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A Primer on Global Auto Markets

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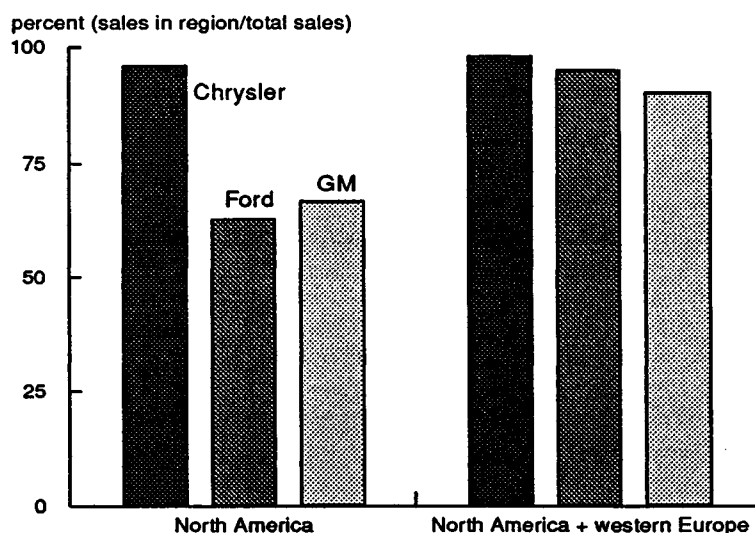
Much literature in the last twenty years has focused on the trials and tribulations of the auto industry in the U.S. This literature has extensively examined the struggles and restructuring of the domestic industry in response to strong foreign competition and a changing domestic marketplace. The studies have portrayed the degree of pressure (substantial) and the degree of change in the U.S. (correspondingly also substantial). Yet, although this analysis is important, one area which has received only a fleeting review has been the subject of the U.S. market within the global environment or marketplace. Certainly an analysis of import and transplant developments in the U.S. does incorporate a strong international component, but it does so exclusively within the U.S. market. Upon reflection, as the industry has evolved it has become important to take a broader look. For instance, the U.S. market only constitutes 25% of new vehicle sales in the world and it is a market that is slowing relative to the remainder of the world. Furthermore, the trends that are driving the world product markets forward are, in part, external to the U.S.; and when one discusses future growth and other economic developments, an increasing portion emanates from abroad and not in the vacuum of the continental U.S.

Specifically, in the emerging global environment of the 90s, attempting to grasp current developments and, more importantly, future developments for any industry requires a movement beyond a parochial vision. Any analysis requires a global vision that examines sales, production and other factors within an integrated world economy. In an attempt to achieve such an integrated analysis for the auto industry, this paper seeks to analyze each major and emerging market for vehicles first in somewhat of a segmented environment and then integrate these markets through a systematic approach. This systematic approach will also attempt to draw some conclusions and insights for the U.S. nameplates in a marketplace where they must not only compete in their own backyard, but also in increasingly competitive markets throughout the world. Particular emphasis will be placed on developments in the Midwest.¹ The domestic industry is still highly concentrated in this region, and future changes will be of great significance to this area.

Current Global Activities of Domestic Producers

A current assessment of the domestic industry within this global marketplace indicates that the Big 3 are almost exclusively concentrated in the North American and western European markets. A sales dependency ratio for each of the Big 3 of North American sales to worldwide sales is presented in Figure 1. As indicated, Chrysler has the highest concentration in North America with a ratio of .96, a ratio which has been increasing throughout the latter half of the 1980s. Although the recent expansion of Chrysler in Europe should partially offset this concentration. Ford's North American ratio is .63, while GM's is slightly higher at approximately .67. Both of these levels are significant improvements over Chrysler. However, calculating a North American/ European ratio provides evidence of the degree of concentration and the dependency of Ford and GM in these markets collectively. For instance, GM's combined ratio of sales is over .90 and Ford's combined ratio is almost .95.

Figure 1
Dependence Ratio--Big 3 Sales



Source: U.S. Department of Commerce and Federal Reserve Bank of Chicago.

A major contributor in these dependency ratios is the limited presence of the Big 3 in developing markets, with the exception of Latin America. Of particular concern is the Big 3's absence in Asian markets where their combined sales are still less than 500,000 units annually. And even this level is concentrated in certain markets, such as Ford's dependence on the Taiwanese market. Eastern and Central Europe are emerging markets with significant potential for the Big 3. However, competition from VW, Fiat and eventually Japanese manufacturers will be intense. Additionally, few of these markets will achieve rapid growth in auto purchases until later in the decade or early in the next century.

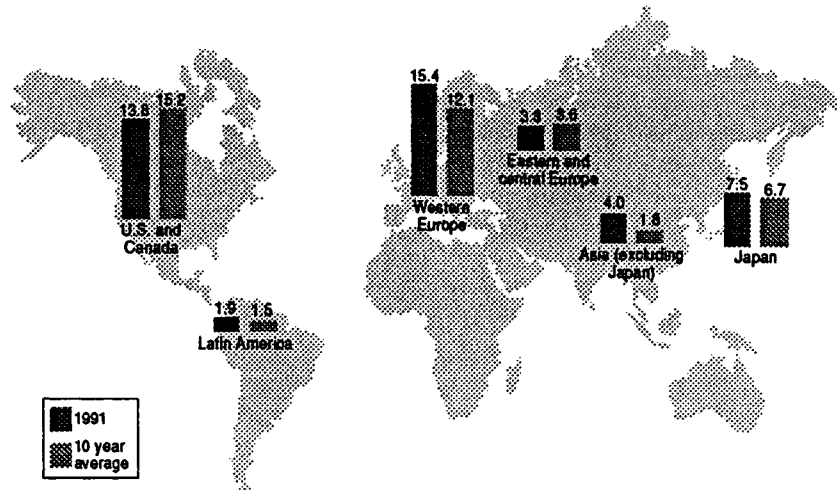
The implications for the domestic industry of high concentration levels in North America and Europe and limited activities in other markets is significant in light of the ongoing changes in the global marketplace. Given the level of competition in traditional markets and the promise in developing markets, the difficulties for domestic nameplates may be substantial. In order to understand the potential difficulties an assessment of the global market must provide a differentiation between traditional and non-traditional markets.

World Market For Vehicles

The total world market for vehicles today is a market with sales and production of nearly 50 million units annually. In the last few years sales have been below trend (approximately 4-5 million units annually), with sales in the U.S. accounting for roughly half this deficiency. The trend level is well above the ten-year average of 41.5 million units; and in fact, growth in the overall vehicle market has been significant in the last ten years, up almost 25 percent during the 1980s. Furthermore, market forecasts are for vehicle sales in excess of 60 million by the turn of the century. For the sake of this analysis, the market in terms of sales and production can be segmented into three mature markets and three emerging markets (see Figures 2 and 3.)²

The mature markets consist of production and sales in the industrial world. These markets collectively account for over three quarters of the world's production and sales of vehicles. Of these markets the U.S., Japan and Germany are the most important. However, because of the degree of integration between the U.S.-Canada, and among the seventeen major nations of Western Europe, these markets have been sub-divided into the U.S.-Canada, Japan and Western European markets. All three major markets are large producers with similar market shares. One major difference is

Figure 2
Total Vehicle Sales
(millions)

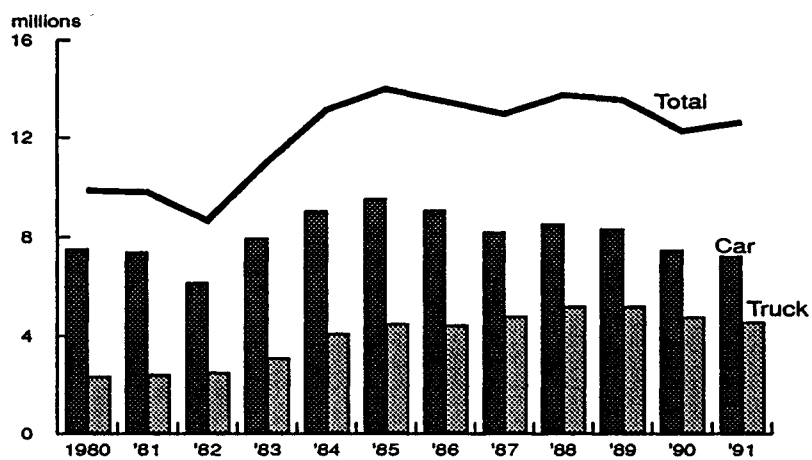


Japan's export orientation, while the U.S.-Canada and Western Europe are domestically oriented. Western Europe and U.S.-Canada represent over 60 percent of all vehicle sales in the world. Japanese domestic sales are significantly less at approximately 15 percent.

Besides the established markets there are numerous emerging markets both in terms of production and in terms of sales throughout the world. These markets generally comprise a rapidly expanding production base with a growing export orientation and a domestic sales environment which has more potential than actual activity at present (see Figure 2.) Of greatest significance are the emerging markets in the Pacific basin, Eastern-Central Europe, and Mexico and Latin America. Production activity in these areas is generally expanding robustly and currently accounts for 1 of every 4 vehicles produced, and a correspondingly high ratio in terms of parts. Over a longer time-frame, the emerging markets also represent phenomenal domestic sales potential, which may be vital for producers in established markets where export sales may offset stagnant or slowly domestic markets. (See Figure 4 which indicates the current level and trend of export activity of assembled vehicles.)

Figure 3
Vehicle Production by region of the world

A. North America



B. Western Europe

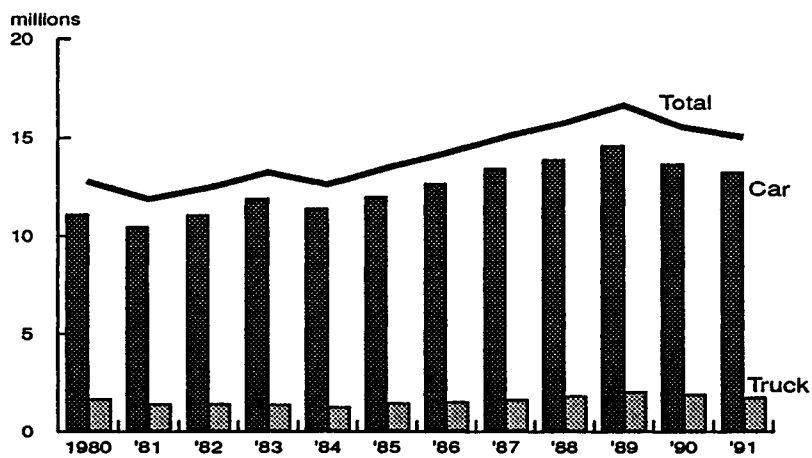
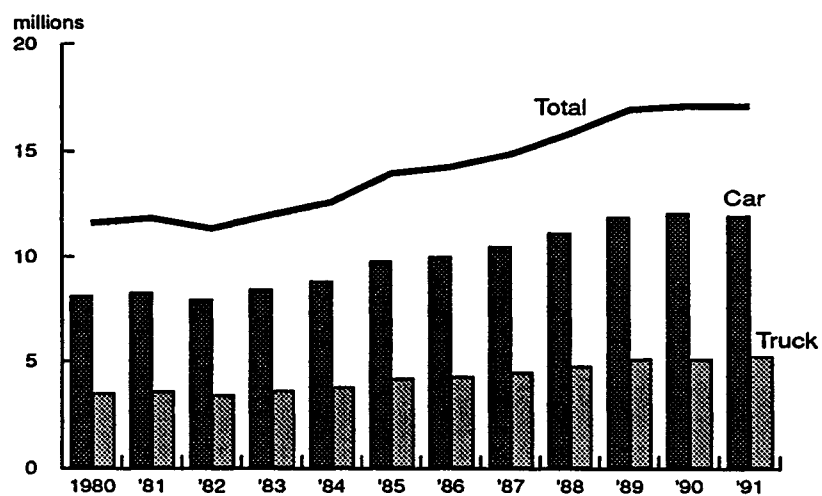


Figure 3 (cont'd)

C. Asia



D. Latin America

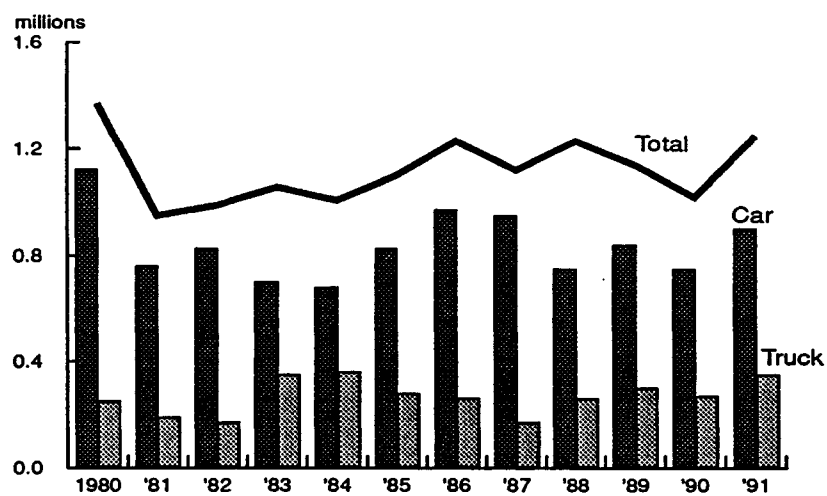
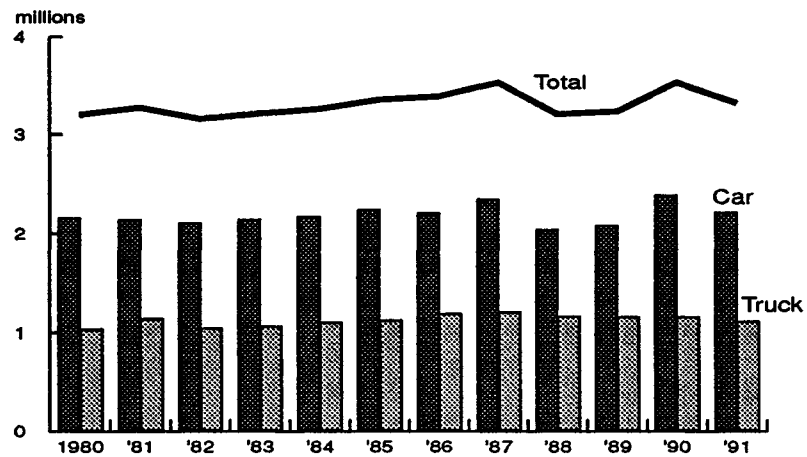


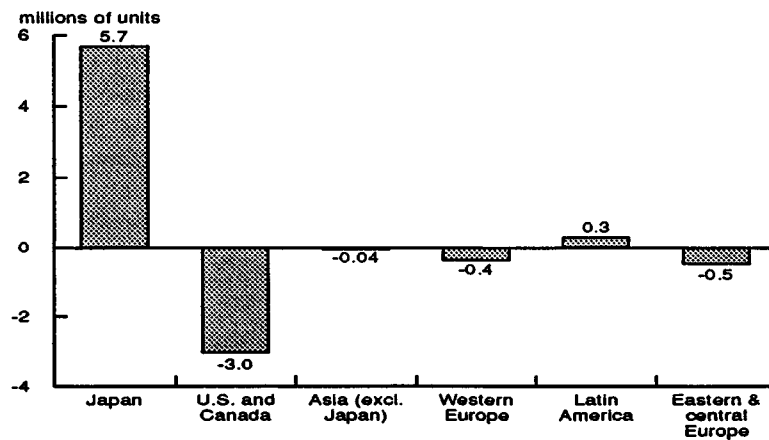
Figure 3 (cont'd)

E. Eastern and Central Europe



Source: OECD.

Figure 4
Vehicle Net Exports-1991



Source: U.S. Department of Commerce.

In terms of producers, the global marketplace is comprised of 12 manufacturers with annual production capacity above 1 million units. A second-tier group comprised of manufacturers with production capacity below 1 million units many of these second tier producers specialize in specific segments of the market. (See Table 1.) The top six manufacturers account for over 50 percent of global production and the top 12 account for over three-quarters of all production. However, in comparison to the 1960s and 70s, the level of concentration is less and has become more geographically diverse. For example, GM is still the number one automaker but its market share has fallen below 20 percent, Ford is second with a share of roughly 13 percent and Toyota is currently third with a share of approximately 11 percent. Not surprisingly, with a group of over 15 major manufacturers competitive pressures have increased in the last 20 years, especially in mature markets like North America with the decline of the hegemony of the Big 3.³

Table 1
Top vehicle producers-1991

	Units produced (in thousands)
GM	7,015
Ford	5,359
Toyota	4,719
Volkswagen	3,128
Nissan	3,083
Fiat	2,461
PSA	2,058
Honda	1,975
Mitsubishi	1,908
Renault SA	1,791
Mazda	1,551
Chrysler	1,481

Most manufacturers still have a core base in their traditional markets. Although one would not classify this core as being completely stable, it still provides a degree of support and is a major consideration in most decisions affecting company operations. The major question for firms in the future may be whether or not they can maintain their position in their traditional market while at the same time permeating new markets.

Mature Markets

U.S.-Canada:

North America, the birthplace of the mass production of vehicles is still the largest market in the world, especially for U.S. nameplates. This market in the early 90s has been depressed due to the economic stagnation in the U.S. and Canada. Consequently, the importance of the market in terms of sales and production has been overshadowed by activities in other mature markets. Still, analyzing changing conditions over the last ten years provides an accurate assessment of the level of activity and highlights once again why North America continues to be a place where many of today's competitive battles are being waged.

Production during the last decade has averaged approximately 12 million units annually with significant growth occurring in two primary segments (see Figure 3). First, light truck production has doubled on an annual basis since the late-70s and early 80s. This development reflects the proliferation of light trucks as a partial passenger-vehicle alternative to cars and the relative strength of U.S. nameplates versus foreign nameplates in this market segment.⁴ An indication of this strength is illustrated by the fact that in 1992 over 1 in every 3 vehicles sold was a light-truck.⁵ Secondly, transplant production in the U.S., and to a lesser extent Canada, has soared.⁶ Transplant production in 1982 was only a token level from Honda; by 1991 transplant production exceeded 1.6 million units annually and new capacity continues to be added, especially in light-trucks.⁷

Within this expansion of production there has been a change in mix, led by the continued down-sizing of GM, Ford and Chrysler, especially in the U.S. By the mid-1990s Big 3 employment in the U.S. will be down by over 400,000 jobs from its level in 1980. Production by the Big 3 did exceed 11 million units in the mid-1980s, when sales were running at +16 million units; however, since that time, production has consistently headed downward toward 8 million units. GM, in particular, is planning the closure of at least four assembly plants with over 1 million units of capacity. Gains by foreigners in terms of market share have prompted some closings, however, the general competitive pressures to do more with less continues to shape the production decisions of the Big 3 as well. Future developments in production of units in North America should reflect the continued development of

transplants, downsizing of domestic nameplate operations in the U.S. and Canada and, as examined later, the continued growth of Mexican production.

Sales trends in the U.S.-Canada market over the past decade have reflected the cyclical sales trends of the U.S. economy (Figure 2). Sales dropped significantly in 1981-82 and rebounded to record levels in the 1984 to 1987 period. Since 1989, sales have declined as the U.S. and Canadian economies have slowed significantly, with sales bottoming out in 1991. In these two years, North American vehicle sales declined to 16 million and 14.5 million units respectively. Furthermore, the decline since 1989 had been preceded by a slow decline from the peak of 18 million units in 1986.⁸

The U.S.-Canadian market has experienced significant competition over the last 20 years as foreign nameplates have eroded the stranglehold the Big 3 once held on the market. The market share for the Big 3 has steadily declined to a level for combined vehicles of approximately 70 percent and a market share in passenger cars of approximately 65 percent. GM has been the most significant loser in this market with a loss in market share in excess of 10 percent over the last decade. This erosion has been the result of market penetration of foreign nameplates, of which the Japanese nameplates have been the most successful, with a market share of approximately 25 percent in the North American vehicle market. This share has been constant in the last few years as trade restrictions have combined with higher import prices and a resurgence of domestic nameplates to prevent further in-roads by import.

Initially a large portion of this erosion was through foreign import sales, which by 1986 in the U.S. alone had reached almost 4 million units. With the rise of transplants and trade pressure (quotas) continuing to build, import levels today have dipped below 2 million units. However, offsetting much of this drop has been the rise of transplant production. Additionally, it should not be assumed that competition between domestic nameplates is not intense. An examination of the mid-size passenger car market indicates how competitive the market is between all manufacturers. GM's traditional strength is not only challenged by Toyota in terms of the Camry, but the Ford Taurus, the Chrysler L-H series and a list of numerous other products. Virtually every segment of the market reflects similar intense competition between all manufacturers.

One segment where domestic nameplates have done reasonably well is the growing light truck segment. During the past decade the number of units sold annually has doubled to almost five million by 1992. This growing market,

along with product strength, traditional know-how of the segment and trade restrictions, has allowed the Big 3 to maintain a market share in 1992 in excess of 85 percent. Current vehicle introductions and re-designed versions have provided further stimulation to their sales volumes, at the expense of Japanese producers in particular. However, Japanese and domestic producers are both responding to this growing market by increased product development which is resulting in greater and not lesser competition. Therefore, the current dominance of even this segment by domestic producers is not guaranteed, and once again the challenges in the segment for domestic producers will continue to be intense.

Future expansion of foreign nameplates in luxury and sport cars as well as mini-vans and light trucks will continue to put pressure on domestic nameplates to retain market share.⁹ Production schedules are decreasing in length, price containment pressures are intense, and quality and safety improvements continue to accelerate. The necessity to restructure is not only an immediate concern but an ongoing operating procedure. The prospects for a North American Free Trade Area or customs union may dampen some external competition due to domestic content procedures, however, it should foster intra-region competition including transplant operations. Therefore, the U.S.-Canadian market will likely continue to be one of the most competitive markets in the world.

Western Europe:

The west European market continues to be a significant region both in terms of production and sales of vehicles. In combination with central and eastern Europe, this market also is rapidly becoming one of the most important areas of growth in the industrialized world. Due to the current and future prospects in the region, the presence of numerous firms-- both local and foreign-- continues to be a dominant theme of the market. With prospects for economic unification still strong in the region, one of the continuing questions concerns the consequences of economic integration for major auto manufacturers.

From the stand-point of production facilities, west European production in the last five years has exceeded 13 million units (Figure 3). Capacity is currently estimated at above 14 million units, with new facilities coming on-line. Current production is concentrated in four principal countries; Germany, France, Italy and the United Kingdom. Germany easily outstrips all other production areas, with production in excess of 5 million in 1991, a level which corresponds to domestic sales in excess of 4.7 million units. French and

Italian producers generally comprise a secondary tier of companies and are concentrated heavily in their domestic markets. British production increasingly involves U.S. and Japanese transplants or wholly owned subsidiaries, and production is mixed between domestic units and products exported to the continent.

In terms of nameplates, Western Europe is dominated by six large firms and a second tier comprised of specialized and/or market specific firms, transplants and imports. Volkswagen, PSA, GM, Ford, Fiat and Renault are the dominant producers in the market representing 85 percent of production. The second tier is dominated by luxury car makers like BMW and Mercedes and one market firms like Volvo. As the market has evolved recently mergers and consolidations have reduced the number of independent companies. Furthermore, competition has also re-shaped the market between the largest firms with GM and VW on the ascendancy and Fiat, and, to a lesser extent, Ford struggling somewhat. Non-U.S. transplant production is increasingly important in the region. This production initially involve Nissan's entry into Britain. However, Toyota and Honda have also recently established facilities. A primary concern in these transplant location is the continuing threat of trade retaliation and a stated European Community (EC) policy to limit Japanese nameplates to a market share of 16 percent or less. Current sales levels are still below this target.

Capacity in this region is also currently being augmented by new facilities in central Europe and transplant operational expansions. BMW, Volkswagen and GM all have major expansion efforts in ex-communist countries and production from these facilities should maintain or at least partially offset the decline in state companies which are being liquidated and/or down-sized.¹⁰ The Big 3 has also added capacity due to stronger sales or, in the case of Chrysler, to re-establishing a position in the market.¹¹

Sales in the market, due primarily to a one-time boost from Germany unification, were robust in 1990 and 1991 (Figure 2). Sales in 1991 reached 15 million units, and although sales in 1992-93 are being depressed by the economic difficulties in Germany, the outlook is for a continuation of the 15+ million units into the late 1990s. Factors supporting these sales levels include continued growth in certain EC countries notably Spain and Portugal, and the economic stimulus from further integration in the Community. Some of the mature market factors that exist in the U.S. are also present in Germany,

the U.K., and France. However, they should be offset by other developments and stronger economic growth, especially in segments of Germany, relative to the 1970s and 1980s.

Additionally, Eastern and Central Europe should provide two long-term stimuli to the European market. First, as examined later, an under-served consumer market is ready and overly willing to purchase quality durable goods. With economic stabilization occurring in Hungary, Czech Lands, Poland and perhaps certain ex-Soviet Republics, consumption is beginning to revive. Secondly, the economic stimulus from successful reform efforts in this region should not be discounted in terms of its benefits to the west. Gains through trade, labor movement and other factors should offset many of the other structural difficulties in west European economies.

As noted, current sales in Western Europe are dominated by six producers, limited Japanese imports (approximately 12 percent), and a second tier of product or market specific manufacturers. Unlike other major markets no producer has even marginal dominance of the overall market, balance prevailing for the most part. Volkswagen, the market leader, comes closest with a strong-hold in Germany (+25 percent market share) and a balance in every other major market (although limited in the U.K.) VW's current overall market share of almost 17 percent is extremely high relatively to developments in the 1980s. However, even at this level it pales in comparison to the dominance of the number #1 company in the U.S., Japan, and many of the emerging markets. Fiat and PSA are next with market shares of approximately 13 to 14 percent. Both producers are heavily concentrated in their domestic markets, in fact they are the market leaders in Italy and France by wide margins. PSA has greater balance, however, and Fiat has increased its efforts in central Europe in recognition of this fact. A large portion of Fiat's dependency is due to the Italian government's past decisions to limited foreign imports.¹² Ford and GM both have significant sales presences in Germany and the United Kingdom and therefore have a market share above 12 percent. Both companies have been rapidly expanding in other markets; Ford in Italy and Germany, GM in Spain and Ford's long-time stronghold in the United Kingdom. As low-cost producers, relative to European manufacturers, the Big 2 expanded aggressively in the late 1980s and it paid off handsomely. GM has posted annual operating profits of upwards of \$2 billion in Europe in recent years.¹³ Furthermore efforts to stream-line costs and product development should continue to support growth in the region. State-owned Renault rounds out the major manufacturers with a market share of approximately 10 percent. The company almost exclusively focuses on the

French market with only limited sales in other European markets. The company has attempted recently to expand its reach with joint operating agreements, especially in Scandinavia.

Other companies do have significant market presences in specific markets. Once again many of these firms have been acquired wholly or in-part by larger firms recently and the market appears to be continuing this trend. Japanese manufacturers are also continuing their restructuring in terms of permeating the market. Current targeted limits on market share, 16 percent in the EC, appear to be unwavering. Therefore, transplants have increased in terms of numbers. It's likely that Japanese transplants will continue to increase their presence in the market, although the rapid in-roads they made in the U.S. and Canada are unlikely. Additional limits on these developments, labor costs and other concerns may dampen this movement somewhat. Overall, the western European market continues to be a dynamic and evolving market. From the stand-point of sales and production growth its likely that the market will avoid some of the stagnation of the U.S.-Canadian and Japanese markets.

Japan:

Separating the Japanese market from the remainder of Asia appears, upon initial inspection, to be inconsistent. Especially, given the degree of integration in Asia between Japanese producers, sales trends, and other developments in Japan and the rest of the region. However, the domestic market is vastly different than the other parts of the region, and is more accurately associated with industrialized markets. From an industry perspective, standards and activity of the Japanese economy are at an industrialized level, and similarly income levels, consumption patterns and other socio-economic developments are first world by any standard.

In terms of production, Japan is the largest country in the world in combined car and light truck vehicle production (Figure 3). Annual production levels by 1991 exceeded 13 million units annually. Almost 45 percent of this production is exported (over \$65 billion a year) and consequently, Japan is the world's largest exporter of vehicles. In terms of production, Toyota, Nissan, Honda, Mazda and Mitsubishi are the primary, but not necessarily the dominant producers. Altogether the domestic market actually comprises 10 manufacturers with production above 500,000 units annually. Of greater significance is the fact that certain manufacturers, like Fuji and Daihatsu, have

important market niches and their influence in this segment is significant. This trend continues in spite of the intense competition that exists in the marketplace.

In terms of extended outlook, Japanese production is being influenced by three primary trends. First, domestic production of parts and some finished assembly is becoming more mobile in terms of moving toward offshore sites in Asia and other developing markets. Due to labor shortages and rising costs in Japan this trends seems inevitable as an alternative to domestic production. Additionally, there remains some incentive to move to offshore facilities as a means of achieving entry to developing consumer market. Production can then include exports back to Japan, as well as some production for the local market. The potential growth of these non- Japanese Asian markets may be significant in the years ahead, and companies like Toyota and Nissan have attempted to anticipate the development.

Secondly, transplant operations in the U.S.-Canada and Western Europe continue to increase capacity and plans for further expansion are in the works. Concern over political pressure, trade barriers and economic considerations continue to push Japanese producers toward local production. As this trend continues, production levels in Japan will be reduced by falling exports which are being replaced by Japanese nameplate production in the States and/or in Western Europe. Unless these exports are offset by new market openings, the impact on domestic production may be severe. With the prospects of further imports into the EC unlikely and the outlook for the ever more stringent terms of selling in North America probable, transplants in the U.S., Britain, Mexico and other countries look like an ongoing trend.

Finally, domestic production is evolving alongside of the industry and Japanese society. This evolution means an increasing move toward luxury, mid-size and sports models to fit the new technological edge of the firms and the changing preferences of the consumer. In an economically mature and aging domestic market, Japanese producers not only must grapple with sales stagnation but a changing product mix. Their technological gains in these areas also influence their product mix in terms of exports and will continue to do so into the foreseeable future.

In terms of sales, annual vehicle sales in Japan currently represent the second largest vehicle market (by country) in the world. Sales in the late 1980s and in 1990 approached almost 8 million units a year (Figure 2). The continued growth of the market throughout the post- war era has resulted in a vehicle

registration level in relation to its population comparable to the U.S.. However, although sales growth in previous decades was substantial, a variety of factors are currently influencing sales growth and will likely hinder a continuation of the growth surge experienced in the last few decades. In fact, the Japanese market has declined recently and is not projected to grow rapidly in the decade ahead. Besides the current economic slow-down, an aging population, low population growth, parking and regulatory difficulties, and a mature market will likely not provide substantial growth in this market.¹⁴ And with the number of producers currently vying for market share the level of competition will likely intensify, especially with the potential of foreign nameplates entering the market.

As noted, the Japanese market in terms of sales is dominated by Toyota (35 percent), Nissan (20 percent), Honda (10 percent), Mazda (7-8 percent) and Mitsubishi (+5 percent). Other Japanese producers are active, especially in certain areas of the market. The bulk of the remaining market is comprised of foreign nameplates, although they continue to struggle to reach any significant market penetration. Annual sales volumes are still below 250,000 units (approximately 3 percent), and most of the activity is currently European nameplates. U.S. nameplates have recently accelerated efforts to establish a presence in the market, although the level of success is still marginal.

Overall the market is currently in flux and the two dominant producers, Toyota and Nissan, have recently experienced significant sales set-backs in the domestic market. A mature and potentially stagnant market will continue to pose problems for these producers, although it is probably erroneous to conclude that the dominance of the major manufacturers will wane significantly. Smaller Japanese manufacturers have experienced greater difficulty in the marketplace and their outlook is at times precarious, especially in financial terms where many do not have the financial wherewithal to wage a competitive battle in multiple segments. In terms of foreign nameplates, some future gains are likely, although once again the lack of a vibrant market will limit growth.

Emerging Markets

Besides the three mature markets, the world marketplace for vehicles includes a number of emerging and/or developing areas. In general, these emerging markets possess similar characteristics-- low current sales volumes, strong optimism for future sales growth, and emerging production facilities which

seemingly become export oriented after infancy. The impact these markets have on existing producers, sales trends, and production activity in the decades ahead may be substantial.

Asian-Pacific Region (excluding Japan):

The Asian-Pacific region including Japan is the largest region for production of vehicles in the world and is also increasingly an important area in terms of sales. Overall, production in this region currently exceeds 17 million units annually and estimates of additions to current capacity indicate that by the mid-1990s production will be well in excess of 18 million units.¹⁵ An increasing portion of this production originates in more diverse areas, including Japanese transplant facilities in Asia. Non-Japanese Asian production in 1991 was almost 4 million units, a level which has increased 10-fold in the last decade (Figure 3).

The fast growing production area has been South Korean facilities, which produce almost 1.5 million vehicles annually. The birth of the Korean industry has been a relative recent one. The industry did not begin in earnest until almost 1980. However, production in the 1980s has gone from 100,000 annually to a projected level of over 1.6 million in 1992. Production in Taiwan has also grown and now approaches half a million units annually. The Taiwanese market is also one of the most competitive in the world. Assembly and parts facilities are also well established in Malaysia, Indonesia and Thailand. Additionally, major facilities have been and are being added in India and China. Currently, production in these two markets exceeds 1 million units. Recent expansion in China, in particular, bodes well for production capacity in the region.

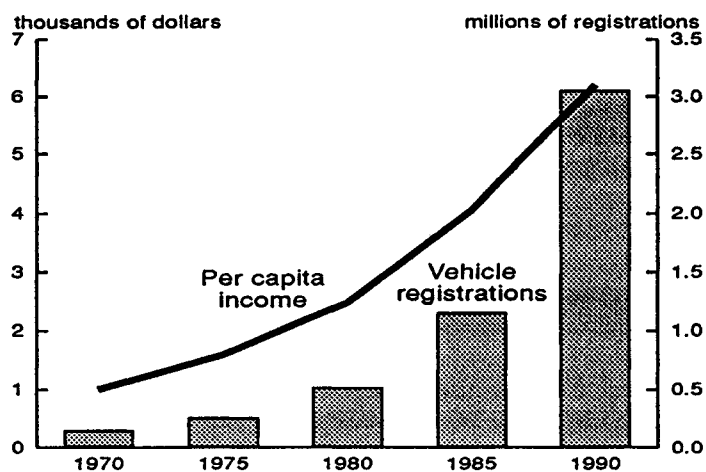
Overall production in Asia has traditionally had an export flavor, with one-third of the production in this region destined for exportation. The trend is still strong in spite of the establishment of Japanese nameplate production facilities in Europe and North America. Non-Japanese markets are not as export-oriented as Japan, although the trend is potentially pervasive (see Figure 4). South Korea may be a reflection of the future; net exports of vehicles for the country are almost 400,000 annually and this level comprises almost 30 percent of total production. Other nations in the region have not experienced such a share or export orientation. However, there does seem to be a learning curve, and once facilities are established, some export potential will likely exist.¹⁶

In terms of sales, combined vehicles sales in Asia (including Japan) currently exceed 11.5 million units annually. Overall sales in 1991 in non-Japanese markets were slightly less than 4 million units. This is not to diminish the market in terms of sales, 4 million units is substantial and more importantly the potential is phenomenal. Sales in South Korea, for instance, are currently in excess of 1 million units and have more than doubled in last 15 years. Overall in the 1980s non-Japanese sales grew in excess of 8 percent annually and are projected to continue this trend through the 1990s (Figure 2). Sales in Taiwan have also experienced strong growth in the 1980s, total vehicle sales annually are almost 500,000 units.

More importantly, parts of the region represent an under-served market that is just emerging. With strong income growth along with population growth these markets look very vibrant.¹⁷ Additionally, economic reforms in the two most populous countries of the world, China and India, provide a large degree of optimism for consumer product sales. In the early stages of development, consumer expenditures may not be for vehicle purchases. However, gains in income should eventually produce significant gains in vehicle purchases in these under-served markets. An estimate of what these potential sales gains may be is indicated by Figures 5 and 6. The first figure compares income levels with vehicle sales in South Korea during its phenomenal economic acceleration in the 1970s and 1980s. As indicated, vehicle sales, and probably all consumer durables, explode in terms of sales once income reaches a certain level. In fact, by examining the lesson of Korea, there does appear to be a "flash" point for sales at an income level above \$3500 per year. At this level vehicle sales begin an upward swing which accelerates as income continues to gain. If China mirrors this trend the gains in vehicle sales in the next twenty years may be surprisingly strong. For instance, adjusting for population if the vehicle concentration in relation to income is consistent with Korean development, total vehicle registrations early in the next century will approach 40 million units. Current vehicle registrations are only 5 million, therefore assuming some replacement, sales will approximate 35-37 million units in the next 10-15 years-- or four times their current sales rate.

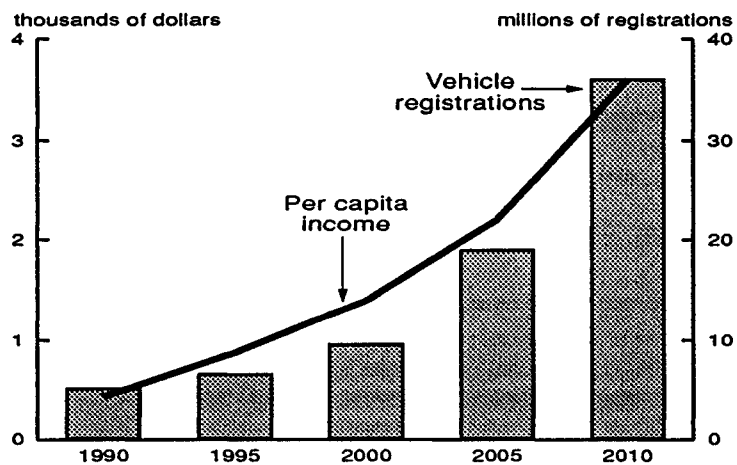
If this growth seems outlandish, it should be noted that mean income levels in the Guangdong Province in Southern China are currently estimated at above \$2,000 a year. And income growth is currently projected at +7 percent annually, with southern regions experiencing much more rapid growth. Even with this growth in sales the market will continue to be underserved, given a population of 1.3 billion people by 2010. In fact the current ratio of vehicles (cars, trucks and buses) is one of the lowest in the world. Consequently, future

Figure 5
Income Growth vs. Vehicle Sales In South Korea



Source: U.S. Department of Commerce.

Figure 6
Projected Income and Vehicle Registration Growth: China



Source: U.S. Department of Commerce.

sales growth may be more rapid, although other constraints, such as space and regulations, may eventually set limits on the market (similar to Japan.)¹⁸

Similarly other nations in the region may achieve substantial growth in vehicle sales in the next few decades. For instance, registrations in India are listed as being even lower than China, thus making the market one of the most under-served in the developing world. Economic reforms are still in their infancy in this country, however, and remain a concern. Other Asian markets, principally Thailand, Indonesia and Malaysia, appear well on their way to stable economic expansion and this growth should boost sales of vehicles significantly in the years ahead. The key to future sales growth in any of these regions is, of course, making demand "effective," something economic growth and income gains should produce in the years ahead.¹⁹

One final area of importance is the presence of producers within Asian markets. To date, production and sales trends reflect similar domination by local firms as seen in established markets, with a higher degree of concentration. The Korean market, for instance, is dominated by the three largest Korean producers, Hyundai Motors (+50 percent), Kia Motors (+20 percent) and Daewoo Motors (+20 percent).²⁰ Others markets are more diverse with foreign nameplates active in Taiwan, where Ford and Toyota have a strong market presence, and Thailand, where Toyota and other Japanese automakers are active. One sub-trend in terms of market share is the continued activities of governments in the marketplace. Besides trade barriers, many Asian markets have government sponsored companies or joint partnership programs that dissuade market penetration. In this environment Japanese manufacturers continue to be the most successful at entering into a market through unconventional means.

Eastern-Central Europe:

In the medium term, perhaps the most important emerging market is in Eastern/Central Europe. This market currently is going through a massive restructuring phase with existing state owned firms failing and/or being disassembled and western firms rapidly entering the market. (Nature and markets both abhor vacuums.)

From a production stand-point, almost all current production involves inefficient state producers who are and/or will likely be disbanded. Current annual production has fallen to approximately 2.5 million units, with the Commonwealth of Independence States (CIS) responsible for over 70 percent

of combined vehicle production. The severe economic slump, combined with the break-up of the centralized manufacturing system, has produced a contraction in production in the last two years that is likely to continue in the near term (Figure 3). The civil war in Yugoslavia and decline of the Yugo has also adversely affected the Yugoslavian economy, which was the second largest producer in the region prior to 1992.²¹ Over an extended time-frame, production will continue its trend away from state-owned production to the private sector.

Increasingly, however, a larger and larger portion of private sector production has become western firms that have established bases in the region. Volkswagen's presence in Czech Lands is instructive of what the future may bring. The company is using facilities to expand production to perhaps +200,000 units annually; of this total a portion will be exported back to the West. A trend that will likely continue as the "cheap" skilled labor and the opening of new markets provides a magnet to U.S., European, and Japanese firms.

In terms of sales in the region, from an overall market stand-point the near term outlook is somewhat bleak, with incomes falling and unemployment rising (Figure 2). However, in the extended term the economic transformation is beginning to take shape and, as the recovery begins, income levels will support the desires of the under-served consumer market. Consequently, sales in Hungary, the Czech Lands, and Poland, and the Baltics should accelerate throughout the mid- and late 90s. Furthermore, the 250 million consumers in the CIS will likely experience significant income gains by the turn of the century and, therefore, provide an added boost. These developments should significantly enhance the overall European market. A conservative estimate of vehicle sales of 6 million units annually seems likely by the next century, excluding a rapid economic transformation in the CIS. It is important to keep in mind that such a sales level would exceed annual sales in Germany. Furthermore, even given this sales levels, the market will continue to be underserved.

Mexico-Latin America:

Latin America is another emerging market that is experiencing a significant economic transformation. Reform efforts have solidified growth in Mexico, Argentina, Chile, and Venezuela, and will eventually stimulate demand for consumer durable goods in a market of 125 million consumers. Successful reform in Brazil and the Andean nations, which appears possible if not

probable, would further stimulate the market. Once again, however, the outlook for the auto market will be tempered by growth in income and development of a domestic industry.

Currently, from a production stand-point Latin America is an important location, both for domestic consumption as well as some exportation (Figure 2). Domestic content restrictions and other trade barriers have produced some distortions in terms of some domestic production. However, current production in excess of 2 million units annually generally reflects the comparative advantage of these areas as a low-cost production base. Evidence of this comparative advantage is in Mexico where a million units are assembled annually and over 500,000 units are exported annually.²² The other major production market is Brazil, where a combination of vehicle sales and exports are responsible for almost 1 million units annually. Brazilian production is not quite as export oriented as Mexico; primarily due to a larger domestic market as well as the economic problems of the nation in the last twenty years. Besides these two production zones, limited assembly occurs in Argentina, Chile, Venezuela and Colombia.

Current production activity is being increased by the rapid expansion of facilities. In fact, capacity estimates indicate that future expansion plans are accelerating, and production should continue to grow, especially in Mexico where a trade agreement with the U.S. should provide an stimulus to the market. Mexican capacity has doubled in the last ten years and, as noted, production in 1992 exceeded 1 million units. This expansion reflects the economic reforms in the country as well as the development of Mexico as an export center of certain models to the U.S. market. The competitive position of the Mexican production environment bodes well for expansion of production facilities in North America, especially due to the continued importance of the market in terms of sales. This expansion will also augment the general trend of the last twenty years which has seen U.S. and European firms increasingly setting up facilities in the region. These efforts have once again been an attempt to breach the local market as well as provide exports to established markets. The potential for future growth also includes Japanese nameplates, who to date, with the exception of Nissan, have had only a minimal presence. The domestic content provisions of the North American Free Trade Agreement may provide a strong impetus for location in Latin markets, principally Mexico.

Current sales levels of almost 2 million units annually reflect the potential of sales in the region (Figure 2). Given the economic hardship of debt

restructuring and economic austerity, the current sales levels reflect positively on the demand for vehicles in the region. Estimates from the IMF and World Bank indicate, that given the pace of current reforms, economic growth of the region should continue to accelerate throughout the decade, with economic growth averaging 4.5-5.0 percent annually. Given the strength of such growth the recent sales recovery of +20 percent may not be replicated, however, the pace should continue forward. In terms of manufacturers, this growth should boost Big 3 sales as well as European manufacturers sales (especially Volkswagen). These producers have significant presences in Mexico and Brazil and, therefore, have an established market presence. Japanese nameplates have most recently begun to penetrate the market. However, the efforts have been limited. One continuing wild card are the various trade talks ongoing in the region. Modifications in domestic content restrictions and other trade barriers could significantly alter production and sales activity for various producers. The general effort to liberalize existing trade policies will likely accelerate investment, export activities, and domestic sales.²³

Global Markets & The Future of The Big 3

Sales data for 1991 indicate the diversity of activities throughout the world and highlight the environment U.S. nameplates face as the decade continues. In 1991 the percentage of total vehicle sales in the world broke down as follows: 33 percent of all sales occurred in Europe, 30 percent in North America, 15 percent in Japan, 8 percent in Asia, 7 percent in East/Central Europe, 3 percent in Latin America and the remaining 3 percent in the rest of the world. Prima facie, it would seem that the Big 3 would be well positioned in the world given that almost two-thirds of all sales occur in North America and Western Europe, their two traditional strongholds. Unfortunately, such a conclusion ignores developments discussed in this article. The most important concern is the fact that sales growth in the market is accelerating in Asia (excluding Japan), Latin America and Eastern and Central Europe where the Big 3 are not active and decelerating in traditional Big 3 strengths, the U.S. and Western Europe. At the same time the current market standing for firms in traditional markets is under stress from foreign competitors, and with the integration of the EC and maybe North America, competition should accelerate further.

The proposition of a shrinking domestic market with intensifying competition at the same time developing markets are expanding abroad, poses many questions for the Big 3 and its traditional center of operations-- the Midwest.

Continued restructuring and down-sizing of domestic operations is, of course, at the forefront of these questions. Especially, if the Big 3 fail to penetrate new markets through expansion programs. Moreover, even the basic question of market penetration may be insufficient to supplement U.S. domestic development and employment, unless this penetration involves exports of product.

Of greatest concern is the further employment and income erosion in the Midwest as Big 3 facilities are stream-lined. GM's plan to cut its workforce in half by 1995 has an immediate impact on the region where most of those jobs are located. In fact, current employment in terms of manufacturing jobs in autos is estimated at slightly over 800,000 jobs in finished and parts assembly. Projections of white collar support staff and retail distribution employees include an additional 500,000 workers. A large portion of these workers are in the Midwest, which is still responsible for over 60 percent of the assembled U.S. vehicles and is home to the headquarters of the Big 3.

There is a strong probability of further economic restructuring in addition to the overwhelming adjustment which has occurred already. Since 1979 the domestic industry has closed numerous plant facilities, pared production costs throughout the entire manufacturing process and will eliminate more than 400,000 jobs by 1995. The impact of this restructuring has been especially severe in the Midwest. In Michigan alone, the Big 3 reduced their workforce by over 150,00 between 1979 and 1991. GM's planned job cuts through 1995 will reduce the workforce in the state by perhaps an additional 50,000 jobs.

A weak sales environment intensifies the need to restructure and will likely prompt further efforts to speed up the adjustment. This factor will also likely encourage all producers, domestic and foreign, to explore new opportunities, many of which will be external to the U.S. market. Whether or not these opportunities are or will be available is likely to become a major issue which each manufacturer will have to address.

As an example of potential production trends, consider finished assembly trade activity. In 1991 the U.S. imported twice the amount of auto products its exported. Over two-thirds of its exports were to Canada and Mexico, where integrated manufacturing processes are the principal determinant of trade, and a large number of vehicle parts are shipped for final assembly and re-shipped back to the U.S. Exports of assembled cars in the U.S. still amount to less than 175,000 units annually versus vehicle imports in excess of 2 million units. Although there have been expanded efforts to export certain

models like the Saturn and Probe units. Exports of parts have been on the rise, approximately \$13 billion a year, however the U.S. is still in a net deficit position in terms of parts.

Over the long run, the success of manufacturers and the location of manufacturing facilities in the Midwest for domestic and/or export production depends on the costs of production, including shipping and locational concerns, versus the costs in other markets. In a competitive marketplace these pressures are felt much faster and to a greater degree. Consequently, when evaluating further global integration and its impact on the Big 3 and Midwest considerations should also include issues of taxation, education and training, regulatory costs and costs in the production process. These elements will impact the competitiveness of the firm and will in the long-run play an important role in determining location, production activity and export growth for any industry. Overall, the issues of external growth and domestic restructuring will continue to bring forth many questions for the domestic industry and the Midwest. Further restructuring and down-sizing of the industry pose many important questions, and it is imperative to try to assess the direction of the industry and its role in supplementing growth in the Midwest. The future for the motor vehicle industry is increasingly a global one, both in terms of production and sales, and hopefully U.S. industry can benefit and get in the game. Otherwise the degree of change and the resulting economic pain may be severe.

Footnotes

¹The Midwest is defined as the East-North Central census region which includes Illinois, Indiana, Michigan, Ohio and Wisconsin.

²Among other estimates the University of Michigan, Euromotor, and the Commerce Department all conservatively estimate sales growth at this level. Estimates provided in this analysis have come from these sources.

³Recent acquisitions have reduced the number of independent automakers, especially in Europe, where intense restructuring appears to be occurring. These acquisitions have not dampened the degree of competition in the marketplace. If anything, competition has become more aggressive recently.

⁴The expression "foreign nameplate" refers to vehicles produced by a company whose headquarters is external to the U.S. Production activity may well, and in fact does, occur in the U.S. and other nondomestic markets, but the firm is headquartered.

⁵Note that U.S. nameplates have been relatively aggressive in developing light vehicles that combine the strengths of trucks with the ride and comfort of cars. Mini-vans and many sports utility vehicles possess these characteristics. Domestic nameplates' market share have also been helped by import quotas and the 25 percent tariff levied on imported light trucks.

⁶Foreign transplants refer to U.S. facilities of foreign nameplates. The initial development of transplant facilities began in 1982 when Honda established U.S. assembly facilities in Ohio.

⁷The expansion of light-truck production is being influenced by trade concerns (friction) and the existing tariff levels.

⁸The recent sales declines may be a reflection of the general downward adjustment in the trend in auto sales. Demographical shifts, minimal income growth and price increases may mean that further expansion in the market is unlikely. These factors may cause multiple problems for many producers, especially given the level of competition that already exists in the market.

⁹Light trucks in this discussion exclude vehicles classified as Class 5 and greater.

¹⁰The expansion by VW and GM has recently added capacity in excess of 500,000 units annually.

¹¹Chrysler has built a facility in Austria and is targeting production of at least 150,000 units annually.

¹²Recent EC rulings have encouraged the removal of auto trade restrictions within the Community. These revisions are forcing significant changes within the Italian market.

¹³Ford's financial performance has slumped in European due to competition and weakness in its principal market the United Kingdom.

¹⁴Regulatory procedures, specifically emission requirements, do encourage a higher replacement rate for autos than otherwise expected in a mature economy. However, reduced prices for slightly used vehicles are beginning to put pressure on new car sales. Along with other adverse trends, one would expect only modest sales gains in the future.

¹⁵Additional capacity in mainland China, Thailand and Indonesia may increase Asian capacity above 18 million units by the mid 1990s. Given the difficulties in measuring existing capacity and additions to capacity, a reasonable forecast would place the level at more than 18 million units by 1995.

¹⁶As illustrated by Korea, emerging producers may have difficulties in exporting to mature markets due to quality problems, trade restrictions, and other factors. However, low labor and other production-related costs are an offsetting factor in export growth to other emerging markets.

¹⁷Conservative estimates of GDP growth in the dynamic Asian economies places growth at approximately 7 to 8 percent per year throughout the decade. Southeastern China, with a population equal to the U.S., has an economy growing at a 12-14 percent annual rate with industrial production growing in excess of 20 percent per year.

¹⁸Yet, even given Japan's space limitations, vehicle registrations and concentration levels are one of the highest in the world.

¹⁹Other elements are also important to support an expanding consumer market for vehicles. Infrastructure, especially roads and parking facilities, is an important factor. Additionally, there may be constraints on specific markets which will hamper growth. Hong Kong, for instance, because of space difficulties has a very small vehicle market in spite of its relatively high income levels.

²⁰One qualification to the claim of apparent market dominance by domestic producers to the exclusion of other manufacturers is that cross ownership stakes are significant and therefore other manufacturers successfully permeated markets through equity stakes. For instance, GM has a 50% equity stake in Daewoo, while Ford has a 10% equity stake in Kia Motors.

²¹Production of the Yugo and the Trabant has been disrupted by current events. Production of the Lada is still occurring at the Nizhny Novgorod facility, an industrial behemoth employing 160,000 workers.

²²Some Mexican exports are the result of 2-for-1 import requirements. However, in general the exports reflect the cost effectiveness of Mexican labor.

²³See Ballew and Schnorbus (1992).