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For each author provide the following information:

Harm-Jan Steenhuis

Department of Management, College of Business & Public Administration, Eastern Washington University

668 N. Riverpoint Blvd., Spokane, WA 99202, USA

e-mail: hsteenhuis@mail.ewu.edu

phone: 509-358-2283

fax: 509-358-2267

Erik J. de Bruijn

Technology and Development Group, School of Business, Public Administration and Technology, University of Twente

PO Box 217, 7500 AE Enschede, The Netherlands

e-mail: e.j.debruijn@tdg.utwente.nl

phone: +31-53-4893534

fax: -31-53-4893087

Abstract

There is a widely held belief that manufacturing activities are being relocated from industrially advanced nations toward industrially developing nations. In many industrially advanced countries this shift is perceived as a threat for employment levels and it raises the issue of whether industrially advanced nations are losing their industrial base. In this study we examine the international shift of production. Production trends in the passenger car manufacturing industry were analyzed for the past five years. The data of top-10 passenger car producing companies, grouped by region of origin show that there is no conclusive evidence that passenger car manufacturers are shifting their international production towards low labor cost countries. Sales evidence shows that the location of production might be tied with the location of sales. The implication of this is that least for this important sector, that industrially advanced nations are not losing their manufacturers as long as there is a national demand for their products.

Keywords: Internationalization, production location, international manufacturing

1 Introduction

The outsourcing of activities from industrially developed nations toward industrially developing nations, i.e. low labor-cost, has received large media attention in the last couple of years. Whereas low labor-cost countries have been attractive manufacturing locations for decades, only recently the trend has moved towards white-collar jobs (Cox News Service, 2003; Moran, 2003; Skapinker, 2003). The interpretation of outsourcing activities is that it leads to a loss of jobs in industrialized countries (Engardio et al., 2003;

Sowa, 2003; Luce and Merchant, 2004). It has become, a political issue because of it economic implications,

However, it is important to realize that the creation of a job in a low labor-cost country does not always mean that a job is lost in a high labor-cost country. And, even if a job is lost in a high labor-cost country, it is possible that simultaneously other jobs are created in that high labor-cost country. For example in the 1990s manufacturing jobs were created in low labor-cost countries. But Ferdows (1997a) pointed out that, despite contradicting media news, manufacturing wasn't leaving the industrialized nations. Investments of multinational companies in low labor-cost countries were often well publicized but an investment several times larger by the same multinational company, expanding its manufacturing facilities in a highly industrialized country, often went unnoticed.

It is also important to realize that an investment in another country isn't necessarily related to job movements. Ferdows (1997a), who examined FDI patterns, concluded that the rich countries continue to attract more manufacturing investment from abroad every year in amounts far greater than the developing countries. However, financial investments can not be equated with job movement. A change in financial ownership isn't necessarily accompanied by a change in production. If for example a US company purchases a Chinese company, but doesn't change its production, the total world production hasn't changed and jobs haven't moved to or away from the US. FDI patterns at best give a very marginal picture of shifts in production location. Studying actual production patterns provides a better assessment method.

While studying production patterns, it is imperative to make a distinction between effects and causes. For example, an increase in the number of products produced in developing countries is not necessarily causally related to a decrease in the number of products produced in industrialized countries. Several situations may arise which may lead to an incorrect conclusion that jobs are being re-located. For example, evidence that the percentage of products produced in industrialized countries is reducing, does not warrant the conclusion that jobs are re-located. Because, if the number of products produced in a certain (industrialized) country remains constant while at the same time the number of products in another (developing) country increases, production in the industrialized country remained constant. It is merely an increase of activities in the developing country that unfavorably changes the percentages for the industrialized country. Another example is when the number of jobs in the industrialized country decreased while production remained the same, accompanied by an increase in production in a developing country. Again, we can not conclude that jobs are being re-located. The job loss is an effect of productivity improvements and unrelated to cheaper labor cost elsewhere in the world.

In this paper passenger car production, an industry that is often viewed as loosing jobs to low labor-cost countries is examined to determine whether industrialized countries are really loosing their competitive edge in this sector.

2 Methodology

The focus of this paper is to determine whether, in the last years, there are indications that passenger car manufacturing has shifted from high labor-cost countries to low labor-cost countries. For data on car manufacturing an existing database, i.e. from Organisation

Internationale des Constructeurs d'Automobiles (OICA) was used. This data includes the manufacturing of complete cars as well as just the final assembly of cars. It does not include supplier activities such as parts manufacturing. The OICA database information was checked against another database, i.e. Ward's World Motor Vehicle data. These two sources show similar passenger car manufacturing figures. The research concerns the years 1997 until 2002 the current available data.

In the first part of the study production quantities were examined for regions and individual countries. It was found that between 1997 and 2002 there were no major shifts in production between the seven regions of the world, i.e. West Europe, East and Central Europe, NAFTA, South America, Asia-Oceania (excluding Japan), Japan, and Africa. For individual countries, it was shown that for each of the years between 1997 and 2002 80% of passenger car production took place in the same 10 countries, i.e. Japan, Germany, the USA, France, South Korea, Spain, the UK, Brazil, Canada, and Italy. Production quantities in some developed nations decreased during these years but in other developed nations it increased. Simultaneously, production quantities in some developing nations increased during these years but in other developing nations it decreased. It was therefore concluded that there is no conclusive evidence that passenger car manufacturing has shifted to low labor-cost regions or countries (de Bruijn and Steenhuis, 2003).

In this second part of the study the location of passenger car production for individual manufacturers will be analyzed. For this study the top-10 car manufacturing companies have been selected. The top-10 passenger car manufacturing companies are: Toyota, Volkswagen, General Motors, Ford, PSA, Honda, Daimler-Chrysler, Renault, Nissan and Fiat. They currently represent approximately 80% of the total passenger car production.

	1998	1999	2000	2001	2002
Top-10 production	30,285,791	30,695,704	31,945,323	31,943,707	33,013,871
Other	8,189,450	9,064,143	9,353,745	8,200,482	8,101,714
Total production	38,475,241	39,759,847	41,299,068	40,144,189	41,115,585
Top-10 as % of total	78.7%	77.2%	77.4%	79.6%	80.3%

Table 1: Top-10 passenger car manufacturers compared to world total.

One of the complications in this type of study is the occurrence of mergers, acquisitions or joint-ventures. Mergers, acquisitions and joint-ventures are about control, i.e. they are financial strategies, that do not necessarily affect production numbers. Therefore, in cases of mergers, acquisitions or joint-ventures it is assumed that they have been in place for the entire time period so that financial investments are not confused with total production.

3 Findings

The findings are presented for passenger car manufacturers categorized into three regions of origin, i.e. Japanese producers (Toyota, Honda and Nissan), American producers (General Motors and Ford) and West European producers (Daimler-Chrysler, Volkswagen, PSA, Renault and Fiat). For each of these producers an overview is given about the number of passenger cars produced in ten regions of the world. The regions are: Japan, the US, Western Europe, Asia-Oceania (excluding Japan), NAFTA (excluding the US), East and Central Europe, South America, CIS, Africa and Turkey.

3.1 Japanese producers

There are three Japanese passenger car manufacturers in the top-10, i.e. Toyota, Honda and Nissan. Their production quantities are shown in table 2, 4 and 5.

	1998	**1999**	**2000**	**2001**	**2002**
Japan	3,076,155 (73.2%)	3,177,101 (73.4%)	3,502,725 (74.8%)	3,421,583 (68.1%)	3,514,460 (63.3%)
USA	538,830 (12.8%)	517,599 (12.0%)	519,642 (11.1%)	696,808 (13.9%)	785,133 (14.1%)
Asia-Oceania not Japan	174,092 (4%)	186,554 (4.3%)	207,500 (4.4%)	445,564 (8.9%)	580,324 (10.4%)
West Europe	172,342 (4%)	178,660 (4.1%)	173,339 (3.7%)	244,007 (4.9%)	333,352 (6.0%)
NAFTA not USA	171,738 (4.1%)	211,082 (4.9%)	183,739 (3.9%)	163,819 (3.3%)	221,699 (4.0%)
Africa	51,000 (1.2%)	40,000 (0.9%)	46,000 (1.0%)	47,100 (0.9%)	52,740 (0.9%)
Turkey	14,573 (0.3%)	9,041 (0.2%)	14,715 (0.3%)	2,338 (0%)	43,753 (0.8%)
South America	1,744 (0%)	7,935 (0.2%)	33,775 (0.7%)	40 (0%)	23,650 (0.4%)
East & central Europe	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
CIS	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	4,200,474	4,327,972	4,681,435	5,021,259	5,555,111

Table 2: Toyota passenger car production figures 1998-2001

Table 2, 4 and 5 show that Japanese car manufacturers produce the majority of their cars in Japan. There is no apparent trend in lowering production quantities (percentage wise) in Japan. Toyota, Honda and Nissan also produce a significant percentage of passenger cars in the US and Western Europe. Table 3 shows the production quantities of the three manufacturers for Japan, the US and Western Europe.

	1998	1999	2000	2001	2002
Toyota	90.0%	89.5%	89.6%	86.9%	83.4%
Honda	88.1%	86.5%	83.9%	78.8%	79.5%
Nissan	89.2%	88.3%	82.8%	81.3%	81.1%

Table 3: Production of Japanese passenger car manufacturers in Japan, the US and Western Europe as a percentage of their world production.

Table 3 shows that although Japanese manufacturers are concentrating less on the three developed regions, i.e. Japan, the US and Western Europe, they are still producing the vast majority of their cars in these three areas.

	1998	1999	2000	2001	2002
Japan	1,147,337 (51.7%)	1,143,459 (50.9%)	1,165,347 (51.0%)	1,219,809 (46.8%)	1,328,640 (45.4%)
USA	694,703 (31.3%)	685,900 (30.5%)	677,090 (29.6%)	694,920 (26.6%)	819,120 (28.0%)
NAFTA not USA	174,531 (7.9%)	186,298 (8.3%)	185,716 (8.1%)	390,690 (15.0%)	401,910 (13.7%)
West Europe	112,089 (5.1%)	114,479 (5.1%)	74,751 (3.3%)	141,814 (5.4%)	178,878 (6.1%)
Asia-Oceania not Japan	64,854 (2.9%)	85,912 (3.8%)	149,478 (6.5%)	136,160 (5.2%)	169,590 (5.8%)
South America	15,775 (0.7%)	17,957 (0.8%)	22,568 (1.0%)	20,220 (0.8%)	21,600 (0.7%)
Turkey	0 (0%)	6,649 (0.3%)	9,821 (0.4%)	5,160 (0.2%)	4,950 (0.2%)
Africa	9,400 (0.4%)	8,000 (0.4%)	2,000 (0.1%)	0 (0%)	0 (0%)
East & central Europe	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
CIS	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	2,218,689	2,248,654	2,286,771	2,608,773	2,924,688

Table 3: Honda passenger car production figures 1998-2001

	1998	1999	2000	2001	2002
Japan	1,353,057 (64.7%)	1,209,702 (63.3%)	1,141,461 (55.8%)	1,088,170 (55.3%)	1,192,770 (55.1%)
West Europe	288,818 (13.8%)	309,711 (16.2%)	403,281 (19.7%)	354,947 (18.0%)	327,895 (15.1%)
NAFTA not USA	143,829 (6.9%)	147,443 (7.7%)	270,000 (13.2%)	292,709 (14.9%)	309,471 (14.3%)
USA	222,733 (10.7%)	167,742 (8.8%)	150,129 (7.3%)	157,876 (8.0%)	235,445 (10.9%)
Asia-Oceania not Japan	68,572 (3.3%)	66,157 (3.5%)	73,000 (3.6%)	72,218 (3.7%)	99,094 (4.6%)
Africa	13,800 (0.7%)	10,000 (0.5%)	7,500 (0.4%)	924 (0%)	0 (0%)
East & central Europe	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
CIS	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Turkey	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
South America	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	2,090,809	1,910,755	2,045,371	1,966,844	2,164,675

Table 4: Nissan passenger car production figures 1998-2001

3.2 US producers

There are two US passenger car manufacturers in the top-10, i.e. General Motors and Ford. Their production quantities are shown in table 6 and 7.

	1998	1999	2000	2001	2002
USA	1,970,150 (38.7%)	2,143,312 (40.1%)	1,988,851 (37.8%)	1,656,170 (35.5%)	1,732,543 (32.8%)
West Europe	1,906,736 (37.5%)	1,930,092 (36.1%)	1,858,399 (35.3%)	1,647,654 (35.3%)	1,540,736 (29.2%)
NAFTA not USA	707,374 (13.9%)	781,430 (14.6%)	825,581 (15.7%)	663,291 (14.2%)	725,509 (13.7%)
South America	356,164 (7.0%)	317,408 (5.9%)	324,304 (6.2%)	362,637 (7.8%)	508,782 (9.6%)
Asia-Oceania not Japan	120,406 (2.4%)	117,948 (2.2%)	171,737 (3.3%)	229,933 (4.9%)	674,763 (12.8%)
East & central Europe	12,374 (0.2%)	49,700 (0.9%)	97,391 (1.8%)	101,614 (2.2%)	97,669 (1.8%)
Turkey	0 (0%)	4,297 (0%)	0 (0%)	2,100 (0%)	0 (0%)
Africa	17,000 (0.3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
CIS	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Japan	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	5,090,204	5,344,187	5,266,263	4,663,399	5,280,002

Table 6: General Motors passenger car production figures 1998-2001

Table 6 and 7 shows that General Motors and Ford do not have the same emphasis on the US that the Japanese manufacturers have on Japan. Both manufacturers produce approximately 30% of their cars in the US. Similar to Japanese companies, the US manufacturers produce many cars in West Europe. Table 8 shows the production quantities of these two manufacturers for the US and Western Europe.

Table 8 shows that Ford has remained largely concentrated in the US and Europe with more than 80% of its passenger car manufacturing in these areas. General Motors has reduced its emphasis but is still producing 62% of its cars in these regions.

	1998	1999	2000	2001	2002
USA	1,378,076 (33.7%)	1,390,260 (34.5%)	1,288,168 (31.9%)	1,014,701 (27.4%)	1,138,313 (31.6%)
West Europe	1,971,753 (48.2%)	1,930,362 (47.9%)	2,016,822 (49.9%)	2,089,077 (56.5%)	1,853,119 (51.4%)
NAFTA not USA	436,555 (10.7%)	414,833 (10.3%)	427,269 (10.6%)	367,902 (9.9%)	347,195 (9.6%)
South America	128,454 (3.1%)	106,025 (2.6%)	110,346 (2.7%)	104,225 (2.8%)	148,721 (4.1%)
Asia-Oceania not Japan	158,816 (3.9%)	160,369 (4.0%)	135,000 (3.3%)	121,745 (3.3%)	117,762 (3.3%)
East & central Europe	0 (0%)	24,584 (0.6%)	20,000 (0.5%)	0 (0%)	0 (0%)
Turkey	6,619 (0.2%)	804 (0%)	41,065 (1.0%)	0 (0%)	0 (0%)
Africa	12,000 (0.3%)	0 (0%)	0 (0%)	1,608 (0%)	1,605 (0%)
CIS	0 (0%)	195 (0%)	0 (0%)	0 (0%)	0 (0%)
Japan	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	4,092,273	4,027,432	4,038,670	3,699,258	3,606,715

Table 7: Ford passenger car production figures 1998-2001

	1998	1999	2000	2001	2002
General Motors	76.2%	76.2%	73.1%	70.8%	62.0%
Ford	81.9%	82.4%	81.8%	83.9%	83.0%

Table 8: Production of US passenger car manufacturers in the US and Western Europe as a percentage of their world production.

Table 6 and 7 shows that US manufacturers also emphasize NAFTA. Table 9 shows the production quantities of General Motors and Ford for the US, Western Europe and

NAFTA. It demonstrates that although General Motors has concentrated slightly less on these regions, it produces at least 75% of its passenger cars in these few countries. Ford has remained largely concentrated with more than 92% of its passenger car production taking place in the US, Western Europe and NAFTA.

	1998	1999	2000	2001	2002
General Motors	90.1%	90.8%	88.8%	85.0%	75.7%
Ford	92.6%	92.7%	92.4%	93.8%	92.6%

Table 9: Production of US passenger car manufacturers in the US, Western Europe and NAFTA as a percentage of their world production.

3.3 West European producers

The production quantities of five West European passenger car manufacturers are presented in tables 10 and 12 through 15.

Tables 10 and 12 through 15 indicate that the European manufacturers have the same emphasis on the US and Europe as the US manufacturers. All manufacturers emphasize Western Europe with at least 50% of their cars being produced in Western Europe. Daimler is the only West European company that produces cars in the US. Combined, it produces approximately 80% of its cars in West Europe and the US. PSA is primarily concentrated in West Europe with approximately 90% of its passenger car production taking place in West Europe. Volkswagen, Renault and Fiat are primarily concentrated in West Europe, East and Central Europe and South America. Table 11 gives the production quantities of these three manufacturers for these combined regions.

	1998	1999	2000	2001	2002
West Europe	976,839 (50.7%)	1,109,714 (55.6%)	1,164,843 (57.0%)	1,216,295 (50.8%)	1,230,997 (61.6%)
NAFTA not USA	434,451 (22.6%)	431,219 (21.6%)	330,649 (16.2%)	608,179 (25.4%)	201,723 (10.1%)
USA	494,138 (25.7%)	431,827 (21.6%)	514,130 (25.2%)	518,087 (21.7%)	508,336 (25.4%)
Africa	9,900 (0.5%)	6,060 (0.3%)	8,875 (0.4%)	38,776 (1.6%)	47,725 (2.4%)
South America	0 (0%)	17,793 (0.9%)	24,879 (1.2%)	11,655 (0.5%)	10,165 (0.5%)
Asia-Oceania not Japan	9,699 (0.5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
East & central Europe	0 (0%)	146 (0%)	0 (0%)	0 (0%)	0 (0%)
CIS	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Turkey	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Japan	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	1,925,027	1,996,759	2,043,376	2,392,992	1,998,946

Table 10: Daimler passenger car production figures 1998-2001

	1998	1999	2000	2001	2002
Volkswagen	85.1%	83.3%	83.9%	84.4%	83.1%
Renault	95.6%	93.6%	93.0%	91.7%	88.6%
Fiat	94.9%	95.1%	93.4%	94.2%	92.7%

Table 11: Production of West European passenger car manufacturers in West Europe, East and Central Europe and South America as a percentage of their world production.

	1998	1999	2000	2001	2002
West Europe	3,045,243 (67.6%)	2,985,971 (66.1%)	3,017,161 (62.1%)	3,011,542 (61.7%)	2,829,725 (58.6%)
East & central Europe	381,991 (8.5%)	401,317 (8.9%)	563,049 (11.6%)	600,934 (12.3%)	696,656 (14.4%)
South America	406,858 (9.0%)	376,568 (8.3%)	496,003 (10.2%)	509,714 (10.4%)	486,132 (10.1%)
NAFTA not USA	338,959 (7.5%)	410,308 (9.1%)	425,703 (8.8%)	380,711 (7.8%)	332,876 (6.9%)
Asia-Oceania not Japan	295,118 (6.5%)	306,526 (6.8%)	315,674 (6.5%)	333,468 (6.8%)	437,584 (9.1%)
Africa	38,483 (0.9%)	38,189 (0.8%)	41,888 (0.9%)	44,727 (0.9%)	46,483 (1.0%)
CIS	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Turkey	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
USA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Japan	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	4,506,652	4,518,879	4,859,478	4,881,096	4,829,456

Table 12: Volkswagen passenger car production figures 1998-2001

	1998	1999	2000	2001	2002
West Europe	1,741,265 (95.2%)	1,969,102 (96.4%)	2,320,186 (93.0%)	2,515,191 (92.8%)	2,574,790 (89.0%)
Asia-Oceania not Japan	58,497 (3.2%)	41,465 (2.0%)	106,763 (4.3%)	126,594 (4.7%)	243,490 (8.4%)
South America	26,248 (1.4%)	24,073 (1.2%)	53,388 (2.1%)	67,214 (2.5%)	70,374 (2.4%)
East & central Europe	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Africa	3,688 (0.2%)	7,457 (0.4%)	13,754 (0.6%)	1,473 (0.5%)	5,376 (0.2%)
CIS	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Turkey	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
NAFTA not USA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
USA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Japan	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	1,829,698	2,042,097	2,494,091	2,710,472	2,894,030

Table 13: PSA passenger car production figures 1998-2001

	1998	1999	2000	2001	2002
West Europe	1,657,188 (81.7%)	1,645,670 (80.5%)	1,652,154 (80.8%)	1,623,486 (78.4%)	1,566,975 (76.4%)
East & central Europe	197,323 (9.7%)	187,708 (9.2%)	122,949 (6.0%)	157,525 (7.6%)	171,108 (8.3%)
South America	85,291 (4.2%)	79,316 (3.9%)	125,963 (6.2%)	118,322 (5.7%)	79,234 (3.9%)
Turkey	88,513 (4.4%)	127,874 (6.3%)	138,478 (6.8%)	98,971 (4.8%)	100,452 (4.9%)
Asia-Oceania not Japan	280 (0%)	0 (0%)	0 (0%)	69,228 (3.3%)	116,963 (5.7%)
NAFTA not USA	0 (0%)	0 (0%)	0 (0%)	1,704 (0.1%)	13,754 (0.7%)
Africa	0 (0%)	4,477 (0.2%)	4,337 (0.2%)	1,682 (0.1%)	1,323 (0.1%)
CIS	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
USA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Japan	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	2,028,595	2,045,045	2,043,881	2,070,918	2,049,809

Table 14: Renault passenger car production figures 1998-2001

	1998	1999	2000	2001	2002
West Europe	1,401,900 (60.9%)	1,410,993 (63.2%)	1,373,426 (62.8%)	1,211,855 (62.8%)	1,080,486 (63.2%)
South America	472,081 (20.5%)	397,492 (17.8%)	396,292 (18.1%)	416,232 (21.6%)	339,624 (19.9%)
East & central Europe	310,600 (13.5%)	314,930 (14.1%)	273,743 (12.5%)	189,247 (9.8%)	164,849 (9.6%)
Turkey	92,994 (4.0%)	65,510 (2.9%)	105,775 (4.8%)	65,690 (3.4%)	51,383 (3.0%)
Africa	17,705 (0.8%)	25,691 (1.2%)	24,484 (1.1%)	25,962 (1.3%)	19,009 (1.1%)
Asia-Oceania not Japan	8,090 (0.4%)	19,308 (0.9%)	12,177 (0.6%)	19,710 (1.0%)	55,088 (3.2%)
CIS	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
NAFTA not USA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
USA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Japan	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	2,303,370	2,233,924	2,185,897	1,928,696	1,710,439

Table 15: Fiat passenger car production figures 1998-2001

3.4 Demand location

The production data provide evidence that several of the passenger car manufacturers have a 'bias' towards producing in their own country or region. Production takes also place in developing countries but there is no consistent pattern where production is being relocated from developed towards developing countries. The pattern found is consistent with the 'proximity to market' reason for offshore manufacturing (Ferdows, 1997b). There are empirical observations that support the notion that proximity to market, in addition to a home-base, is a primary location motive in the car manufacturing industry. For example, car manufacturing companies are establishing production capacity in China to meet the growing Chinese demand for passenger cars (McGregor, 2003a; McGregor, 2003b). Another example is Volkswagen which is reducing production in Brazil due to lagging Brazilian demand (Mackintosh and Colitt, 2003). Yet another example is Ford which increased European production due to increased European demand (Scheer and Moes, 2003).

If companies indeed select proximity to market as their strategic reason for locating in other countries, then a pattern can be expected which is consistent with market demand patterns. Table 16 provides data on the location of passenger car production and sales by region in 2001. These data were obtained from Ward (2001). Although these data only concern one year, they provide further evidence for our assertion that passenger car manufacturing location is to a large degree determined by passenger car sales location.

Table 16 shows that from 1997 until 2000, the demand for cars has increased to some extent. Demand grew in Western Europe, North America, Asia-Oceania (without Japan),

and East- and Central Europe. In Japan demand declined slightly and for Africa it fluctuated each year. There are similarities with table 1, e.g. growth in Western Europe, Asia-Oceania (without Japan) and East- and Central Europe, there was a decline in Japan, and not much change in production and sales for South- and Central America. There is also a discrepancy. For North-America the production numbers didn't change much from 1997 until 2000 whereas the number of units sold grew significantly. With regard to Africa, the data are non-conclusive. It can not be excluded that the discrepancy is due to the different source of the available database. Further analysis is required to determine whether there is statistically a pattern between the location of passenger car sales and the location of passenger car production. If this relationship exists, it means that for this sector in the current situation industrially advanced nations are not losing their industrial base as long as there is a national demand for the products produced with this national industrial base. Specific research is required to determine whether this is also valid for other industrial sectors.

2000		USA	NAFTA (not USA)	Japan	Asia-Oceania (not Japan)	West Europe	East & central Europe (+ Turley and CIS)	South America	Africa
Toyota	Production	519,642	183,739	3,502,725	207,500	173,339	14,715	33,775	46,000
	Sales	972,715	95,023	1,601,632	304,528	570,818	36,578	16,599	50,514
Honda	Production	677,090	185,716	1,165,347	149,478	74,751	9,821	22,568	2,000
	Sales	882,055	130,048	690,945	131,894	180,808	19,941	19,911	0
Nissan	Production	150,129	270,000	1,141,461	73,000	403,281	0	0	7,500
	Sales	421,894	158,705	502,911	122,249	391,851	16,977	0	7,792
General Motors	Production	1,988,851	825,581	0	171,737	1,858,399	97,391	324,304	0
	Sales	2,531,734	393,293	0	171,173	1,596,623	120,372	304,552	21,709
Ford	Production	1,288,168	427,269	0	135,000	2,016,822	61,065	110,346	0
	Sales	1,687,025	177,584	0	168,473	1,567,902	65,767	116,120	34,486
Daimler	Production	514,130	330,649	0	0	1,164,843	0	24,879	8,875
	Sales	802,223	157,637	0	20,841	901,957	8,623	19,797	18,158
Volkswagen	Production	0	425,703	0	315,674	3,017,161	563,049	496,003	41,888
	Sales	432,104	216,530	0	346,993	2,746,818	236,073	377,354	47,860
PSA	Production	0	0	0	106,763	2,320,186	0	53,388	13,754
	Sales	0	3,454	0	57,497	1,928,858	62,786	68,088	889
Renault	Production	0	0	0	0	1,652,154	261,427	125,963	4,337
	Sales	0	0	0	415	1,557,474	278,542	99,391	10,210-
Fiat	Production	0	0	0	12,177	1,373,426	379,518	396,292	24,484
	Sales	0	0	0	14,146	1,473,676	153,680	354,116	11,325

Table 16: Passenger car sales in 7 regions of the world (adopted from (Ward, 2001)).

4. Conclusions

Passenger car manufacturing is a highly concentrated industry and it has become more concentrated in the last 5 years. Currently approximately 80% of all passenger cars are produced by ten companies. These ten companies are based in Japan, the US and West Europe. When each of these manufacturers is analyzed it was found that these manufacturers largely concentrate their production in only a few regions (countries) in the world. Japanese companies emphasize production in their home country, i.e. at least 50% of their production takes place in Japan. Furthermore, they concentrate on the US and Europe. The Japanese companies concentrate approximately 80% of their production in Japan, the US and West Europe. US companies do not have the same emphasis on US production but they produce more than 70% of their cars in the US and West Europe. More than 85% of their passenger car manufacturing is concentrated in the US, West Europe and NAFTA. European companies, similar to the Japanese companies, emphasize European production. At least 50% of their production takes place in West Europe. PSA is the most concentrated with more than 92% of its production in West Europe. Daimler is the only West European manufacturer that produces in the US. The other three manufacturers, i.e. Volkswagen, PSA and Renault, concentrate 85% of their production in West Europe, East and Central Europe and South America. South American production has become more important for these three manufacturers.

Taken as a whole, there are only minor indications that passenger car manufacturing is moving from industrialized, i.e. high labor-cost, countries towards developing, i.e. low labor-cost, countries. Labor cost does not seem to be the primary motive for production location. In fact, each of the companies has a strong emphasis on their ‘home region’.

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