that the lessons from the new entrants remind the traditional industry that it can be more proactive in shaping its success and less reactive to some inevitable outcome.

Perhaps the major lesson that the traditional industry should learn from the experiences of these new entrants is that the North American workforce can generate world-class results, and the best tools for accomplishing this are effective recruitment, training, and changes in managerial and company cultures. If the problems of the traditional workforce are rooted in the current structure and



arrangements of the workplace, and if the new entrants have in general offered quite different workplaces and gained quite different workforces, surely it makes sense to change the workplace, rather than simply accepting the legacy workforce as a given.

Another important lesson is that incentives, no matter how lucrative, are temporary, and the new entrants had to develop and pursue business plans that did not rely on incentives. Whatever the value of the incentives granted to new entrants (and traditional companies similarly investing), many new entrants have already exhausted them. Traditional companies have survived them, and that part of the playing field is now rapidly leveling.

In addition, we have discovered that proximity might not be the unmixed blessing that many once thought it to be, and that the handicaps of distance are also less than many expected. So the more dispersed state of the traditional North American industry may not be a severe handicap, as the transportation infrastructure and improved logistics have served the industry well. At the same time, the relative concentration of new entrant plants has conferred some disadvantages as well as advantages, often straining the labor supply.

Finally, the traditional domestic industry faces far smaller challenges in two important arenas. For one, the traditional industry has much less concern for balancing expatriate and

local managers, and tensions between plants and headquarters, while often real, are not complicated to the same degree by language, time, and culture differences. For another, while conventional wisdom sees “newness” as an unmitigated blessing, it clearly raises numerous challenges, as discussed above, and most older, traditional operations have in large measure resolved these challenges.

Endnote: Lessons Learned

The challenges and responses of new entrants and established participants will often differ, but perhaps not to as large a degree as many expect. This should not be too surprising when one considers that both are participating in the same industry and the same national political, economic, and business regime. And to the extent that they face similar challenges with a similar response repertoire, the lessons learned by one should provide useful information for the other.



For additional information about our research or how the findings and implications may apply to your own business, please contact:

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Appendix: An Historical View of Production, Sales, and Profit Trends

NEW ENTRANTS HAVE EXPERIENCED CONSIDERABLE SUCCESS IN THE NORTH AMERICAN MARKET OVER THE PAST THREE DECADES. THE FOLLOWING PAGES PROVIDE A DETAILED LOOK AT THIS DEVELOPMENT, WITH A FOCUS ON HISTORICAL INDUSTRY TRENDS.



Exchange Rates: Shaping the Competitive Threat

The U.S. industry tends to see important advantages for offshore automotive producers in currency exchange rates, typically feeling that the dollar is too strong, or the euro/yen too weak, making U.S. production less cost competitive with imports. However, shifts in the currency exchange rates probably matter less in terms of establishing a company's level of competitiveness than they do in shaping the kind of competitive threat a company faces.

Setting aside the complex issue of whether a particular currency may be over- or under-valued, recent shifts in the currency exchange rate for the euro and yen may indeed change the basis of competition with offshore producers. The dollar has weakened over the past year, making exports from euro and yen producers substantially more expensive in dollars than they were a year ago. At the same time, the weakening dollar/strengthening euro and yen mean that dollar investments in the United States have become less expensive for yen- and euro-based producers.

If the current shift continues, we would expect to see a fall in exports to the United States, but also an increase in U.S. investments, as offshore producers expand their U.S. participation as new entrants. Exchange rates are indeed important not only in the comparative costs between international competitors, but are also major determinants of whether exporting or foreign direct investment (FDI) is the better strategy for a given competitor. As Figure 4 illustrates, changes in currency exchange rates drive export and investment costs in opposite directions.

Production: Domestic Suppliers and Assemblers Under Pressure

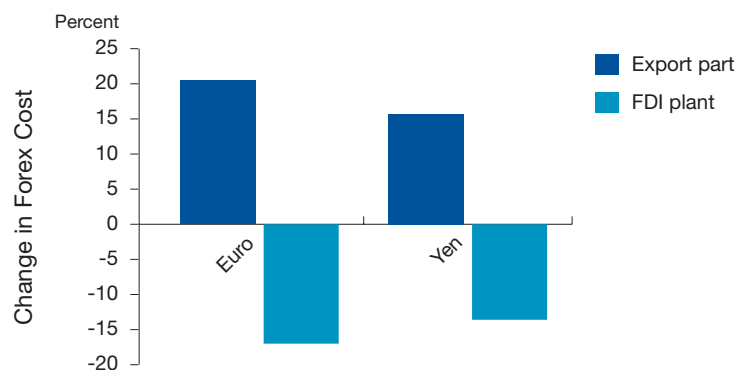
Today, new entrant assemblers' production capacity in North America exceeds 4 million vehicles. These additions have not been solely incremental capacity though, as many assemblers have shifted production from other locations to North America. Indeed, as Figure 5 illustrates, the four major Japanese assemblers in North America are now sourcing substantial proportions of their total vehicle sales from their local U.S. plants.



This shift in vehicle production has presented an important threat to traditional suppliers, since much of the new entrants' incremental production gain comes at the expense of the suppliers' traditional domestic customers—Chrysler, Ford, and General Motors. As their customers lose business, so do suppliers. Nevertheless, as Figure 6 illustrates, as these new entrant assemblers have steadily increased their local build, they have also increased their local buy, and traditional suppliers can pursue business with them. Still, for traditional suppliers, new entrant business all too often constitutes a shift in customers rather than incremental sales, and thus at best replaces the lost business.

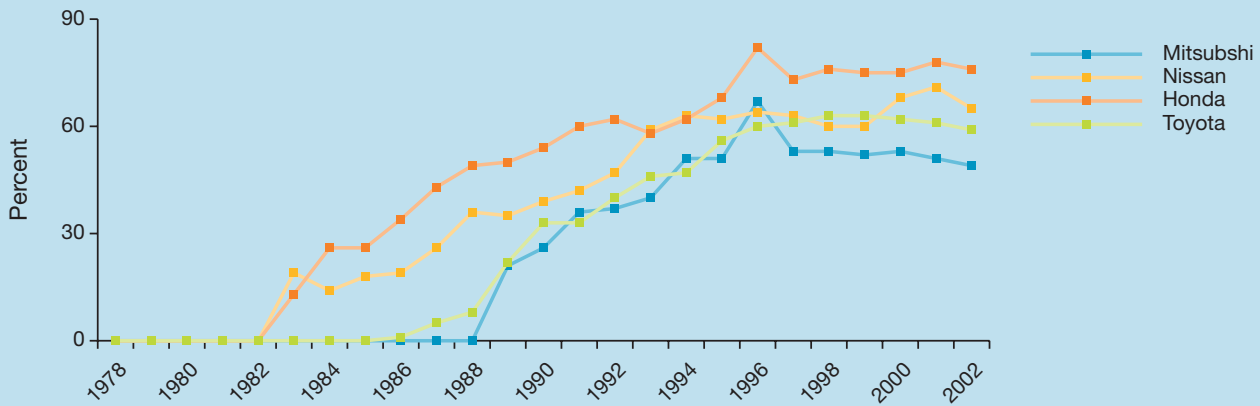
As recently as 1992, traditional North American suppliers dominated the North American supplier industry,

accounting for over 80 percent of the top 50 suppliers based on North American sales. As Figure 7 indicates, however, the composition of this elite group has changed through mergers, acquisitions, and investments, such that traditional suppliers now account for 60 percent of North American sales. As Figure 8 reveals, the traditional domestic suppliers in the top 50 performed well in terms of sales, capturing over 90 percent of North American sales in 1992, but then fell to 75 percent by 2002. Similarly, as Figure 9 indicates, in 1992 the traditional domestic suppliers captured over 70 percent of worldwide sales by the North American top 50 suppliers, falling to 54 percent by 2002. European-based, North American suppliers gained the most share of worldwide sales over those 10 years, moving from 12 percent of the total to 29 percent.



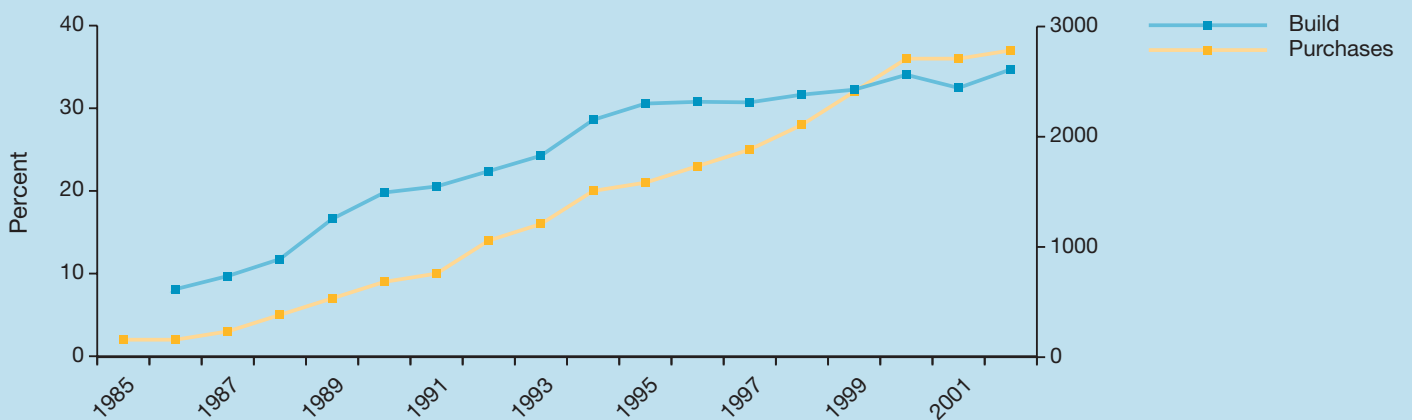
Source: *The Economist*, December 2003 compared to December 2002

Figure 4. Change in cost of export versus FDI strategies: 2003/2002.



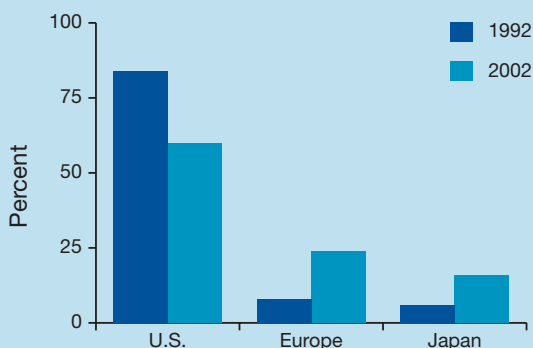
Source: Automotive News Market Data Book

Figure 5. Percent of U.S. sales assembled here.



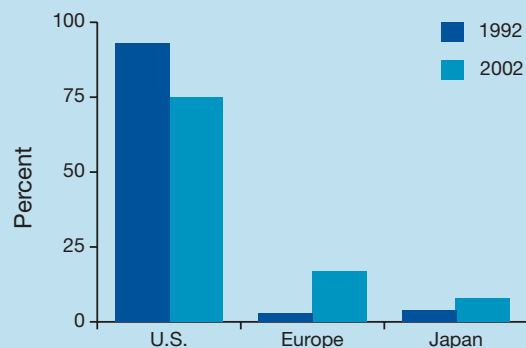
Source: Automotive News, October 2000; JAMA, October 2002, November 2003

Figure 6. Japanese assemblers' U.S. build and parts procurement.



Source: Automotive News

Figure 7. Composition of top 50 suppliers based on North American sales, by national origin.



Source: Automotive News

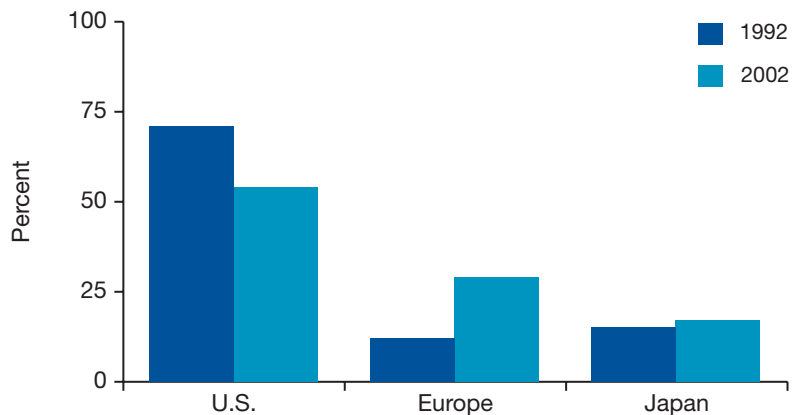
Figure 8. North American suppliers' share of North American top 50 sales, by national origin.



As Figure 10 illustrates, the traditional domestic assemblers' passenger car volumes have declined precipitously. This, despite the near-record sales levels of the past few years. This decline is partly due to a shift in demand from passenger cars to light trucks, including pickups, minivans, and SUVs; however, the decline is also partly due to the traditional domestic assemblers' market share loss. In fact, as Figure 11 reveals, when we eliminate the effects of market fluctuations and vehicle segment shifts and examine production share, we see the traditional domestics have lost 40 points of North American car production share. Indeed, Honda and Toyota alone now account for 20 percent of North American car production.

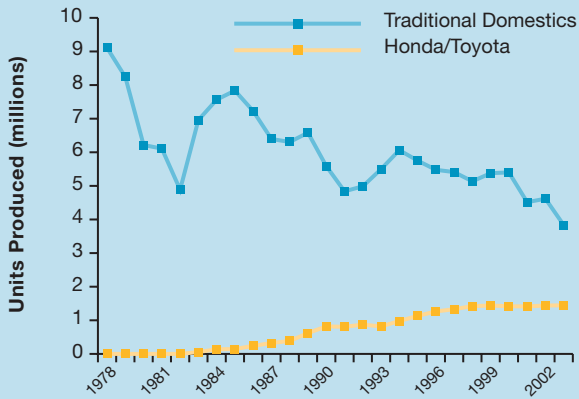
Although sales of light trucks and passenger cars are still relatively balanced given that more passenger cars than light trucks are imported, the traditional domestics' passenger car production has fallen, while light truck production has increased to meet shifting demand. In fact, as Figure 12 indicates, light truck production in North America now exceeds passenger car production.

As Figure 13 reveals, the two major Japanese producers in North America have accelerated their light truck production more rapidly than passenger car production over the past five years. This acceleration has also contributed to the overall increase in light truck production share. It also merits mention that this light truck production acceleration



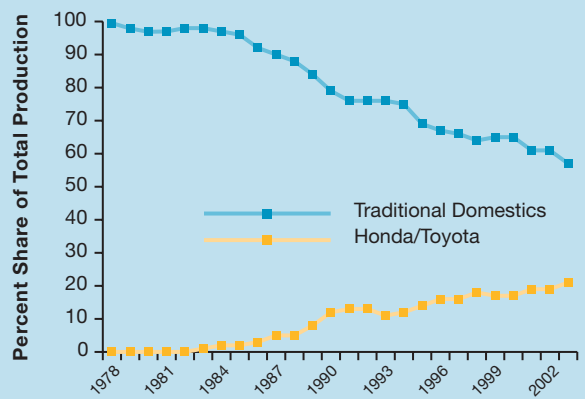
Source: *Automotive News*

Figure 9. North American suppliers' share of worldwide top 50 sales, by national origin.



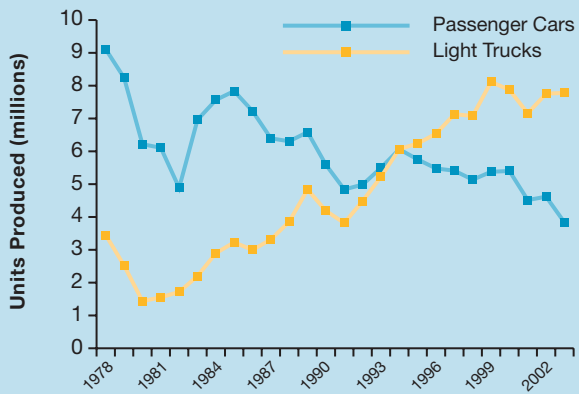
Source: Automotive News Market Data Book

Figure 10. North American assemblers' passenger car production.



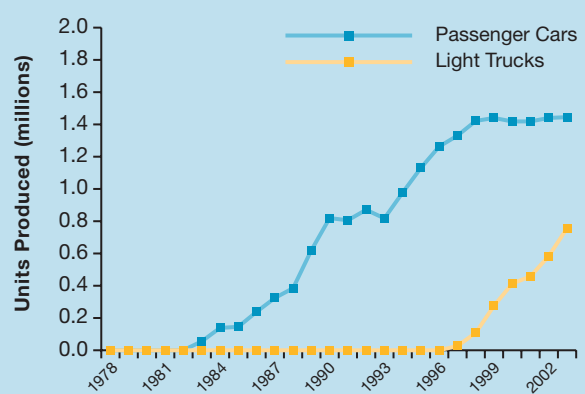
Source: Automotive News Market Data Book

Figure 11. North American assemblers' passenger car production share.



Source: Automotive News Market Data Book

Figure 12. Traditional domestic car and light truck production in North America.



Source: Automotive News Market Data Book

Figure 13. Honda's and Toyota's passenger car and light truck production in North America.



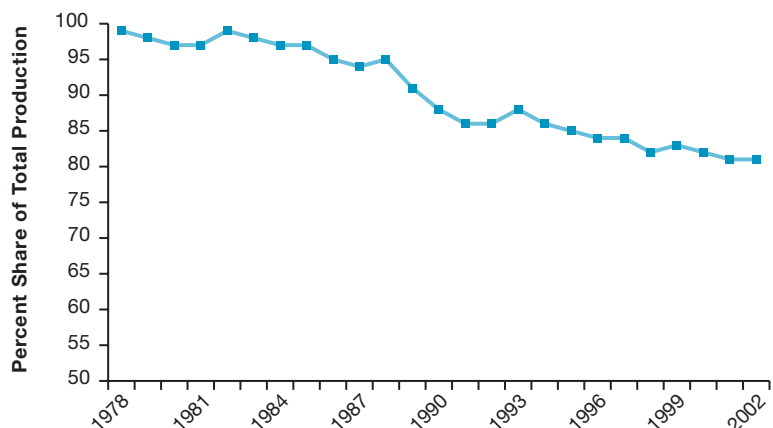
offers an opportunity to traditional parts suppliers that may have focused their business more on the light truck build of their customers than the passenger car build.

Figure 14 suggests another major change for the traditional industry over the past 25 years: The proportion of vehicles assembled in the United States that are assembled by UAW-represented workers has declined some 19 percentage points since 1978, falling from 100 to 81 percent. This not only affects the UAW's bargaining power, but makes them a competitive factor. Not only does the industry now have union and nonunion assemblers, but companies that can effectively build on their relationship with the UAW, much as those that can effectively deploy their

supplier relationships, may develop competitive advantages over those that cannot.

Sales: Vehicle Segment Patterns Shift

Using the then-record sales and production year of 1978 as a base year, Figure 15 illustrates that the traditional domestics have lost a combined 22 points of market share. Moreover, Ford and Chrysler show little change, losing and gaining three points respectively over that period, while GM has lost 22 points. Meanwhile, Honda has more than doubled its share and Toyota has almost tripled its share. The remaining new entrant and import assemblers have captured 10 percent of the market since 1978.



Source: Automotive News Market Data Book

Figure 14. Proportion of vehicles assembled in the United States that are assembled by UAW-represented workers.

When we examine the sales patterns of the individual traditional domestic assemblers in Figure 16, a number of important patterns emerge. First, in the late 1960s and early 1970s when GM dominated the U.S. market, the proportion of Ford sales that were light truck sales already exceeded

the overall market share for these vehicles. On the other hand, Chrysler sold proportionately fewer trucks than the market demanded. So Ford was already a stronger performer in light trucks than in passenger cars, and Chrysler stronger in passenger cars than light trucks. Meanwhile,

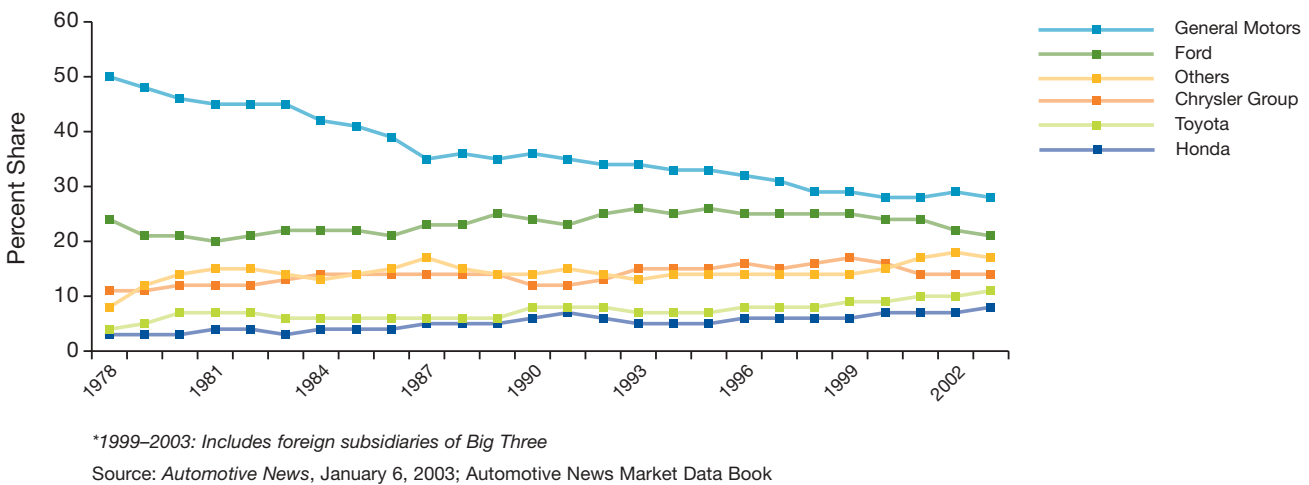


Figure 15. Big Five total vehicle market share in the United States.

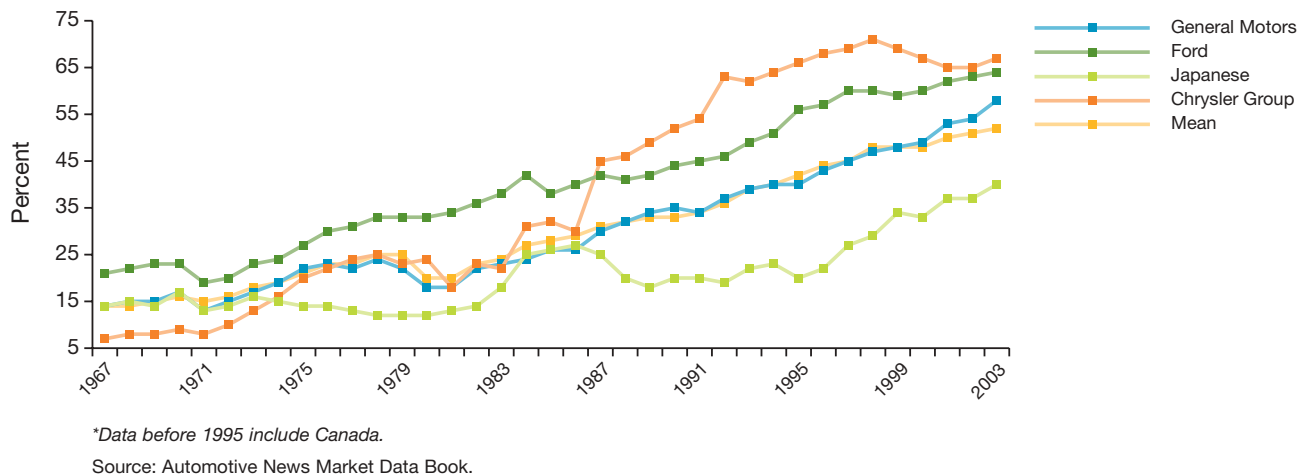


Figure 16. Light trucks as a proportion of North American sales.



GM sales were balanced, equally strong in both markets, and able to move with, or even drive, the market shifts between light trucks and passenger cars.

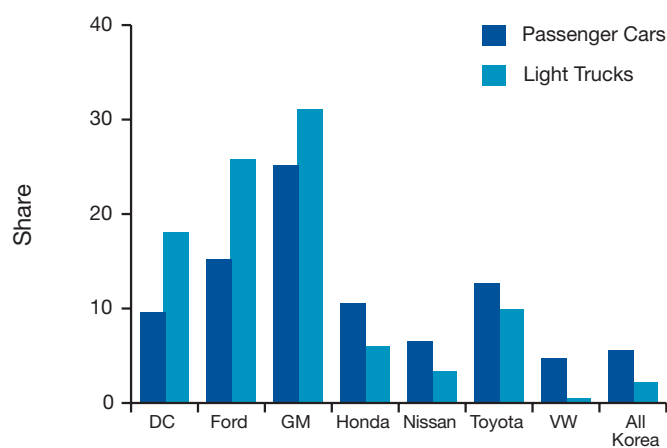
Second, the introduction of the minivan in the mid-1980s and Chrysler's subsequent acquisition of American Motors made Chrysler more of a light truck producer, although this has been slightly modified since Daimler acquired the company in 1997.

Third, GM moved off the market mean and began to rely more on light truck sales in 2000, leaving all of the traditional domestics stronger performers, but also more reliant on light truck sales. Moreover, GM's

improved performance in light trucks relative to passenger cars reflects both a strengthening light truck performance and a weakening passenger car performance.

Fourth, the Japanese producers have alternated between meeting the market mix of vehicles and performing more strongly in the passenger car segment of the market. Since 1995, the Japanese assemblers' performance has been moving to the market mean, strengthening in light trucks, even while continuing to strengthen in passenger cars.

Today, light trucks account for about 52 percent of the total U.S. market, so we essentially find two distinct and similarly sized vehicle markets,



Source: *Automotive News*, January 6, 2003

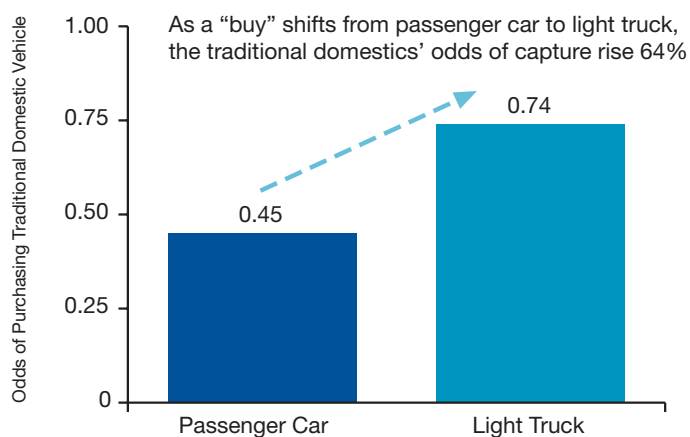
Figure 17. U.S. market share in 2003, by company and vehicle type.

one for passenger cars and one for light trucks. If we examine the performance of the Big Five and a few illustrative competitors in the light truck and passenger car markets, Figure 17 reveals the striking extent to which performance in the two vehicle markets can diverge. Chrysler, for example, has just about twice the market share in light trucks that it has in passenger cars. Toyota and GM have the most balanced performance; although GM's segment performance trend is diverging, while Toyota's segment performance is converging.

Perhaps the easiest way to visualize the market implications of assemblers' differential performance in the two vehicle segments is to consider a

customer shopping for a vehicle. As Figure 18 illustrates, if a customer decides to buy a passenger car, the odds of the traditional domestics capturing the sale are less than 50/50 and falling. On the other hand, if the customer elects to buy a light truck, the odds of the traditional domestics capturing the sale are nearly 75/25, but also falling.

So, the traditional domestics perform best in the market's current growth segment. Differential performance in passenger cars and light trucks may be a fact of life in the industry, since most companies probably cannot afford the huge product investments required to be top competitors in both. But we noted earlier that both Toyota and Honda are moving to



Source: *Automotive News*

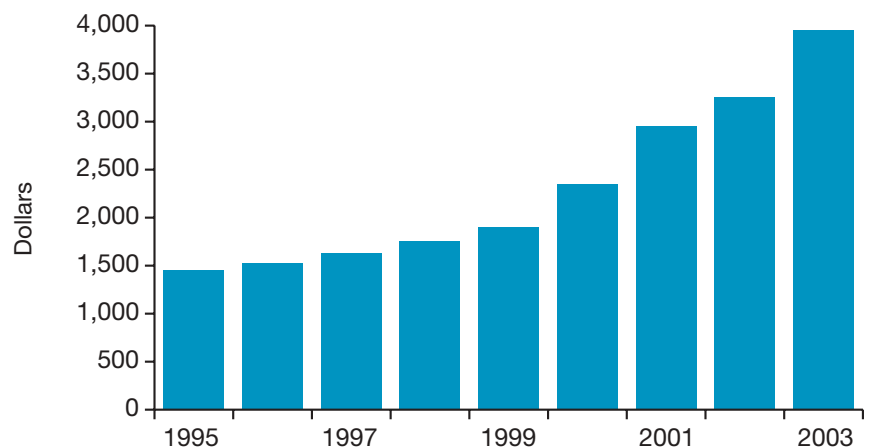
Figure 18. Traditional domestics' capture rates in 2003, by vehicle type.



balance their performance as they increase their light truck share more rapidly than their passenger car share.

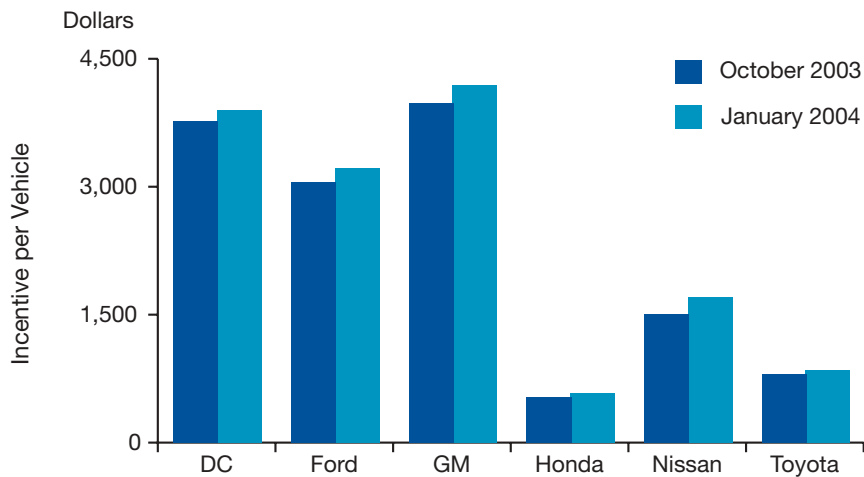
Moreover, the market could shift back to passenger cars if style preferences or utility needs change, fuel availability decreases, fuel prices continue to increase, or other environmental concerns increase. It is difficult to predict the effect of environmental events and purchasing factors on sales. The overwhelming majority of experts missed the fuel shocks of the 1970s, and many customers report the importance of environmental factors in their purchase decision, while making purchases that seem inconsistent with those views.

Nonetheless, the U.S. auto industry now finds itself lagging the Japanese industry in hybrid vehicle development, and risking exposure to a massive market swing like that which accompanied the oil shocks of the 1970s and left the traditional domestics unable to provide consumers with the fuel-efficient cars offered by Japanese competitors. Certainly a major oil shock, sustained oil price increases, air quality concerns, and concerns about foreign oil dependence could develop and might well lead U.S. consumers back to passenger cars over time. If such a shift occurs, then Chrysler, Ford, and GM stand to lose many sales and, if customers shift to hybrids, perhaps face a disaster of 1970s proportions for them and their suppliers.



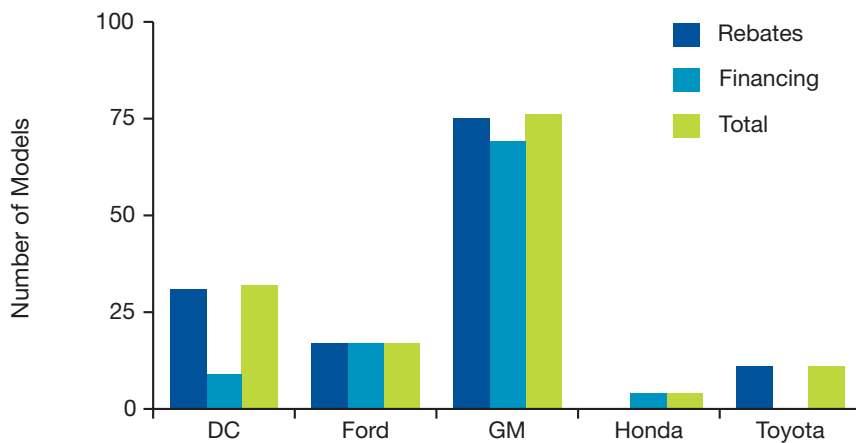
Source: *Automotive News*, August 11, 2003

Figure 19. Traditional domestics' incentives per vehicle.



Source: *Automotive News* online November 7, 2003 for October; February 5, 2004 for January

Figure 20. Incentive spending by company.

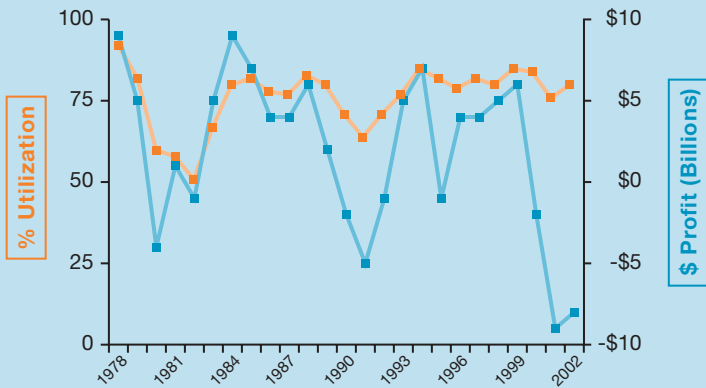


Source: *Automotive News*, August 2003

Figure 21. Rebates and subsidized financing in August 2003, by company.

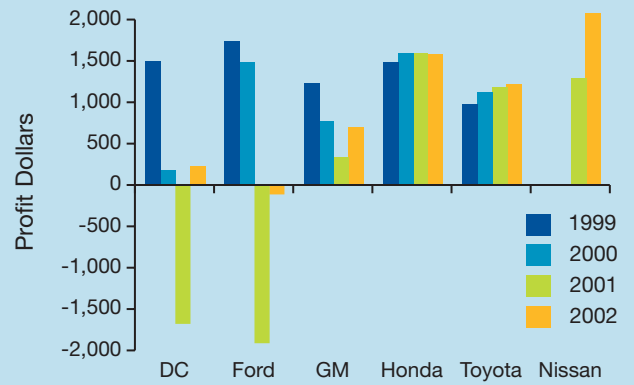
Profit: Incentives Subsidize Sales

In spite of the traditional domestics' impressive efforts to close the competitive advantage held by some offshore producers, they continue to heavily subsidize sales through the use of incentives. As Figure 19 reveals, the level of traditional domestics' incentives in 1995 was somewhat below \$1,500 per vehicle. In 2003, their incentives were approaching \$4,000. And, as Figure 20 reveals, the traditional domestics' incentive spending per vehicle is considerably above that of their major Japanese rivals. Moreover, as Figure 21 illustrates, the traditional domestics' incentives are more widespread across their product lines, in contrast to those of Honda and Toyota.



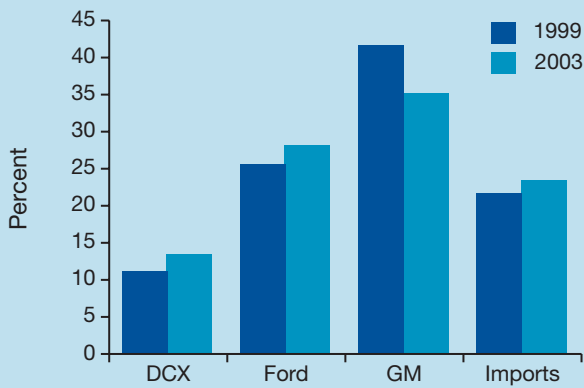
Source: DOC, BLS

Figure 22. Industry capacity utilization and profit.



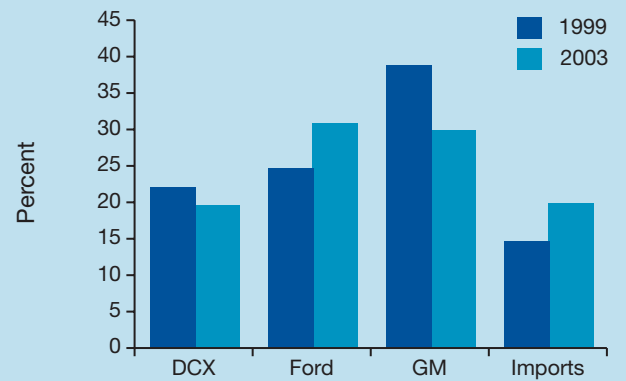
Source: Harbour, *Automotive News*, June 17, 2002

Figure 23. Profit per vehicle, by year.



Source: Automotive Fleet

Figure 24. Share of total fleet passenger car market, by assembler.



Source: Automotive Fleet

Figure 25. Share of total fleet SUV market, by assembler.

Industry profits have suffered, and incentives only add to the challenge of earning sufficient revenues to support the huge product investments required to be a full line assembler. As Figure 22 reveals, each profit peak, even in current dollars is lower than the previous one, and the industry simply does not earn the returns it once did, even in the difficult 1970s. As Figure 23 indicates, this has led to a poor profit performance at the traditional domestics, especially compared with Honda and Toyota.

Fleet sales constitute another comparative weakness for some of the traditional domestics' profits. Ford and GM rely on more or less "captive" sales, including their own employees, relatives, vendors, and fleets, all of which tend to be associated with deep discounts that restrict profit. Ford and GM only captured about 40 percent of the passenger car market in 2003, but as Figure 24 reveals, accounted for about 63 percent of passenger car fleet sales.



Figure 25 illustrates the share of the total fleet SUV market by assembler. New entrants have a higher participation in fleet sales for SUVs than for pickup trucks, where their share is less than 5 percent. This might reflect fleet purchasing decisions based on quality ratings or residual values, but could reflect an advertising tactic for these assemblers to make the public more aware of their relatively newer SUV product line.

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