

**The Contribution of the International Auto Sector
to the U.S. Economy:
An Update**

A study prepared for the
Association of International Automobile Manufacturers, Inc.



by

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The statements, findings, and conclusions herein are those of the authors and do not necessarily reflect the views of the project sponsor.

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INTRODUCTION

The motor vehicle industry is the largest manufacturing industry in the United States. No other single industry is linked so much to the U.S. manufacturing sector or directly generates so much retail business and employment. Our study describes the economic contribution of an important sector of the U.S. motor vehicle industry: the United States International Auto Sector (USIAS). The USIAS will be defined in this study as international automakers that sell passenger cars and light-duty trucks in the United States.¹

This study is an update of a previous report on the economic contribution of the international automotive industry completed in 1998 for the AIAM. The first study showed total employment at USIAS facilities as 69,000 in 1996. To this total was added 334,000 additional jobs connected to USIAS new vehicle sales at U.S. new vehicle dealerships. The 400,000 direct jobs were shown to contribute an additional 800,000 supplier and spending-induced spin-off jobs for a grand total of 1.3 million jobs contributed by the USIAS to the U.S. economy in 1996. About \$49 billion in labor compensation was added to the U.S. economy that year by the sales and manufacturing activities of the USIAS.²

Our current study seeks to first update in Part 1 the employment totals for the USIAS firms and their dealer franchises as well as present an empirical overview of the current scope and significance of the international auto industry in the United States. Second, in Part 2 of this study, CAR provides an estimate of the total impact of the USIAS on U.S. employment derived from our latest research in this area of the motor vehicle industry's contribution. Finally, CAR's sources of information for this study include economic information provided by various departments of the U.S. government, industry data from public sources, and data provided by a special survey of the international automakers. Our major findings include the fact that USIAS direct U.S. employment has increased to over 93,000 and that this direct employment total, when combined with related new vehicle dealership employment, generates 1.8 million jobs in the U.S. economy, or 1.7 percent of total private sector employment in the United States.

¹The USIAS comprises the following motor vehicle firms: BMW, Honda, Hyundai, Isuzu, Kia, Mazda, Mercedes-Benz, Mitsubishi, Nissan, Porsche, Subaru, Suzuki, Toyota, Volkswagen, and their respective divisions.

² The Office for the Study of Automotive Transportation, Transportation Research Institute, and the Institute of Labor and Industrial Relations, University of Michigan. The Contribution of the International Auto Sector to the U.S. Economy. A study prepared for the Association of International Automobile Manufacturers, Inc., Ann Arbor, March, 1998.

PART I: SCOPE AND SIGNIFICANCE OF THE INTERNATIONAL AUTO SECTOR IN THE UNITED STATES

USIAS History during 1996-2004

The USIAS has increased its contribution to the U.S. economy since 1996 when CAR performed its first study. Since 1996, a number of new, major assembly plants were built by Toyota, Nissan, and Honda. Other existing USIAS assembly and powertrain facilities have been significantly expanded with new capacity and additional employment. Also, the USIAS has significantly enlarged its U.S. sales and share of the U.S. light vehicle market since 1996. A dramatic change occurred in 1998 when Daimler AG purchased the Chrysler Corporation and formed the German-owned DaimlerChrysler Corporation. Although the employment and wages contributed by Chrysler Group of DaimlerChrysler are excluded from many of the results we show below, they too now should be rightfully included in the international automotive sector of the U.S. economy. The Chrysler Group is excluded from this update to facilitate comparisons with our previous study. All-in-all, it can be shown that the USIAS has contributed almost all of the growth in the U.S. motor vehicle industry since the publication of our first study.

As figure 1.1 illustrates, the USIAS sold 4.7 million vehicles in the United States in 1986. Figure 1.2 shows, however, that fewer than 700,000 of these sales were vehicles produced in the United States. In 2003, the USIAS set an all-time U.S. sales record of 6.8 million vehicles while producing 3.1 million vehicles in the U.S. Sales of USIAS vehicles produced in the United States have quadrupled since 1986, and now constitute over 44 percent of international U.S. vehicle sales.³

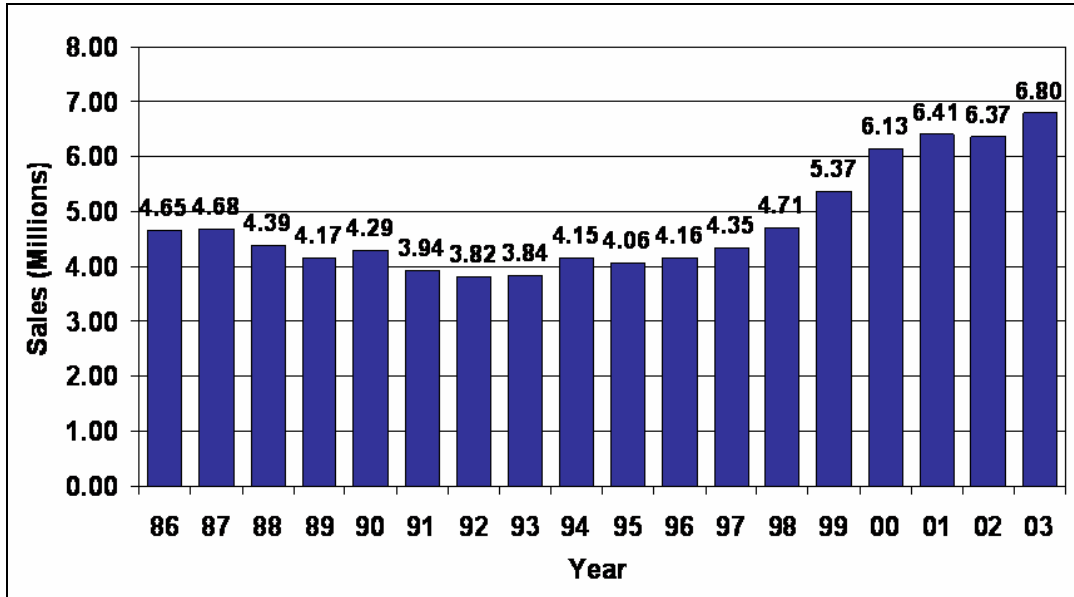
The period of 1986-2003, however, did see shifts in the sourcing of the U.S. sales of the USIAS. As figure 1.2 shows, U.S. sales of imported USIAS vehicles declined from a peak of 4.2 million units in 1986 to 3.5 million units in 2003, or a percentage decrease of 17 percent. Also in the same period, U.S. sales of U.S. built USIAS vehicles increased from a level of 0.7 million in 1986 to a level of 3.1 million in 2003, or a percentage increase of 440 percent.⁴ The resurgence of imported vehicle sales can be partially attributed to a stronger U.S. dollar, post-1996, as well as increased public demand for USIAS vehicles. The steady growth in U.S. produced vehicles can

³ Limiting this comparison only to companies that both sell and produce vehicles in the U.S. would produce an even higher percentage.

⁴ Although 4.2 million units were imported and 0.7 million produced, this need not match 4.7 million sales above due to export activity and change in vehicle inventory.

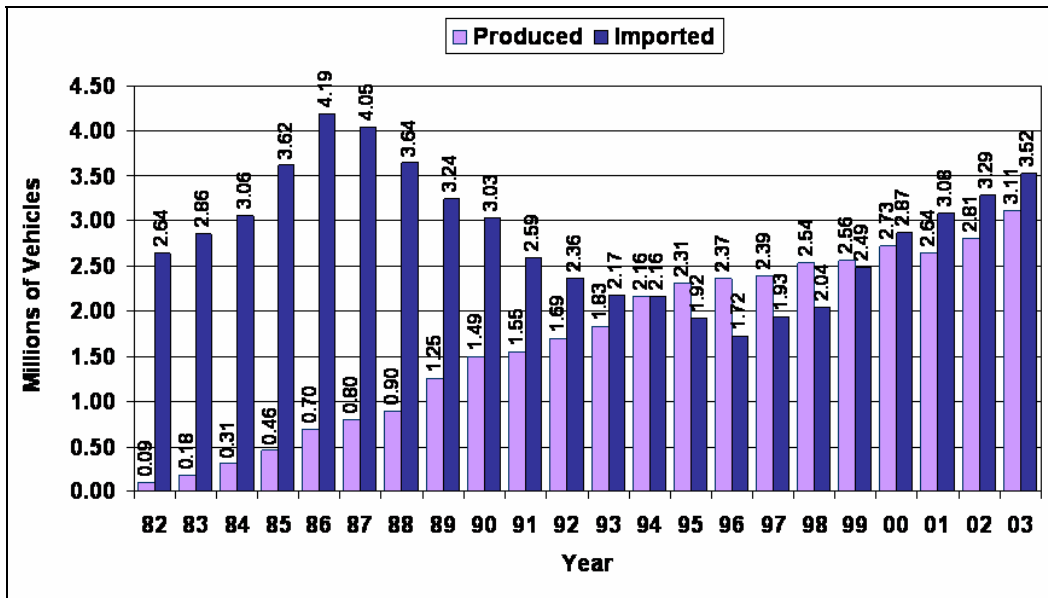
also be attributed to increased public demand and the commitment of many USIAS companies to manufacture their product in the United States in the plants shown in table 1.1.

Figure 1.1
USIAS U.S. Sales of Light Vehicles
1986 – 2003



Source: Economic Indicators, AAMA Q4 1996 and Q1 1997; Ward's Automotive Yearbooks 1998 – 2003; Automotive News Market Data Book 2004.

Figure 1.2
USIAS Vehicle Production and Sales of Imports
1982 - 2003



Source: Economic Indicators, AAMA Q4 1996 and Q1 1997; Ward's Automotive Yearbooks 1998 – 2003; Automotive News Market Data Book 2004.

**Table 1.1
USIAS Motor Vehicle Assembly Facilities**

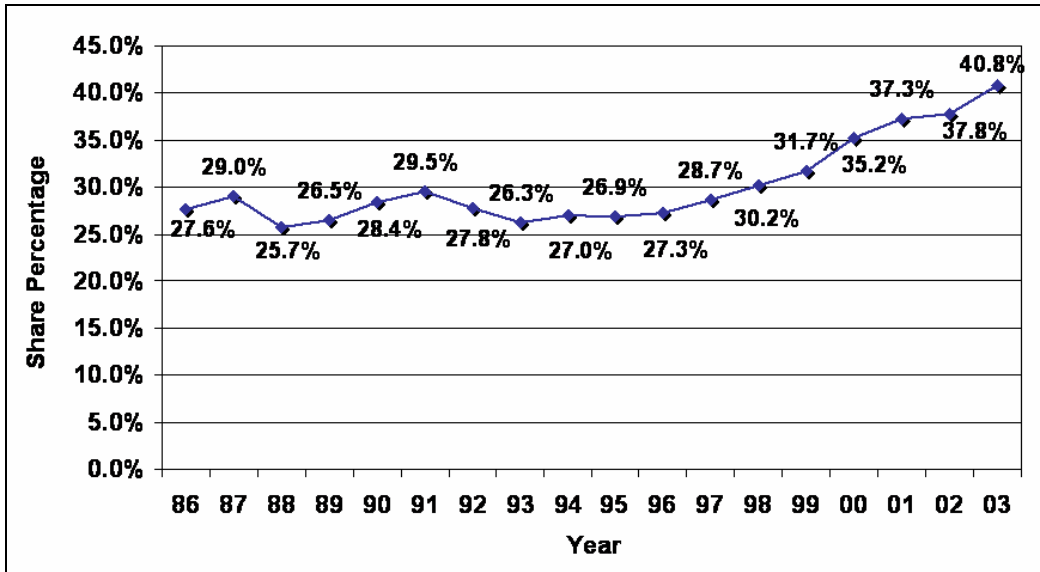
	Location	Total Vehicle Capacity	Employment	Investment (\$ millions)	Production Start
BMW	Spartanburg, SC	120,000	3,000	2,000	1994
Honda	Lincoln, AL	300,000	*4,300	*1,100	2001
	East Liberty, OH	244,174	2,600	895	1989
	Marysville, OH	440,000	5,800	2,850	1982
Mercedes	Vance, AL	100,016	1,900	300	1997
Mitsubishi	Normal, IL	240,000	3,150	1,378	1988
Nissan	Smyrna, TN	500,000	9,333	2,150	1983
	Canton, MS	400,000	5,537	1,430	2003
NUMMI	Fremont, CA	361,486	5,630	1,700	1984
Subaru-Isuzu**	Lafayette, IN	126,240	2,500	1,190	1989
Toyota	Georgetown, KY	500,000	7,000	5,152	1988
	Princeton, IN	149,986	2,400	1,500	1998
	Princeton, IN 2	150,000	2,200	1,000	2002
		3,631,902	55,350	22,645	

* Includes Lincoln Powertrain
** Subaru-Isuzu plant is now Subaru Indiana Automotive.

Source: Company reports; CSM Worldwide; Harbour & Associates, 2003

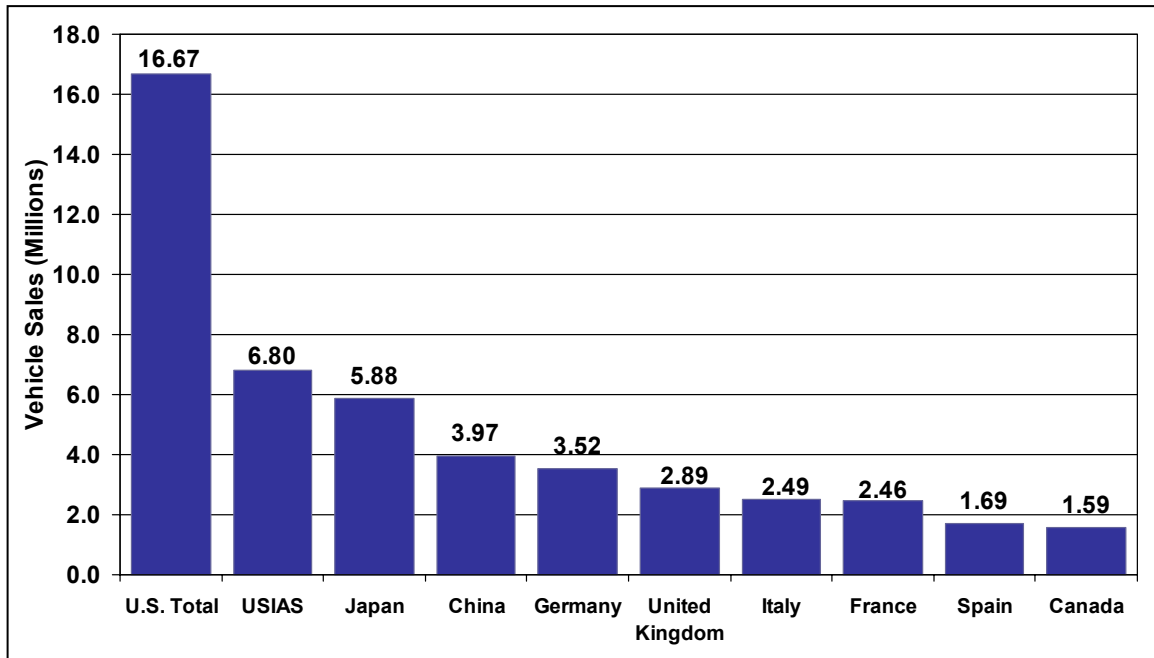
The U.S. sales totals of the USIAS have been substantial for over two decades. Figure 1.3 presents the percentage market shares of total U.S. vehicle sales for the USIAS during 1986-2003. As shown, USIAS vehicles began with 27.6 percent of U.S. vehicle sales in 1996 and rose steadily to 40.8 percent in 2003. This strong trend in the growth of market share particularly underscores the importance of the USIAS producers for new vehicle dealership employment in the United States. Finally, figure 1.4 shows that if USIAS U.S. sales in 2003 were ranked against national markets worldwide, sales of international vehicles in the United States would rank second—between the total national vehicle markets of non-USIAS producers in the United States and total vehicle sales in Japan.

Figure 1.3
USIAS Share of the U.S. Light Vehicle Market
1986 - 2003



Source: Economic Indicators, AAMA Q4 1996 and Q1 1997; Ward's Automotive Yearbooks 1998 – 2003; Automotive News Market Data Book 2004

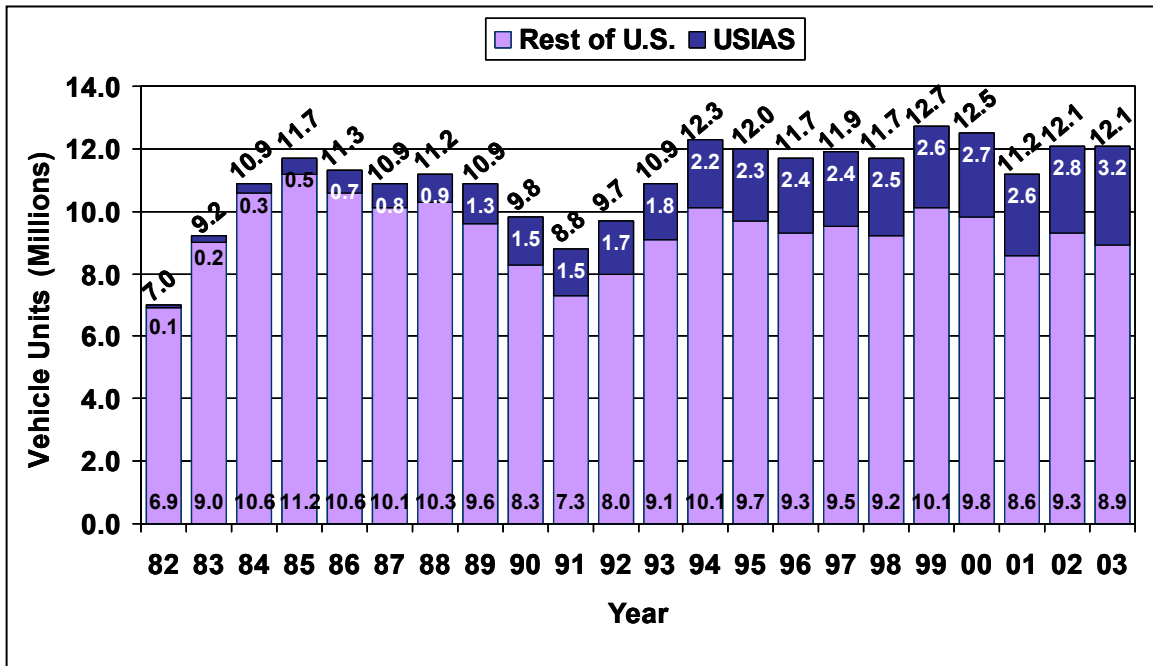
Figure 1.4
Top 2003 National Sales Markets



Source: Automotive News Market Data Book 2004

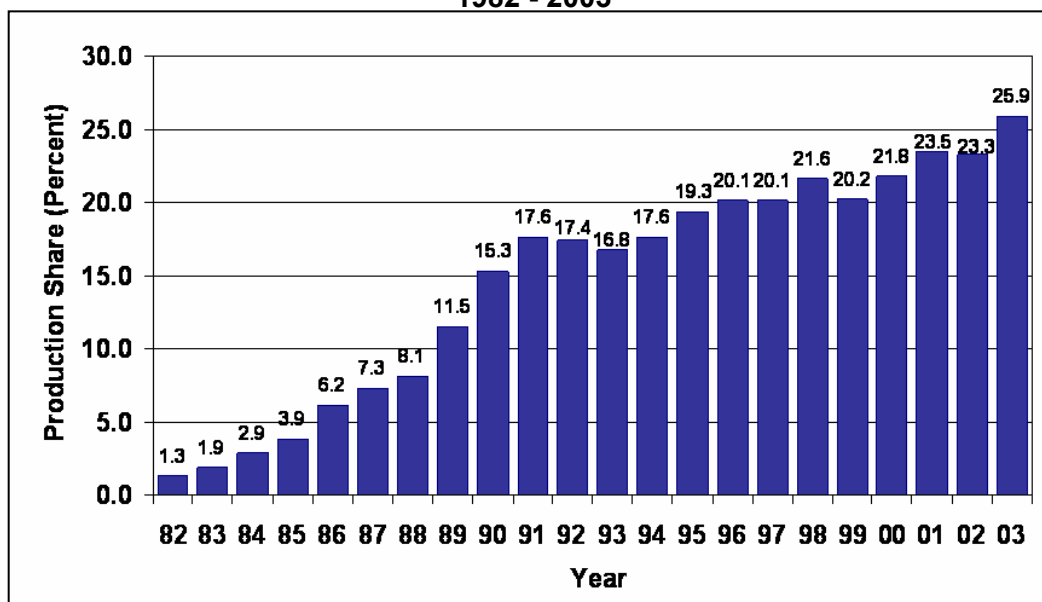
The real story of the growth of the USIAS in the U.S. economy, of course, is the sector's ever-increasing domestic production of vehicles. The USIAS's share of total U.S. light vehicle production is shown in figures 1.5 and 1.6. The latter illustrates the rapid acceleration of the USIAS's share of U.S. production with the start-up of many of their initial plants during 1982-1991. During the recession of 1991 – 1994, the market share of USIAS automakers continued to increase, even though the market as a whole softened. Recently, a second surge of new capacity and sales has allowed the USIAS to increase its share of U.S. production to 25.9 percent in 2003. Total U.S. production of light vehicles averaged 11.9 million units during 1994-1997 and again during 2000-2003. USIAS U.S. production, however, increased by about 500,000 annually between these two periods (1994 – 1997 and 2000 – 2003). In other words, increased production by USIAS automakers due to market demand forestalled any decline in U.S. automotive production during the period 1994-2003, despite the occurrence of a recession in 2001.

Figure 1.5
U.S. Light Vehicle Production
1982 – 2003



Source: *Economic Indicators*, AAMA Q4 1996 and Q1 1997; *Ward's Automotive Yearbooks* 1998 – 2003; *Automotive News Market Data Book* 2004

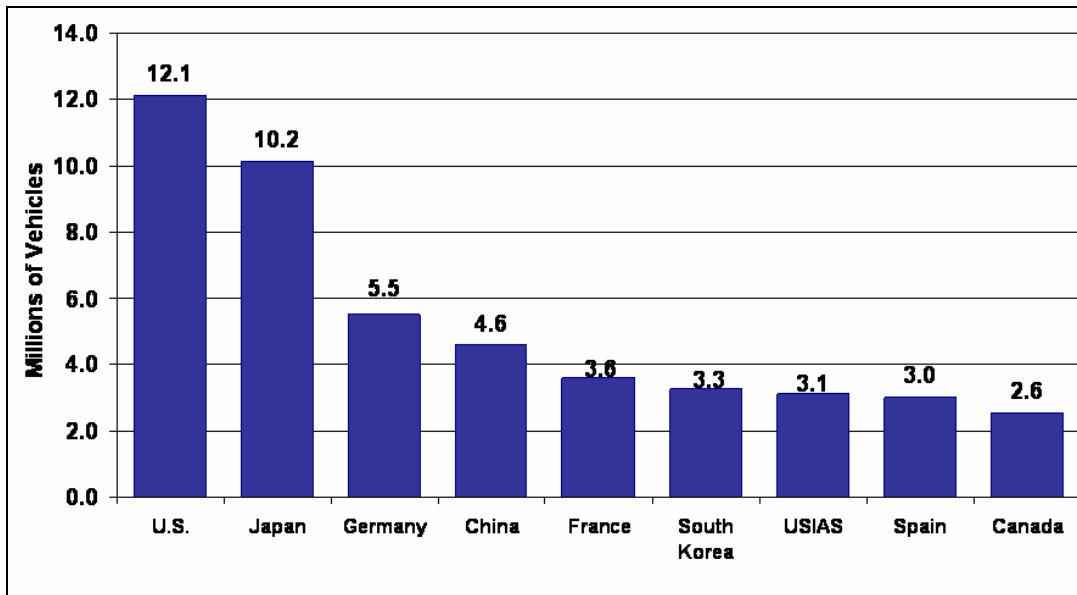
Figure 1.6
USIAS Share of U.S. Production
1982 - 2003



Source: Economic Indicators, AAMA Q4 1996 and Q1 1997; Ward's Automotive Yearbooks 1998 – 2003; Automotive News Market Data Book 2004

The current 26 percent USIAS share of U.S. production will almost certainly grow with the construction of new plants, and the further expansion of current facilities. Even at current levels, if 2003 USIAS U.S. production is ranked against the motor vehicle output of other countries, as shown in figure 1.7, the USIAS would be placed just below the motor vehicle industry of South Korea and above the industry in Spain. Also, USIAS producers have increased their manufacturing of powertrains and components in the United States (see table 1.2). In fact, the USIAS more than doubled their capacity to build engines in the United States since the publication of our last report (from 1.5 million to 3.5 million), and increased the capacity to build transmissions by a factor of seven (from 200,000 to 1.4 million). USIAS producers can now build enough engines to install in every vehicle they assemble in the United States, and almost half of these vehicles can now include U.S. produced USIAS transmissions. This has direct impact on the U.S. content of U.S. assembled USIAS vehicles.

Figure 1.7
Top 2003 National Motor Vehicle Industries Production



Source: Automotive News Market Data Book 2004

The level of U.S. powertrain production is also expected to rise in the near term, raising once again the USIAS's level of local purchasing of U.S.-made parts and components. The 2003 USIAS shares of U.S. light motor vehicle and vehicle engine capacities are shown in table 1.3. These shares were calculated using figures contained in the well respected Harbour Report, North America 2004, (Harbour Consulting 2004) as well as data from CSM Worldwide and the USIAS firms. The 26 percent share of vehicle capacity and 31 percent share of engine capacity reflect the \$27.8 billion the USIAS has invested in its major vehicle and engine assembly plants alone since 1982, and the employment of nearly 63,000 workers at these plants.

**Table 1.2
USIAS Powertrain Facilities**

	Location	Capacity: Engines	Capacity: Transaxles	Employment	Investment (\$ Millions)
Honda	Anna, OH	1,100,000	824,944	2,850	1,270
	Lincoln, AL	300,000		*4,300	*1,100
	Russels Point		1,000,000	970	145
Nissan	Decherd, TN	950,000	300,000	1,716	647
Toyota	Georgetown, KY	500,000		804	1,000
	Huntsville, AL	120,000		350	234
	Buffalo, WV	540,000	360,000	930	758
		3,510,000	2,484,944	11,920	5,154

** Includes Lincoln Assembly*

Source: Company reports; CSM Worldwide; Harbour & Associates, 2003

**Table 1.3
USIAS U.S. Capacity**

	Capacity	Share of U.S. Capacity
Vehicles	3.6 million	25.9%
Engines	3.5 million	30.5%

Source: Company reports; CSM Worldwide; Ward's Automotive Yearbooks 1998 – 2003; The Harbour Report, North America 2004, Harbour Consulting 2004.

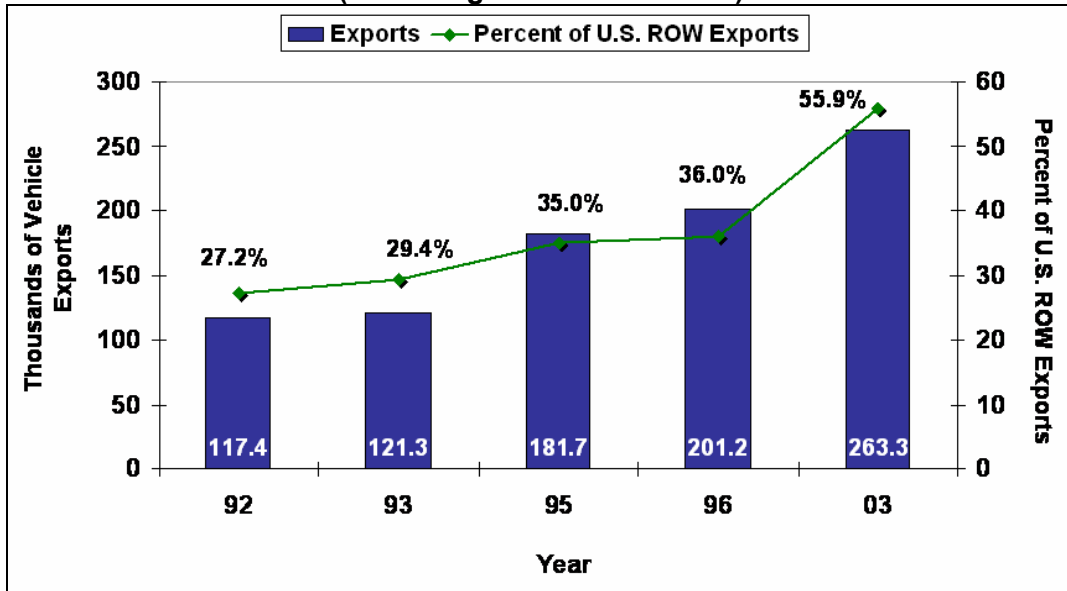
AIAM Survey Information

A special survey of international motor vehicle firms was carried out in the winter and spring of 2004 to measure the contribution of USIAS activities to the U.S. economy in 2003. Material collected from companies on employment and employee compensation is particularly useful for this study. The results pertain only to light vehicle operations and sales.

USIAS-U.S. vehicle sales and production data were reviewed above in this report. The survey provides some additional detail on the sales destinations of USIAS produced vehicles. Figure 1.8 shows that exports of USIAS vehicles to the rest of the world (ROW) outside of North America increased by 131 percent during 1996-2003. The USIAS share of total U.S. auto industry exports to the rest of the world, outside of North America, rose from 27 percent in 1992 to about 56 percent in 2003, or over half of U.S. non-North American light vehicle exports. About 8 percent of USIAS output is exported to destinations outside of North America. This level

of exports is certainly above that for the U.S. motor vehicle industry as whole, and it is a significant contribution to U.S. economic growth through export sales.⁵

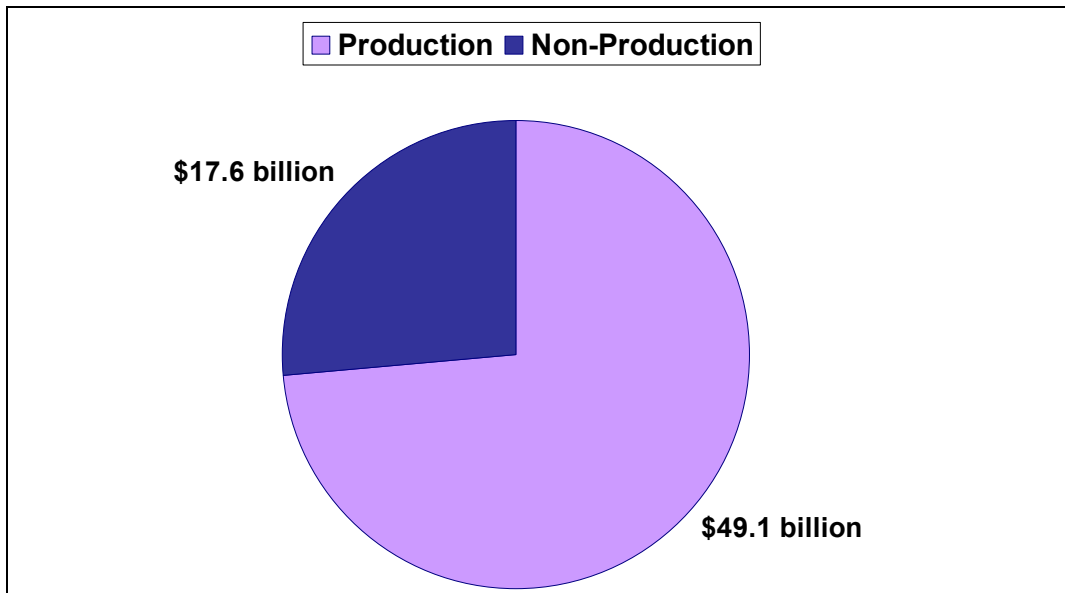
Figure 1.8
USIAS Vehicle Exports and Share of U.S. Vehicle Exports to the Rest of World (excluding Canada & Mexico)



Source: USDOC; ITA Office of Automotive Affairs; Survey of Companies

⁵ For example, total U.S. vehicle exports to countries outside of North America were 470,820 in 2003. About 4 percent of total U.S. production was exported to other markets not including Mexico and Canada. See U.S. Department of Commerce, International Trade Administration 2003, <http://ita.doc.gov/td/auto/qfact.html>.

Figure 1.9
USIAS 2003 Purchases from U.S. Suppliers (\$billions)
Total = \$66.7 billion



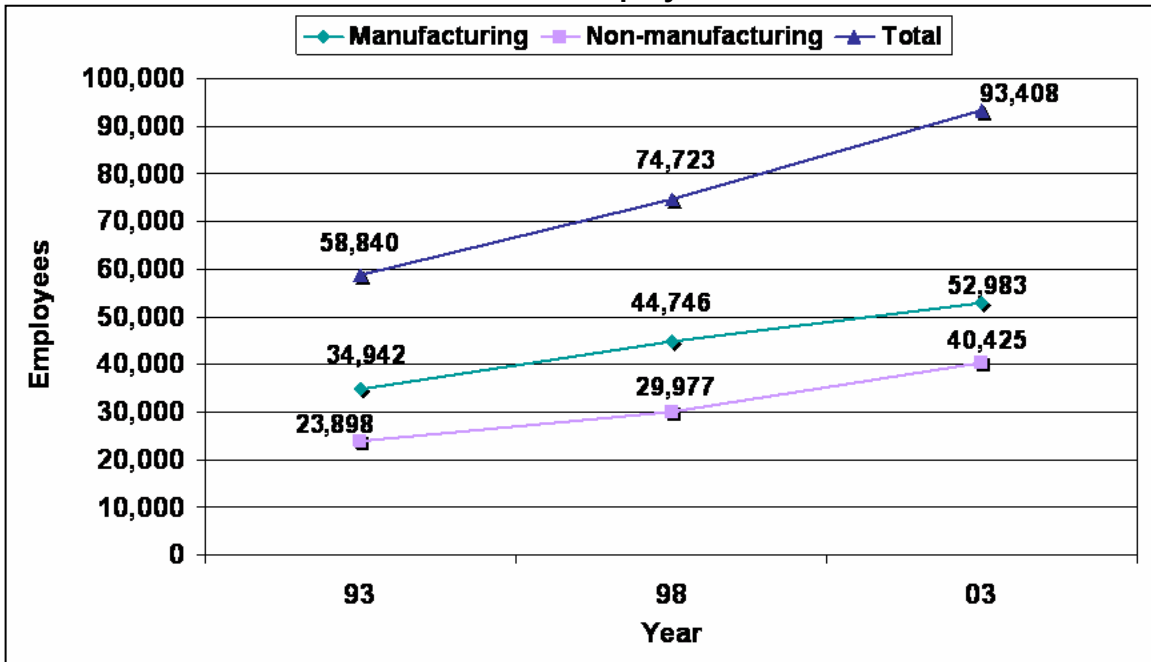
Source: Surveys of Companies

CAR's 2004 survey shows that the USIAS directly spent about \$66.7 billion on purchases from U.S. suppliers in 2003. This total does not include taxes and tariffs paid that year, or charitable contributions. About 73.6 percent or \$49.1 billion of total purchases were for manufacturing or production purposes. "Non-production" includes expenses for goods and services used in engineering and design activities, and other goods and services bought by operations in sales, distribution, finance, and port services.

USIAS reported survey employment is given in figure 1.10 for 1992 through 2003. The sources for the 1992-1996 information are the AIAM membership surveys carried out by DeRosiers Inc. for the association. The five year increase (from 1998 to 2003)⁶ in total employment was 18,685, or an increase of 25 percent. Manufacturing employment grew by a total increase of 18 percent, or from 44,746 in 1998 to 52,983 in 2003. Non-manufacturing employment grew faster with a total increase of 35 percent, or from 29,977 in 1998 to 40,425 in 2003.

⁶ The Office for the Study of Automotive Transportation, Transportation Research Institute, and the Institute of Labor and Industrial Relations, University of Michigan, March 1998.

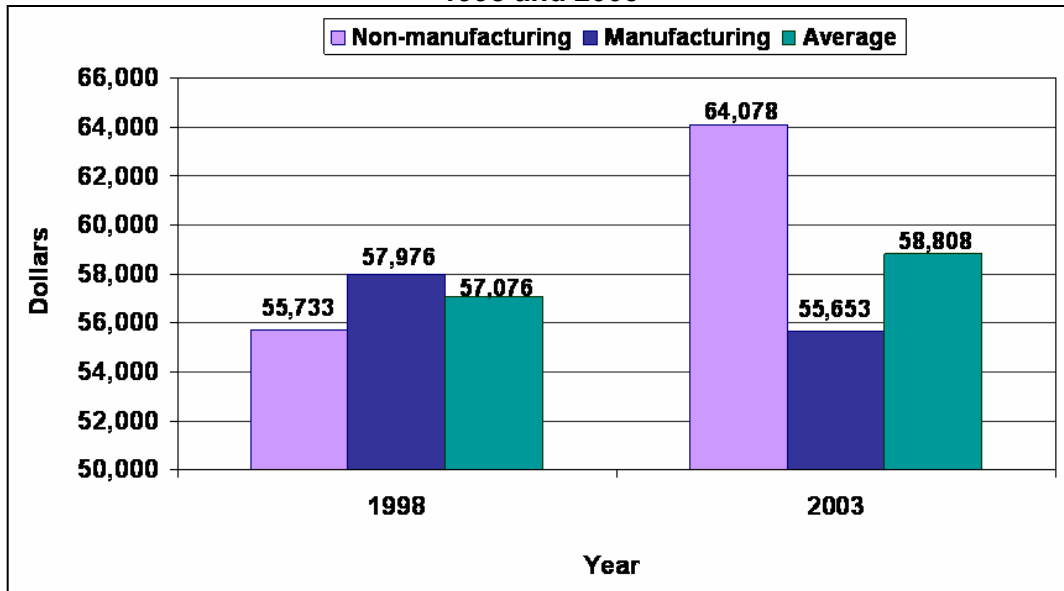
**Figure 1.10
USIAS U.S. Employment**



Source: Surveys of Companies

Figure 1.11 combines reported employment totals with information from the AIAM surveys on employee payroll, both manufacturing and nonmanufacturing, yielding employee payroll averages for 1998 and 2003. As can be seen, average payroll compensation for all employees increased from about \$57,000 in 1998 to almost \$59,000 in 2003. Non-manufacturing payroll compensation rose from an average of about \$56,000 in 1998 to an impressive \$64,000 per employee in 2003. Although average manufacturing compensation fell slightly during this period principally due to new hires at new and expanded U.S. manufacturing facilities (who would typically receive entry level wages), total USIAS payroll (not including the cost of mandated and non-mandated benefits) rose to \$5.5 billion in 2003. The employment and employee compensation data shown in figures 1.10 and 1.11 are important parameters for the economic contribution section of this study.

**Figure 1.11
USIAS Average Payroll per Employee
1998 and 2003**



Source: Surveys of Companies

The survey results provide valuable information for this study's estimate of the contribution of the USIAS to the U.S. economy. The survey, however, covers only employment, compensation, and purchasing activity of the international vehicle firms.

Future Scheduled Investment and Employment

A final item in the CAR 2004 survey of USIAS companies is announced capacity and employment change for USIAS companies in the United States. Table 1.4 lists the scheduled capacity increases and associated new employment additions for 2004-2006. Four companies have announced major additions to their operations in the United States. Notably, the USIAS plans the expansion of an auto tech center in Michigan, a proving grounds facility in California, and a large vehicle assembly plant in Alabama. The USIAS will invest over \$3.8 billion in new facilities in three years and eventually hire over 9,000 employees to staff them. Table 1.4 does not contain other investments in tooling and other equipment needed for new vehicle models and powertrains for the existing facilities listed in tables 1.1 and 1.2 above. The USIAS will certainly grow in terms of capacity and employment over the next three years.

**Table 1.4
USIAS Planned Facility Additions and Expansions 2004 – 2006**

	State	Additional Employment	Additional Investment (\$ Millions)	Year Complete	
Honda	Honda Manufacturing of Alabama (Lincoln #2)	AL	1,300	580	2004
	Honda Manufacturing of Alabama (Lincoln #1)	AL	100	70	2006
	Honda Transmission	GA	400	100	2006
	Honda Transmission	OH	100	100	2006
	Marysville Auto Plant (Paint facility)	OH	50	120	2006
Hyundai	Hyundai Motor Manufacturing Alabama, LLC	AL	2,000	1,100	2005
	Proving Grounds, California City	CA	50	24.8	2005
	Hyundai Auto Tech Center	MI	400	36	2005
Toyota	Toyota Motor Manufacturing, Texas, Inc.	TX	2,000	800	2006
	Toyota Motor Manufacturing, Alabama, Inc.	AL	150	20	2005
	Toyota Motor Manufacturing, West Virginia, Inc.	WV	50	80	2006
	Toyota Motor Manufacturing, North America, Inc.	KY	75	15.6	2004
Mercedes USIAS	Mercedes Benz International, Inc., Tuscaloosa	AL	2,000	600	2005
	Other *Facilities		406	163.5	
			9,081	3,809.9	

* Port, sales, and administrative facilities

Source: Surveys of Companies

BEA Data on Foreign Direct Investment of Foreign Multinational Automotive Firms in the U.S. Automotive Industry

The Bureau of Economic Analysis of the U.S. Department of Commerce (BEA) is mandated by the U.S. Congress to annually survey majority owned U.S. affiliates of foreign multinational corporations on such information as financial and operating characteristics of their businesses in the United States. Table 1.5 presents the highlights for the automotive industries covered by the BEA Foreign Direct Investment (FDI) surveys conducted in 1999-2001. Five major industry areas are shown in table 1.5. At first glance, it would seem that the bulk of USIAS employment and compensation would be located in the “Vehicle Manufacturing” sector of the table. Foreign owned vehicle manufacturing firms (including heavy truck makers such as Freightliner and Mack), for example, reported \$135.7 billion in U.S. assets and \$141.4 billion in U.S. sales in 2001. These firms employed 162,500 with a reported compensation of \$12.6 billion the same year. However, complicating the use of these numbers to approximate the economic contributions of USIAS companies is the fact that employment and investment totals for USIAS companies are included in BEA totals for foreign owned parts manufacturing and wholesale facilities shown in table 1.5. These totals, of course, measure the contribution of foreign owned auto parts supplier firms to the U.S. economy. Second, the BEA figures shown in table 1.5 include employment and investment numbers for Chrysler Group during 1999 - 2001. Chrysler Group U.S. employment totaled 101,200 in 1999 and 83,400 in 2001.⁷ These employment totals when subtracted from the 162,500 vehicle manufacturing jobs in the FDI survey in 1999 and

⁷ Source: Communication with Chrysler Group of DaimlerChrysler, June 15, 2004.

2001 – produce a corrected (for the Chrysler Group) figure of 81,500 in the first year and 79,100 for the later year for international motor vehicle and parts manufacturing employment. Or the Chrysler employment numbers when subtracted from the overall FDI automotive totals of 463,200 in 1999 and 416,400 in 2001 yield a corrected total of 362,000 in 1999 and 333,000 in 2001 as corrected employment figures of all foreign owned vehicles, parts manufacturing, and wholesale trade firms doing business in the United States.

Table 1.5
Selected Financial and Operating Data of Non-bank U.S. Affiliates of Foreign Automotive Multinational Corporations, by Industry of Affiliates, 1999-2001

	Year	Assets (Billions of Dollars)	Plants and Equipment (Billions of Dollars)	Sales (Billions of Dollars)	Net Inc. (Billions of Dollars)	Employment (Thousands)	Compensation (Billions of Dollars)	Per Capita Comp per Employee
Vehicle Manufacturing	1999	\$135.70	\$63.30	\$141.40	\$6.40	182.7	\$12.5	\$68,418
	2000	\$150.80	\$70.00	\$144.40	\$2.60	166.5	\$11.0	\$66,066
	2001	\$153.10	\$78.30	\$135.60	-\$2.00	162.5	\$12.6	\$77,538
Parts Manufacturing Estimate	1999	\$37.50	\$23.40	\$51.30	\$1.40	197.0	\$9.2	\$46,701
	2000	\$35.90	\$23.30	\$49.80	\$1.00	186.4	\$8.9	\$47,747
	2001	\$36.80	\$24.60	\$49.90	-\$0.40	177.1	\$9.7	\$54,771
Wholesale Auto	1999	\$83.30	\$43.20	\$111.80	\$2.00	61.6	\$4.2	\$68,182
	2000	\$92.50	\$42.20	\$125.10	\$2.90	57.6	\$4.5	\$78,125
	2001	\$74.10	\$33.50	\$129.60	\$2.40	56.5	\$4.7	\$83,186
Retail Auto	1999	\$2.30	\$0.70	\$4.30	\$0.60	21.9	\$0.6	\$27,397
	2000	\$2.80	\$0.80	\$5.40	\$0.02	26.8	\$0.8	\$29,851
	2001	\$2.50	\$0.80	\$5.10	-\$0.10	20.3	\$0.6	\$29,557
Totals	1999		\$130.60		\$10.40	463.2	\$26.5	\$57,211
	2000		\$136.30		\$6.50	437.3	\$25.2	\$57,626
	2001		\$137.20		-\$0.10	416.4	\$27.6	\$66,282

Source: U.S. Department of Commerce, Bureau of Economic Analysis, "Foreign Direct Investment in the U.S.: Financial and Operating Data for U.S. Affiliates of Foreign Multinational Companies," (online). Available: <http://www.bea.doc.gov/bea/di/di1fdiop.htm> (2004).

What is the employment share of the USIAS and foreign owned automotive suppliers in the U.S, motor vehicle and motor vehicle parts industry? The corrected BEA numbers can give an approximate estimate. Total U.S. employment in 2001 for motor vehicle, motor vehicle body and motor vehicle parts manufacturing (NAICs 3361, 336211, and 3363) was 1,086,900.⁸ Table 1.5 shows a combined total of 339,600 (162,500 + 177,100) employed in foreign owned facilities, of

⁸U.S. Department of Labor Bureau of Labor Statistics, <http://data.bls.gov/PDQ/outside.jsp?survey=ce>

which 87,800 are Chrysler Group employees. The net of 251,800 employees of foreign owned affiliates, therefore, constituted 23.2 percent of total U.S. motor vehicle and parts manufacturing employment in 2001.

The compensation per employee levels shown in table 1.5 is higher than those shown in figure 1.11. The BEA does ask in its survey for total compensation, or payroll, other forms of money compensation, and the cost of benefits. Not all responding corporations responded with complete information on all of these areas. Figure 1.11, of course, includes only payroll reported by USAIS firms. The difference between the higher per capital employee compensation levels from the BEA survey and the CAR USIAS survey reflect the additional cost of benefits.

Table 1.5 illustrates that international vehicle makers had U.S. assets valued at \$153.1 billion in 2001. Assets include property, facilities, equipment, intellectual property, patents, and other assets. Similarly to the employment data discussed earlier, the assets of DaimlerChrysler's Chrysler Group can be subtracted from this figure to estimate 2001 USIAS assets in the U.S. Based on data provided by DaimlerChrysler, CAR estimates 2001 Chrysler Group assets at \$18.3 billion. Subtracting this amount from the \$153.1 billion results in estimated USIAS assets in the U.S. valued at \$134.8 billion.

Employing this method results in perhaps the most accurate assessment of United States USIAS investment and holdings. Because of potential disinvestment, inflation, and assets that are difficult to track, such as equipment leased for use in supplier facilities, simple addition of past USIAS investments results in an undercount of the investments the USIAS has made in the U.S. This estimate, which provides the current value of all investment and assets, best illustrates the financial commitment made by the USIAS in the United States.

PART 2: ESTIMATES OF THE ECONOMIC CONTRIBUTION OF THE INTERNATIONAL AUTO SECTOR IN THE UNITED STATES

Introduction

The fastest-growing segment of the motor vehicle and equipment industry in the 1980s and 1990s has been the USIAS. The economic contributions of the USIAS in many dimensions are apparent from the statistics presented in part 1 of this report, which are dramatic confirmation of the USIAS's importance as a player in the domestic economy.

Impressive as they are, however, these statistics still understate the contributions of the USIAS, since they exclude motor vehicle dealer activities altogether, and they account for only its direct activity in manufacturing, ignoring spin-off activities. Spin-off activities are those that come from two sources: indirect effects, or purchases from domestic suppliers (for example, steel); and induced effects, or spending by people who receive income attributable to USIAS activity (for example, in restaurants). It is the sum of these direct and spin-off activities that determines the total contribution of the USIAS to the domestic economy.⁹

Results

The series of tables in this section show our estimates of the economic contribution associated with the presence of the international auto sector in the United States. Our estimate of total contribution is based on a recent (2004) study completed by the CAR and the Institute of Labor and Industrial Relations, University of Michigan (ILIR) for the Alliance of Automobile Manufacturers (AAM).¹⁰ This new study relied on a total survey of the entire memberships of the AAM and the AIAM in the winter of 2003-2004. The study represented an important update of a large, previously performed study for the AAM and AIAM in 2001.¹¹ The new 2004 AAM study makes use of a complete macro-economic model of the United States supplied by REMI, Inc.

⁹ However, this total contribution should not be interpreted as representing the economic activity that would be lost if the USIAS did not assemble vehicles in the United States. There would be some replacement activity, and the economy would make other compensating adjustments over time. Other studies have made some attempt to estimate the so-called net effects (Adams et al. 1991, Howes 1993, Lawrence 1990, U.S. General Accounting Office 1988), but we do not. Also, we do not consider the long-run general equilibrium solutions that are important in macroeconomic analysis when compensating adjustments are made following a perturbation of the economic system.

¹⁰ Institute of Labor and Industrial Relations, University of Michigan and the Center for Automotive Research. **Contribution of the U.S. Motor Vehicle Industry to the Economies of the United States, California, New York, and New Jersey in 2003.** Prepared for the Alliance of Automobile Manufacturers, Inc., Ann Arbor, May, 2004.

¹¹ Institute of Labor and Industrial Relations and the Office for the Study of Automotive Transportation, University of Michigan and the Center for Automotive Research. **Contribution of the Automotive Industry to the U.S. Economy in 1998: The Nation**

and is calibrated with the latest industry information survey data from 21 automotive firms or divisions that sell light vehicles in the United States. The new study is significant in that it finds that motor vehicle firm employment generates a far larger impact per job on the rest of the U.S. economy partially due to strong productivity gains made in the last five years since the 2001 study. A full discussion of the methodology for deriving the multiplier results borrowed here for our estimates below from the new AAM study are discussed in the body of the AAM study which is available on the CAR website (www.cargroup.org).

The total economic contribution of the USIAS includes both direct employment and the spin-off jobs in the domestic economy that result from its direct employment. The employment estimates are based on the total number of private sector jobs, using the Bureau of Economic Analysis (BEA) definition of employment. We use the BEA definition in order to be consistent with personal income estimates that we also use. This definition of employment includes the self-employed. Data on direct employment are from the survey of USIAS member companies by CAR, discussed in part 1.

The employment contribution of the USIAS in 2004, for private sector manufacturing and support activities, including white-collar workers but excluding dealers, is shown in table 2.1. (Within the industry, the term “manufacturing and support” is often used to describe the activities that we term “manufacturing and distribution.”) The direct employment of 93,400 jobs resulting from CAR’s survey of international automotive firms is consistent with the BEA data. Spin-off employment from these activities is estimated to be 877,900 jobs. These spin-off jobs are those that come from two sources: purchases from domestic suppliers, and spending by people who receive income attributable to USIAS activity. The sum of direct jobs and spin-off jobs equals the total contribution of USIAS manufacturing and support activities, amounting to 971,300 private sector jobs. The total number of jobs created (direct plus spin-off) for every direct job introduced constitutes the “employment multiplier.” In this case, the employment multiplier equals 10.4. The employment multiplier can be interpreted in two ways: (1) there are 10.4 times as many total jobs generated as there are direct jobs, or (2) there are 9.4 spin-off jobs generated for every direct job (1 direct job + 9.4 spin-off jobs = 10.4 total jobs).

Table 2.1
Private Sector Manufacturing and Support Activities

Direct employment	93,400
+ Spin-off employment	<u>877,900</u>
= Total contribution to employment	971,300
Employment multiplier (total ÷ direct)	10.4

CAR studies of the economic impact of the automotive industry include the economic contributions of dealer activity. The results shown in table 2.2 are for USIAS dealer activity in the United States for 2003. The direct employment of 515,892 jobs was provided by the *American International Automobile Dealer Association (AIADA)* for 2003.¹² The AIADA also reported a total payroll compensation of \$22.9 billion for their employees, or \$44,424 per employee. We estimate that at least 61 percent of these employees are associated with new vehicle sales and warranty service work related to new vehicles. In other words, about 314,600 of these dealer employees are connected directly to the sale and servicing of new vehicles. The Spin-off employment from these activities is estimated to be 534,800 jobs. The total contribution to private sector employment, then, amounts to 849,400 jobs. The resulting employment multiplier equals 2.7. The employment multiplier for dealer activity is considerably lower than the multiplier for manufacturing activity because the supplier chain is not as extensive for dealers, and employee compensation for expenditures is not as high on average.

Table 2.2
Private Sector Motor Vehicle Dealer Activities

Direct employment	314,600
+ Spin-off employment	<u>534,800</u>
= Total contribution to employment	849,400
Employment multiplier (total ÷ direct)	2.7

The “bottom line” can be derived by combining the estimates for manufacturing and support with the estimates for dealers presented in tables 2.1 and 2.2. This results in the estimates of total private sector contributions from USIAS activities shown in table 2.3. Direct employment of 408,000 jobs combined with spin-off employment of 1,412,700 produces a total contribution to private sector employment of 1,820,700. In summary, *the employment contribution currently*

¹² Communication with AIADA, June 21, 2004. The 515,892 dealership jobs reported by AIADA amounts to 45.7 percent of U.S. dealership employment, which is in proportion with USIAS 2003 U.S. market share of 40.8 percent.

associated with the presence of the international auto sector in the United States is estimated to be about 1.8 million jobs in the private sector. The corresponding employment multiplier is 4.5.

Table 2.3
Total Private Sector USIAS Activities

Direct employment	408,000
+ Spin-off employment	<u>1,412,700</u>
= Total contribution to employment	1,820,700
Employment multiplier (total ÷ direct)	4.5

The 1.8 million jobs contributed by the USIAS constitute 1.7 percent of total private sector employment in the United States in 2003.¹³ It is also interesting to compare the results in tables 2.1 through 2.3 above to the overall results included in the new ILIR/CAR AAM study. In that study, total direct employment for the vehicle manufacturers was measured at 498,200. USIAS employment of 93,400, then, constitutes about 19 percent of that direct employment total and contributes about 19 percent of the total number of 4.68 million spin-off jobs contributed by the manufacturing portion of the industry. However, the AIADA total for dealership jobs connected to USIAS sales of 314,600 represents 44.6 percent of the total of 705,700 new vehicle dealer's jobs in the new AAM study that are estimated to be connected to new vehicle sales. Thus, a larger share of the spin-off jobs connected to dealership activity is associated with the USIAS than is the case for manufacturing. About 534,500 of the total of 1.2 million spin-off jobs generated by total new vehicle dealership activity in the new AAM study are generated by sales of USIAS vehicles. This reflects the total share of almost 41 percent of new vehicle sales now held by USIAS companies in the U.S. market.

¹³ The US BLS DOL reports total U.S. non-farm payroll employment of 130.0 million for 2003. Government employment totaled 21.5 million in 2003 leaving an employment total of 108.5 million for the U.S. private sector.

SUMMARY

This study is intended to update our understanding of the economic contribution associated with the presence of the USIAS in the United States. To this end, we have collected the most recent information from the industry itself and combined it with results from a state-of-the-art macroeconomic model with a rich data set of primary survey information on the USIAS. With these tools, we were able to generate quantitative estimates of the contribution of the USIAS to the domestic economy. Specifically, we estimate that the economic contribution currently associated with the presence of USIAS activity in the United States is about 1.8 million jobs. This represents about 1.7 percent of the total private (non-farm) sector jobs in the U.S. economy. In addition, we must point out that auto manufacturing's multiplier and its compensation level are among the highest of all manufacturing industries in the U.S. economy. Finally, we have shown that the international automotive sector will continue to grow as a healthy and vibrant portion of the U.S. economy. Although the contributions of the USIAS are smaller in the parts of the country where they do not have a manufacturing presence, their contributions are nevertheless important there as well. Finally, it should be remembered that the foreign-owned Chrysler Group's roughly 80,000 U.S. employment in 2003 and associated new vehicle dealer employment would contribute an additional one million jobs to the U.S. economy – raising the international automotive sector's total contribution to 2.8 million jobs or 2.6 percent of total private sector employment in the United States.

There are yet more potential benefits that have not been quantified in this updated study. For instance, our study does not update our previous assessments in our 1998 study of the qualitative effects that produce additional economic benefits for the domestic economy, such as the intangible advantages of technological and management technique transfers associated with the presence of the USIAS that have clearly improved the productivity and quality performance of the overall U.S. motor vehicle industry. Also, we do not review, as we did in 1998, the contribution by the USIAS of impressive product innovation in the U.S. automotive market which includes the usual leading products in fuel economy performance, and now includes the first introductions of advanced alternative powertrain vehicles such as the Toyota *Prius* or the Honda *Insight*. Finally, we do not review, as we did in 1998, the contributions of USIAS companies to many U.S. charities, educational institutions, and community organizations.

Thus, the international auto sector is associated with greater economic activity in the United States than has been estimated to date.

BIBLIOGRAPHY

Adams, F. Gerard, Byron Gangnes, and Gene Huang. "Impact of Japanese Investment in U.S. Automobile Production." *Journal of Policy Modeling* 13, no. 4 (1991):467-87.

American Automobile Manufacturers Association. "Auto and Truck Output." *Economic Indicators* (1st Quarter 1997):15.

American International Automobile Dealers Association. Communication with CAR, June 21, 2004.

Association of International Automobile Dealers, Inc. "International Nameplate Automobile Dealer U.S. Employment." Washington, DC: Association of International Automobile Dealers, Inc., May 1997. Mimeograph.

Automotive News. *2004 Market Data Book*. Detroit: Automotive News, 1997.

Chrysler Group of DaimlerChrysler. Communication with CAR on June 15, 2004.

CSM Worldwide. North American Light Vehicle Forecast, October 2004.

DesRosiers Automotive Consultants Inc. *AIAM: A Report Examining Member Company Contributions to the U.S. Economy*. Richmond Hill, Ontario: DesRosiers Automotive Consultants Inc., 1997.

Harbour and Associates. *The Harbour Report 2003*. Troy, MI.

Harbour Consulting. *The Harbour Report, North America 2004*, Troy, MI.

Hashimoto, Masanori. "Employment Based Training in Japanese Firms in Japan and in the United States: Experiences of Automobile Manufacturers." In *Training and the Private Sector, International Comparisons*. Edited by Lisa M. Lynch. Chicago: University of Chicago Press, 1994.

Institute of Labor and Industrial Relations, University of Michigan and the Center for Automotive Research. "Contribution of the U.S. Motor Vehicle Industry to the Economies of the United States, California, New York, and New Jersey in 2003." Prepared for the Alliance of Automobile Manufacturers, Inc., Ann Arbor, May, 2004.

Institute of Labor and Industrial Relations and the Office for the Study of Automotive Transportation, University of Michigan and the Center for Automotive Research. "Contribution of the Automotive Industry to the U.S. Economy in 1998: The Nation and Its Fifty States." A Study Prepared for the Alliance of Automobile Manufacturers, Inc. and the Association of International Automobile Manufacturers, Inc. Ann Arbor, Winter 2001.

Lawrence, Robert Z. "Foreign-Affiliated Automakers in the United States: An Appraisal." Study done for the Automobile Importers of America, Washington, DC, January 1990.

Office for the Study of Automotive Transportation, Transportation Research Institute, and the Institute of Labor and Industrial Relations, University of Michigan. "The Contribution of the

International Auto Sector to the U.S. Economy.” A study prepared for the Association of International Automobile Manufacturers, Inc., Ann Arbor, March, 1998.

Treyz, George I. *Regional Economic Modeling: A Systematic Approach to Economic Forecasting and Policy Analysis*. Boston: Kluwer Academic Publishers, 1993.

Treyz, George I.; Dan S. Rickman, and Gang Shao. “The REMI Economic-Demographic Forecasting and Simulation Model.” *International Regional Science Review* 14, no. 3 (1992):221-53.

U.S. Department of Commerce, Bureau of Economic Analysis. “U.S. Affiliates of Foreign Companies: Operations in 1990.” *Survey of Current Business* 72, no. 5 (May 1992):45-68, table 11.1.

U.S. Department of Commerce, Bureau of the Census. *ASM: 2004 Annual Survey of Manufacturers, Statistics for Industry Groups and Industries*. Washington, DC: Government Printing Office.

U.S. Department of Commerce, International Trade Administration. “Table 15: Total New Passenger Vehicle and Truck Exports, 1996” (online). Available: <http://www.ita.doc.gov/industry/basic/t15297.html> (1997).

U.S. Department of Commerce, Bureau of Economic Analysis, “Foreign Direct Investment in the U.S.: Financial and Operating Data for U.S. Affiliates of Foreign Multinational Companies,” (online). Available: <http://www.bea.doc.gov/bea/di/di1fdiop.htm> (2004).

U.S. Department of Commerce, International Trade Administration 2003, <http://ita.doc.gov/td/auto/qfact.html>

U.S. Department of Commerce, International Trade Administration, Office of Automotive Affairs, www.ita.doc.gov/td/auto/

U.S. Department of Labor Bureau of Labor Statistics, <http://data.bls.gov/PDQ/outside.jsp?survey=ce>
Ward’s Automotive Yearbooks 1998-2003.