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INTERNATIONAL LABOUR ORGANIZATION

Sectoral Activities Programme

Automotive industry trends affecting component suppliers

Report for discussion at the Tripartite Meeting on Employment, Social Dialogue, Rights at Work and Industrial Relations in Transport Equipment Manufacturing

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Preface

At the 286th Session of the Governing Body (March 2003), one of the options proposed to the Committee on Sectoral and Technical Meetings and Related Issues was to hold a tripartite meeting on the evolution of employment and working conditions in the manufacture of automotive components. [1] It was subsequently noted (287th Session, June 2003) that the manufacture of automotive components involved many types of enterprises in different relationships with the manufacturer/assembler of the final product, ranging from subsidiary companies to contractors and subcontractors and SMEs in export processing zones. [2]

At its 288th Session (November 2003) the Governing Body decided that a small three day tripartite meeting for the transport equipment manufacturing sector would be held in Geneva early in 2005 and would discuss employment development, social dialogue and rights at work, and industrial relations. [3] It would have a background report prepared by the Office and thematic papers from participants and invited guests as the basis for its discussions. [4]

It also decided that the purpose of the meeting be: to exchange views on the above themes; to adopt conclusions that include proposals for action by governments, by employers' and workers' organizations at the national level and by the ILO; and to adopt a report on its discussions. (It was subsequently noted that since it would not be possible to submit a draft report for adoption at the meeting due to its short duration, a brief report would be sent to the participants within two weeks of the end of the meeting.)

The Director-General proposed that this be a tripartite meeting lasting three working days and comprising representatives from the Governments of all interested member States and ten Employer and Worker representatives selected on the basis of consultations with the respective groups of the Governing Body. A Governing Body representative would chair this meeting. [5]

The Meeting is part of the ILO's Sectoral Activities Programme, one of the purposes of which is to facilitate sectoral social dialogue and the exchange of information between constituents on labour and social developments relevant to particular economic sectors, complemented by practically oriented research on topical sectoral issues. This objective has traditionally been pursued by holding international tripartite sectoral meetings with a view to: fostering a broader understanding of sector-specific issues through social dialogue; developing an international tripartite consensus on sectoral concerns and providing guidance for national and international policies and measures to deal with related issues; promoting the harmonization of all ILO activities of a sectoral character and acting as a focal point between the Office and its constituents; and providing technical advice, practical assistance and support to the latter to facilitate the application of international labour standards.

[1] GB.286/STM/1, para. 29.

[2] GB.287/7, para. 16.

[3] GB.288/13, 19(c).

[4] GB.287/7, para. 17.

[5] GB.288/STM/1, para. 18.

This report was prepared by Paul Bailey of the Sectoral Activities Department. The statistical data (using mainly ILO LABORSTA, OECD and UNIDO databases) were compiled and analysed by Ralph Doggett. The list of Tier 1 suppliers in Annex 1 was compiled by Jean-Pierre Singa and the analysis thereof was undertaken by Toby Procter who also contributed large sections of Chapters 2 to 9 of the report together with Peter O'Brien. The European Industrial Relations Observatory (EIRO) contributed information on industrial relations from their recent automotive industry report. Thanks also go Yasuhiko Kamakura and Gijsbert van Liemt.

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1. Recent developments in the motor vehicle sector

1.1. Definition of the sector

Today most countries report on motor vehicle production to international agencies under division 34 of the United Nations International Standard Industrial Classification of all Economic Activities (ISIC, Rev. 3, from 1989 onwards). A few still report under major group 384 (Rev. 2 of 1968). Since not all national definitions are the same, the use of ISIC facilitates presentation and analysis of internationally comparable data, albeit incurring a certain time lag. Although each country's national statistical office or industry association has more recent data, the classifications used are usually not completely internationally comparable, and therefore could be misleading.

While ISIC 34 captures the majority of information needed for an analysis of the motor vehicle industry, further information at the three-digit level (343) would be required to look separately at the automotive components subsector (parts and accessories). However, this information is generally not available separately. In addition, the manufacture of engines, batteries, electrical equipment and tyres and inner tubes for motor vehicles are found under other ISIC classes at the four digit level and are generally not disaggregated in the available sources. (Altogether, there about 36 other categories at the four digit level that supply one component or the other to the automobile industry, but for which data are not readily available.) Therefore, while data reported under ISIC 34 give a good indication of the level of employment, etc., in the motor vehicle industry, they do not give the full picture.

Box 1.1
The motor vehicle (MV) manufacturing sector at a glance

ISIC Rev. 3	The motor vehicle industry
2511	Manufacture of rubber tyres and tubes; re-treading and rebuilding of rubber tyres.
2912	Manufacture of pumps/compressors for motor vehicles and engines.
3140	Manufacture of batteries for vehicles.
3190	Manufacture of electrical equipment for motor vehicles;
	manufacture of electrical ignition or starting equipment for internal combustion engines: ignition magnetos, magneto-dynamos, ignition coils, sparking plugs, glow plugs, starter motors, generators (dynamos, alternators), voltage regulators etc.;
	manufacture of wiring sets and wiring harnesses;
	manufacture of windscreen wipers and electrical defrosters and demisters for motor vehicles and motorcycles.
34	Manufacture of motor vehicles, trailers and semi-trailers
341	*Motor vehicles* (cars, buses and coaches, light commercial vehicles and heavy trucks).
342	*Bodies*
343	*Parts and accessories*
	This class includes:
	manufacture of diverse parts and accessories for motor vehicles: brakes, gearboxes, axles, road wheels, suspension shock absorbers, radiators, silencers, exhaust pipes, catalysers, clutches, steering wheels, steering columns and steering boxes;
	manufacture of parts and accessories of bodies for motor vehicles: safety belts, airbags, doors, bumpers.

Source: International Standard Industrial Classification of all Economic Activities (ISIC), Rev. 3, 1990.

A variety of databases were used to create the ILO sectoral activities database, including the ILO's labour statistics database (LABORSTA), the OECD's structural analysis (STAN) database, UNIDO's industrial statistics, UNCTAD, WTO, the United States Bureau of Labor Statistics, information from the International Metalworkers' Federation (IMF), and publications of various industry associations such as the German automobile industry association (*Verband der Automobilindustrie* – VDA), the International Organization of Motor Vehicle Manufacturers (OICA) and the French automobile manufacturers' association (*Comité des Constructeurs Français d'Automobiles* – CCFA).

A selection of these data is presented in Annex 2, which gives estimates for employment (table A2.1), the share of women workers (table A2.2), working time (table A2.3) and number of vehicles produced (table A2.4). These tables also highlight that despite using the common denominator of ISIC, large differences still appeared within and between the data sets of the various organizations because of different coverage. Some were based on household surveys, others labour force surveys, enterprise sample surveys and official estimates. National currencies and the Euro or US$ were used.

Tables 1.1 to 1.8 show employment and production data for the eight leading motor vehicle producing countries (Canada, China, France, Germany, Japan, Republic of Korea, Spain and the United States). Between them they account for almost three quarters of the units produced in 2003 and well over 80 per cent of global employment. Figure 1.1 shows that production in China has increased by over 250 per cent since 1997 while in other countries it has stagnated. Employment increases were the highest for Canada and Spain, followed by Germany. France increased marginally while employment went down in the United States (figure 1.2).

Despite data limitations an attempt was made to arrive at global estimates using ILO, OECD, UNIDA and VDA as sources. Using ISIC 34 only, employment was somewhere between 7.6 million and 9.2 million (see table 1.9). However, given that ISIC 34 does not capture all components manufacturing these estimates are on the low side.

Nevertheless, the state of employment data for the component industry is poor. Existing numbers on a global scale are either out of date, not comparable, or often appear unreliable, and are especially weak in the emerging markets, where it is almost certain that employment in future years will increase the most. The national data are also not regularly supplied to the key international agencies, or reproduced, in a timely fashion. The problem is rendered more acute by the rapid changes in the sector. Long lags in data availability severely compromise the applicability of analytic work on the sector and one can only hope for improvements in data collection and dissemination in the future.

Table 1.1. Motor vehicle industry data for Canada

Production (units, OICA)	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total				2 256 781	2 172 662	3 058 813	2 961 636	2 532 742	2 629 437	2 546 124
Passenger cars					1 458 941	1 626 316	1 550 500	1 274 853	1 369 042	1 339 607
Light commercial vehicles					1 009 508	1 369 757	1 364 849	1 228 785	1 229 614	1 178 811
Heavy trucks					47 945	60 543	46 287	29 104	30 781	27 706
Buses					2 141	2 197				
Employment (thousand employees, ISIC 34, ILO)										
Total	174.3	177.2	177.4	190.8	197.9	226.3	239.2	225.4	247.4	
Women	35.1	37.1	41.7	42.4	40.8	48.8	56.2	53.0	59.7	
Men	139.2	140.1	135.7	148.4	157.1	177.5	183.0	172.4	187.7	
Working time										
Average weekly hours paid for – wage earners (ILO)	41.6	40.9	41.0	42.0						
Hours worked by employees, ISIC 34, millions (OECD)	276.7	296.3	293.5	314.7	316.1	327.1	313.2	305.5	315.6	
Wage rates (ILO)										
Earnings per hour – wage earners	19.4	19.8	19.8	20.1						
Earnings per week – employees	843.3	848	860.3	897.6						
International trade (million US$, UNCTAD)										
Exports, SITC 781 passenger cars	23459.0	25088.7	25034.0	26817.5	28440.3	34634.9	34909.7	31576.5	31908.1	
Imports, SITC 781 passenger cars	10113.2	9761.0	10098.8	12958.8	12072.3	13376.5	14813.2	14528.2	16960.8	
International trade (million US$, WTO)										
Exports, automotive products	41024.3	43064.0	43608.0	47872.0	48735.7	60531.0	60655.6	54970.6	56327.9	
Imports, automotive products	32112.8	33471.0	33808.0	39636.0	40038.2	45251.6	46275.8	41985.3	46655.8	
International trade (millions, OECD)										
Exports ISIC 34 motor vehicles, parts and accessories	54977.6	59553.9	59132.2	65951.9	73523.2	91498.9	92017.8	86811.5	90219.1	
Imports ISIC 34 motor vehicles, parts and accessories	45316.3	47152.2	47988.5	56872.5	62331.9	70219.3	71514.7	67190.5	75711.1	
Conversion factors										
National currency per US$ UNIDO	1.36564	1.37244	1.36347	1.38462	1.48346	1.48573				
Exchange rate, mid year, IMF	1.36560	1.37240	1.36350	1.38460	1.48350	1.48570	1.48510	1.54880	1.56930	
Purchasing power parity (PPP) for GDP (US=1.00; OECD)	1.22082	1.22254	1.21823	1.20865	1.18839	1.19081	1.21367	1.19775	1.19495	1.21532

Source: ILO Sectoral Activities Department database, various years.

Table 1.2. Motor vehicle industry data for China

Production (units, OICA)	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total				1 579 699	1 627 829	1 829 953	2 069 069	2 334 440	3 286 804	4 443 686
Passenger cars					507 103	565 366	604 677	703 521	1 101 696	2 018 875
Light commercial vehicles					1 079 872	1 218 870	1 374 489	1 262 226	801 935	821 111
Heavy trucks					34 829	38 000	81 950	309 028	969 358	1 087 000
Buses					6 025	7 717	7 953	59 665	413 815	516 700
Production, sales and employment, VDA (IMF)										
Employment (thousands)										
Assembly					723.0	626.0				
Parts					759.0	730.0				
Total					1963.0	1807.0				
International trade (million US$, UNCTAD)										
Exports, SITC 781 passenger cars	20.1	32.7	25.7	38.4	19.2	14.3	30.6	32.7	33.6	
Imports, SITC 781 passenger cars	1637.6	933.0	403.5	319.5	424.2	455.3	759.5	1261.2	2605.9	
International trade (million US$, WTO)										
Exports, automotive products	425.6	621.0	592.0	732.0	796.0	1039.9	1580.7	1891.7	2677.3	
Imports, automotive products	4389.0	2609.0	2156.0	1905.0	2061.0	2538.1	3798.4	4912.3	6960.2	
Conversion factors										
Exchange rate, mid year, IMF	8.6187	8.3514	8.3142	8.2898	8.279	8.2783	8.2785	8.2771	8.277	

Source: ILO Sectoral Activities Department database, various years.

Table 1.3. Motor vehicle industry data for France

Production (units, OICA)	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total				2 579 867	2 874 864	3 180 193	3 348 361	3 628 418	3 701 870	3 620 056
Passenger cars					2 602 982	2 784 469	2 879 810	3 181 549	3 292 797	3 220 329
Light commercial vehicles					301 544	346 117	409 966	395 342	358 989	351 285
Heavy trucks					46 502	46 401	55 112	47 955	47 495	46 049
Buses					3 030	3 206	3 473	3 572	2 589	2 393
Employment (thousands, ISIC 34, ILO)										
Employees, ISIC 34	285.2	285	284.2	280.9	276.9	277.2	287.8	295.8	293.3	
Hours worked (millions, OECD)										
ISIC 34	402	404	406	401	397	394	389	394		
Wage rates (earnings per month, ISIC 34, ILO)										
All employees						1484	1664	1565	1612	
Women employees						1298	1327	1365	1412	
International trade (million US$, WTO)										
Exports, automotive products	27560.6	33464.8	34918.0	34520.4	38684.5	39691.7	39175.9	39887.1		
Imports, automotive products	22023.6	27717.6	28803.0	23476.0	28509.6	30502.2	30169.5	30100.0		
International trade (millions, OECD)										
Exports, ISIC 34	24517	25951	27106	31212	35352	37820	42911	44941	47750	
Imports, ISIC 34	19187	21645	23122	21440	26299	29510	33586	34966	36627	
International trade (million US$, UNCTAD)										
Exports, SITC 781 passenger cars	13789.5	15212.2	15803.8	17345.2	19414.4	19309.2	19388.3	21046.3	24862.8	
Imports, SITC 781 passenger cars	12638.1	14589.8	16043.7	12103.7	14835.1	16457.7	16815.5	16121.6	17488.9	
Conversion factors										
National currency per US$ UNIDO	0.84640	0.76095	0.77986	0.88980	0.89938	0.93863	1.08540			
PPP (US=1.00; OECD)	0.96406	0.95930	0.95069	0.93245	0.92791	0.92739	0.92671	0.91235	0.91259	0.91128
Exchange rate, mid year, IMF *	0.84640	0.76095	0.77985	0.88980	0.89937	0.93860	1.08540	1.11750	1.06260	

* Estimates prior to 1999 calculated by the Sectoral Activities Department.

Source: ILO Sectoral Activities Department database, various years.

Table 1.4. Motor vehicle industry data for Germany

Production (units, OICA)	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total				5 022 928	5 726 788	5 687 692	5 526 615	5 691 677	5 469 309	5 506 629
Passenger cars					5348 115	5 309 524	5 131 918	5 301 189	5 123 238	5 145 403
Light commercial vehicles					220 734	188 755	238 593	207 299	178 190	187 555
Heavy trucks					144 954	177 588	142 586	171 249	158 136	163 248
Buses					12 985	11 825	13 518	11 940	9 745	10 423
Employment (thousands, ILO)										
Total employees ISIC 34		742	751	752	815	846	867	897	926	
Women		118	118	128	136	146	155	158	172	
Working time (hours paid for per week, ILO)										
All wages earners, ISIC 34			35.4	35.1	35.3	34.9	35.3	35.6	36.1	
Women wage earners			34.6	34.2	34.7	34.4	35.2	35.3	35.8	
Wage rates – earnings per hour (ILO)										
All wage earners, ISIC 34		31.2	32.5	33.2	34.3	35.6	35.9	18.4	18.3	
Women wage earners		26.2	27.2	27.8	28.8	30.2	29.4	15.3	15.3	
International trade (million US$, WTO)										
Exports, automotive products	65166.5	85645.3	88025.7	89114.3	100920.0	102129.0	100751.0	105474.0		
Imports, automotive products	32439.3	44872.9	47157.4	45502.6	49150.8	50978.8	46746.6	47144.1		
International trade (millions, OECD)										
Exports, ISIC 34	60097.1	64378.9	68972.6	81207.2	93284.1	98505.0	112682.0	124598.9	134215.7	
Imports, ISIC 34	29865.9	33487.7	36627.5	41174.6	45310.4	49092.7	52089.3	55765.0	58752.9	
International trade (million US$, UNCTAD)										
Exports, SITC 781 passenger cars	42225.6	48602.1	51864.1	52969.8	60355.3	62241.7	60560.0	67390.6	75210.4	
Imports, SITC 781 passenger cars	18274.2	23255.2	24380.8	23206.5	24864.4	26050.1	21990.8	24314.9	25309.4	
Conversion factors										
National currency per US$ UNIDO		0.732748	0.769377	0.886611	0.899705	0.9386299				
PPP (US=1.00; OECD)	1.02808	1.02659	1.01041	1.00658	1.00518	1.00309	0.99389	0.98935	0.98723	0.98070
Exchange rate, mid year, IMF *	0.82972	0.73273	0.76939	0.88663	0.89972	0.9386	1.0854	1.1175	1.0626	

* Calculated by the Sectoral Activities Department.

Source: ILO Sectoral Activities Department database, various years.

Table 1.5. Motor vehicle industry data for Japan

Production (units, OICA)	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total				10 975 087	10 049 792	9 895 476	10 140 796	9 777 191	10 257 315	10 286 318
Passenger cars					8 055 736	8 100 169	8 359 434	8 117 563	8 618 354	8 478 328
Light commercial vehicles					1 204 619	1 161 464	1 124 147	1 053 020	947 856	1 023 657
Heavy trucks					732 119	626 023	649 180	595 403	679 964	772 927
Buses						7 820	8 035	11 205	11 141	11 406
Employment (thousands, VDA (IMF))										
Assembly					211	202.6	196.3	190.9	185.7	
Parts					523	502.3	486.8	473.1	460.5	
Total					734	704.9	683.1	664	646.2	
International trade (million US$, WTO)										
Exports, automotive products	82434.8	80680.0	75012.0	79909.0	77605.0	82733.5	88081.8	80319.6	92514.4	
Imports, automotive products	8585.1	11930.0	12480.0	10204.0	7814.0	8597.1	9957.2	9238.6	9891.4	
International trade (billions, OECD)										
Exports, ISIC 34	8625.6	7763.5	8409.1	9930.9	10346.8	9652.4	9767.9	10047.5	11900.2	
Imports, ISIC 34	898.9	1144.3	1389.5	1267.8	1046.8	995.2	1091.0	1138.5	1257.4	
International trade (million US$, UNCTAD)										
Exports, SITC 781 passenger cars	44920.7	41673.8	39973.6	47656.1	50194.8	54684.3	56809.4	52884.8	62582.9	
Imports, SITC 781 passenger cars	6951.3	9992.5	10245.2	7835.4	5554.4	6214.4	6947.5	6236.5	6259.0	
Conversion factors										
PPP (US=1.00; OECD)	181.4	176.7	172.0	169.2	167.0	162.0	155.7	149.7	145.6	139.6
Exchange rate, mid year, IMF	102.21	94.06	108.78	120.99	130.91	113.91	107.77	121.53	125.39	

Source: ILO Sectoral Activities Department database, various years.

Table 1.6. Motor vehicle industry data for the Republic of Korea

Production (units, OICA)	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total				2 818 275	1 954 494	2 843 114	3 114 998	2 946 329	3 147 584	3 177 870
Passenger cars					1 625 125	2 361 735	2 602 008	2 471 444	2 651 273	2 767 716
Light commercial vehicles					288 460	439 655	464 133	435 550	444 914	359 629
Heavy trucks					23 860	24 527	30 738	21 711	33 269	34 171
Buses					17 049	17 197	18 119	17 624	18 128	16 354
Employment (thousands, VDA (IMF))										
Assembly					92.6	85.3				
Parts					94.2	108.2				
Total					186.8	193.5				
Working time (ISIC 34, ILO)										
Hours actually worked – employees	49.1	49.7	47.6	45.9	40.5	46.4	46.5	44.2		
Women employees	48.9	49.2	47.3	45.7	41.1	49.7	48.4	46.8		
Wages (earnings per month, ILO)										
All employees	1275.8	1493.5	1654.8	1462.9	1396.6	1742.6	1824.1	1827.2	2251	
Women employees	777.6	866.2	946.8	926.8	895.9	1102.1	1195.6	1130.9	1252	
International trade (million US$, WTO)										
Exports, automotive products	5851.5	9166.0	11555.0	12223.0	11373.0	13034.5	15193.9	15428.4	17040.7	
Imports, automotive products	1764.4	2218.0	2314.0	1920.0	918.0	1392.9	1773.0	1771.1	2519.5	
International trade (billions, OECD)										
Exports, ISIC 34	5268.9	7742.5	9870.5	11896.5	16284.4	18586.3	17483.7	19992.6		
Imports, ISIC 34	1780.1	2123.3	2324.5	2263.8	1729.3	2394.6	2460	2844.8		
International trade (million US$, UNCTAD)										
Exports, SITC 781 passenger cars	4470.4	7242.0	9087.6	9263.3	8603.6	9968.0	11894.1	12025.7	13281.1	
Imports, SITC 781 passenger cars	118.1	263.1	435.3	274.1	14.1	69.6	147.6	241.2	591.2	
Conversion factors										
National currency per $ (UNIDO)	803.4	771.3	804.5	951.3	1401.4	1188.8				
PPP (US=1.00; OECD)	697.0	730.8	744.7	753.3	781.7	754.9	731.2	732.0	735.7	740.1
Exchange rate, mid year, IMF	803.5	771.3	804.5	951.3	1401.4	1188.8	1131.0	1291.0	1251.1	

Source: ILO Sectoral Activities Department database, various years.

Table 1.7. Motor vehicle industry data for Spain

Production (units, OICA)	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total				2 562 077	2 826 042	2 852 389	3 032 874	2 849 888	2 855 239	3 029 690
Passenger cars					2 216 898	2 281 617	2 366 359	2 211 172	2 266 902	2 399 238
Light commercial vehicles					588 205	548 852	642 422	564 115	520 252	566 423
Heavy trucks					23 078	20 332	22 586	73 193	66 657	62 527
Buses					1 254	1 588	1 507	1 408	1 428	1 502
Employment (thousand employees, ISIC 34, ILO)										
Total	178.2	169.4	173	181.1	187.2	200.3	225.7	232	229	
Women	17.4	15.4	17.6	18.1	18.4	20.2	27.8	33.4	44.5	
Men	160.8	154	155.4	163	168.8	180.1	197.9	198.6	184.5	
Working time (avg. hours per week, ILO)										
All salaried employees, ISIC 34	35.2	35.9	36.6	36.5	36.3	34.5	34.8	34.3	34.5	
Women salaried employees, ISIC 34	34.6	32.3	34.6	36.7	33.8	34.3	34.8	32.3	33.6	
Wage rates (ILO)										
Earnings per hour – employees						10.5	11.1	11.3	11.9	
International trade (million US$, WTO)										
Exports, automotive products	17880.5	23682.5	26008.4	23971.1	27735.3	26954.7	27860.5	26812.8		
Imports, automotive products	12530.2	16724.0	18447.1	17738.3	23407.2	26488.7	26354.2	25058.5		
International trade (millions, OECD)										
Exports, ISIC 34	14135.1	17289.9	19280.7	21782.6	24740.3	25761.2	30174.3	30675.4	30835.0	
Imports, ISIC 34	10701.5	12689.2	14386.4	16702.9	21197.2	25659.6	28898.1	29123.3	29545.9	
International trade (million US$, UNCTAD)										
Exports, SITC 781 passenger cars	12296.5	15097.5	16023.8	14951.9	16014.6	16492.5	17313.0	16929.9		
Imports, SITC 781 passenger cars	5378.9	6106.1	7282.1	7479.5	9797.5	12092.4	11340.2	11712.2		
Conversion factors										
National currency per US$ UNIDO	0.80510	0.74940	0.76125	0.87997	0.89788	0.93863	1.08540			
Exchange rate, mid year, IMF *	0.80512	0.74940	0.76124	0.87994	0.89791	0.93860	1.08540	1.11750	1.06260	
PPP (US=1.00; OECD)	0.69003	0.70865	0.71883	0.73072	0.73403	0.73261	0.75165	0.76006	0.76636	0.78547

* Calculated by the Sectoral Activities Department.

Source: ILO Sectoral Activities Department database, various years.

Table 1.8. Motor vehicle industry data for the United States

Production (units, OICA)	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total				12 130 575	12 002 663	13 024 978	12 799 857	11 424 689	12 279 582
Passenger cars					5 614 800	5 637 949	5 542 217	4 879 119	5 018 777
Light commercial vehicles					5 985 814	6 955 161	6 846 969	6 292 779	7 000 838
Heavy trucks					395 081	403 387	378 884	252 791	259 967
Buses					28 433	28 481	31 787		
Employment (ISIC 34, ILO)									
Total employees	1168.5	1241.5	1240.3	1253.9	1271.5	1312.6	1313.6	1212.8	1151.6
Women employees	277.3	296.9	298.2	312.1	323.5	341.2	350.2	321.9	297.9
International trade (million US$, WTO)									
Exports, automotive products	49613.7	52505.0	54968.0	61463.0	61059.0	62923.4	67195.3	63420.7	67088.7
Imports, automotive products	102758.0	108016.0	111957.0	120727.0	129834.0	155723.0	170195.0	165157.0	176628.0
International trade (millions, OECD)									
Exports, ISIC 34	50551.8	53624.5	55839.5	62566.9	64474.9	66963.7	71311.5	66212.3	
Imports, ISIC 34	104143.2	109891.9	113749.2	120544.2	131916.9	155080.5	169841.9	165105.1	
International trade (million US$, UNCTAD)									
Exports, SITC 781 passenger cars	15865.9	15940.0	16246.5	16287.6	15139.7	15285.7	15694.6	17011.3	19699.1
Imports, SITC 781 passenger cars	62648.6	66127.0	68087.9	74140.4	82430.3	98328.7	110919.9	108187.8	115629.9

Source: ILO Sectoral Activities Department database, various years.

Notes: Unless otherwise indicated, value estimates are expressed in national currency. Time periods given are calendar years.

ISIC 34 includes all motor vehicles and motor vehicle parts and accessories.

Sources: ILO Sectoral Activities Department database, compiled from:

ILO	International Labour Organization LABORSTA database http://laborsta.ilo.org/
IMF	International Monetary Fund http://ifs.apdi.net/imf/
OECD	Organisation for Economic Co-operation and Development Structural Analysis (STAN) database http://www.oecd.org/
OICA	The International Organization of Motor Vehicle Manufacturers http://www.oica.net/
Toyota	Toyota Databook http://www.toyota.co.jp/en/about_toyota/pdf2004/
UNCTAD	United Nations Conference on Trade and Development, Handbook of Statistics, 2003 CD ROM
USDOC	United States Department of Commerce Office of Automotive Affairs http://www.ita.doc.gov/td/auto/qfact.html
UNIDO	United Nations Industrial Development Organization, UNIDO INDSTAT4 2003 ISIC Rev. 3 CD ROM
VDA	Verband der Automobilindustrie – Association of the German Automobile Industry http://www.vda.de/ (quoted in International Metalworkers' Federation (IMF), http://www.imfmetal.org/)
WTO	World Trade Organization, http://www.wto.org/english/res_e/statis_e/statis_e.htm

Table 1.9. Employment in the motor vehicles industry, using data sources as indicated, ISIC 34 (thousands of employees except as noted)

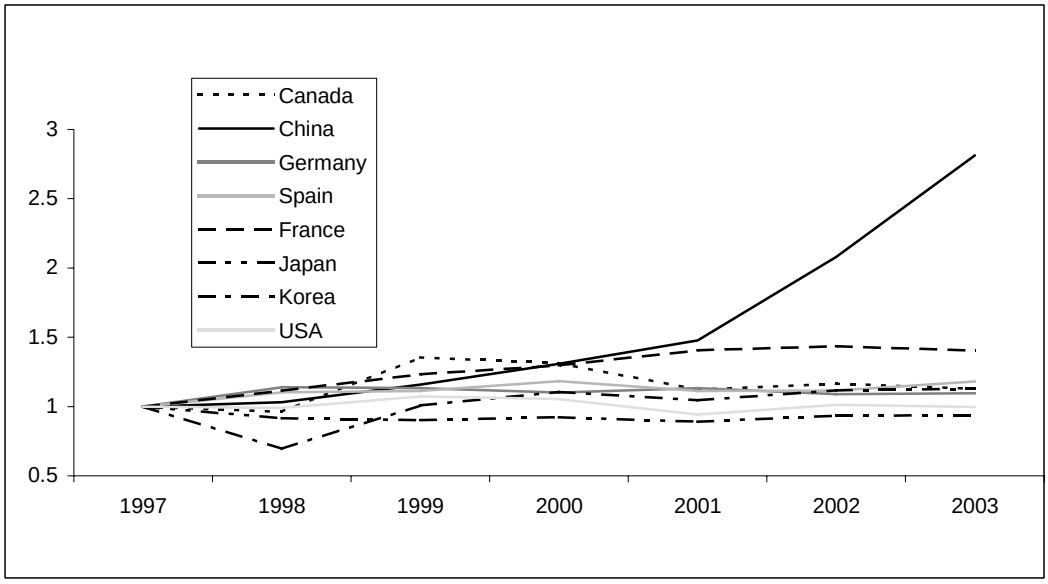
Country	ILO		OECD		UNIDO		VDA (IMF)		Country	SECTOR choice	Year	Source	Max.	Min.
China							1 807.0	1999	China	1 807.0	1999	VDA	1 807.0	1 807.0
United States	1 151.6	2002	950.0	2001*	1 067.9	1999	1 151.6	2002	United States	1 151.6	2002	ILO	1 151.6	950.0
Germany	926.0	2002	925.0	2001*	824.8	1999*	866.6	2002	Germany	926.0	2002	ILO	926.0	824.8
Japan*			945.6	2001*	721.2	2000	646.2	2002	Japan*	646.2	2002	VDA	945.6	646.2
Russian Federation	574.6	1998			535.0	2000	535.0	2000	Russian Federation	535.0	2000	UNIDO	574.6	535.0
Mexico	526.0	2001	447.4	2001	148.2	2000*	138.1	2001	Mexico	526.0	2001	ILO	526.0	138.1
France	293.3	2002	261.0	2002*	269.6	2000	273.2	2002	France	293.3	2002	ILO	293.3	261.0
India					288.5	1999	288.6	1999	India	288.5	1999	UNIDO	288.6	288.5
Brazil*	275.5	2001*			251.4	1999*	250.1	2002	Brazil*	250.1	2002	VDA	275.5	250.1
Canada	247.4	2002	155.5	2002*	158.8	1999	167.0	2002	Canada	247.4	2002	ILO	247.4	155.5
Spain	229.0	2002	207.8	2001*	163.5	2000	158.5	2002	Spain	229.0	2002	ILO	229.0	158.5
United Kingdom	207.0	2002			228.0	1997	219.2	2002	United Kingdom	207.0	2002	ILO	228.0	207.0
Korea, Republic of*			372.0	1997*	193.5	1999	193.5	1999	Korea, Republic of*	193.5	1999	UNIDO	372.0	193.5
Italy	176.0	2002	173.0	2002*	186.9	1998	163.9	2002	Italy	176.0	2002	ILO	186.9	163.9
Turkey	164.0	2002							Turkey	164.0	2002	ILO	164	164.0
South Africa					79.2	2000	79.2	2000	South Africa	79.2	2000	UNIDO	79.2	79.2
Czech Republic	79.0	2002			66.0	1998	78.5	2000	Czech Republic	79.0	2002	ILO	79.0	66.0
Sweden**	48.0	1996**	76.5	2002*	72.0	1999	80.6	2002	Sweden**	76.5	2002	OECD	80.6	48.0
Australia	74.3	2002	67.4	1999*	62.7	2001*			Australia	74.3	2002	ILO	74.3	62.7
Poland	86.1	2001	86.0	2001			74.3	2002	Poland	74.3	2002	VDA	86.1	74.3
Romania	64.7	2002					74.7	2001	Romania	64.7	2002	ILO	74.7	64.7
Yugoslavia							56.0	2000	Yugoslavia	56.0	2000	VDA	56.0	56.0
Ukraine	53.0	2002							Ukraine	53.0	2002	ILO	53.0	53.0
Belgium	51.7	2002	52.7	2000*	54.1	2000*	51.0	2002	Belgium	51.7	2002	ILO	54.1	51.0

Country	ILO		OECD		UNIDO		VDA (IMF)		Country	SECTOR choice	Year	Source	Max.	Min.
Indonesia*	48.7	2001*			49.7	2000			Indonesia*	48.7	2001	ILO	49.7	48.7
Hungary	35.9	2002			33.2	2000	36.2	2001	Hungary	35.9	2002	ILO	36.2	33.2
Argentina	34.4	2002			44.8	1999	46.8	1999	Argentina	34.4	2002	ILO	46.8	34.4
Iran (Islamic Republic of)					33.9	1996			Iran (Islamic Republic of)	33.9	1996	UNIDO	33.9	33.9
Portugal	32.8	2002	22.4	1999*	23.5	1998	20.0	2002	Portugal	32.8	2002	ILO	32.8	20.0
Austria	29.8	2002	37.1	2002*	29.0	2000	30.2	2002	Austria	29.8	2002	ILO	37.1	29.0
Slovakia (Slovak Republic)	27.6	2002			14.0	1998	14.7	2000	Slovakia (Slovak Republic)	27.6	2002	ILO	27.6	14.0
Netherlands*			31.7	2000*	27.5	1999	26.8	2002	Netherlands*	26.8	2002	VDA	31.7	26.8
Philippines	26.2	1997							Philippines	26.2	1997	ILO	26.2	26.2
Egypt*					20.6	1998			Egypt*	20.6	1998	UNIDO	20.6	20.6
Slovenia	10.0	2002					6.4	2001	Slovenia	10.0	2002	ILO	10.0	6.4
Colombia	9.3	2000			8.0	2000			Colombia	9.3	2000	ILO	9.3	8.0
Finland	8.0	2002	7.6	2001*	7.2	1999	7.1	2002	Finland	8.0	2002	ILO	8.0	7.1
Denmark	6.3	2002	7.4	2002*	8.2	1998			Denmark	6.3	2002	ILO	8.2	6.3
Norway	5.0	2002	5.4	2000*	5.4	1999			Norway	5.0	2002	ILO	5.4	5.0
Switzerland*	4.6	2002							Switzerland*	4.6	2002	ILO	4.6	4.6
Ireland	3.8	2002			4.1	1999			Ireland	3.8	2002	ILO	4.1	3.8
Greece	2.2	2002	2.9	2002*	1.8	1998			Greece	2.2	2002	ILO	2.9	1.8
Totals	5511.8		4834.4		5682.1		7541.0		Total	8615.2			9247.6	7627.8
	ILO		OECD		UNIDO		VDA/IMF							

Notes:

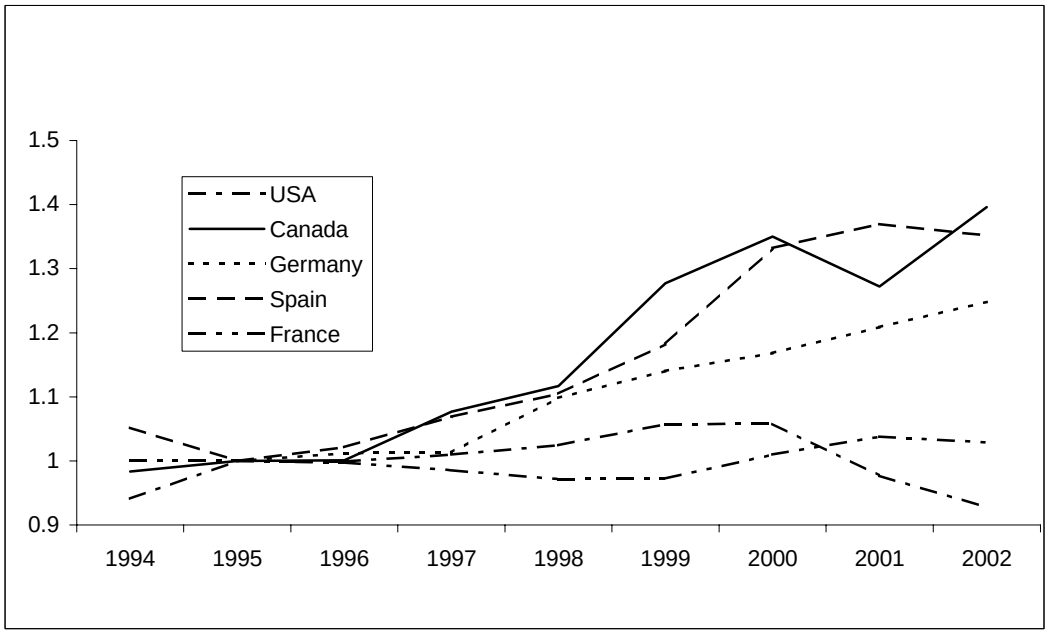
* Persons engaged. ** Wage earners (hourly production workers).

Figure 1.1. Motor vehicle production in eight countries
(1997=1.0)



Source: OICA (see also Annex 2, table A2.4).

Figure 1.2. Employment in motor vehicle manufacturing – six countries
(1995=1.0)

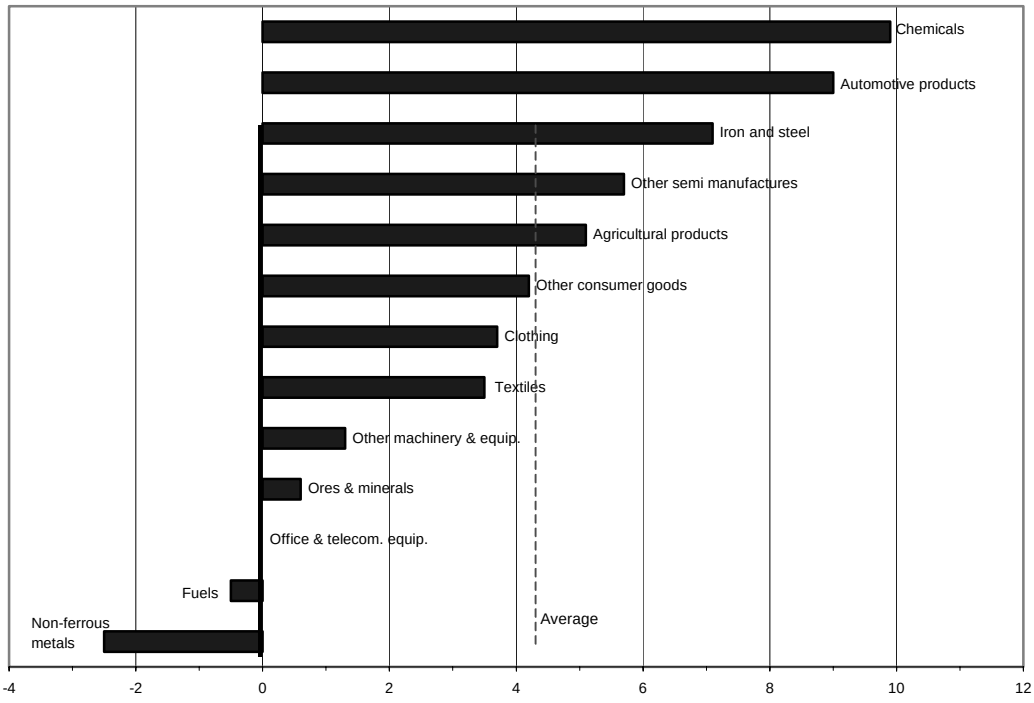


Source: International Labour Organization LABORSTA database (see also Annex 2, Table A2.1).

1.2. Globalization and international trade in automotive products

One of the key indicators of the extent of globalization of an industry is the degree of its participation in international trade. According to the WTO, in 2002, world exports of automotive products (cars, trucks, buses) recorded outstanding growth – benefiting from the pick up in global automobile production/demand – and reaching a new peak level of $630 billion. [1] Figure 1.3 shows that the value of the growth in exports of automotive products ranked just behind chemicals (driven by pharmaceutical trade and amounting to $660 billion) but ahead of iron and steel and agricultural products. Western and Eastern Europe and Asia were the regions with the most dynamic expansion of automotive product exports and imports. EU exports, accounting for nearly one half of world exports of automobiles, rose by 10 per cent. EU exports to third countries are reported to have increased more than intra-EU trade (16 per cent versus 7 per cent respectively). As automobile production in the Czech Republic, Hungary, Poland, Slovakia and Turkey becomes increasingly integrated into a European automobile production network, both exports and imports of these economies continued to rise. Japan's automobile exports recovered from the sharp setback in 2001 and expanded at double-digit rates to all regions except Latin America. According to the WTO, Japan's automotive product exports to Asia rose by nearly one quarter, with shipments to China up by 77 per cent.

Figure 1.3. Growth of world merchandise exports by product, 2002
(annual percentage change)

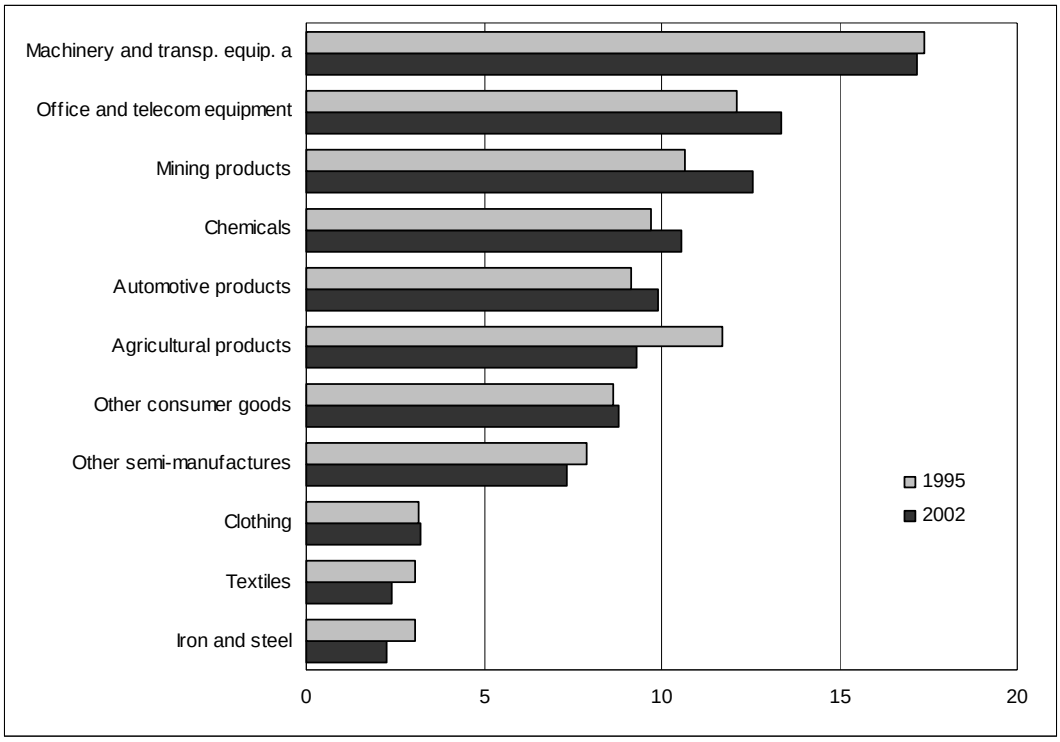


Source: WTO, op. cit., chart 4.

As figure 1.4 shows, the export of automotive products accounted for almost 10 per cent of world merchandise exports.

[1] WTO: *International Trade Statistics 2003* (Geneva, WTO, 2003), pp. 1-6.

Figure 1.4. World merchandise exports by product, 1995 and 2002
(share based on value)



Note: [a] Excluding automotive products and office and telecom equipment (throughout this report they are included with machinery and transport equipment, unless otherwise noted).

Source: WTO, op. cit., chart IV.1.

NAFTA members' exports of automotive products traded very largely within the region, increased by 4 per cent in 2002. NAFTA imports from third countries, mainly Japan, the EU and the Republic of Korea, increased by more than 15 per cent. Mexico's exports stagnated and imports declined in 2002, in contrast to their sharp rise throughout the 1990s. The Central/Eastern European countries continued to expand their exports and imports of automotive products at double- digit rates in 2002. A combination of trade liberalization leading to lower domestic car prices, rising foreign direct investment (FDI) inflows in the automobile sector and strong domestic demand led to an import surge of automotive products in China in 2002. Despite the 42 per cent rise in China's imports of automotive products, its share in world imports of this product group was still only 1 per cent in 2002. A strong recovery of imports of automotive products was reported in a number of Asian economies (e.g. Australia (18 per cent), Japan (7 per cent), the Republic of Korea (49 per cent), Taiwan (China) (11 per cent), New Zealand (32 per cent) and Thailand (12 per cent). However, Asia's imports of automotive products in 2002 still remained below their 1996 peak level, while global imports of all other regions expanded by one third over this six year period. The current import level of automotive products in many Asian markets is often rather low since the domestic automobile industry is protected by high import barriers. [2] Consequently, intra-Asian trade in automotive products was also limited and accounted for only one fifth of the region's exports. For all other manufactured

[2] In 2002, the share of imported passenger cars in domestic registrations was less than 2.5 per cent in the Republic of Korea, India and Malaysia. In addition, the corresponding share of imported cars decreased markedly in Indonesia, the Philippines, Taiwan (China), and Thailand between 2000 and 2002, to levels ranging from 21 to 4.5 per cent.

goods, the share of intra-Asian trade was close to one half in 2002. Global trade in automotive products continues to be driven by EU and United States' import demand which, combined, accounted for more than two thirds of world imports of automotive products, as table 1.10 indicates.

Table 1.10. Leading exporters and importers of automotive products, 2002
(billion dollars and percentage)

	Value	Share in world exports/imports				Annual percentage change			
	2002	1980	1990	2000	2002	1995-00	2000	2001	2002
Exporters									
European Union (15)	303.30	52.8	53.8	46.8	48.8	3	–1	2	10
Extra-exports	101.57	19.5	14.3	14.5	16.4	4	9	5	16
Japan	92.51	19.8	20.8	15.3	14.9	2	6	–9	15
United States	67.09	11.9	10.2	11.7	10.8	5	7	–6	6
Canada	56.33	6.9	8.9	10.5	9.1	7	0	–9	2
Mexico [a]	30.91	0.3	1.5	5.3	5.0	17	18	0	1
Korea, Republic of	17.30	0.1	0.7	2.6	2.8	11	17	2	12
Czech Republic [a]	6.40	–	–	0.8	1.0	25	13	19	16
Hungary [a]	5.98	0.6	0.2	0.8	1.0	49	1	12	12
Poland	5.19	0.6	0.1	0.7	0.8	32	80	6	23
Brazil	4.98	1.1	0.6	0.8	0.8	10	21	3	3
Turkey	3.16	0.0	0.0	0.3	0.5	19	5	54	35
Thailand	2.88	0.0	0.0	0.4	0.5	38	37	11	8
Slovak Republic	2.81	–	–	0.4	0.5	47	30	–5	23
China [a]	2.68	0.0	0.1	0.3	0.4	21	52	20	42
South Africa	2.40	0.1	0.1	0.3	0.4	19	10	–13	62
Above 15	603.92	94.4	97.1	97.0	97.3	–	–	–	–
Importers									
European Union (15)	252.67	37.5	47.0	39.3	40.0	4	–5	1	8
Extra-imports	50.95	5.3	7.3	7.6	8.1	10	–3	2	12
United States	176.63	20.3	24.7	28.9	28.0	10	9	–3	7
Canada [b]	46.66	8.7	7.7	7.9	7.4	7	2	–9	11
Mexico [b]	20.55	1.8	1.6	3.8	3.3	38	...	–6	–2
Japan	9.89	0.5	2.3	1.7	1.6	–4	16	–7	7
Australia [b]	8.54	1.3	1.2	1.5	1.4	7	10	–15	18
China [a]	6.96	0.6	0.6	0.6	1.1	8	50	29	42
Switzerland	6.45	1.8	1.9	1.1	1.0	0	–3	3	–1
Saudi Arabia [c]	5.19	2.7	0.9	0.6	0.9	12	48	36	...
Poland	5.06	0.9	0.1	0.7	0.8	21	–10	7	8
Russian Federation [d]	4.70	–	–	0.4	0.7	–	26	57	19
Czech Republic [a, b]	3.79	–	–	0.4	0.6	12	12	23	19
United Arab Emirates [c, d]	3.24	0.4	0.3	0.5	0.6	7	12	16	...
Brazil	3.13	0.3	0.2	0.7	0.5	–6	5	–1	–27
Hungary [a]	3.10	0.4	0.2	0.4	0.5	22	–2	2	22
Above 15	556.56	77.0	88.6	88.6	88.3	–	–	–	–

[a] Includes significant shipments through processing zones. [b] Imports are valued f.o.b. [c] 2001 instead of 2002. [d] Includes secretariat estimates. ... = not available; – = not applicable.

Source: WTO, op. cit., table IV.53.

Despite the presence of automotive products in every corner of the globe, exports of automotive products are concentrated in a handful of countries comprising the "triad" of the EU (15), NAFTA and Japan which accounted for over 88 per cent of exports. Another 10 counties accounted for most of the rest. Viewed from the perspective of the importance of the automotive industry for a country's merchandise exports, we find that automotive products accounted for over 20 per cent of exports in Canada, Cyprus, Japan, Mexico and the Slovak Republic. They accounted for over 10 per cent for countries such as Belarus, the Czech Republic, the EU (15), Hungary, the Republic of Korea, Lithuania, Poland, and Slovenia and almost 10 for South Africa, Turkey and the United States (see table 1.11 which also indicates the importance of exports from export processing zones for some countries).

Table 1.11. Exports of automotive products of selected economies, 1990-02
(million dollars and percentage)

	Value					Share in economy's total merchandise exports	
	1990	1995	2000	2001	2002	1995	2002 [a]
World	318 960	456 430	576 670	569 480	620 920	9.1	9.9
Argentina	200	1 374	2 105	2 061	...	6.6	7.7
Australia	719	1 053	2 151	2 287	2 348	2.0	3.6
Belarus	–	...	740	745	836	...	10.3
Brazil	2 034	2 955	4 682	4 819	4 979	6.4	8.2
Canada	28 442	43 064	60 656	54 971	56 328	22.4	22.3
China [b]	...	621	1 581	1 892	2 677	0.4	0.8
Colombia	6	83	226	433	338	0.8	2.8
Cyprus	29	14	94	124	167	1.1	19.8
Czech Republic [b]	–	1 509	4 658	5 521	6 403	7.1	16.7
European Union (15)	171 579	235 523	270 109	275 787	303 297	11.3	12.4
Intra-exports	125 828	166 326	186 740	188 227	201 724	12.5	13.4
Extra-exports	45 751	69 197	83 369	87 560	101 573	9.2	10.8
Hong Kong, China	354	1 147	764	920	1 265	0.7	0.6
Domestic exports	27	10	23	14	9	0.0	0.1
Re-exports	328	1 137	741	906	1 256	0.8	0.7
Hungary [b]	648	659	4 765	5 323	5 983	5.1	17.4
India	198	568	640	580	...	1.8	1.3
Indonesia	22	130	369	384	453	0.3	0.8
Japan	66 230	80 680	88 082	80 320	92 514	18.2	22.2
Jordan	19	72	62	143	...	4.1	6.2
Korea, Republic of	2 301	9 166	15 194	15 428	17 300	7.3	10.6
Lithuania	–	91	126	282	564	3.4	10.1
Malaysia [b]	121	279	307	254	...	0.4	0.3
Mexico [b]	4 708	14 258	30 655	30 677	30 909	17.9	19.2
Morocco [b]	28	23	24	58	...	0.5	0.8
Norway	305	469	459	494	575	1.1	0.9
Oman	119	459	605	579	...	7.6	5.2

	Value					Share in economy's total merchandise exports	
	1990	1995	2000	2001	2002	1995	2002 [a]
Pakistan	3	2	7	10	10	0.0	0.1
Philippines [b]	23	218	583	634	774	1.2	2.1
Poland	374	996	3 976	4 228	5 192	4.4	12.7
Romania	354	153	195	236	338	1.9	2.4
Russian Federation [c]	–	...	1 423	1 320	1 644	...	1.5
Singapore	348	886	678	649	772	0.7	0.6
Domestic exports	82	106	90	91	113	0.2	0.2
Re-exports	266	780	588	558	659	1.6	1.1
Slovak Republic	–	344	2 397	2 273	2 805	4.0	19.5
Slovenia	–	970	1 075	1 083	1 312	11.7	13.9
South Africa	...	730	1 708	1 485	2 402	2.6	8.1
Switzerland	591	716	788	896	1 043	0.9	1.2
Taipei, Chinese	829	1 674	2 226	2 173	2 305	1.5	1.7
Thailand	108	486	2 401	2 658	2 878	0.9	4.2
Turkey	153	642	1 517	2 336	3 160	3.0	9.1
Ukraine [c]	–	...	145	167	154	...	0.9
United States	32 547	52 505	67 195	63 421	67 089	9.0	9.7
Venezuela	73	441	223	213	...	2.3	0.8

[a] Or nearest year. [b] Includes significant exports from processing zones. [c] Includes secretariat estimates. ... = not available; – = not applicable.

Source: WTO, op. cit., table IV.54.

In contrast to WTO data for automotive products as a whole, UNCTAD makes separate export data available for passenger cars, trucks and automotive parts and accessories, as shown in table 1.12.

Table 1.12. **Top ten developing country exporters of cars, trucks and parts at the SITC Rev. 2 group (3 digit) level** (ranked by average 2000-01 values)

Exports of passenger vehicles	% DC exports	% world exports	Exports of trucks	% DC exports	% world exports	Exports of auto parts, accessories	% DC exports	% world exports
Mexico	46.13	5.23	Mexico	55.85	9.91	Mexico	34.24	4.11
Korea, Rep. of	34.93	3.96	Thailand	13.12	2.33	Korea, Rep. of	11.11	1.33
Brazil	5.43	0.62	Korea, Rep. of	7.31	1.30	Taiwan, China	10.00	1.20
South Africa	2.79	0.32	Brazil	5.87	1.04	Brazil	9.49	1.14
Argentina	2.45	0.28	Argentina	5.53	0.98	China	7.48	0.90
Turkey	2.34	0.26	Turkey	2.35	0.42	Philippines	3.59	0.43
Thailand	1.30	0.15	South Africa	1.96	0.35	Thailand	3.03	0.36
Oman	0.98	0.11	China	1.15	0.20	Turkey	2.99	0.36
Colombia	0.53	0.06	Colombia	0.87	0.15	Argentina	2.85	0.34
UAE	0.49	0.06	Chile	0.87	0.15	Singapore	2.69	0.32

Source: *UNCTAD Handbook of Statistics 2003.*

1.3. Women's share of employment

According to the ILO estimates (see Annex 2, table A2.1) women accounted for approximately 25 per cent of motor vehicle employment in both Canada and the United States. In countries of the European Union, female employment was usually in the 17-20 per cent range, except in the Czech Republic (37 per cent), Denmark (25 per cent), Greece (27 per cent), Ireland (34 per cent), Portugal (38 per cent) and Slovakia (up to 30 per cent). It is thought that this was mainly in parts manufacturing rather than assembly. Ukraine also recorded a 38 per cent share for women.

The example of Germany in table 1.13 shows that the sector is largely dominated by male employment. The comparatively largest proportion of female employment is found in the manufacture of electrical equipment, where almost one-third of employees are women. However, this data was available for NACE 31.61 (similar to ISIC 3191 which is outside the scope of ISIC 34).

Table 1.13. Employees within the scope of national insurance in Germany (2002)

NACE categories	Men	Women	Total
31.61	48.567	22.391	70.958
34.10	406.666	53.511	460.177
34.20	38.180	5.661	43.841
34.30	174.710	38.187	212.897
Total	668.123	119.750	787.873

Note: NACE is the European Union nomenclature.
Source: Bundesanstalt für Arbeit, BfA (Federal Employment Service).

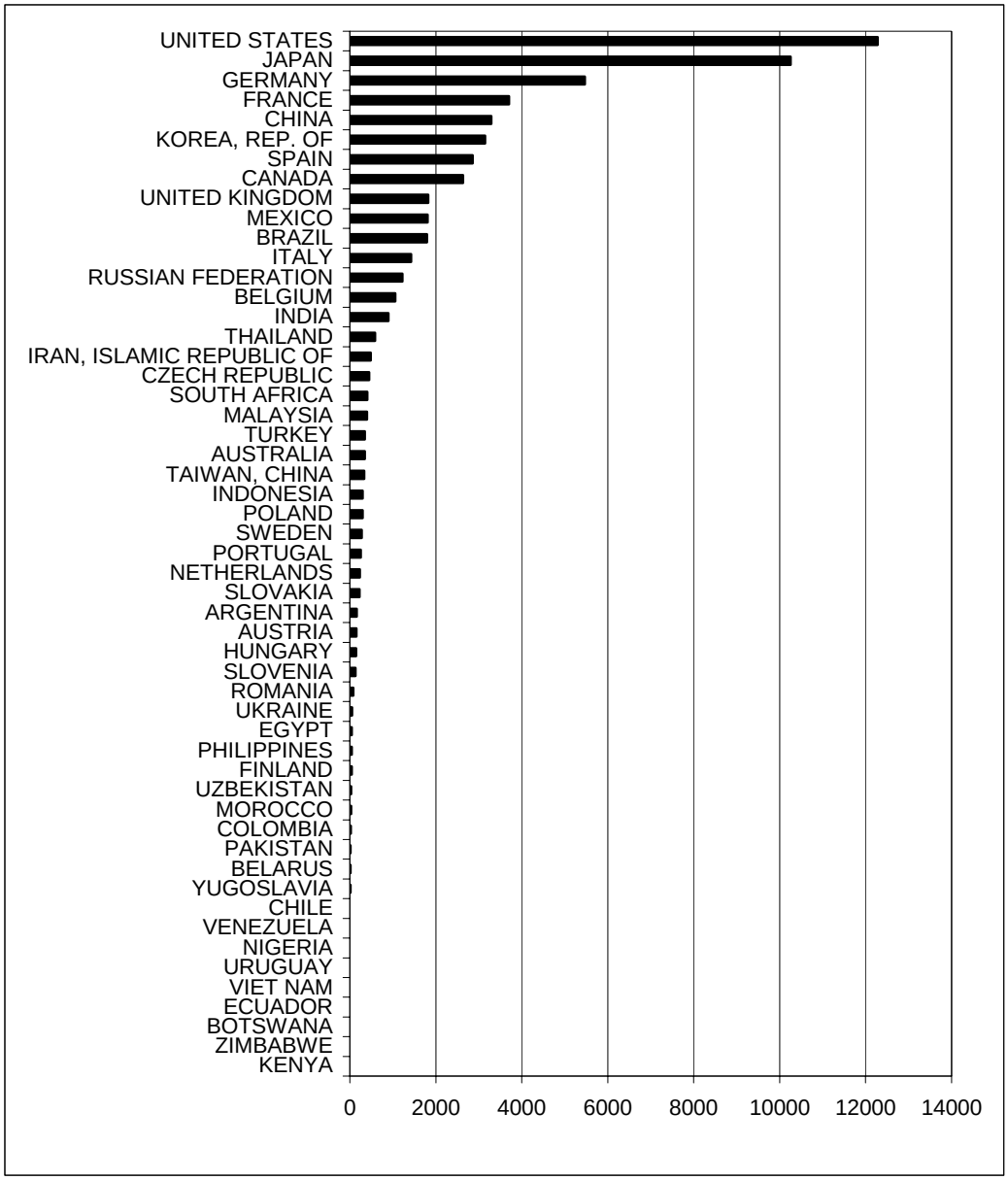
With respect to hours worked, women usually recorded slightly shorter hours than that shown for both men and women.

1.4. Motor vehicle production

Motor vehicle producing countries can be grouped by the number of units produced. In 2003, the United Sates, Japan and Germany produced over 5 million motor vehicles each, China produced 4.4 million units and France 3.6 million (see table A2.4). Countries producing over 2 million units included Canada, Spain and the Republic of Korea, followed by those producing over a million units each, including the United Kingdom, Brazil, Mexico, Italy, Russian Federation and India. Notable newcomers here are India and the Russian Federation. Over half a million motor vehicles in 2003 were produced by Thailand, Turkey, the Islamic Republic of Iran, Australia and South Africa. Figure 1.5 shows global unit production in 2002.

It is interesting to compare production figures for 2003 with those of 2002. For example, as figure 1.5 shows, China was in fifth place in 2002; it has now moved to fourth place, overtaking France.

Figure 1.5. Motor vehicle production in 2002
(thousands of units)

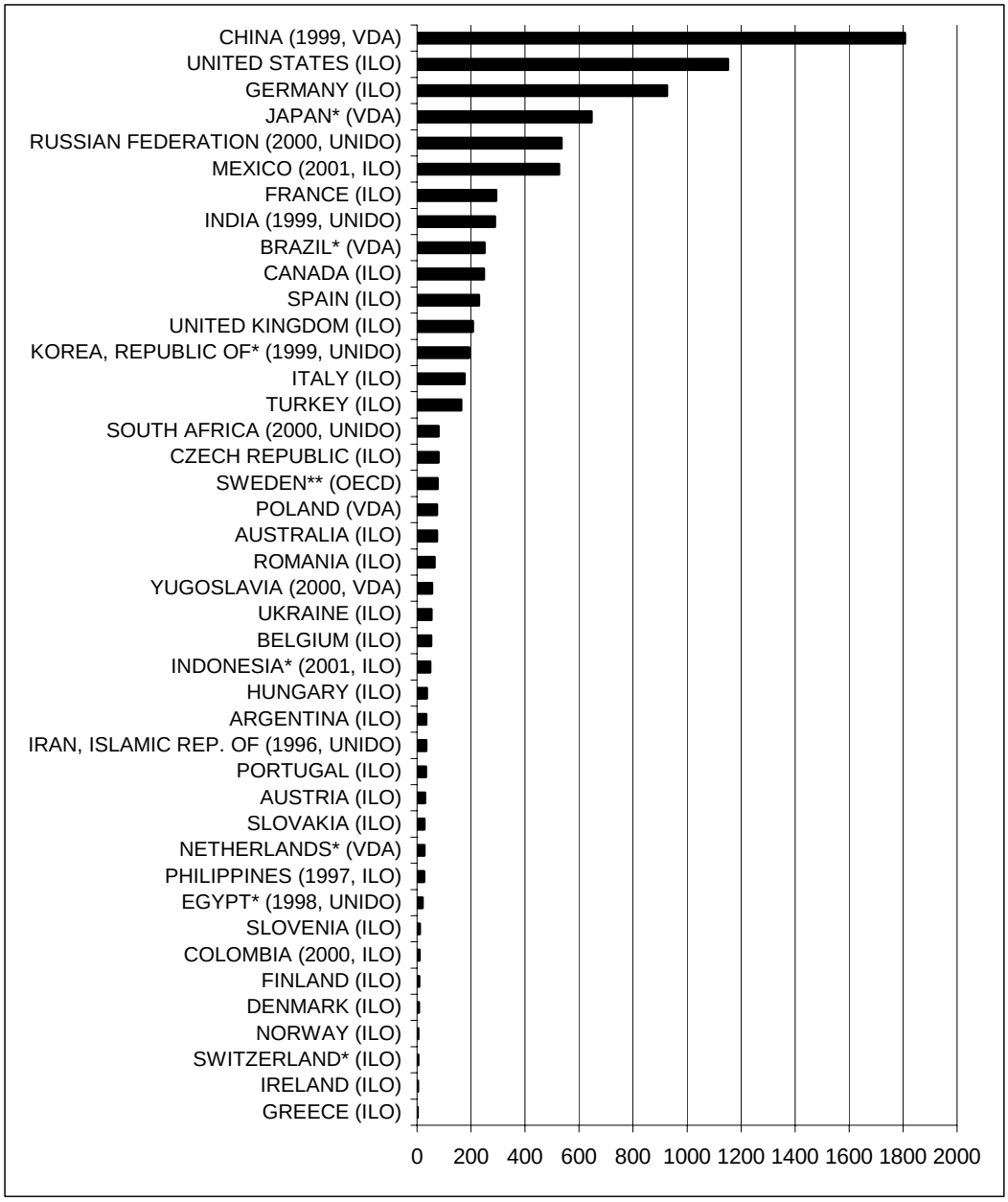


Source: ILO calculations based on OICA web site.

For purposes of comparison, employment data for 2002 (the latest complete year available) are presented in figure 1.6 in descending rank order, to show the relative strength of employment in each country.

Unlike figure 1.5, which shows total motor vehicle production, table 1.14 shows automobile production only, which also gives a different ranking for the countries concerned. For example, in 2003 Japan and Germany rank ahead of the United States from this perspective.

Figure 1.6. Employment in the motor vehicle industry
(thousands of employees in 2002 except as noted)



Notes: Source estimates appear in brackets. * = Persons engaged. ** = Wage earners (hourly production workers).
Source: ILO calculations, based on table 1.9.

Table 1.14. Automobile production, 2003 (units), selected countries (passenger cars)

Japan	8 478 328
Germany	5 145 403
United States	4 509 565
France	3 220 329
Korea, Republic of	2 767 716
Spain	2 399 238
China	2 018 875
United Kingdom	1 657 558
Brazil	1 504 998
Canada	1 339 607
Italy	1 026 454
Russia	1 010 436
India	905 851
Belgium	791 703
Mexico	780 819
Rest	4 434 870
Total	41 991 750

Source: ILO calculations, based on OICA, op. cit.

The top 15 manufacturers are noted in table 1.15. These industry leaders made 86 per cent of the motor vehicles produced worldwide.

Table 1.15. Motor vehicle producers, by company, 2003

GM (Opel-Vauxhall)	8 185 997
Ford (Jaguar-Volvo cars)	6 566 089
Toyota	6 240 526
VW Group	5 024 032
DaimlerChrysler	4 231 603
PSA Peugeot Citroen	3 310 368
Nissan	2 942 306
Honda	2 922 526
Hyundai-Kia	2 697 435
Renault-Dacia-Samsung	2 386 098
Fiat-Iveco	2 077 828
Susuki-Maruti	1 811 214
Mitsubishi	1 582 205
Mazada	1 152 578
BMW	1 118 940
Rest	7 900 000
Total	59 486 010

Source: ILO calculations, based on OICA, op. cit.

1.5. World Commission on the Social Dimension of Globalization

The report [3] of the World Commission on the Social Dimension of Globalization (WCSDG) also provides a backdrop against which the automotive industry and the relationship between the manufacturers and their suppliers can be discussed. The Director-General's Report [4] of the role of the ILO examined six broad policy themes for detailed reflection: national policies to address globalization, decent work in global production systems, global policy coherence for growth, investment and employment, constructing a socio-economic floor, the global economy and the cross-border movement of people, and strengthening the international labour standards system. The Report of the World Commission also discussed how the ILO can respond to the Commission's call for the multilateral system to enhance participation and accountability by mobilizing global tripartism to make a full contribution to the building of a social dimension for globalization.

The World Commission believes that the benefits of globalization can be extended to more people and better shared between and within countries, with many more voices having an influence on its course. The Commission felt that the current process of globalization was generating unbalanced outcomes, both between and within countries. Wealth was being created, but too many countries and people were not sharing in its benefits. The World Commission has proposed addressing issues of labour standards, backward linkages to the domestic economy, and the ways that enterprises can move up the "value chain" through investment and technological upgrading. The primary beneficiaries of such an approach would be the countries, enterprises – both domestic and multinational – and workers concerned.

[3] World Commission on the Social Dimension of Globalization: *A fair globalization: Creating opportunities for all* (Geneva, ILO, 2004).

[4] ILO: *A fair globalization: The role of the ILO*, Report of the Director-General, International Labour Conference, 92nd Session, Geneva, 2004.

2. The automotive industry and the structure of the components sector

The following chapters [1] will examine the situation of the automotive supplier industry, an industrial subsector in a state of flux. The objective is to assess the potential effects on employment of global trends in the automotive sector, to present the current state of the industry and to suggest how it is likely to develop in the foreseeable future.

The automotive industry's intra-sector relationships, and the dynamics of international automotive market development, are complex. The component sector is large and highly diverse in composition. However, it is easier to identify current and potential influences on the sector's fortunes than to determine with accuracy their aggregate effect on global sector employment over the coming years.

The automotive industry as a whole is still growing as it expands into emerging markets. The components sector is set to require more labour on a global basis than it currently employs, and to grow faster than the vehicle manufacturer sector as a result of increased outsourcing. The precise effect of automotive market growth, most notably in China, India and other Asia-Pacific countries, on the automotive components sector globally will depend on the interaction of a number of specific trends outlined below.

The current position is also charged with tensions. These impinge especially on labour and on lower-tier components suppliers in the traditional vehicle-producing locations, especially the United States and Western Europe. The value added chain is not only a source of linkage among companies: it is increasingly a source of conflict, as players of unequal strength seek to protect their interests.

The primary research material used here comprises data obtained from a range of Tier-1 (see Annex 1) supplier companies, i.e. those which sell directly to vehicle manufacturers. [2] Secondary source material encompasses reports and news items carried by specialist automotive media, academic studies, as well as information gleaned from governmental and inter-governmental services and from industrial associations.

2.1. Estimating levels of employment

The data presented in Chapter 1 (tables 1.1-1.9) and Annex 2 from the ILO, OECD, UNIDO and other sources demonstrate the difficulty of collecting uniform estimates of the level of employment in the automotive industry, with its manufactures (final assemblers) and suppliers. Employment figures are also not always up to date, especially for emerging markets, so quantitative analysis is subject to some degree of inaccuracy.

2.1.1. The supplier-assembler relationship

The future of component supply can only be appraised in relation to emerging trends in the automotive industry as a whole. Its supply and distribution chain comprises five broad sectors:

[1] Chapters 2-9 were largely prepared by Toby Procter and Peter O'Brien.

[2] Tier-1 refers to the most immediate supplier selling directly to the final assembler. Tier-2 and Tier-3 suppliers are those supplying components to the Tier-1 supplier.

– raw material inputs (at least for Tier-2 and Tier-3 suppliers);

– component supply;

– vehicle assembly;

– distribution;

– after-sales service and replacement parts distribution.

The key aspects of the assembler-supplier relationship are outlined in box 2.1.

Box 2.1
The assembler-supplier relationship

- Vehicle manufacturers produce approximately 15 cars per employee per annum.
- Component and system supply firms account for 65-75 per cent of the manufactured value of vehicles.
- In France, French Vehicle Equipment Industries (FIEV) estimates that the cost of bringing a car to market is: 53 per cent components (both produced by manufacturer and by suppliers); 17 per cent assembly-related costs; and 30 per cent distribution/marketing.
- Operating margins of manufacturers are 3-4 per cent of sales.
- Sales to the parts aftermarket may be as much as 20 per cent of European manufacturers' consolidated sales and up to 40 per cent of operating profits.
- By contrast, less than half of FIEV members sell in the aftermarket.

The elements of production and distribution/aftermarket support employ approximately equal numbers in mature automotive markets. [3]

Leaving aside the extremely large-volume producers (GM, Ford, Toyota), an average vehicle manufacturer employs around 100,000 or more workers, plus managerial and administrative staff, to produce between 1 million vehicles (e.g., Mercedes-Benz, BMW) and 1.2 million (e.g. Volkswagen) per year. Average output is of the order of 10-15 cars per employee per annum, calculated on the basis of plants working two daily shifts over 16 out of every 24 hours. The variation depends in part on efficiencies, but also critically on the complexity of the vehicles produced.

Seventy per cent of the manufacturer's workforce may typically be productive rather than management/supervisory or "white collar". This ratio varies in response to many factors. The structures and productivity levels of companies are critical. But product profiles, degrees of vertical integration, engagement in ancillary activities such as financial services, and degrees of automation in the assembly process, are all influential.

2.1.2. Distribution of employment between assemblers and suppliers

Supplier sources [4] estimate that the components and systems supply firms contracted to vehicle manufacturers account for some 75 per cent of the manufactured value of finished vehicles. If labour intensity and value added per capita in components

[3] These ratios may vary between countries and from company to company.

[4] Such as the FIEV's *Chiffres Clés (Facts and Figures) 2002*.

manufacture and development were comparable to the conditions in vehicle assembly, as many as 30 people would be employed in the components sector for every 10 in assembly. Box 2.2 shows how this ratio varies considerably between countries. One estimate of global employment in the two sectors in 2002 (see table 2.1) suggests a 66:33 split, i.e. 2.9 million jobs in assembly versus 5.9 in components. Data collected in 2002 from the automotive sectors of 14 countries by the German Association of the Automotive Industry (VDA) and the International Metalworkers' Federation and published in the latter's Auto Report 2004 show 51 per cent to be employed in assembly and 49 per cent in components manufacture.

Box 2.2
Automotive sector employment: Assembly-supplier breakdown in percentages

Country	Assemblers	Components
Spain	25	75
Japan	29	71
Poland	33	67
United States	37	63
Italy	39	61
United Kingdom	43	57
Germany	56	44
France	62	38
Belgium	84	16

- The ratio varies greatly from country to country.
- The 2002 average for 14 manufacturing countries was 51 per cent assembly to 49 per cent components.
- Studies covering all regions of the world suggest a very different 2002 breakdown: 32 per cent assembly and 68 per cent components.
- Approximate calculations suggest that in 2002 global employment in the automotive sector could have been between 7 and 9 million workers.

Source: Estimates based on data from EIRO, IMF, VDA.

Degrees of vertical integration in the manufacturing (assembly) sector vary considerably. Labour cost differentials between assembly and components sectors are one contributing factor. Another is the degree to which manufacturers have adopted the "lean production" systems pioneered by Toyota and other Japanese firms. These systems, in which suppliers' facilities are housed on or adjacent to an assembly site, allow manufacturers to enjoy many of the potential benefits of vertical integration while profiting from a differential between lower components manufacture labour costs and higher final assembly labour costs.

The figures for vehicle assembly in table 2.1 include all employment by the firms concerned, including dealers and marketing. Globally, nevertheless, most dealers are independent entities and most of their staff are not employed by manufacturers. Most marketing expenditure by vehicle manufacturers involves outsourcing rather than using large numbers of in-house personnel.

The table demonstrates vividly the expected importance of China and India as growth centres. They are the only places where employment in assembly is predicted to grow (if India were estimated separately from the Republic of Korea, the figure would be much larger). With respect to components manufacture, their significance is still considerable, more than making up losses among assemblers.

Table 2.1. Projected employment shifts from assemblers to suppliers (2002-15) (in '000s)

Region	2002	2015	Percentage change
Vehicle assembly employment			
EU25	996	977	–1.8
NAFTA	866	645	–25.6
South America	113	105	–7.0
Republic of Korea, India	136	138	+1.5
Japan	430	333	–22.5
China	125	173	+38.4
Rest of world	269	226	–15.9
Total	2.9 (m)	2.6 (m)	–10.3
Component manufacture employment			
EU25	1 756	2 998	+70.0
NAFTA	1 763	2 356	+33.6
South America	230	465	+102.2
Republic of Korea, India	417	583	+39.8
Japan	907	1 069	+17.8
China	260	814	+213.0
Rest of world	570	942	+65.2
Total	5.9 (m)	9.2 (m)	+55.9

Source: *Mercer Management Consulting/Fraunhofer-Gesellschaft, 2003.*

2.2. National automotive labour markets

Four contrasting national examples from Western Europe, the United States and Brazil are discussed below as indicative of the variation between national labour markets.

2.2.1. France's automotive components sector

The 2002 statistics from the French component suppliers' association FIEV show that automotive component manufacturers (as defined by France's official industrial classification system) numbered 220 enterprises in its membership; operated a total of 350 plants; achieved sales of €21 billion; and collectively employed 109,000 people, of whom over one-third were clerical or management staff. Adding the remaining supplier firms affiliated to other related associations in France, the country's total supplier industry's sales were calculated at €46.2 billion, and the French components sector as a whole employed 283,667 workers.

A total of 130 foreign-owned components suppliers operated 200 production sites in France and employed 64,000 workers. Sales were €13.4 billion, or 64 per cent of those of FIEV members.

Average employment in FIEV member firms was about 500 workers. According to the FIEV, 75 per cent of global employment in automotive suppliers was in firms with more than 500 employees. In France, 75 per cent of components manufacturing workers were employed by small and medium-sized enterprises (SMEs) under the EU definition of the term.

Table 2.2 shows the composition of French automotive suppliers' sales as quantified by the FIEV.

Table 2.2. Sales of French automotive suppliers

Product type	Sales (€bn)
Components/systems/modules	21.0
Mechanical parts	7.7
Plastics	5.7
Tyres	3.8
Electronics*	3.1
Foundry	3.0
Rubber/polymers	1.0
Glazing	0.3

* Electrical and electronic systems now account for over 50 per cent of the sales of Valeo, one of France's largest automotive suppliers, which has 129 plants, 65 R&D centres and nine distribution centres, and employs 68,700 people in 26 countries worldwide.

Source: FIEV, *Chiffres Clés (Facts and Figures) 2002*.

The French supplier sector's workforce has been stable since the mid-late 1990s, after reductions in the 1980s and early 1990s. Until the establishment of Toyota's French assembly plant in 2003 and the car plant of the DaimlerChrysler subsidiary MCC Smart two years earlier, French vehicle manufacturers numbered only two major domestic firms, with no volume "transplants", and produced 5.6 million vehicles in 2002. However, the domestic supplier sector has enjoyed other sources of growth besides the 3.4 per cent rise in sales to vehicle manufacturers to €18 billion in 2003. Its potential original equipment sales were boosted by the increase in European and other manufacturing investment from new manufacturers such as Toyota within and beyond France. In 2002, some 40 French-owned supplier firms operated a combined total of 372 production sites abroad, employing around 100,000 people in 34 countries. The growth and increasing age of the domestic vehicle parc brought an increase of 4.6 per cent in aftermarket sales to €3 billion.

Further growth prospects for the sector were shown in the FIEV's calculation that the standardization across its customers' vehicles of additional equipment such as air bags, ABS brakes and audio equipment accounted for a 15 per cent increase by value in suppliers' content contribution per new car unit – although the FIEV confirmed that its members' sales had not increased on a par with the increase in vehicle production or additional equipment per vehicle, having ceded share to other firms through price competition.

2.2.2. The United Kingdom's automotive components sector

The car manufacturing and components sectors have a markedly different composition in the United Kingdom. Only two of its top ten automotive suppliers are domestically owned, and one of these, the Anglo-Dutch steel maker Corus, is a large but not exclusively automotive concern, not wholly British-owned, and outside the standard OECD components industry classifications.

Only one car manufacturer in the United Kingdom is British-owned – the former BMW subsidiary MG Rover. The remaining volume assembly plants are owned by BMW, General Motors, Ford (its Jaguar and Land Rover subsidiaries), PSA Peugeot Citroen, Honda, Nissan and Toyota. They and the smaller specialist manufacturers produced

1.658 million vehicles in 2002, with an aggregate sales value of £28 billion, while total domestic sales totalled 2.579 million units. The 2,578 components firms present in the United Kingdom achieved aggregate sales of £15.5 billion. They employed 148,000 people, compared to 95,000 in the country's vehicle assembly plants. [5] This puts average employment in components firms in the United Kingdom at around 60, not much more than 10 per cent of the figure for France, suggesting that considerable supply may be going to the specialist manufacturers.

Whereas France's two national car manufacturers have controlling shares in suppliers (e.g. PSA Peugeot Citroen's control of one of the largest French suppliers, Faurecia), the decline of British-owned vehicle manufacturing to a sole, loss-making firm has left the country with only one domestically owned transnational Tier-1 supplier, namely, GKN Automotive, although some important contributions come from more diversified specialist British companies such as Pilkington Glass. The domestically supplied content of British vehicle manufacture has declined accordingly since the 1990s, notably following the closure of Ford and GM assembly plants, whose owners during the 1960-80s between them held a near-50 per cent share of the now much more fragmented British car market. Thanks to the inward investments of foreign manufacturers, however, some 17 global Tier-1 suppliers are represented in the United Kingdom.

The British automotive industry is now notable not for the volume of its vehicle output, or the local ownership of production facilities, so much as for the diversity of Japanese and European "transplant" vehicle manufacturers hosted by the country. The United Kingdom is also noted for the global standing of its specialist SME engineering firms in the performance car and motor sport sectors. These specialists contribute strongly to exports, but overall the British automotive sector remains in deficit (its trade balance was in the red to the tune of £11 billion in 2002).

2.2.3. The automotive components sector in the United States

In the United States, motor vehicle and parts manufacturing were among the largest manufacturing industries in 2002, providing 1.2 million jobs. [6] Most jobs, about 63 per cent, were in firms that make motor vehicle components. About 23 per cent of workers in the industry were employed in firms assembling complete motor vehicles, while about 13 per cent worked in firms producing truck trailers, motor homes, travel trailers, campers, or car, truck and bus bodies placed on separately purchased chassis.

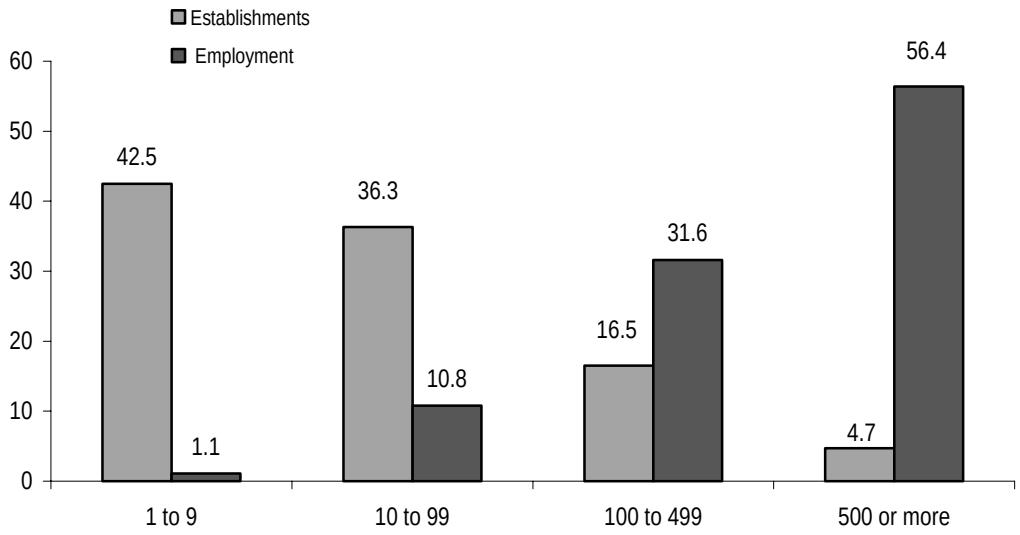
Although motor vehicle and parts manufacturing jobs are scattered throughout the country, certain states account for most of the jobs. Michigan, for example, accounts for nearly one-quarter of the total. Michigan, Ohio and Indiana combined include nearly half of all the jobs in this industry. Other states that account for significant numbers of jobs include California, Tennessee, Texas, Kentucky and Missouri.

Employment is concentrated in a relatively small number of very large firms. More than half of motor vehicle and parts manufacturing jobs were in firms employing 500 or more workers (see figure 2.1). Motor vehicle manufacturing employment in particular is concentrated in large firms, whereas many motor vehicle parts manufacturing jobs are found in small and medium-sized firms.

[5] According to the National Statistics Office (NSO).

[6] See Bureau of Labor Statistics web site www.bls.gov/oco/cg/print/cgs012.htm (visited 1 June 2004).

Figure 2.1. Number of workers employed by establishment, March 2002, United States (percentage)



Source: Bureau of Labor Statistics.

In 2002, about 9,600 firms manufactured motor vehicles and parts; these ranged from small parts plants with only a few workers to huge assembly plants that employ thousands. [7] Table 2.3 shows that about seven out of ten firms in the industry manufactured motor vehicle parts – including electrical and electronic equipment, petrol (gasoline) engines and parts, brake systems, seating and interior trim, steering and suspension components, transmission and power train parts, air-conditioners, and motor vehicle stampings, such as fenders, tops, body parts, trim, and moulding. Manufacturing parts requires less assembly, and the firms that manufacture only parts are not as vertically integrated as those that make complete vehicles. Other establishments specialized in manufacturing truck trailers, motor homes, travel trailers, campers, and car, truck, and bus bodies placed on separately purchased chassis.

Table 2.3. Per cent distribution of establishments in motor vehicle and parts manufacturing by detailed industry sector, 2002, United States

Industry sector	Establishments
Total	100.0
Motor vehicle parts manufacturing	70.1
Motor vehicle body and trailer manufacturing	24.9
Motor vehicle manufacturing	4.9

Source: Bureau of Labor Statistics.

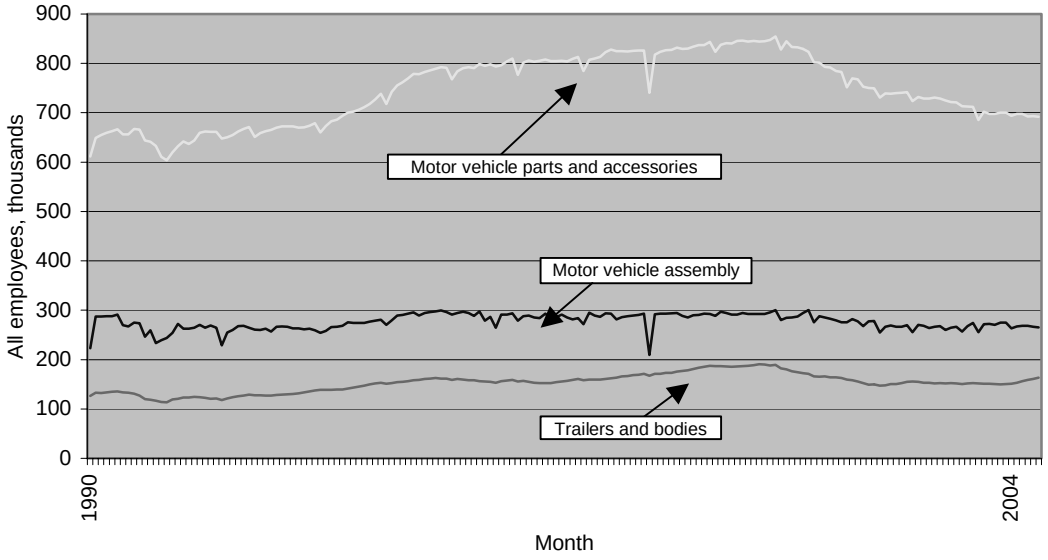
The United States Bureau of Labor Statistics is moving from Standard Industrial Classifications or SIC codes to the North American Industry Classification System

[7] Bureau of Labor Statistics, United States Department of Labor, *Career Guide to Industries, 2004-05 Edition*, Motor Vehicle and Parts Manufacturing, on the Internet at http://www.bls.gov/oco/cg/cgs012.htm (visited 7 June 2004).

(NAICS). This reclassification provides a more accurate picture of employment in the auto parts industry by creating more motor vehicle specific parts classifications.

Employment in the parts industry grew through the 1990s but has experienced a sharp downturn since it peaked in 2000, despite relatively strong auto sales. Employment now stands at its 1994 level (see figure 2.2). A breakdown of employment levels in the various subsectors of the United States components industry is given in table 2.4.

Figure 2.2. Distribution of motor vehicle employment in the United States



Source: Bureau of Labor Statistics.

Table 2.4. Change in levels of employment in the components sector, United States, 2000-03

Category of industries within the parts sector	Employment (not seasonally adjusted)		
	April 2000	April 2003	Percentage change
Motor vehicle gas engine and engine parts	105 100	86 900	–17
Carburettors, pistons, piston rings and valves	23 500	16 700	–29
Gas engines and engine parts	81 600	70 200	–14
Motor vehicle electrical and electronic equipment	134 000	106 000	–21
Vehicular lighting equipment	19 400	16 800	–13
Other electrical and electronic equipment	114 600	89 200	–22
Motor vehicle steering and suspension components	56 000	44 800	–20
Motor vehicle brake systems	50 500	43 600	–14
Motor vehicle transmission and power train parts	105 100	87 900	–16
Motor vehicle seating and interior trim	69 300	60 200	–13
Motor vehicle metal stampings	122 400	105 500	–14
Other motor vehicle parts (such as air bags, air-conditioners and radiators)	202 700	170 000	–16

Source: Bureau of Labor Statistics, www.uaw.orgpublications/jobs_pay/03/no2/jpe10.cfm .

2.2.4. The Brazilian automotive components industry [8]

In terms of inter-firm relations, the Brazilian auto parts industry has been transformed almost beyond recognition from its composition and behaviour at the end of the 1980s. The shake-out of parts firms and lowered local content levels have resulted in a few leading Tier-1 firms, which are affiliated to major multinational components producers. The new standards being imposed by the assemblers are creating a nexus of Tier-1 firms capable of acting as modular suppliers.

Employment throughout the automotive industry declined sharply in the 1990s. As table 2.5 also shows, the automotive assemblers employed 84,834 workers in 2001 and the auto parts industry employed 170,000 workers in the same year. One-quarter of all assembly jobs and nearly 40 per cent of automotive parts employment were shed during this decade.

Table 2.5. Net revenue and total employment, assemblers and auto parts producers in Brazil, 1988-2002

Year	Net revenue (US$ billions)**		Total employment	
	Vehicles*	Auto parts	Vehicles*	Auto parts
1988	12.5	10.4	112 985	288 300
1989	11.5	15.5	118 369	309 700
1990	8.6	12.2	117 396	285 200
1991	9.9	9.8	109 428	255 600
1992	11.0	10.1	105 664	231 000
1993	11.6	13.2	106 738	235 900
1994	15.2	14.4	107 134	236 600
1995	15.3	16.6	104 614	214 200
1996	16.6	16.1	101 857	192 700
1997	18.2	16.5	104 941	186 400
1998	17.4	14.8	83 049	167 000
1999	14.5	10.4	85 117	167 000
2000	15.8	13.3	89 134	170 000
2001	16.0	11.9	84 834	170 000
2002	N.A.	10.9	82 050	168 000

Sources: ANFAVEA, 2003; Sindipeças, 2003. * Data refer to production of automobiles, commercial vehicles and jeeps, but exclude agricultural machinery. ** Prices converted from Brazilian reals to US dollars by average exchange rate of each year.

While part of this significant decline in labour per unit of output surely reveals genuine productivity increases, some of the improvement in output, both by auto parts plants and especially by assembly plants, is due to an increased proportion of imported parts. [9] In addition to imported parts, these data also include hidden labour, owing to

[8] Based on A. Posthuma: *Industrial renewal and inter-firm relations in the supply chain of the Brazilian automotive industry* (forthcoming SEED Working Paper No. 46 (Geneva, ILO, 2004)).

[9] Local vehicle content requirements among MERCOSUR countries were relaxed in the 1990s and are now lower than those for NAFTA (which stipulates 62.5 per cent local content). Import tariffs between MERCOSUR countries were gradually reduced and eventually eliminated.

increased subcontracting of services and some productive activities. These subcontracted firms are usually small. Many are not classified as metalworking firms and would not appear in the statistics of the automotive industry associations. [10]

2.2.4.1. A successful example of import substitution industries (ISI)

As table 2.6 shows, exports of Brazilian auto parts nearly doubled between 1991 and 1997. On the other hand, auto parts imports also grew five-fold and the trade balance in auto components was in deficit for the first time in decades. Automotive vehicle exports, by contrast, have grown faster than imports, at a ratio of roughly 2:1. The geographical diversity of exports has become more restricted, as shown in table 2.7. Whereas auto parts were widely exported around the world, with the American market accounting for two-thirds of exports, vehicle exports are increasingly restricted to the immediate region. Market liberalization, denationalization of the domestic auto parts industry and greater integration into the global strategies of multinationals do not appear to have resulted in greater globalization, but rather in regionalization of trade.

Table 2.6. Brazilian auto parts trade balance, 1991-2002 (in US$ million FOB)

Region	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002*
Exports	2 048	2 312	2 665	2 986	3 262	3 509	4 041	4 031	3 591	3 821	3 677	3 881
Imports	843	1 060	1 549	2 073	2 789	3 422	4 394	4 175	3 847	4 228	4 198	3 980
Balance	1 204	1 252	1115	913	473	87	(352)	(144)	(257)	(407)	(531)	(98)

Source: Sindipeças, 2003. * Data for 2002 are preliminary.

Table 2.7. Exports of Brazilian auto parts by region, 1991-2002 (share of total exports)

Region	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
North America *	53.8	49.2	50.3	48.9	42.8	41.3	40.0	39.3	45.6	44.0	40.7	46.6
Europe	24.4	20.2	14.1	15.0	17.0	15.3	14.8	18.2	21.0	20.6	22.6	24.3
South America	14.1	24.8	29.6	30.2	30.5	34.5	37.6	39.4	27.6	28.3	26.9	16.1
Asia and Oceania	4.8	3.1	3.4	3.6	7.0	6.6	4.9	3.8	3.3	3.9	6.1	8.3
Africa	2.2	1.9	1.8	1.6	1.8	1.6	1.6	1.2	1.4	1.6	2.0	2.5
Central America and Caribbean	0.7	0.8	0.8	0.7	0.9	0.7	1.03	1.12	1.05	1.53	1.74	2.12
Total (in per cent)	100	100	100	100	100	100	100	100	100	100	100	100

Source: Sindipeças, 2003. * Includes United States, Mexico and Canada.

In the early years of the present decade, the United States continued to be the largest export market for Brazilian auto parts, although that share had fallen to 36 per cent by 2002 (from 53.8 per cent in 1991). In the 1990s, Argentina became Brazil's second largest export market, representing 28 per cent of all exports in 1997 (compared to a mere 4.6 per cent in 1986), but as a result of its huge crisis at the beginning of the current decade, this figure fell to 8 per cent by 2002. At present, Mexico is the second largest export market (10 per cent of exports in 2002), followed by Germany (9 per cent) and Argentina. It is

[10] Many of these workers are employed without the signed work card *(carteira assinada)* that guarantees payment of the company's share of social security contributions to the Government.

worth mentioning the rise of China as an important export market in the decade, as Brazilian auto parts exports to this country rose from 0.01 per cent in 1991 to 4 per cent in 2002.

2.2.4.2. Changing the product mix

The product mix was altered, largely due to agreements signed in the Sectoral Chamber of the Automobile Industry, [11] which gave a boost to sales of economy models by cutting prices. As a result, the production and sales of economy cars rose to 70 per cent of total passenger vehicle sales in Brazil.

The automotive industry has been the centrepiece of many Latin American industrialization policies. In Brazil, under protective nationalist policies, this industrialization process stimulated significant technological learning processes among local firms, building forward and backward linkages between companies at different stages in the production process. Brazil was an attractive location for new foreign investments during the mid-1990s. These investments enabled the Brazilian automotive industry to make the transition from being a large but stagnating national industry to becoming the premier production location for MERCOSUR and selected South American markets.

Inter-firm relations have been strengthened on two levels. First, relations between assemblers and suppliers have been transformed as assemblers have passed on greater responsibilities to their Tier-1 suppliers. Second, relations between firms in the supply chain appear to have been strengthened, as Tier-1 suppliers have become specialized manufacturers, responsible for the effective management of the supply chain and product assembly.

2.3. The asymmetric relationship between value added and decision-making in the automotive industry

These four national cases highlight the economic importance of the components sector, which contributes most of the automotive industry's value added, quite apart from its obvious importance to employees and direct investors and to economic activity as a whole. While the combined sectors of the automotive industry directly contribute something like 10 per cent of total GDP in their host economies, the dependence of the advanced economies on light vehicles and the infrastructure supporting them increases the direct and indirect contributions of the automotive industry to 20 per cent or more of GDP.

Crucially, in respect of the components sector's profit and growth potential, its contribution to value added per vehicle is at least 66 per cent overall and has been predicted to grow in importance.

2.3.1. Manufacturers as value added aggregators

As "aggregators" of value added, the vehicle manufacturers are and always have been the principal arbiters of the investment requirements, production locations and, in large measure, aftermarket access of their components suppliers. Globally, vehicle manufacturers also exert a similar degree of control over the supply of parts and services to

[11] The Sectoral Chamber of the Automotive Industry is a forum for social dialogue between automotive companies, trade unions and Government (at the local, state and federal levels). It was formed in 1992, and in 1993 sought to revitalize the domestic automotive industry through negotiated agreements to reduce taxes, maintain lowered prices and prevent labour strikes.

end-users in the aftermarket; their mostly franchised distribution channels are broadly similar throughout the world, although regulatory regimes differ according to region.

For this reason, the opportunities and threats facing the components sector are assumed in this chapter to be defined by global market movements in which vehicle manufacturers are the principal actors. The manufacturers respond to predicted and actual end-user demand, and dictate to their suppliers the volume and locations of opportunities available to them.

It is important to differentiate between the subsectors of the automotive supplier industry, which encompasses a huge range of business size, product type and production volumes, removes from direct supply contracts with manufacturers (in Tiers-2 and 3), and involves companies in the *development* as well as manufacture of automotive technologies.

The complexity of the automotive supply chain is illustrated by the number of firms typically responsible for the 30,000 or so components used in the assembly of a modern car. It may involve 100-200 Tier-1 suppliers, of which 30 or so may be responsible for most of the value contributed, partly through the sub-assembly of their own suppliers' products. These Tier-1 suppliers may be contracted directly to the vehicle manufacturer or, in a few cases, to a subcontracted or joint-venture assembly plant, among as many as 500 Tier-1, 2 and 3 suppliers. In size, firms involved in the automotive supply chain range from those employing over 100,000 staff at more than 100 locations in more than 30 countries, to specialists employing fewer than five workers.

Some of the suppliers' products are of a generic type, developed at their own risk for several manufacturers' applications and for the aftermarket – tyres, spark plugs, batteries, steel wheels, some engine parts, for example. Others – the great majority – are developed by suppliers at the behest of the vehicle manufacturer for a specific vehicle or model range, up to three years before pre-launch production of the vehicle yields revenues. Such components are produced in volumes and at locations determined by specific manufacturer-specified contracts, with no permitted access to secondary markets, should these exist.

2.4. The global market value of the components sector

Estimates of global market value differ considerably. According to one source, in 2002 the global market for components and accessories manufactured for vehicles including motorcycles reached a value of US$533.4 billion, having grown at a year-on-year rate of 3.6 per cent since 1997. [12] The wide variations between companies and product values in the sector across the globe make it difficult to confirm that figure.

What is clear is that despite the shift in investment towards predominantly Asian emerging markets, North American firms within the first tier of component manufacturers still own the lion's share of the global components market. Of the top ten firms ranked by Datamonitor according to their 2002 global market shares (table 2.8), six were American, one Canadian, one German and two Japanese.

[12] Datamonitor, *Automotive Business Review*, 28 June 2004.

Table 2.8. Ranking of top ten automotive suppliers by 2002 market share

1.	Delphi Corporation
2.	Robert Bosch GmbH
3.	Johnson Controls, Inc
4.	Denso Corporation
5.	Visteon Corporation
6.	Lear Corporation
7.	Magna International
8.	Dana Corporation
9.	TRW Automotive
10.	Aisin Seiki

Source: Datamonitor, *Automotive Business Review*, 2004.

2.4.1. Growth of emerging markets and components demand

The light vehicle markets of the traditional "triad" of major regional automotive markets – North America, Europe and Japan – reached maturity by the end of the 1980s and have since behaved in a cyclical manner determined by the influence of economic conditions on vehicle replacement cycles. The growth forecast for global automotive demand is predicated on the acceleration of an already measurable shift of the automotive industry's centre of gravity from these mature "triad" markets towards Asian markets other than Japan, of which China is by far the largest and, from late 2004 onwards, will be the Asia-Pacific HQ of the world's biggest manufacturer, General Motors.

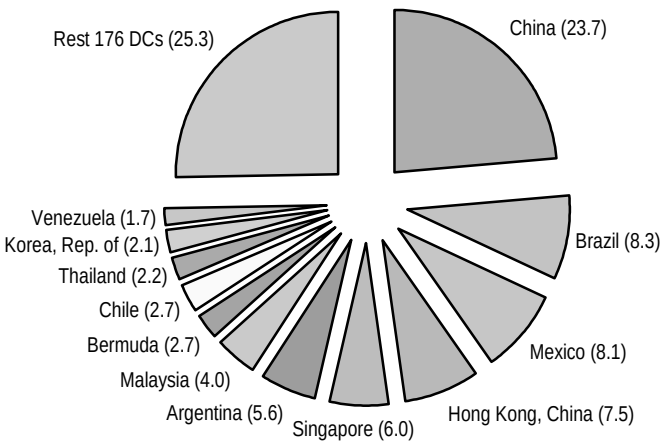
China, according to OECD data quoted by the International Metalworkers' Federation (IMF), [13] received the largest national share (37 per cent) of total world direct inward investment in 2003. The IMF quantified the scale of this investment in China by multinational companies as US$12 billion between 1996 and 2003. A further US$13 billion in direct inward investment in China is projected for the automotive industry alone over the next decade, despite signs of incipient overcapacity.

Data collected for the report of the World Commission on the Social Dimension of Globalization show the share of FDI to the top 12 recipients over the past decade. China, Brazil and Mexico are major automobile producers, as figure 2.3 shows.

Some of the major multinational automotive suppliers initiated their investments in China in the early 1990s, in the form of wholly owned subsidiaries supporting the 50:50 joint ventures to which their manufacturer customers were restricted. The effect of Western and Japanese firms' presence on the numbers of Chinese-owned automotive suppliers has yet to be fully determined, since rapid growth in the domestic market dates back only three years, and domestic Chinese-owned suppliers, which numbered 2,734 in 2001, underwent substantial consolidation during the late 1990s along with their Chinese manufacturer customers – but in a pre-WTO accession market still dominated by public sector vehicle procurement and largely insulated from overseas trends.

[13] IMF: *Auto Report 2004*.

Figure 2.3. Distribution of foreign direct investment (FDI) inflows to developing countries, totals for 1990s (in percentage)



Source: UNCTAD, *Handbook of Statistics 2002*.

By 2002, firms among the top five multinational suppliers – including Delphi, Bosch, Denso and Visteon – had acquired a 9 per cent share of the domestic Chinese components market. One year later, however, the GM-SAIC joint venture's transnational suppliers still accounted for fully 75 per cent of its procurement, according to the consultants KPMG. Quality performance, as well as volume capacity, is a constraint on the speed at which local content can substitute for components imports in developing automotive industries: according to a survey quoted in a recent American press report on the potential of Chinese-sourced cars to satisfy American buyers, the quality of compact cars built in China did not compare favourably with those built in the United States.

While new investment in automotive production is directed predominantly at Asia, the mature traditional markets of the North America/Europe/Japan "triad" are not expected to shrink in the medium term, despite declining market shares among some of these markets' domestically owned manufacturers. These have recently involved displacement and net job losses in the "rustbelt" areas of historically concentrated automotive activity, such as Michigan in the United States or the West Midlands in the United Kingdom.

The North American automotive manufacturing labour market shrank by 140,000 jobs or 2.6 per cent per annum between 2000 and 2003, 70 per cent of the losses being borne by components workers. [14]

There is considerable potential for developing automotive markets to increase the global parc of vehicles, and hence the volume of business potential available to suppliers between today and 2020. According to one analysis:

[14] Roland Berger Strategy Consultants: Presentation to the OESA meeting on *The road ahead for the North American automotive industry: Supplier strategies* (Cleveland, Ohio, March 2004).

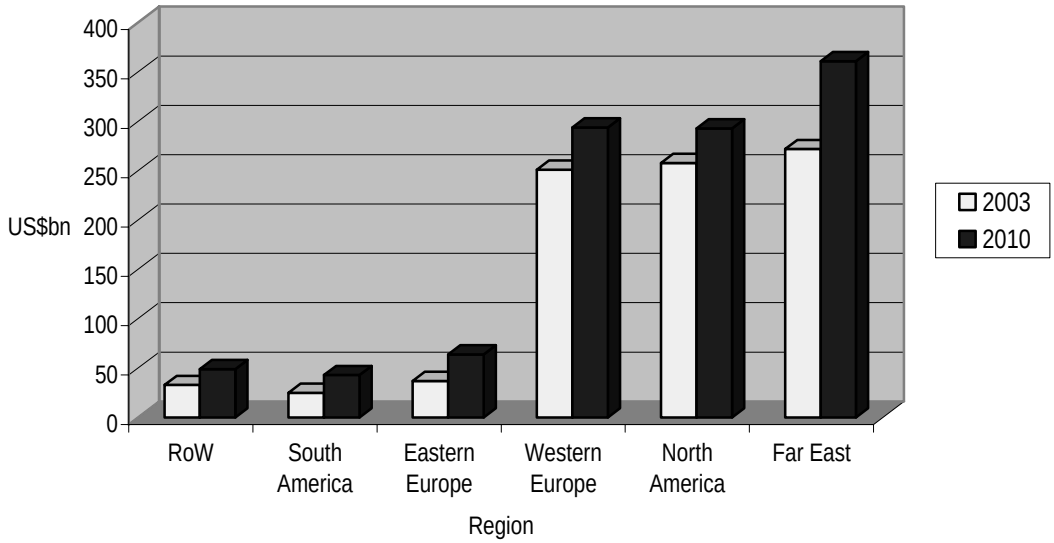
> Motorization varies across the planet. The world average in 2000 (all vehicles, passenger cars and commercial vehicles combined) was 126 vehicles per 1,000 population. In the more developed countries, (MDCs), the ratio was 585 vehicles per 1,000 population, but in the developing countries (DVCs) the ratio was just 41 vehicles per 1,000 population. This works out at a vehicle parc size across the world of 765 million units in the year 2000 … . To raise ownership levels in 2020 to the world average figure of 126 per 1,000 population extant in 2000 would require a parc size of 1.4 billion units, compared to our current forecast of 1.2 billion units; that is, almost double the size of the parc in 2000. [15]

In short (given the maintenance of existing global average replacement cycles), the achievement of these vehicle population projections would imply growth in global vehicle manufacture of 83 per cent by 2020, or an average 4.15 per cent per annum.

The potential instability of oil markets and, of course, economic development rates will affect the eventual rates of automotive production growth in emerging markets. But the investments made notably in Asian market growth (reported elsewhere in this chapter) tend to confirm these forecasts. Other forecasts mentioned also amplify the implied growth prospects for components suppliers by suggesting a growing share for suppliers of value added per vehicle.

One estimate has valued the 2003 American automotive components market at US$876 billion, and suggested it may grow by 3.4 per cent per annum on average, to reach US$1.1 trillion in 2010. [16] However, the NAFTA region's *share* of global component manufacturing revenues may decline by 11 per cent by 2010, and Western Europe's by 20 per cent. The principal beneficiaries would be Asia, whose global components market share would rise by 165 per cent, and Central Europe, whose share would rise by 31 per cent.

Figure 2.4. Global components market 2003 and projections for 2010



Source: OESA/Roland Berger Strategy Consultants, 2004.

[15] M. Pemberton: *Newsletter of Market Data Analysis*, www.autelligence.com , 25 June 2004.

[16] Roland Berger Strategy Consultants: Presentation for the SAE World Congress, Detroit, 8 March 2004.

2.4.2. The growing importance of China

With 1.12 million domestic light vehicle sales in 2003 (and 4.4 million motor vehicle sales in total), China became the third largest national vehicle producer after the United States and Japan. It is also the largest single destination of foreign direct investment (FDI) for most of the global manufacturers in the automotive industry, and consequently also for many of their established Tier-1 components suppliers. In total, foreign manufacturers have announced plans to invest a combined total of over US$13 billion by the end of the present decade in forthcoming and expanded capacity in joint ventures with SAIC, FAW, Dongfeng, Brilliance China and other major Chinese partners.

China's growth in demand for oil and steel, in particular following the past three years' rapid growth in its automotive production and domestic vehicle sales, have directly influenced global price increases for these two most essential automotive commodities in the past half-year.

The accuracy of long-term global automotive market forecasts is of course subject to the impact of as yet unknown destabilizing events. The consensus among forecasters, however, is for continued significant growth in global automotive demand, driven primarily by the emergence of Asian markets, notably China and India. India's potential, based on the size of its population alone, is still relatively far from being realized, compared to China and some smaller emerging markets

A 2003 forecast suggested that the automotive industry's traditional "triad" markets (North America, Europe and Japan) would grow from 42.8 million units in 2002 to 51.8 million in 2015. [17] Emerging markets, with China at the forefront, were predicted to grow from 14.4 million units to 24.4 million in the same period, bringing total output from 57.2 million units to 76.2 million. Supplying the forecast increase would require over 63 new car assembly plants of an average capacity of 300,000 units a year.

Michael Robinet, Vice-President of Global Forecast Services of the United States-based CSM Worldwide, wrote in August 2003: "China is and will remain the industry's growth market. Between 2002 and 2008 China's vehicle production will grow at a compounded annual rate of 15 per cent, with production hitting 6.3 million in 2008 (an increase of 3.6 million vehicles from 2002."

2.4.3. The impact of vehicle demand growth on components demand

How do these global production forecasts relate to the market for components? In 2003, one observer [18] forecast a 75 per cent increase in turnover in the automotive supply industry between 2000 and 2010. This would be fuelled by a global increase in vehicle volume and by a 30-40 per cent increase in outsourcing of production and development by vehicle manufacturers.

[17] The 2002 figures quoted are different from those quoted by OICA, the international vehicle manufacturers' association, which recorded 41.1 million passenger cars produced globally in 2002, and 15.43 million light commercial vehicles, i.e. total light vehicle production excluding motorcycles of 56.4 million units. With comparable year-end stocks from year to year, production is a close proxy of market volume.

[18] Mercer Management Consulting – Fraunhofer-Gesellschaft, 2003.

Another 2003 study [19] concluded that by 2015 the share of value per vehicle contributed by suppliers would rise from a typical 65 per cent today to 77 per cent, some of this increase deriving from growth in the value of electrical and electronic equipment per vehicle. The same forecast indicated that the automotive industry's global growth will take it from a present global turnover of about €645 billion, by average increases of 2.6 per cent per annum, to €903 billion by 2015. Final assemblers and suppliers combined are predicted to invest €2,000 billion from this year to 2015 in order to achieve this growth.

Many observers and trade associations representing the supplier sector focus on the negative implications of continuing price pressure on suppliers from the vehicle manufacturers. Box 2.3 provides a recent illustration. The Pemberton forecast suggested that major suppliers offering advanced technologies would be at the forefront of the entire industry's growth. The global sales of Tier-1 suppliers specializing in relatively high value added systems, such as Bosch, Delphi, Faurecia, Siemens VDO Automotive and Valeo, are predicted, according to that forecast, to see growth of 4 per cent per annum, or 70 per cent between 2003 and 2015, with combined sales rising from a level of €417 billion today to €700 billion.

Box 2.3
Negative implications of price pressure on suppliers of lower-priced components

A strike of 1,026 workers resulted in violence in June 2004 at Visteon's Bedford, Indiana plant, which makes simple products – e.g., windshield washer bottles – that could be produced almost anywhere, such as Mexico, China or any lower-cost American plant. Automakers like Ford, General Motors and DaimlerChrysler are putting enormous pressure on suppliers to slash prices on such commodity-type products.

Bedford plant workers walked out, and an attempt was made to replace them with workers bussed in from elsewhere, which resulted in a local riot.

Visteon had told workers at the Bedford plant in April 2003 that it would move 500-600 jobs to another plant where costs are lower; IUE-CWA rates in Bedford have been reported to be US$17-19 an hour. Subsequently, Bedford workers rejected a proposed deal, which although not disclosed, was described by "chatter on an Internet chat board" as proposing no change in base wages for existing Bedford workers, but aiming to eliminate cost-of-living increases and to increase employee contributions to health insurance. Visteon was proposing to hold the number of job losses at Bedford to 250 or 300, but was also pushing for a two-tier pay scale similar to those the United Auto Workers Union (UAW) had recently approved at other Visteon and Delphi Corp. plants. These were plants where historic differentials existed between the higher pay of former Ford and GM employees of the two spun-off former subsidiaries and the lower rates obtaining elsewhere among suppliers.

Source: *Detroit News*, reported on 10 June 2004.

Variables likely to affect the eventual impact of the growth in global vehicle sales on suppliers as a whole – which cannot be predicted with any degree of accuracy on a global scale – include the following:

- vehicle price trends which determine the potential value of components overall;
- legislative demands for new value added technologies which are at present discretionary rather than compulsory, and typically installed only in upmarket, relatively high-margin vehicles;
- the effect on the prices of lower-value components of the introduction of higher-value components, given the limitations of total component cost per vehicle;

[19] M. Pemberton: *Managing the Future: World vehicle forecasts and strategies to 2020* (London, Autointelligence Ltd., 2003).

- the effect on aftermarket replacement demand of extending the longevity of components through quality improvement;

- the effects of raw materials shortages arising from expanding global production;

- the effects of consolidation on the R&D capacities of surviving individual firms;

- future changes in vehicle manufacturers' policies with regard to vertical integration versus outsourcing of component manufacture and sub-assemblies.

The incident cited in box 2.3 highlights peculiarly United States-related issues, including the "vertical disintegration" of former assembler-owned suppliers, the excess capacity of domestic manufacturers losing share to foreign-owned domestic rivals and imports, and high private medical care costs. But the underlying commercial pressures are also typical of those affecting similar component plants throughout the advanced automotive markets, and indeed manufacturing industry in general, in North America and Europe.

3. New markets and the demand for labour

The geographic spread of automotive production and sales has impacted on the demand for and distribution of labour in every traditional vehicle-manufacturing country. Vehicle manufacturers, despite an overall increase in their outsourcing of R&D and sub-assembly to suppliers during the past decade, remain the arbiters of suppliers' production locations, owing to the growth in importance of "just-in-time" supply chain demands since the late 1980s.

In China, the largest of the industry's growth markets, manufacturers are subject to different FDI regulations from suppliers. The strategic importance of manufacturing is shown by the Chinese authorities' insistence on joint venture structures for foreign/domestically owned vehicle manufacturers. On the other hand, United States, European and Japanese suppliers have been permitted to invest in wholly Chinese-owned subsidiaries.

The automotive industry, like most other areas of business, has been subject in recent years to sharp shifts in terminology. These often involve euphemisms that have negative connotations for one of the parties involved. "Labour flexibility" is one of the best examples. Trade unions struggled for decades in the OECD countries to establish contractual conditions with automobile enterprises, especially assemblers and Tier-1 suppliers, which would provide guarantees to their members. As competition in the sector has intensified and abundant lower cost labour has become available in emerging markets, automobile firms have come to view those conditions as excessively costly and now argue that labour in the OECD should accept changes to those conditions if jobs are to be preserved in OECD production locations. This is the rationale behind the Daimler-Chrysler Agreement in Germany, as well as a number of similar developments elsewhere (including the pressure to increase working hours). Companies prefer to call this trend a movement in favour of "flexibility", a positive-sounding word. However, the words do not alter the facts. Organized labour in the automobile industry in the traditional production locations is under the severest pressure to forego some of the benefits it previously enjoyed. The "quid pro quo" is about preserving jobs. Another currently fashionable term, which has strong links with the labour situation, is "legacy management" (see box 3.1). This refers to the way in which the automotive companies, at a time of major financial pressures, deal with inherited costs, including pensions and health-care benefits for retired workers (issues which are especially critical for GM and Ford). From the perspective of automotive workers, labour flexibility affects those currently employed in the sector, while legacy management affects those who are retired. In both cases, the phrases imply pressure on workers' welfare.

Box 3.1
A new concept: Legacy management

As successive rounds of global restructuring ripple through the vehicle manufacturers, the ultimate effects are felt at the local level in individual plants and facilities. This in turn is causing vehicle manufacturers to face, to an unprecedented degree, the challenge of having to live with past decisions: the challenge of *legacy management*.

The following features of global restructuring (among vehicle manufacturers) are typical:

- large sums of money have to be spent reversing or rescuing previous decisions;
- some decisions are simply too difficult or expensive to change (engine supply deals are typical) in the short term, and so a pragmatic "live with it" attitude is adopted;
- some investments are effectively wasted because the duplication of decisions tends to result in overcapacity;
- the actual facilities get scant chance to enjoy a period of long-term stability in which all the key activities such as management, investment, training, etc., can be embedded.

Facilities and plants can become "victims" of change almost irrespective of actual performance, simply by being in the wrong place at the wrong time.

The turbulent world of automotive industry manufacturing demands above all else competitive performance. Note that the main competition is internal: when it comes to future investment decisions, external benchmarking by entities such as The Harbour Report will not be nearly as relevant as the internal comparisons with sister plants worldwide.

This issue of "competitiveness" may ultimately not be reducible to productivity. The most productive plant will be one that is running at or near full capacity most of the time, while the key problem is the inapplicability of previous capacity investment decisions to changed circumstances. So what probably matters more is labour flexibility of all types.

Globalization does more than underpin the creation of ever larger aggregations in the automotive industry; it provides much of the force for the continued rupturing of the automotive landscape. Particularly in those established markets that have a long history of production, suffer endemic overcapacity, and are under strong competitive pressure from new production locations, these global stresses can have dramatic consequences at the local level. Increasingly then, the successful companies and prosperous facilities in the automotive industry (and the analysis applies as much to suppliers as it does to the vehicle manufacturers) will be those which deal best with the new art form: *legacy management*.

Source: P. Wells: "The end of the affair", in *Automotive Components Analyst*, June 2004, www.awknowledge.com .

3.1. Global labour cost differentials

In the labour-intensive automotive component sector, some of the fastest-growing markets offer stark contrasts with mature markets in respect of labour costs. Table 3.1 shows hourly wages in the motor vehicle industry for 13 countries, while table 3.2 shows hourly labour costs (wages plus benefits) for manufacturers in ten countries for which data were available.

While its investments, like those of many other industries, are affected by cost inequalities made transparent by globalization, the automotive industry is somewhat less "globalized" in terms of its *output* than many others: regional consumer preferences, trade bloc tariff regimes and differences in safety and environmental legislation still largely preclude the marketing of single-specification vehicles in different regions.

Table 3.1. Hourly compensation costs for production workers in motor vehicles and equipment manufacturing (US SIC 371), selected countries, US$, various years

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Brazil	–	–	–	15.43	15.86	16.83	11.50	11.51	9.85	–
Canada	20.83	20.65	20.81	21.02	20.86	20.50	19.94	–	–	–
Mexico	3.98	4.09	2.56	2.51	2.93	3.02	3.45	4.18	5.04	5.12
United States	25.52	26.64	26.55	27.23	28.00	26.44	26.73	27.99	29.84	31.67
Japan [1]	23.93	26.35	29.12	25.83	24.52	22.89	26.38	27.77	24.77	24.37
Republic of Korea	7.37	8.83	10.85	12.46	10.02	8.06	10.63	11.75	10.95	13.62
Taiwan, China	6.66	6.73	6.98	6.76	7.09	6.58	7.03	7.06	6.82	6.53
France	17.36	17.97	20.04	19.67	17.75	17.97	17.77	16.65	16.95	18.49
Germany	–	–	–	–	–	35.47	34.92	31.63	31.11	32.81
Ireland	10.45	10.76	12.14	12.35	12.31	12.18	13.42	12.39	13.30	13.97
Italy	16.63	16.67	17.22	18.82	17.88	17.60	17.09	15.12	14.92	16.24
Spain	16.22	15.39	16.78	16.70	14.92	14.14	15.16	13.92	13.31	14.83
United Kingdom	15.21	16.00	16.78	16.94	18.77	20.12	20.32	19.45	19.32	21.15

[1] Including motorcycle manufacturing.

Source: United States Bureau of Labor Statistics, May 2004.

Table 3.2. Selected comparative effective hourly labour costs in manufacturers, 2003 (US$)

Country	Hourly wage	Benefits	Employer contributions	Total per hour
Germany	33.0	8.0	2.9	43.9
United States	22.5	4.6	6.5	33.6
France	22.1	6.9	2.7	31.7
Japan	20.2	2.3	1.4	23.9
Canada	19.4	3.0	1.4	23.8
United Kingdom	18.6	2.9	2.0	23.5
Republic of Korea	8.4	2.5	n.a.	11.2
Taiwan, China	5.2	n.a.	n.a.	n.a.
Mexico	2.7	n.a.	n.a.	3.2
China	1.3	n.a.	n.a.	1.3

Source: Roland Berger Strategy Consultants/US National Manufacturers' Association.

The economic status of the vehicle manufacturers that form important hubs in their host countries' employment- and tax revenue-intensive manufacturing economies has led governments and financial institutions to facilitate the survival of many firms which more severe global competition might otherwise have reduced in number. Each of these car firms, even when subsumed within parent groups or joint ventures, competes for market share by offering multiple products in an attempt to occupy all market segments within its reach. As a result, the proliferation of vehicle models designed for regional markets hosting multiple competitors has meant that the entry of manufacturers into new markets is often followed by component plants dedicated to each of the manufacturers' assembly facilities.

Box 3.2

Developing countries: A niche in the global automotive supply chain?

In a 2003 UNIDO report, the authors describe the "follow sourcing" policy that has required Tier-1 suppliers (and especially the largest so-called "Tier 0.5" systems' integrators, or "global mega-suppliers" such as Bosch or Delphi) to establish production facilities alongside new assembly plants in developing automotive production centres. They note that this trend limits opportunities for local component suppliers in emerging markets to participate in automotive development.

They argue, however, that the global reach required of Tier-1 suppliers delivering parts for vehicle platforms deployed across different regions is not required of second-tier suppliers. Accordingly, the UNIDO paper authors say that "… developing countries can increase the possibility of integration into the global value chains of multinational automotive companies by opening up their domestic markets", and emphasize the importance of fostering networks of small firms in developing countries as a means of helping them to enter new markets.

Cases cited by the authors show a tendency for Tier-1 suppliers moving into developing markets to prefer to use, where possible, the second-tier suppliers they already contract with elsewhere. The economic independence of SME suppliers in developing economies is shown to be subject to globalization factors: while specific (and especially labour-intensive) types of production may be centred in low labour-cost markets for global trade in components within supply chains, component design and contract allocation are typically organized globally by Tier-1 suppliers in conjunction with vehicle manufacturers.

Smaller Tier-2 suppliers' long-term survival will thus be dependent on their ability to develop specific competences that complement, rather than compete with, those of their Tier-1 customers; and in order to achieve the requisite scale that allows competitive pricing – either for original equipment (OE) supply or the aftermarket – SME suppliers in developing economies need to be integrated into global supply chains. They need to adopt proactive market strategies (which are economically difficult to achieve for small enterprises) and their products and systems need to be fully compliant with global quality standards.

The UNIDO paper agues that the integration of Tier-2 suppliers into global supply chains requires the opening of developing markets to Tier-1 suppliers, although this is a process which, in areas as diverse as Brazil, South Africa, Australia or Asia, has led to a growing tendency for key local suppliers to become subsidiaries of multinational companies.

This trend had been absent in China until the country's accession to the WTO in 2003, but the automotive industry consolidation now being pursued by the Chinese Government, and the technological dependence of local vehicle assemblers on their foreign joint venture partners, suggest a growing Chinese role for multinational suppliers. The authors argue for the nurture of networks of suppliers in emerging markets through technical, financial and managerial support. The most ambitious such support scheme has been South Africa's Motor Industry Development Programme (MIDP), which combines fiscal incentives for local production and exports with import tariffs permitted by South Africa's principal automotive trade partner, the European Union. The MIDP cannot, however, claim to have increased the autonomy of the South African motor sector as a whole or the independence of its supply sector from export-driven, foreign-owned manufacturers, and the country's automotive trade is in deficit despite a protective regime governing imports of parts and completely built-up (CBU) vehicles.

The provision of technical, managerial and financial support for the relatively sophisticated and capital-intensive automotive manufacturing sector is generally problematic for countries without an established automotive skills base or stable investment structure, whereas the governments of countries with mature automotive sectors, such as the United Kingdom and other countries in north-western Europe, intervene with education and subsidy programmes to attract and retain automotive FDI and with industry-specific support programmes.

Sources: J. Humphrey and O. Memedovic: *The global automotive industry value chain: What prospects for upgrading by developing countries* (UNIDO, Vienna, 2003), available at http://www.unido.org/en/doc/12769 .

3.2. Platforms and tiers

While models and their local derivatives are tending to proliferate, manufacturers are reducing the number of the basic "platforms" on which these vehicles are based. In the case of the Renault-Nissan alliance, for example, it is planned that no more than five basic vehicle platforms will supply the partners' respective models in markets ranging from Japan through Europe to North and South America and elsewhere. By 2008, vehicle

platforms with annual volumes in excess of 1 million units may comprise one-third of global vehicle production, compared to 28 per cent in 2002. The total number of platforms exceeding 1 million units per year may increase from five to 15 during this period.

The key Tier-1 suppliers of sub-assemblies for these global platforms are required to supply them wherever the vehicles are to be assembled. They in turn will require second-tier suppliers to support them in regional production centres. In this sense, products that may vary in their specifications (notably high-value items such as engines) and in prices across the globe nevertheless draw suppliers into becoming multinational firms – a process already largely accomplished at Tier-1 level. Among national automotive production centres, only the latecomer China did not attract inward investment from Tier-1 suppliers until the beginning of the 1990s.

Asked to rank their future strategic priorities, 31 per cent of a sample of United States suppliers cited moves to lower cost locations, compared to 12 per cent that cited moves with or closer to their customers, and 10 per cent that mentioned the idling or closure of existing excess capacity. [1]

How easy it may be for a relatively small or specialist components supplier to follow a manufacturer or Tier-1 supplier into new territory will depend on overall scale issues, as well as on the availability of risk capital, expertise and other resources. Suppliers with annual sales below US$100 million may try to expand to cover markets in their "home" continent only. Those with up to US$500 million in sales may choose one other region to serve. With sales above US$500 million, a supplier may be obliged to become global. Box 3.3 explores the issue of global platforms.

Such a momentum towards globalization in this sense arises from the multinational investments made obligatory by customers, rather than from ownership of multinational operations being a condition of achieving the scale needed to make a company competitive. In other words, as this report's introduction indicates, globalization for Tier-1 suppliers (and doubtless for some of their suppliers in turn) follows a pattern determined by the location of customers' assembly plants (this is often termed "co-location"). [2]

Suppliers investing in new markets can adopt a "hub and spoke" manufacturing organization, in which their just-in-time driven, assembly-only plants are located next to vehicle manufacturers' sites and served by regional manufacturing centres that can achieve scale objectives by supplying more than one manufacturer-dedicated plant.

[1] Roland Berger Strategy Consultants: Presentation to the OESA meeting on *The road ahead for the North American automotive industry: Supplier strategies* (Cleveland, Ohio, March 2004).

[2] M. Holweg and F.K. Pil: *The second century: Reconnecting customer and value chain through build-to-order* (MIT Press, Cambridge, Mass., and London, England), 2004, p. 146.

Box 3.3
Supplier production strategy: Follow the global footsteps of assemblers

Suppliers must recognize that global platforms are increasingly a fact of life. Automakers that have been slow in ramping up global platforms and rationalizing them on a global scale are now considered to be lagging behind.

From a supplier's point of view, global platforms provide opportunities to expand to new markets and the possibility to quote on a full range of programmes. Suppliers that are flexible and working on global platforms are able to react to currency shifts and limit negative financial exposure.

Exposure to low-cost production locations will be increasingly vital towards the end of this decade. Compared to other vehicle assemblers such as Daimler-Chrysler and Ford, which will have less than 30 per cent of their production in low-cost locations by 2009, Hyundai will base more than 90 per cent of its production in Central Europe, India, China and other low-cost Asian locations.

In response to this trend, competitive manufacturers such as General Motors are working with affiliates such as Suzuki, GM-Daewoo, AvtoVAZ and Fiat to increase their product reach and to gain access to low-cost production locations. Japanese vehicle manufacturers will also be addressing their exposure by increasing production of several offerings off global platforms in Central and Eastern Europe, China, Thailand, India, Brazil and South Africa.

In order to remain viable, suppliers must look to global platforms as a mechanism for expanding their geographical footprint.

Source: M. Robinet, Vice-President, Global Vehicle Forecasts, CSM Worldwide, Inc., May 2004.

3.3. The shift from Western to Central and Eastern Europe

The requirement to locate plants in proximity to the emerging market assembly locations has begun to indicate to suppliers as well as their customers the potential impact of global labour cost differentials on costs and prices. Thus Robert Bosch, in tandem with its customer the VW Group, has invested heavily in Central and Eastern Europe, where labour costs in Slovakia, for example, which now has the highest per capita car output in Europe, are only about 20 per cent of those paid by the same firms in Germany.

Within Europe, the migration of investment to lower cost countries on automotive employment in countries where labour costs are higher has yet to be reflected in large-scale job losses, although it had started to have some impact on working conditions in Germany by mid-2004. Figures for Germany from the past decade (see below) may be indicative of the relationship between domestic growth and overseas investment in a globalizing components market – especially in Germany, where VW's Chinese joint venture sales exceeded its domestic sales in 2003, and where CBU vehicle exports also exceed domestic sales.

German-owned automotive sector firms created 271,000 jobs abroad between 1991 and 2001, whereas employment in the domestic sector increased by 71,800. The strength of exports, especially to North America, has provided the engine of whatever growth Germany's vehicle manufacturing sector has enjoyed during a sustained period of domestic stagnation.

While rising German investment in production abroad was until 2001 accompanied by employment growth in Germany itself, more recent events suggest the tide may turn further against suppliers' domestic employment. A number of them, including Robert Bosch AG, have featured in 2004 news reports of intended "offshoring" plans.

The impact of a transfer of production investment from Western to Eastern Europe will clearly be different from that of investment in developing markets in Asia, since the proximity of the lower cost European labour markets to the relatively expensive ones and to existing supplier facilities, and the fact that these countries belong to a single trading bloc, make the substitution of existing Western European capacity a more immediate possibility. The five Central European countries that joined the European Union in 2004 will host 13 vehicle assembly plants between them, and these are likely to expand production capacity through inward investment substantially beyond their host countries' domestic demand for vehicles over the next decade.

The likelihood of Central European States becoming primarily low-cost production sites rather than sources of market growth over the next decade was confirmed by May 2004 data from the Polish automotive sector research company, Samar. These indicated that roughly 50 per cent of all cars in Poland are more than 11 years old, and used car imports into Poland, principally from neighbouring Germany, increased during the first half of 2004 as their prices fell to levels of affordability that could not be matched by new vehicles.

3.4. Can investment incentives keep firms in advanced markets?

A mid-2003 survey by KPMG of United Kingdom-based suppliers demonstrated, against a backdrop of increasing costs and customer pressures, that the majority of CEOs felt that their firm's future lay abroad. Of importance to government policy was the finding that 70 per cent of suppliers' CEO respondents saw no value in tax incentives available to the automotive sector against a backdrop of other costs they considered to be globally uncompetitive. Eighty-nine per cent of respondents cited cost as the prime reason for relocating their operations. Seventy-two per cent stated that the domestic procurement bias of overseas customers made it very important to site facilities close to the customer. The same proportion felt that any local presence should consist of some engineering as well as manufacturing activities; 61 per cent felt that some sales activity should be located alongside production facilities; and 50 per cent felt that their activities at any given location should include some local R&D activity.

Most of the British-based businesses surveyed were already represented to some extent in Central Europe and the Far East, excluding China, which emerged as the most popular choice for businesses that were considering relocating – or increasing their overseas presence – alongside the remaining non-EU European countries. (Some of the latter were among the ten EU accession States a year after the survey.)

As table 3.2 shows, there are extremely high differentials in comparative labour costs in the industry's emerging and mature markets. The South African Metal Workers' Union, NUMSA, warning of possible strike action during June 2004 negotiations on its demand for a 9 per cent wage increase, claimed that its members in the automotive industry were paid on average R3,657 (US$563) per month, just 13.3 per cent of the comparable Japanese worker's rate (the yen equivalent of US$4,234).

Again, it is primarily vehicle manufacturers rather than suppliers whose decisions on the location of production within a given region will be influenced by wage differentials, although suppliers are likely to be directly influenced by them, and in many cases find that labour accounts for a higher proportion of their total costs.

Box 3.4
The role of incentives: Kia's decision to locate in Slovakia

A contemporary case illustrates the strength of the negotiating position that can be held by automotive inward investors in Central Europe.

In March 2004, Kia Motor, an affiliate company of Hyundai Motor, announced that it would build a 200,000 unit-capacity, 2,800 worker assembly plant in Slovakia, after considering alternative locations in Poland and Hungary for European production. Kia planned initially to invest €700 million (US$846 million), to which suppliers following Kia into Slovakia would add about €300 million and prospectively employ a further 3,000 workers from 2006 onwards, when the plant would come on-stream.

Ministers of the Government of Slovakia, which joined the EU in May and will be subject to investment subsidy rules, disagreed in July 2004 over parliamentary demands for disclosure of the investment aid offered to Kia. The economics ministry web site revealed that aid of US$173 million would not be repayable in the event of Kia failing to honour its commitments, whereas the Government faced "strict penalties" if it did likewise.

Kia management had resisted publication of its arrangements with the Slovakian Government on grounds of commercial confidentiality. When it sent a "very sharp" letter of complaint to the Government, the latter withdrew the information provided on its web site.

Meanwhile, action by local farmers unwilling to comply with the compulsory purchase orders required to prepare the planned site by the end of August 2004 created the risk of a contractual penalty for the Slovakian Government.

Source: *Financial Times*, 26 July 2004.

3.5. Wages as a component of total costs

The contribution of assembly labour costs and productivity to overall costs may be exaggerated by vehicle manufacturers in their negotiations on wages and subsidies, given the two-thirds of vehicle value accounted for by generally more labour-intensive suppliers, and the additional contribution of raw materials and capital assembly line installation costs.

Labour costs as a proportion of vehicle manufacturers' total costs are difficult to determine accurately, owing to the diverse structures of global manufacturers. But one example sets labour costs in context at the lower end of the global per capita earnings range: the Indian car market leader Maruti-Udyog, with 3,355 employees in 2003, reported that its wage and benefit costs represented US$47 million, or 2.36 per cent of its operating income, implying an average per capita cost of US$14,010.

China, where wages are markedly higher in the coastal provinces that host vehicle assembly than in the much less industrialized regions, remains a much lower wage economy than any other country with a comparable automotive production capacity. According to government data for 2003, manufacturers in Shanghai typically paid workers US$1 per hour, plus 42 cents an hour in benefits. Factories in rural areas were reported to pay wages of 60 cents an hour. [3]

As a result of this, a number of reports in the past year have suggested that some Western OEMs have begun to treat Chinese component costs as the global benchmark for their suppliers elsewhere – although the cost of producing components in China has been reported anecdotally to be up to 15 per cent *higher* than in some developed markets, owing to infrastructure and quality management problems, while the cost of building cars in

[3] Pricewaterhouse Coopers warned inward investors in the components sector this year that only 5 per cent of the huge population representing the impressive potential vehicle market in China earn annual incomes as high as US$5,000 – a figure widely regarded as the minimum required to create new car demand.

China has been said to be up to 30 per cent higher than in some other (unspecified) manufacturing locations, as many components must be imported with high import tariffs on high-value parts such as engines and transmissions.

The scale of inward investment in Chinese component manufacturers may both increase the Chinese sector's efficiency and raise the value of its output, since the Tier-1 suppliers concerned are introducing advanced technologies which are as appropriate to the demands of the Chinese market as they are in the "triad" markets.

The French-owned Valeo, for example, announced in June 2004 that it expected to triple its sourcing of components from China within three years, from a current €300 million per annum to €1 billion. The company's regional purchasing office, which opened in Shanghai in 2001, had already demonstrated its ability to locate qualified suppliers and train them where necessary to meet global standards in cost-competitiveness, quality, productivity, service, innovation and technology, according to a statement from the company. Much of this sourcing will probably be dedicated to Valeo's French manufacturer customers.

China is not the only candidate to supplant higher cost locations. Valeo is reported to be planning to source 70 per cent of its procurement from Tier-2 suppliers in other low-cost countries by 2010. Further moves of this type may come to indicate that, while Tier-1 suppliers' manufacturer contracts may be determined by vehicle assembly locations, procurement at successive tiers of supply further up the chain will be influenced more by combinations of wage costs and trade tariffs.

At the vehicle assembly level, where labour costs represent a lower percentage of total costs than in the supplier sector as a whole (despite higher levels of unionization and higher wages), the effect of international wage differentials has not yet been seen in any large-scale re-exports to high-cost markets of finished vehicles assembled in lower cost ones. Existing cases where this has occurred include Skoda exports from the Czech Republic to Western Europe, limited Maruti-Udyog exports from India through the parent company Suzuki, and Honda's pioneering licence to build an export-driven manufacturing site in China for its Jazz model, which will replace Japanese exports to Europe from 2005 onwards. In the higher cost countries, high-profile closures during the 1990s, such as those of GM and Ford assembly plants in Britain, or Renault at Vilvoorde in Belgium, have coincided with specific overcapacity problems faced by those companies within Europe itself, rather than resulting directly from globalization effects.

3.6. Southerly migration of automotive jobs in North America

At the supplier level, the margin enhancement presented by the relocation of production to lower labour-cost countries has so far resulted in some North American plant closures among both Tier-1 and Tier-2 suppliers. The active membership of the United Auto Workers union (UAW) had fallen to 624,000 by the end of 2003, compared to 1.5 million in 1979. The UAW has lost nearly 138,000 members since 1999, and is predicted to lose a further 50,000 member jobs over the next four years at the "Big Three" United States manufacturers and their largest Michigan-based suppliers Delphi and Visteon.

Over the past four years, the number of automotive industry-related jobs in Michigan, the first home of automotive mass production, has fallen by 21 per cent to the lowest point since the bottom of the western automotive market cycle in 1991. In April 2004, 274,000 people were employed in the automotive industry in Michigan, compared to 347,000 workers during the same period in 2000, according to the state's Department of Labor and

Economic Growth. The reductions have particularly affected white collar staff among the "Big Three" manufacturers. By contrast, there has been some job growth among local supplier firms and among Japanese and Asian competitors expanding their engineering, research and design operations in Michigan.

While inward investment by vehicle manufacturing companies results in parallel local investments by their existing key suppliers, and creates fresh opportunities for local suppliers, new Japanese and German-owned assembly plants in the southern United States have brought no such opportunities for workers in the automotive heartland of Michigan.

Box 3.5
The jobs-benefits trade-off

Where jobs have been saved at automotive suppliers in Michigan, this has lately been at the cost of reductions in wages and other benefits. Workers at a Federal-Mogul Corp. engine bearing plant in Greenville, Michigan, voted in June 2004 to accept more than US$5 million in wage and benefit cuts after the firm, which only recently emerged from a "Chapter 11" insolvency administration regime, had threatened to move production to a lower cost location. Greenville employee wages will be cut by US$1.19 per hour over the next four years, with no pay reduction during the first year; paid holidays will be reduced by four days a year, and workers will pay higher medical insurance and prescription charges. As part of the deal, Federal-Mogul will not have to pay US$500,000 in severance pay for 80 employees whose jobs will be lost over several years. Federal-Mogul had reportedly sought up to US$7 million in labour concessions to avoid relocation, but later reduced its demands to around US$5.5 million.

The *threat* of relocation to impose increasingly stringent productivity agreements on trade unions in relatively high-cost plants has been used by suppliers both in North America and Western Europe. The International Metalworkers' Federation has addressed this topic in depth in its Auto Report 2004. [4]

Automotive suppliers and manufacturers alike are at pains to point out that low labour costs alone are not sufficient determinants of investment or profit, since the globalization of supply provides worldwide benchmarks for efficiency and quality, as well as raw cost.

The point is illustrated by the case of Mexico, amply documented in recent labour history. There, particularly since the formation of NAFTA, investment in automotive production by firms expanding or relocating from the United States Mid-West has been patently labour cost-driven, but also precarious. In an interview in 2003, Jorge Castañeda, a former Mexican foreign minister, remarked: "We are caught between India and China. We have lost about 500,000 manufacturing jobs. It is very difficult for us to compete with the Chinese, except with high-value-added industries. Where we should be competing, in the services area, we are hit by the Indians with their back offices and call centres … Not enough people here speak English."

Quite apart from certain structural and other problems which have not always been outweighed by the advantages of its low wages, labour "flexibility", proximity to the United States and NAFTA membership, Mexico has no indigenous vehicle manufacturers. Transnational companies, both manufacturers and suppliers, appear less likely to close plants in their home markets than in others, for reasons which may be political or related to investor sentiment and outweigh purely economic considerations.

[4] Available online at www.imfmetal.org .

Conversely, inward investors' plants in developing economies are more likely to be at risk in the event of disruption of supply contracts or increased margin pressures, especially if local organized labour succeeds in raising wage levels to those in other markets which may offer other advantages.

3.7. The emergence of India

The progress of India in automotive supply provides a more positive example of globalization. Where growth in India's automotive supply sector has taken place, it has created some "world-class" companies capable of investing in the acquisition of weaker Western counterparts. The investment brokers Merrill Lynch recently predicted that India's automotive component exports could increase over the next six years, from a current level of about US$1 billion to around US$10 billion. Daimler-Chrysler has contractual arrangements in place with 28 Indian suppliers, and expects to obtain some €100 million worth of components annually from them, despite lacking assembly plants in the country. Leading Indian firms, such as Bharat Forge, which acquired a moribund German foundry firm in early 2004, and India's second largest automotive forgings firm, Amtek Auto, are both publicly quoted companies and recipients of Western institutional stock investments.

The Indian automotive components industry is worth US$6.7 billion and its exports were worth US$1 billion in 2003. The latter figure is likely to rise as India enters emerging markets such as the Islamic Republic of Iran as a technology partner for local manufacturers ahead of competitors from the triad countries (28 Indian firms exhibited at the 2004 Tehran International Auto Fair, and the Iranian Government is considering investing some US$1 billion in automotive development).

However, of all the countries mentioned so far, India and the Republic of Korea, for all their other differences, appear to be exceptional among emerging markets in their development of indigenous supply and assembly sectors capable of supplying global markets before the entrance of foreign manufacturers.

4. The international components trade

4.1. The influence of production conditions

Variants of the "Toyota Production System", with its characteristic proximity of Tier-1 suppliers to the assembly plant, have been adopted by most vehicle manufacturers around the globe. Accordingly, in the "lean manufacture" model, cross-border trade in components (procurement at a distance) is avoided by manufacturers wherever costs (net of import tariffs) and buffer stock levels would adversely effect already slender margins.

Apart from the fact that inventory control is more efficient when supplier locations can replenish the assembly process on an hourly, rather than daily or weekly, basis, many high-value components are relatively bulky, fragile or costly to transport over long distances, whatever tariffs may apply. Nevertheless, there is significant cross-border trade in components where circumstances favour it over local sourcing. Several such circumstances may coincide, for example, when:

(a) new assembly plants are established in markets where existing local suppliers lack the capacity to supply them at the required price and quality levels;

(b) a supplier can ship components abroad competitively thanks to scale or labour cost economies achieved at a given plant, or has expertise or legally protected intellectual property in the form of technology unavailable to a manufacturer elsewhere;

(c) the government of a country hosting an assembly plant allows component imports at tariffs that will not penalize foreign manufacturers' inward investments (governments typically encourage inward investment by Tier-1 component suppliers that follow assembly plants, treating the latter as the primary investor and the "magnet" to attract suppliers and achieve the goal of 80 per cent local content per vehicle);

(d) parts are exported for aftermarket replacement rather than assembly purposes;

(e) a supplier operates a "hub and spoke" structure and trades across borders with its own suppliers and subsidiaries.

Cross-border trade in components between suppliers (as exporters) and vehicle manufacturers (as importers) remains necessary, as indicated in (a), at least until suppliers can "take root" in new customer plant markets. In general, the structure of government aid programmes for inward investment is such that new assembly plants can be established more rapidly than supplier plants. It may take as long as a decade, spanning two vehicle model generations, for a "green field" assembly operation to achieve an 80 per cent proportion of locally procured content. During that time, logistics and infrastructure support will be needed for efficient component imports, both from suppliers' plants and from manufacturers' integrated component factories such as engine plants.

4.2. Component exports from emerging markets

Once a domestic automotive sector has been in place for the time required to establish a largely self-sufficient local supply chain, it can become largely self-sufficient in components, if not in raw materials. The Islamic Republic of Iran, where the 700,000-unit domestic market supports two local manufacturers which procure 90 per cent of their components within the country, is a case in point. Iranian exports of automotive

components reached a value of US$50 million in 2003 and are predicted to reach US$300 million in 2004, according to the country's Society of Automotive Parts Manufacturers.

UNCTAD data reproduced in table 4.1 suggest that, despite wage cost advantages for suppliers in emerging automotive markets, the productivity, long-standing relations with manufacturers and intellectual property of leading suppliers in developed countries make them more competitive overall than low-cost competitors as component exporters.

Table 4.1. Developing country exports of motor vehicle parts and accessories
(SITC 784, Rev. 2, group (3 digit) level ranked by average 2000-01 values)

Exports of automobile parts, accessories	Value (US$'000)	Country total exports (%)	Developing country exports (%)	Total world exports (%)
World	138 726 455	2.33	–	100.00
Developed countries	117 210 879	3.04	–	84.49
Developing countries	16 634 301	0.92	100.00	11.49
Mexico	5 695 892	3.51	34.24	4.11
Republic of Korea	1 848 848	1.15	11.11	1.33
Taiwan, China	1 662 920	1.22	10.00	1.20
Brazil	1 578 444	2.78	9.49	1.14
China	1 244 822	0.48	7.48	0.90
Philippines	596 845	1.70	3.59	0.43
Thailand	504 296	0.75	3.03	0.36
Turkey	497 793	1.69	2.99	0.36
Argentina	473 708	1.79	2.85	0.34
Singapore	447 663	0.34	2.69	0.32

Source: UNCTAD: *Handbook of Statistics, 2003*, p. 194.

The UNCTAD data need to be interpreted with care, since the "developing country" status of some nations does not accord with their advanced status within the global automotive economy. China is one case in point. Others include Mexico (a NAFTA member which hosts American, European and Japanese vehicle manufacturers and where labour costs may equal those of southern European equivalents), the Republic of Korea, Thailand and Brazil.

However, accepting the general rule that manufacturers prefer local procurement where possible, the percentage of production exported is less indicative of a given national supplier sector's economic strength than the capacity of its firms to establish overseas plants. By the same token, a plant located by an inward investor in a low-cost area primarily for the purposes of re-export does not necessarily constitute an asset on which its local workers or government may depend if it loses its original purpose.

4.3. The risks of export trade

Although industrialized countries are shown by the UNCTAD data in table 4.1 to account for by far the greatest share of components exports, the United States, the largest single manufacturing country, ran a trade deficit of up to US$26 billion in 2003 (components exports were put at US$48 billion and imports at US$74 billion). Japan is a major contributor to that deficit, through greater output at its American assembly facilities

and rising demand for aftermarket parts from its growing share of the United States light vehicle parc. China is the fifth-largest exporter of vehicle parts to the United States.

Some Asian imported parts may have been pirated versions of North American, European or Japanese components – piracy is said to cost the American automotive industry US$3 billion per annum in lost revenues, and to cost the industry globally US$12 billion. Not all components trade is conducted by supplier companies: some of it involves parts procured for aftermarket distribution by manufacturers, or parts manufactured by vertically integrated manufacturer operations.

Vehicle manufacturers rationalize engine assembly, for example, in dedicated plants, and ship engines from those plants to assembly sites within and between regions. General Motors, for example, plans to export US$4 billion worth of V6 petrol (gasoline) engines to the United States from its Chinese plant by 2008. Ford Motor Company's British manufacturing plants are now largely dedicated to building engines for European and North American applications following the closure of its British assembly plants.

4.4. A move to export processing zones (EPZs)?

The previous report on transport equipment manufacturing [1] noted that Delphi Automotive Systems (DAS) had already located a significant proportion of its R&D to a *maquiladora* plant in Mexico.

WTO data for automotive products as a whole indicate significant exports from EPZs located in China, Czech Republic, Hungary, Malaysia, Mexico, Morocco and the Philippines, many of which may have been components. Data for the past ten years show how Mexico's share of automotive components exports has increased (see table 4.2).

Table 4.2. Exports of motor vehicle parts (in million US$ and in order of world market share)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Motor vehicle parts (SITC 784)										
Mexico	417	498	1 603	2 014	2 307	2 499	2 976	3 462	4 174	5 108
	(0.49)	(0.59)	(1.74)	(2.24)	(2.21)	(2.07)	(2.42)	(2.70)	(3.32)	(3.84)
Brazil	594	666	1 012	1 240	1 424	1 471	1 562	1 778	1 789	1 446
	(0.70)	(0.78)	(1.10)	(1.38)	(1.36)	(1.22)	(1.27)	(1.39)	(1.42)	(1.09)
Republic of Korea	247	271	310	385	501	667	1 037	1 457	1 281	1 709
	(0.29)	(0.32)	(0.34)	(0.43)	(0.48)	(0.55)	(0.84)	(1.14)	(1.02)	(1.28)
China	3 432	4 348	125	177	251	378	383	449	533	783
	(4.05)	(5.13)	(0.14)	(0.20)	(0.24)	(0.31)	(0.31)	(0.35)	(0.42)	(0.59)

Source: UNCTAD (2001), CD-ROM.

Leoni AG is a holding company in which most of the 18,338 employees are involved in making wiring systems for the automotive industry. It has 60 facilities in 23 countries and regards itself as a full-service supplier to the world's major automotive manufacturers (including the "premier group" of Ford, Volkswagen, BMW, Daimler-Chrysler, Opel (GM), MG Rover and Porsche).

[1] ILO: *The social and labour impact of globalization in the manufacture of transport equipment*, report for discussion at the Tripartite Meeting on the Social and Labour Impact of Globalization in the Manufacture of Transport Equipment, Sectoral Activities Programme (Geneva, 2000).

The company is an example of a supplier that has chosen to set up operations in an EPZ in Egypt. The reasons for this include low labour costs, an abundant supply of young and well-educated workers, government support for FDI, the existence of a free zone system (GAFI), favourable labour laws, a low crime rate and low absenteeism (only 1 per cent). Other factors that favour the location include close proximity to Cairo Airport (9 kilometres), Egypt's proximity to European customers, a well-established zone (in existence for 19 years), and the existence of an initial pilot factory and suitable plots for a new purpose-built plant. Beginning as a subsidiary of Lucas in 1997, the home company was bought by Leoni AG in 2000. Production in Factory 1 started in 1999 and was soon followed by Factory 2 in 2002. The expansion of Factory 2 was expected by June 2004.

Employment rose rapidly from 14 in 1997 to about 1,880 by 2004, and is expected to peak at 2,200 in 2007. It was rated supplier of the year by Denso in 2003 and was the Leoni Group plant of the year in 2003.

In examining the phenomenon of EPZs, the World Commission on the Social Dimension of Globalization [2] noted the persistent concerns that EPZs are sometimes exempted from national labour laws, or that there may be obstacles to exercising rights in practice, and that they engage countries in a competition for foreign investment which leads to damaging tax and subsidy policies. By their nature, EPZs are linked closely to the global economy, but often have few linkages back to national economies; this tends to create international "enclaves". On the other hand, EPZs are widely considered to make important contributions to development strategy. Wages and working conditions, and opportunities for employment for women, in EPZs are often better than the national average. The Commission also observed that there are possibilities which have not been fully used to ensure that EPZs, and participation in global production systems more generally, contribute to both development and decent work, and made the following recommendation:

> We recommend that the main international organizations and other actors concerned work together to develop proposals for effective international policies to promote decent work, investment and trade both in EPZs and more generally in global production systems. Such proposals should address issues of labour standards, backward linkages to the domestic economy, and the ways that enterprises can move up the "value chain" through investment and technological upgrading. The primary beneficiaries of such an approach would be the countries, enterprises – both domestic and multinational – and workers concerned. We also believe that social dialogue among workers and employers is an important means by which this can be achieved [...]. [3]

[2] World Commission on the Social Dimension of Globalization: *A fair globalization: Creating opportunities for all* (Geneva, 2004), paras. 498-502.

[3] ibid., para. 501.

5. Price competition among vehicle manufacturers

The relentless pressure for vehicle manufacturers in the components sector to reduce its prices is in part a reflection of pricing pressures experienced by the manufacturers themselves. This trend is described below in some detail, since the profitability of the manufacturer customers is so clearly a major factor in suppliers' fortunes.

Given that a substantial proportion of global car demand is susceptible to cross-border trade that has been opened to a growing number of manufacturers by tariff agreements (except within Japan, China, the Republic of Korea, India and smaller emerging markets, where import volumes have been tightly controlled before WTO accession), end-user vehicle prices have tended to converge downwards in the mature Western markets. The trend within the triad markets over the last decade or more is for slight vehicle price fluctuations to accompany shifts in demand along the demand cycle, and for vehicles in new "niche" segments of the market to attract at least a short-lived premium before shares of each such "niche" are contested by competitors.

5.1. The falling real price of vehicles

Owing to the prevalence of the franchise system governing vehicle sales, which provides for exclusive representation in some markets, prices have been maintained at levels that might otherwise have fallen faster with the intermediation of more powerful retailers than car dealers appointed to cover limited sales territories. But even if manufacturers' recommended vehicle prices have risen slightly in absolute terms (by no more than 1 per cent per annum in Western Europe in the past three years), transaction prices have been falling in real terms over the past decade, particularly for the leading American-owned "Big Three" firms GM, Ford and Chrysler in their home market and, in the case of the first two, for their European subsidiaries. Vehicle prices in real terms have fallen over the past decade, even allowing for increasing content value. Both in the United States and in Europe, volume car prices currently account for historically low percentages of consumers' average incomes.

Price reductions have been driven by a rapidly growing choice of brands and models, and this has accelerated net price reductions among competitors struggling to maintain market shares. The average manufacturer incentive per vehicle sold in the United States in May 2004 was US$2,507. For the "Big Three" brands, the cost of maintaining market share, on average US$3,461, was significantly higher, while Korean manufacturers spent an average US$1,813 per vehicle, European firms US$2,042, and Japanese firms, US$899 (and they alone of these groups increased their share in the United States market).

Some of the vehicle price elasticity indicated by these incentives is attributable to chronic oversupply by an industry whose global excess capacity is often estimated at 20 million units per annum, or as a 20-30 per cent excess of supply over demand in the European or American markets. The existence of many brands offering directly comparable vehicles (42 internationally recognized brands were represented in the United Kingdom in 2004) provides a degree of choice that encourages price competition, among retailers as well as their suppliers.

Net average prices realized by brands exposed to corporate markets (major fleet operators and leasing firms) in major European markets may be 25 per cent or more lower than the recommended prices. Corporate fleet buyers often obtain discounts of around 15 per cent, and private buyers discounts of 7-10 per cent or more, these costs being shared by manufacturers and their retailers. A combination of improved specifications and rising

customer expectations, falling prices in real terms and institutionalized discounting clearly creates additional pressures on external costs which also affect suppliers. This attention to external cost reduction must be seen in the context of reduced economies of scale in sales volumes, since the wider range of derivatives of each manufacturer's vehicle platforms means a smaller share per model of total sales, while models require more frequent changes in a sated replacement market, and inventory management becomes more complex. Meanwhile, manufacturers face the rising cost of meeting successive emissions and safety regulations.

5.2. Capacity utilization, prices and profitability

Reviewing the impact of excess production capacity on the profitability of vehicle manufacturers, one analyst at KPMG told clients in his mid-term 2004 review that global assembly plant utilization could collectively reach a break-even position only with average 80 per cent utilization of installed assembly capacity. According to KPMG, a current estimated global average utilization of 74 per cent was likely to rise to 78 per cent by 2010, given current and known planned capacity and projected increase in demand. This rate of improvement would not be sufficient to create sustainable shareholder returns for manufacturers.

For the worldwide vehicle assemblers to reach 83 per cent utilization would require the closure of approximately 30 assembly plants worldwide, assuming an average global plant size of 200,000 units. In terms of units of production, 83-85 per cent global utilization would require the elimination of 5.6-8.8 million units of capacity by 2007, 6-9.1 million by 2008 and 5.2-8.1 million in 2009.

Table 5.1 includes a selection of companies from each automotive sector, and the rates of shareholder return reflect the impact on share values of different events and historical differentiating factors affecting individual companies as well as each of the three sectors. Share values, as company directors often attest, do not necessarily reflect medium-term profit performance, but rather, expectations regarding future prospects. The interest of investors in the potential of consolidators in the European automotive retail sector has been lively for the past three years owing to the anticipated effects of "block exemption" reform. Similarly, shares of some suppliers have benefited from speculation on merger and acquisition (M&A) activity.

Table 5.1. Shareholder returns 2001-04 by automotive sector, sample European companies

Manufacturers	Three-year return (%)	Suppliers	Three-year return (%)	Retailers	Three-year return (%)
Porsche	56.7	Elring Klinger	256.6	Inchcape	301.9
Renault	8.2	Kolbenschmidt	124.8	Lookers	301.1
BMW	(1.0)	Continental	103.3	Pendragon	264.6
PSA	(3.9)	Avon Rubber	72.1	Reg Vardy	94.3
Daimler-Chrysler	(23.9)	Wagon	168.9	H R Owen	90.1
VW	(24.0)	GKN	(18.5)	Stern	22.9
Fiat	(73.2)	Valeo	(26.1)	Bilia	158.6
Average	-16.1	Average	15.0	Average	181.9

Source: KPMG mid-year client review, 2004.

However, all exceptions allowed for, the poor return on investment in vehicle assembly compared to the average return on supplier firms' stock is indicative of a structural problem.

The excess installed capacity that contributes price pressure on manufacturers is a moving target. The alignment of plants and models with the demands of specific markets over the life cycle of a typical model usually sees peaks and troughs that influence pricing and incentive policies in a highly dynamic way. In recent years, only one European volume assembly plant has ever reached its potential to employ three shifts in 24 hours (Peugeot's plant at Ryton, United Kingdom, which reverted to a conventional double-shift pattern in the spring of 2004). The capacity utilization of car assembly plants is regularly measured at up to 85 per cent, a level conventionally taken to be a "benchmark" productivity target.

These margin-eroding market conditions led manufacturers in Europe to reduce the discounts offered to their franchised distributors during the 1990s. The typical reduction of gross discount from 17.5 to 10 per cent was accompanied by the transfer of some of that amount from discounts to performance-related bonus schemes. This was done with a view to improving customer satisfaction, rather than cutting costs. Reducing discount terms for dealers also curtailed their opportunities for discounting to end-users on their own account.

Currency translation has also affected, for good and for ill, the net prices achieved by manufacturers in the export markets that are vital for almost all European brands and many of their Japanese and Korean competitors. Fluctuations of 20 per cent or more in the unhedged value of the US dollar against the euro, the yen, the Korean won or sterling have considerable effects. They also affect suppliers, both directly and indirectly.

However, components suppliers have been more directly affected than distributors by market and currency pressures on vehicle prices. They are the softest targets for compensatory action, especially when limited-term supply contracts fall due for renewal, or when new model contracts are under negotiation. Manufacturers attempted in the 1990s to sharpen competition for supplier contracts through the advent of "reverse-bid" systems such as the one pioneered by the manufacturer-dominated joint venture Covisint. This particular system failed to win enough adherents among suppliers and, shorn of its auction facility, ceased to be an independent entity in early 2004.

The effects of price competition and currency fluctuation have been multiplied by a longer-term trend which benefits suppliers of advanced technology at the undoubted cost of the suppliers of more commoditized products. Manufacturers may find themselves unable to recoup the increased component value of their vehicles from price increases, if at all. The price sensitivity of the end-user market makes this increase in component complexity per vehicle a "zero-sum game", but all manufacturers have tended to increase the value built into their products as a competitive gambit, rather than competing on price alone.

5.3. Price competition, technical advances and new opportunities for suppliers

New markets for suppliers have been created in the past decade in areas dictated by consumer expectations, fiscal rules and legislation. There are many examples, including air conditioning, successive generations of less polluting, higher economy diesel injection systems, lightweight body materials, electronic alternatives to electro-hydraulic controls, a multitude of sensors, and the increasing use of airbags.

Other new opportunities for suppliers arise as a result of legislation that may not coincide with market pressure from consumers. A case in point is the revision of front-end vehicle construction that will be required under a forthcoming EU pedestrian protection directive. Ford Motor Company has said that this will involve an average additional cost of €5,000 per unit, much of which will generate added bought-in component value. In the United States, however, Ford has just agreed to absorb the cost of new "anti-rollover" technology as standard equipment on its sport utility vehicles. [1]

It is difficult to estimate the rate at which advances in vehicle technology are affecting the supplier sector as a whole. Many new vehicle technologies tend to spread slowly through a manufacturer's range, and then gradually through competitors' ranges. In the case of diesel injection development, for example, the cost of R&D and of the sophisticated manufacturing and testing facilities required has limited the significant competitors in the field to Bosch, Siemens, Delphi and Denso, which are among the largest and most R&D-intensive suppliers in the industry (and in the case of the first two, also major suppliers in non-automotive electronics markets).

The "less developed country" Asian and South American growth markets for the automotive industry exhibit less demand for advanced technologies than the mature markets. This will continue to be the case until a combination of environmental regulations based on European, Japanese and American models, and rising incomes, permit the marketing of more sophisticated vehicles in these regions. The contrast between the installed value per vehicle in developed and less developed markets is still stark, as the example described in box 5.1 shows.

Box 5.1
Room for mark-up?

In Northern Europe, a mass-market "B" segment ("supermini") car priced to the end-user in sterling at £8,000 is likely to afford its manufacturer/importer a gross margin of some 40 per cent, of which some 30 per cent is typically absorbed in marketing and distribution costs, hence providing for a "factory-gate" price of somewhat under £5,000. The nearest Asian (e.g. Tata or Maruti-Udyog) equivalent is estimated to have a considerably lower "factory-gate" value – circa £2,000. The differential is accounted for by sparser new technology content in the Asian model, as well as by lower per unit labour costs, which may in any case be offset by inefficiencies: Tata failed to make a profit from the initial version of its Indica supermini in India, the successor of which, with minor modifications, is marketed under the Rover brand in the United Kingdom at over £8,000.

Among the cheapest new cars retailed in the United Kingdom is a Malaysian model from Perodua, based on a platform and body transferred from a long-outdated Japanese model, and priced below £4,700.

Depending on the pace of incomes growth in emerging automotive markets, components suppliers are likely to see a gradual increase in the value they contribute per vehicle globally, at least for the coming two decades, regardless of how the cost of developing that additional value may be shared between them and their manufacturer customers. Progress may be difficult to predict, but significant growth areas will surely be, as they have been for the past decade, the development of equipment required to reduce vehicle fuel consumption and emissions, the design of alternative fuel systems and of expensive hybrid power trains, and greater reliance on electronics and lightweight materials.

[1] J. Grant: "Ford absorbs safety cost", in *Financial Times*, 26 July 2004.

5.4. The potential impact of fuel cell vehicles (FCVs) on components demand

Series commercial production of fuel cell vehicles (FCVs) should begin between 2010 and 2020. If they achieve the success which would justify the several billion dollars so far invested in R&D, the gradual replacement of the internal combustion engine with fuel cell electric motive power in cars will lead to a radical restructuring of the components industry.

While the prototype FCVs currently undergoing trials have been adapted from conventional vehicles to accommodate fuel cells and the associated fuel-storage and running gear, future FCVs are likely to discard many of the power-train and drive-train components that contribute the highest value elements of vehicles.

In place of a choice of several engines and up to two or three transmissions per model, an FCV's electric motive power will be transmitted non-mechanically to hub motors on each wheel. The electronic controls content per vehicle will be relatively high, but the overall complexity of the FCV's power train will be greatly reduced by comparison with the present generation of vehicles. Much of the expertise currently required to supply power-train, transmission and emissions-control systems will not be required to produce what will essentially be electric vehicles.

If series production FCVs also come to resemble the "hypercar" advocated by Dr. Amory Lovins of Rocky Mountain Institute (among others) in terms of replacing press steel construction with composite mouldings, the entry costs associated with vehicle manufacture will fall, their components base will be simplified, and much of the technology required – including composite and other lightweight materials, electric motors, ultra-capacitors and electronic control units – will be accessible to suppliers beyond the present automotive supply chain.

With the exception of Toyota, Honda and PSA Peugeot Citroen, which have all invested in developing hybrid electric power trains in the past five years, the automotive industry has not experimented with radically different propulsive technologies since the early years of the twentieth century before mass production, when all-electric and steam vehicles co-existed with petrol vehicles. For that reason (besides the uncertainty about the price and availability of future fossil fuel resources), it is unclear how much time the components sector may have before a transition from current vehicle technology to a successful new hydrogen-based technology significantly reduces the size of the components market.

It is nevertheless conceivable that the global market for automotive components will be transformed within 30 years on a scale not yet seen in the industry's 100 years of history, and by a "step change" imposed by new technology, rather than the gradual development of manufacturing, electronics and materials technologies seen in the past 20 years.

Even over a ten-year timescale, it is difficult to predict the impact of disruptive technologies with any confidence. The electronic controls content of vehicles has increased rapidly over the past decade, and "high-end" vehicles now contain several electronic control units (ECUs) rather than just one. But the reliability of these systems has been found wanting. Daimler-Chrysler, for example, recently announced its intention to dispense with some 600 electronic devices not considered worth the liability risk of failures – to the disadvantage of their principal supplier, Robert Bosch AG.

The widely forecast introduction of 42-volt electrical systems required for hybrid drive and electrical "drive-by-wire" functions that could usurp the place of mechanical and electro-hydraulic braking, steering and allied systems has been put back indefinitely, although some applications of more powerful electrical starter/alternator-based power-train control systems are due to be launched in Europe in 2005. Meanwhile, only two Japanese manufacturers and one American one (Toyota, Honda and Ford) were marketing hybrid petrol-electric vehicles using rival technologies at the time of writing this report, although Americans in 2005 will have a choice of 15 hybrid-electric vehicles.

6. Consolidation among Tier-1 original equipment manufacturers (OEMs) and other suppliers

According to one forecast, the number of independent vehicle manufacturers worldwide will fall from 13 in 2002 to 10 in 2015. Other forecasts, based in part on conjecture concerning the future fortunes of individual firms, have suggested that the number may fall even further, as alliances, rather than mergers and acquisitions (M&As), come to limit the effective independence of firms, regardless of majority ownership, in favour of cost-sharing commitments.

6.1. Mergers and acquisitions: The quantitative picture

By contrast, the same forecast points to a 50 per cent reduction in the number of Tier-1 suppliers over the same period, from 5,600 in 2002 to 2,800 by 2015.

Such forecasts can be set against the total M&A activity among suppliers in the past two years reported by PricewaterhouseCoopers (PwC) in 2004. Their figures refer essentially to publicly quoted Tier-1 firms, and indicate that the much more numerous components sector firms involved considerably more transactions than the already highly consolidated manufacturer sector.

Total automotive M&As fell by 4 per cent in volume and value, from 621 transactions worth US$53 billion in 2002 – a record year – to 588 transactions worth US$21 billion in 2003. Only 18 per cent by value of this M&A activity in 2003 involved vehicle manufacturers; 61 per cent involved components suppliers, which accounted for 45 per cent of transactions in 2002 and 46 per cent in 2003.

One reason for a decline in the volume of acquisition activity by larger suppliers may be the present balance sheet weakness of many larger firms. When ArvinMeritor attempted a (failed) hostile takeover of Dana Corporation in 2003, many investment analysts doubted whether the deal could be adequately financed without an excessive debt burden being placed on the balance sheet of the merged firms. Cost reduction and restructuring have been more prevalent than growth strategies in the market announcements made by most quoted suppliers in the past five years. At the same time, investment in expansion in Asia, and specifically China, has in the past five years not only offered organic growth potential as an alternative to acquisitions, but has also been seen as a necessary step for the retention of existing customer relationships.

PwC records that 274 components firms were acquired in 2002 and 262 in 2003, at aggregate values of US$16.3 billion and US$12.8 billion, respectively. The average value of individual components firm acquisitions was US$109 million in 2002 and US$125 million in 2003. However, the acquisition of a single American-owned aeronautics and automotive firm, TRW, by Northrop Grumman in 2002, and the disposal of its automotive division to a private equity firm in 2003, accounted for a substantial part of the sector's entire M&A value. Most of the M&A activity in both years was prompted by the commercial failures of many of the target firms, which in 2003 were all smaller than TRW. Of the ten biggest M&A targets in 2003, seven were located in the United States, one in the Republic of Korea, one in Italy and one in the United Kingdom. All but two were bought by private equity investors, rather than consolidators in the sector.

The suppliers concerned were diverse in terms of product, and not indicative of any trend in that respect, but geographically, they indicated greater scope for the reduction of supplier numbers in Europe than in North America or Asia: European M&A activity among suppliers represented 29 per cent of the global automotive supplier M&A value in 2003, little more than the American share of 25 per cent, but it involved 307 firms, compared to 144 in the United States. Asian companies accounted for 22 per cent of global supplier M&A activity by value (with 100 firms involved) and for 19 per cent of M&A transactions.

It should be noted that the data reported above is not necessarily representative of acquisitions, closures or start-ups among smaller, privately owned enterprises in the second and third tiers of the automotive supply chain that may escape the attentions of M&A specialists in the financial sector.

Box 6.1
Is there a limit to supplier consolidation?

It is often argued that consolidation among vehicle manufacturers will be mirrored in the supply sector with the emergence of 6-10 dominant companies. It is certainly true that the vehicle manufacturers expect a global presence from their Tier-1 suppliers, an expectation which has led to a flurry of consolidation as companies secure a global footprint.

However, the structure of the global components industry is in many ways more complex than that of vehicle manufacture, with a number of different strategic options for the companies involved. Certain firms have built up expertise in component integration and do not necessarily manufacture all the components they supply. Instead, they manage the supply chain and provide sequenced in-line supply to the assembly plant. In the process, firms which would previously have been Tier-1 suppliers find themselves at Tier-2 supplying one of their former competitors.

At the same time some manufacturers see advantages in close relationships with relatively small suppliers whose technology allows the manufacturer to differentiate its products from those of competitors. BMW Group in particular uses its relationships with medium-sized German companies to secure early access to new technologies. Finally, certain types of components appear to benefit from specialization. Tyres are one example and glass is another, with Visteon, for example, having decided to sell off its glass making operations.

Source: http://www.autoindustry.co.uk/statistics/companies/analysis .

6.2. The results of consolidation

Consolidation over the last decade and more has had the effect of reducing the number of suppliers on which manufacturers can call for any given set of components. Within Europe and North America, for example, acquisitions have given Johnson Controls and Lear a near duopoly in seating systems supply. Given the integration of airbags in some seats (and in the case of some expensive models, as many as nine electric motors installed in a single driver's seat to effect multi-directional movement and seat temperature control), the achievement of scale has brought undoubted benefits to the surviving companies.

Consolidation among suppliers has created a degree of vertical integration, the converse of the trend since the mid- to late 1990s whereby final assemblers had entrusted an increasing proportion of assembly tasks to selected Tier-1 suppliers. Close integration of Tier-2 suppliers in the processes of delivering completed sub-assemblies (so called "front-end modules" are a case in point) is a prerequisite of the necessary cost control and inventory management.

As this trend towards more extensive responsibilities being taken by Tier-1 suppliers takes hold, it will have a negative impact on the number of independent Tier-2 suppliers remaining in the market, and possibly exert downward pressure on the prices they are able

to charge their Tier-1 customers, by virtue of the latter's increased appropriation of value added.

The wave of consolidation activity by private equity firms in the supplier sector some five to eight years ago may not have yielded the desired results in the form of profits realizable via flotations or initial public offerings (IPOs). For the private equity firms active during the 1990s as purchasers of European suppliers, the process of acquisition, restructuring, profit enhancement and disposal have typically involved a five-year cycle, but the stock market prices available to the supplier sector in return for such efforts have disappointed them.

The M&A strategies applied by the declining number of independent vehicle manufacturers are perhaps more diverse. The stated objectives of manufacturers' M&As and alliance/partnership strategies include increasing market coverage in terms of both global regions and regional market segments, and cutting costs through economies of scale. Cost savings have been sought primarily through pooling of components procurement, which represents at least 50 per cent of total manufacturing costs.

Box 6.2
Joint purchasing

The effect of M&A activity on suppliers is illustrated by the alliance between Renault and Nissan. The French and Japanese firms currently share three common vehicle platforms developed jointly for their respective models. This number is to be expanded to five within three years. This factor and other joint initiatives by a common Renault-Nissan Purchasing Organization (RNPO) have, since the two firms joined forces in 1999, reduced the number of both firms' suppliers. The RNPO currently accounts for €33 billion worth of components purchases annually, including €14 billion of Renault's own €20 billion worth of discrete purchases. Some 35 per cent of the RNPO's suppliers now supply both partners. The objective is simple: according to Renault's purchasing director Odile Desforges, if component order volumes are doubled for the same goods, cost reduction benefits of 8-10 per cent can be expected, depending on the supplier investment costs involved.

Source: www.supplierbusiness.com (visited in May 2004).

In a market where the life cycle of some parts for individual models is becoming shorter as models are renewed more frequently and often occupy market "niches" where volumes are smaller than those on which much current productive capacity was predicated, M&A activity is an essential means of rationalizing procurement to secure the volumes per supplier required for manufacturers to maintain pressure on per-unit prices.

The Renault-Nissan alliance may begin to break down one significant barrier to the globalization of suppliers' markets. Japanese suppliers have traditionally been entrusted by their Japanese manufacturer customers with more responsibility for vehicle value than their North American counterparts, and, under the *Keiretsu* system, are bound to those customers by more subtle and mutually responsive relationships than exist in the United States or Europe. They have largely dedicated their output to those Japanese manufacturers.

This factor and the divergence in power-train technologies between the American, European and Japanese manufacturers have restricted opportunities for non-Japanese suppliers to attract Japanese original equipment orders. The Renault-Nissan alliance, predicated on joint presence in European markets, is based on a higher penetration of globally-sourced technology in each brand's products, and one of the urgent priorities set for Nissan by Carlos Ghosn, the current Nissan and designated Renault CEO, was to reform its relatively informal purchasing operation.

Post-war consolidation among automotive suppliers was fuelled by the failure of smaller firms for which there were a number of reasons, among them the demise of

independent vehicle manufacturers and the expansion of competitor suppliers. Another contributing factor since the 1970s has been the takeover of small units by foreign groups, in direct or indirect connection with the establishment of new local vehicle assembly facilities. Several once independent components suppliers in Europe are now owned by American, Canadian or Japanese parent groups. The flow of acquisition funds in the components sector has favoured acquisitions in Europe, the United States and developing markets, rather than in Japan.

6.3. New trends

A relatively new trend towards greater outsourcing of supplier responsibilities by vehicle manufacturers is currently encouraging a different form of consolidation more akin to the partnerships and cross-shareholding alliances that exist among many vehicle manufacturers.

For example, a joint venture company HBPO was established in mid-2004 by two German firms, lighting specialist Hella and heating and air-conditioning specialist Behr, and the French impact-absorbing body parts supplier Plastic Omnium. It is currently (July 2004) awaiting clearance from the competition authorities to exploit the growing demand for "front-end" modules which none of these companies could produce individually. Most manufacturers have hitherto assembled these "modules" from discrete parts themselves, but their outsourced supply has been predicted to double between 2003 and 2008 from some 5 million units per annum to 10 million.

Part of the HBPO joint venture is the already merged Hella-Behr Fahrzeugsysteme created in 1999. The new entity will expect not only to inherit business won by its respective owners, but to operate independently, expanding its market by working with its parents' competitors if this is required by vehicle manufacturers. One of the partners, Plastic Omnium, is already committed to a joint venture with another French firm (Valeo) to supply a French vehicle manufacturer's model.

HBPO predicts that it will increase its legacy-based present turnover potential of €350 million to €700 million within three years – at the expense of global competitors such as Faurecia, Valeo, Decoma, Visteon, Calsonic Kansei and Denso. It will need to grow fast enough to compensate for the loss of discrete components orders which complete front-end module outsourcing will have denied its joint investors.

The front-end module is a case where the manufacturing technology is forcing changes between the supplier sector and its manufacturer customers. Significantly, the manufacturers that have thus far been most reluctant to outsource front-end modules are those where the reduction of work content at assembly level would imply the greatest difficulty for labour relations – these being GM, Ford and Volkswagen, according to a SupplierBusiness.com report of June 2004.

The consolidation of Tier-1 suppliers through M&A activities or joint ventures makes it even more likely that the number of Tier-2 suppliers will fall as a result of sheer attrition of their customer base.

A survey of 130 chief executives of German suppliers carried out by Ernst & Young in 2003 found that 90 of them predicted bankruptcies, mergers or sell-outs in 2004-05. Problems cited by respondents included a withdrawal of banks' support for the sector, and the failure of client vehicle assemblers to order sufficient volumes for them to recoup the cost of component development.

The study concluded that the resulting gap in financing threatens not only the ability to innovate but ultimately also the very existence of many companies, and noted that Germany, in addition to its globally competitive Tier-1 firms such as Bosch, Continental, Siemens VDO and ZF Friedrichshafen, still had some 3,000 SME automotive-related firms, many of which are too under-resourced to accommodate manufacturers' demands.

6.4. Regional comparisons of leading regional Tier-1 automotive suppliers

Primary data researched for this report included reported sales, employee numbers, research and development data and other information gathered from the corporate web sites of 200 leading Tier-1 suppliers. These comprised the top 150 automotive suppliers by sales in North America (NAFTA), the leading 30 in Europe and the top 20 in Japan, for the years 2002 and 2003. Asian-based firms outside Japan were omitted from the comparisons for want of like data, as was the case for Latin America.

The rankings of the firms surveyed are derived from tables of 2003 sales values published by the industry newspaper Automotive News. Their presence in different regional tables – NAFTA, Europe and Japan – is related to their levels of sales in those regions, not the location of their corporate global headquarters.

Difficulties of comparison between firms of very different sizes, producing very different products ranges, mean that the data sets shown in tables A1.1-A1.4 in Annex 1 do not present a representative picture of the entire supplier sector for each of the three main regions – especially as a much larger number of smaller Tier-1 suppliers and second- and tertiary-level suppliers are excluded from the analysis.

It also proved impossible in many instances within the time available for the preparation of this report to find comparable data for both the years in question. Care has to be taken to separate the effects of organic growth or decline from the effects of M&As, and to that end a total was sought for the value of restructuring and other charges on the listed companies' profit and loss accounts (for the year 2003 only).

It is a factor of the global footprint of nearly all the firms featured in this analysis that their financial reporting lacks precision with regard to the geographical origin of sales, the location of investments in research and development, and of employee numbers.

Nevertheless, the data provide worthwhile corroboration of some of the themes discussed elsewhere in this report, and are indicative at least of recent short-term trends within the three largest regions for automotive manufacture.

6.4.1. Sales by region

In summary, the tables in Annex 1 show that the 150 companies listed as leading NAFTA suppliers increased sales within the NAFTA region by 1.5 per cent year on year to US$327,513 billion in 2003. The figure represented 41 per cent of the same companies' global sales.

The 30 companies leading the European components market collectively increased sales by a more impressive 25.3 per cent year on year from 2002-03, and their 2003 European sales of US$142,314 billion represented 45 per cent of their 2003 global sales of US$310,325 billion.

The 20 leading suppliers in Japan raised their sales within Japan from US$123,623 billion in 2002 to US$132,842 billion in 2003, an increase of 13.0 per cent to a figure representing 46 per cent of the companies' global sales volume.

Given the disparities between the firms included in each regional total, the most significant elements within this data set may be:

1. European suppliers, representing one-fifth of the number leading the NAFTA market, achieved sales within Europe equal to 42 per cent of sales by the top 150 suppliers to the NAFTA region. Some of the firms responsible for this achievement in Europe are American-owned, including the world's largest, Delphi Corporation. Components demand in the European market is likely to increase by comparison with North America in the coming decade, as assembly and components output develop within the expanded European Union.

2. The United States market is host to many European components suppliers, but only one top-Tier-1 supplier is Canadian (Magna, which is also very active in Europe as a diversified supplier and contract assembly firm). None of those companies is incorporated (except through subsidiaries) in Mexico, the third NAFTA member country.

In the United States, which remains the world's largest national centre of automotive production, leading suppliers have a slightly larger share of their sales in their domestic market than their European and Japanese counterparts.

6.4.2. Employment trends

Few multinational companies collate their internal employment statistics in a form that readily allows analysis of employee numbers by region or country. Nor are the ratios of productive (i.e. factory) workers to non-manufacturing and management staff generally available from corporate sources. In many cases, firms do not report employee numbers at all in an easily accessible form.

Accordingly, for this analysis, it was possible only to add the employee numbers of the firms that provided like figures for each of the years 2002 and 2003 for each region, and to note that the resulting 2003 total of 557,600 was 3.7 per cent lower than the corresponding 2002 figure of 579,200. Neither figure can be taken as a reliable indicator of total employment trends in the sector. These largest suppliers featured in our tables are generally more likely than their smaller counterparts to acquire additional employees through acquisitions, even if M&A activity should involve redundancies.

The fall of 3.7 per cent is not at variance with other data given in the previous sections on consolidation. Firms in North America have tended to reduce headcounts over the past year through freezes on fresh recruitment and natural wastage, and have also instituted productivity improvement programmes.

It may be noted that while many of the firms represented in these tables are subject to rules of governance involving corporate social responsibility reporting, this obligation does not appear to extend to comprehensive or consistent reporting of employee numbers, direct/indirect costs, or wages – although in both the United States and Europe, the cost of employment features prominently in the automotive sector's negotiations with governments and the EU authorities over competitiveness and investment incentives.

In Europe, the 11 companies within the top 30 suppliers that provided annual employment figures for 2002 and 2003 produced totals of 432,500 and 434,900,

respectively, representing growth of 0.5 per cent. The same caveats apply with regard to the significance of the data as apply to the North American figures.

In Japan, those of the top 20 suppliers that provided online data on employees for 2002 and 2003 showed totals of 565,400 and 556,600 respectively, representing a 1.5 per cent fall – in a market which has been, in terms of domestic demand, in a state of stagnation for several years.

6.4.3. R&D expenditure as a percentage of sales

A current ongoing study of 200 automotive manufacturing concerns by PTC (the Product Development Company) and Aachen University of Technology in Germany confirms the general view that corporate profits among manufacturing firms tend to rise according to their product development capabilities. [1] According to a benchmarking study undertaken as part of this research project, leaders in revenue growth spend 20 per cent more on R&D than their peers, yet realize almost seven times more revenue from new products – a trend directly linked to their significantly higher R&D spending per employee.

Accordingly, R&D figures were sought for this report in order to establish the ability of firms to reinvest, in the context of pressure on prices from customers and, in some cases, from raw materials suppliers. For those firms that reported R&D expenditure (recorded for 2003 only, in tables A1.2-A1.4 in Annex 1), total R&D expenditure of US$36.76 billion represented 2.65 per cent of total listed firms' global sales. Several firms did not report R&D expenditure levels, and some, such as Delphi Corporation, which in 2003 registered more patents than any other automotive enterprise, are far more R&D-intensive than others. Different degrees of product innovation in the sector depend largely on the demand for innovation in particular product families, such as electronics or new materials applications.

The percentage figure has not been compared to the R&D expenditures of vehicle manufacturers. In many cases, research and development involving suppliers' intellectual property development is carried out in conjunction with specific manufacturer customers, and in some cases also involves contributions from academic institutions and financial assistance under government programmes.

6.4.4. Consolidation, mergers and acquisitions and joint ventures

Corporate transactions that incurred special charges to the 2003 accounts of the 200 firms listed in our tables included significant investments involving the acquisition of controlling shareholdings, outright acquisitions, the formation of joint ventures, and divestments.

Total transactions involved 162 entities either acquired or divested by a minority of the 200 Tier-1 suppliers, including 16 companies divested by them, and the formation of 15 joint-venture companies. Given that many of the largest automotive suppliers have grown to their present size in large measure through acquisitions, it is not surprising, in view of the primacy of economies of scale in many of their operations, that the number of firms making acquisitions in 2002-03 greatly outweighed the number of companies that divested themselves of subsidiaries.

[1] See http:www.ptc.com/solutions/industry/automotive/index.htm .

7. Relations between components suppliers and vehicle manufacturers: Supply chain location and profit potential

The importance of vehicle manufacturers to the supplier sector – as its primary, if not in all cases exclusive, customer base – helps to explain the scope for friction in an industry operating under intense, long-term cost pressure.

FIEV, the French suppliers' association, estimates that components as a whole account for 53 per cent of the total cost of bringing a new car to market, the remainder comprising manufacturers' internal (assembly-related) costs (17 per cent) and distribution/marketing (30 per cent). Although the latter has received attention from manufacturers over the past two decades, legislation protective of dealer franchise rights, and the risk of disrupting sales amid growing competition, have hindered attempts to achieve significant cost-savings in the industry's marketing and distribution model. Furthermore, suppliers represent a bigger target for cost reduction, representing 75 per cent of the total manufactured cost of a vehicle.

7.1. Who bears the risks? Who collects the returns?

Common themes running through the statements of firms and trade associations commenting on relations between manufacturers and suppliers can be summarized as follows:

- Suppliers believe manufacturers are requiring them to accept ever greater shares of risk in exchange for lower returns. They cite the fact that manufacturers often require on-site product facilities; insist on payment linked to daily or even hourly small-batch deliveries that leave suppliers holding inventory or excess capacity in the event of (frequent) below-forecast vehicle assembly volumes; and demand year-on-year price reductions.

- The purchasing executives of manufacturers, who have gained prominence over the past decade, tend to counter such complaints in public with denials of across-the-board demands for price reductions, and to claim a desire to work in close partnership with a reduced number of preferred suppliers on a long-term basis. Both vehicle manufacturers and Tier-1 suppliers often rank their suppliers publicly according to their ability to deliver goods and services of the desired quality and price. Significantly, manufacturers rank suppliers themselves and publicly grant favoured firms "preferred supplier" status, whereas suppliers dare only to rank their customers in the anonymity assured by independent third-party agencies.

7.2. Asymmetrical information flows

Asymmetrical information exchange is generally characteristic of relations between unequal parties that fall short of the "partnership" associated in public and investor-targeted rhetoric with supplier-manufacturer relations. Besides the rankings mentioned above, many manufacturers require their suppliers to open their books and submit to audits of non-financial business operations in the course of ongoing supplier quality assessments. One case study on supplier work organization in a South Wales pressings firm,

CarPress Ltd., [1] described how Rover (now MG Rover) vetted the supplier's operations during the 1990s. According to the study, Rover took a keen interest in the methods used to achieve cost reductions, and emulated the Japanese practice of demanding surveillance of the supplier's attempts to introduce changes on the shop floor. Various mechanisms were used to accomplish this. For instance, the increasing use of a new style of factory audit, extending far beyond matters of product quality, constituted a significant supplier control device. Rover applies its RG2000 audit to all its prime suppliers. The company's audit personnel visit firms like CarPress every year and make critical judgements on working practices, personnel policy and business performance.

Perhaps even more significant than the intrusive nature of such practices is the fact that the suppliers subjected to this treatment have no comparable right of scrutiny of their customers' internal practices.

Significantly, in recent years observers that have no stake in either manufacturers or suppliers (including consultancies which earn fees from both) have generally concluded that price pressure on suppliers, irrespective of fairness in the apportionment of risks and rewards, will yield declining returns to both parties.

For example, an Ernst & Young study of German suppliers (mentioned in Chapter 6) called for a more equal division of risks among manufacturers, suppliers and providers of capital, and warned that manufacturers could endanger their own existence unless they help to solve their suppliers' financing problems.

The same problems in this respect face the supplier sector in both Europe and North America (although less so for suppliers of Japanese manufacturers, with which relationships are admitted by suppliers to be qualitatively better, both in Japan and in relation to overseas Japanese assembly operations).

In one instance recounted by a vice-president of the Comerica Bank, a supplier company was given a purchase order for advanced research and development, for which it had to invest cash at the front end. After 18 months, the customer decided not to go forward with the product because of a change in market conditions, and the supplier went out of business.

This account is not unduly biased, since the bank in question numbers DaimlerChrysler among its clients and has sought to minimize the risk of that client's lending to over 50 of its small American suppliers by helping them with restructuring, cost structures and management systems.

7.3. Risk and the supply chain

Although the path between individual suppliers and manufacturers may be smoothed, the trend towards supplier consolidation resulting from price pressure is unlikely to be halted. The prime candidates for acquisition or market exit are likely to be the weakest of the small and medium-sized Tier-2 suppliers of the most "commoditized" components.

However, firms higher placed in the supply chain are also affected by the purchasing behaviour of some vehicle manufacturers. A study of German suppliers has shown that customers' procurement practices affect suppliers' cash flow and their ability to undertake

[1] In E. Charron and P. Stewart (eds.): *Work and employment relations in the automobile industry* (Palgrave Macmillan, 2004).

the R&D increasingly demanded of them: only one-fifth of invoices of suppliers covered by the survey were expected to be settled in full within 12 months.

Any resulting problems of liquidity may be exacerbated by new constraints on the lending capacity of suppliers' banks once the "Basel 11" rules on bank liquidity come into force.

A supply chain that already squeezes the profitability of the smallest enterprises contributing the least unique value-added also shares the cost of external disruptions unequally, as was demonstrated when steel prices rose in the United States as a result of its trade dispute with overseas steel-producing countries (and rising Chinese steel demand). Hot rolled steel prices rose by 60 per cent between February and April 2004, and the largest American supplier, Delphi, took legal action to force one of its Tier-2 suppliers, Republic Engineered Products, to continue deliveries at contract prices established before the price increases.

Such increases in raw material prices may lead to operating losses of 8 per cent for a supplier whose steel costs made up 50 per cent of turnover in a normal year and which otherwise achieved an operating profit of 3 per cent. One steel-intensive Michigan firm, Federal Forge, Inc., blamed its recent bankruptcy on this factor. In such circumstances, a large Tier-1 supplier has the advantages of size and market control in respect of both steel mills and their smaller customers, while its own vehicle manufacturer customers and some major suppliers are at least temporarily insulated from raw material price inflation by long-term contracts. The commodity suppliers themselves – in this case, the steel mills – were little better placed to survive disruption than their smaller customers. [2]

Another source of friction in the automotive supply chain may affect SMEs rather less than the Tier-1 suppliers that have had to assume much of the responsibility for R&D in the automotive industry, namely, the migration of engineering competence from manufacturers to Tier-1 suppliers of advanced technology equipment or sub-assemblies.

For example, Delphi, the largest global supplier, comprising the equipment manufacture divisions formerly integrated within General Motors, registered more patents than any vehicle manufacturer in 2003. The migration of expertise that may result from the outsourcing of component design may eventually alter the balance of power between manufacturers and suppliers, introducing an element of instability into commercial relations.

An exploratory case study [3] on a major European car maker and two of its suppliers concluded that this migration of competence should not threaten the leadership of car makers within the supply chain if it is associated with: (1) strong competence of the car maker as a systems integrator; and (2) a new way of conceiving supply chain management.

No such new model of supply chain management has yet emerged, despite the consensus view among external observers that a better, more collaborative model could benefit the automotive industry as a whole. Such an improved model would potentially involve a reduction of manufacturers' operating margins (which most volume manufacturers are determined to increase, from an average of 3-4 per cent of sales to

[2] Source: supplierbusiness.com, 21 Apr. 2004.

[3] M. Caputo and F. Zirpoli: "Supplier involvement in automotive component design: Outsourcing strategic and supply chain management", in *International Journal of Technology Management* (Vol. 23, No. 1/23, pp. 129-159), 2001.

5-7 per cent). As "aggregators" of value, regardless of their contributions to that value vis-à-vis those of their suppliers, manufacturers exercise a degree of control over their end-user markets that has so far been denied to suppliers. There is in the automotive industry no brand recognition of components equivalent to that of finished cars that could alter this position – no direct automotive equivalent of the slogan "Intel Inside".

Until such a condition obtains, conflict between suppliers and manufacturers might best be reduced if Western firms were to emulate the more amicable relations, often cemented by equity holdings, that exist between Japanese manufacturer firms and their suppliers. The differences between Western and Japanese supplier-customer relations, however, reflect fundamental social and cultural differences between the Japanese, North American and European industrial economies as a whole, rather than specifically automotive sector strategies. It is not easy for individual firms to change the cultures in which they compete.

A specific manufacturer-supplier issue reported in June 2004 (see box 7.1) illustrates a case of American manufacturer behaviour differing not only from Japanese but also from European norms.

Box 7.1
Purchasing practices of assemblers

A recent article surveying suppliers' attitudes to specific manufacturer customers reported that the French trade association FIEV was to hold a meeting in July 2004 with Ford Motor Co., the company its members categorized as the "most difficult to work with". The specific concern was with the Ford Production Purchasing Global Terms and Conditions contract. Its terms have been publicly rejected by one major Tier-1 supplier (Bosch), while the VDA in Germany reportedly sent Ford a letter of protest on behalf of its supplier membership, although the majority of Ford's Tier-1 suppliers have refrained from expressing public criticism. The Ford document is said to specify that the company may show supplier drawings to competitors, a practice Ford says is not unique to its own procurement processes.

"The general conditions in force (in respect of European manufacturers) are largely more respectful of the intellectual property rights of suppliers", according to Jacques Monnet, FIEV's executive director, who adds: "Negotiations always remain difficult. However, you can say that in a general fashion, the European makers and notably the French are less adventurous in moves to violate the intellectual property rights of suppliers."

The Ford document reportedly also claims Ford's right to set off against a supplier's receivables from the Ford/PAG group any amount owed to it by the supplier's "related companies", which include parent companies and subsidiaries in which the supplier has voting rights of 25 per cent or more. In Canada, Decoma International, a Magna Group member, says in its annual report that it would contest any move by Ford to interpret the global terms and conditions referred to earlier in a way that would try to set off any Magna Group liability against Decoma receivables.

Source: Newsletter, supplierbusiness.com, 21 June 2004.

The scale of the problem to which Ford's purchasing policies relate is made clear by the company's current cost reduction efforts. The company spends some US$90 billion on components and materials globally per annum, and reportedly hopes to achieve reductions totalling US$780 million in overall purchasing costs by 2007. Some of these savings clearly cannot be achieved solely through price pressure on existing procurement patterns, and will require common components usage across its brands and models. But these strategies will impose greater demands on suppliers in terms of scale and reduced per-unit prices based on larger volumes, and will surely involve harder bargaining on existing procurement volumes.

Similarly, General Motors has adopted a practice of requiring its suppliers to match lower prices within 30 days. Although the company says it will rarely invoke its new 30-day clause to terminate contracts with non-competitive suppliers, the clause – which it began to include in supplier contracts on 1 October 2003 – has generated tension and complaints from suppliers. But according to the GM CEO, the company simply wanted to

standardize its worldwide contracts, and in any case the new clause will affect only a handful of vendors.

Box 7.2
United States suppliers shifting support, R&D and investment to Japanese manufacturers

Findings of the annual Working Relations Study of vehicle manufacturers' relations with their suppliers suggest that US suppliers are shifting their loyalties – and resources – to their Japanese customers in the United States at the expense of the domestic "Big Three".

The study indicated that the domestic "Big Three" and Japanese "Big Three" have fundamentally different approaches to working with their suppliers, and suggested that this difference might well be a major factor in the consistently high quality and competitive gains achieved by the Japanese companies.

The study shows that the better working relations are between manufacturers and suppliers, the more suppliers are willing to help the vehicle manufacturer: suppliers will share more technology with the manufacturer, are more willing to invest in new technology in anticipation of new business, and will provide higher quality goods and higher levels of service to the manufacturer. The Japanese manufacturers clearly understand this, and are gaining competitive advantage and market share as a result.

The 2004 supplier survey was conducted in July 2004. It was based on replies from 223 Tier-1 suppliers, including 36 of the top 50, and was based on 852 buying situations. Participating suppliers' combined sales represent 48 per cent of annual components purchases by OEMs.

Source: Planning Perspectives, Inc. (PPI): *Annual North American Automotive Tier 1 Supplier Study*.

The new clause allows GM to cancel a contract if the supplier fails to meet a competing firm's lower price within 30 days, and suppliers will not be able to recover their tooling costs. To ease relations, Neil De Koker, managing director of the Original Equipment Suppliers' Association (OESA) in Troy, Michigan, says his group is developing a balanced model contract covering the wide-ranging terms and conditions of supplier contracts, such as rights to supplier-owned tooling, inspections, liabilities, warranties, termination and dispute settlement.

7.4. Changing the supply chain

Some "best-in-class" manufacturers have initiated a new and more radical evolution of their supply chain. The primary net effect of this pursuit of a better-integrated supply chain, from raw materials to end-customers, has been the acceleration of the trend towards fewer but more closely interlinked direct suppliers, with a further relegation of many of them to the status of secondary or tertiary providers competing on price/quality ratio alone.

This can mean that surviving suppliers benefit from a shift of focus from piece-part cost to value added contribution, increased volumes of bought-out materials and services, and greater contractual security. In Northern Europe at least, supplier requalification would seem well advanced. To qualify, the new breed of first-tier suppliers is obliged to choose whether to develop its technological abilities and "know-how", its manufacturing and assembly skills, or both. Failure to do so would mean relegation to the status of "component supplier" competing on a "lowest cost" basis. [4]

This tends to confirm the point made above about the importance of cultural legacies, and the idea that the desired shift towards a partnership relationship may be counter-cultural: the inherent dependency, trust and "open-book" dealing required calls for a difficult cultural shift for Western companies.

[4] R. Bertodo: "Some developing trends in manufacturer-supplier relationships", in *International Journal of Technology Management* (Vol. 4, No. 1/2, pp. 21-35), 2002.

This places the onus on both sides to change behaviour, but suppliers, unlike manufacturers, are required to consider wholesale restructuring of their operations in order to fit into one of two existing categories – the large multinational, multi-customer Tier-1 firms such as Bosch, Siemens or Visteon, and the very different Tier-2 and Tier-3 SMEs, which are still numerous but coming under increasing pressure.

It might be concluded that firms already marked as "lowest cost components suppliers", or under threat of relegation to that status, are unlikely to achieve amicable relations with much larger customers, although disparities in economic power may reduce the potential for legal disputes.

It is noteworthy that relations between large customers (insurance companies) and small suppliers (body shops) across the globe in another sector of the automotive aftermarket largely echo those of the pre-assembly supply chain. A degree of conflict, muted by power differentials, has also been prevalent between manufacturers and their franchise holders in the distribution chain.

7.5. The relationship between profitability and control in the automotive supply chain

Unlike some other supply chains such as food production and retailing, in which many suppliers are more numerous, smaller and less profitable than supermarket retailers, there is no direct correlation between the ability of car manufacturers to exert price pressure on suppliers and their ability to improve their margins.

Has the increase in outsourcing by vehicle manufacturers over the past five years or more improved financial standing at least of Tier-1 suppliers vis-à-vis their customers, in terms of return on investment?

A 2002 survey by Goldman Sachs of earnings before interest and tax (EBIT), a key performance indicator much quoted by both manufacturers and suppliers, indicated a better average EBIT performance by 22 quoted Tier-1 suppliers with headquarters in all three "triad" automotive markets than that of their 15 largest manufacturer customers: supplier EBIT averaged 8.94 per cent of sales, compared to manufacturers' 4.72 per cent. Nine Japanese suppliers achieved average EBIT in 2002 of 12.23 per cent; their six European counterparts 5.46 per cent; and their American counterparts, 4.84 per cent.

Table 7.1. EBIT in 2002 as a percentage of sales of manufacturers and Tier-1 suppliers, by region

Europe	
Average of 8 manufacturers	4.95 per cent
Average of 6 suppliers	5.46 per cent
United States	
Average of 2 manufacturers	2.05 per cent
Average of 7 suppliers	4.84 per cent
Japan	
Average of 5 manufacturers	6.48 per cent
Average of 9 suppliers	12.23 per cent
Global average manufacturer EBIT	4.72 per cent
Global average supplier EBIT	8.94 per cent

Source: ILO calculations based on Goldman Sachs/corporate financial accounts.

Although this picture looks better for suppliers than for manufacturers, it must be remembered that the comparison is between manufacturers and Tier-1 suppliers, not the supplier sector as a whole inclusive of second- and third-tier suppliers and smaller companies: the suppliers included in the above comparison are some of the largest companies in their respective regional/national markets.

At the same time, manufacturer averages encompass firms as different in scale and profitability as the industry profit "champion" Porsche AG in Germany, on the one hand, and Ford and GM in the United States, on the other. The latter two have struggled in recent years to achieve manufacturing profits in their overseas and domestic markets alike.

There is no direct equivalent in the supplier sector to the premium, high-margin, low-volume manufacturer such as Porsche. Supplier sector averages do not account for the diversity of products and product-group margins that apply to global firms, some of whose operations are naturally more profitable than others.

Besides, one factor that has improved the prospects of profit growth for the largest, most technologically advanced suppliers – increased levels of outsourcing from manufacturers – has not benefited smaller Tier-1 supplier firms, whose negotiating positions with manufacturers are weaker, or Tier-2 or Tier-3 suppliers.

However, the above EBIT comparisons do attest to the severe impact of inter-manufacturer price competition described in an earlier section of this report. The impact feeds through to manufacturers' procurement policies, and while no major manufacturer has yet been forced out of the market altogether, there are clearly risks for suppliers associated with supplying few, economically weak manufacturer customers with increased value added.

Pending any major restructuring of the automotive supply chain that introduces significantly more outsourcing of both development and production from the assembly stage to suppliers, the *structure* of manufacturer-supplier relations and the relative sizes of the two parties seems likely to place continued pressure on suppliers' prices and on supplier-manufacturer relations. With all the successive tiers of suppliers, there are far more of them than there are manufacturers to buy their products, and the aftermarket – the only alternative source of sales for suppliers – offers little scope for most of them to broaden their sales base and thus restore a more equitable balance of economic power.

8. The outsourcing issue

8.1. Vertical integration and outsourcing

The degree to which a car manufacturer delegates development and supply of components and systems directly affects the share of labour within automotive manufacture, and may also impact indirectly on the volume of supply which may be "offshored" from relatively high-cost to relatively low-cost labour markets. Suppliers of some (but not all) types of components can more easily ship them across national frontiers and trade areas than can assemblers, whose remaining vertically integrated subsidiary functions (e.g. engine assembly) need to be most closely integrated with the assembly process for inventory control purposes.

The International Metalworkers' Federation (IMF) noted recently that globalization and global inequalities have vastly expanded the scope of outsourcing.

Box 8.1
Outsourcing and industrial relations in motor manufacturing

During the 1990s, "outsourcing" became an increasingly popular strategy among employers in both the private and the public sectors. Although the term is not always used with the same meaning, the basic definition of outsourcing for our purposes is a process whereby an organization ceases to carry out various functions outside its "core" activity, and instead purchases the services or products concerned from outside parties. Outsourcing often involves the restructuring of the organization concerned around a distinction between its core activity and the services provided by external suppliers. Outsourcing is based on an internal process of redefinition of production activities – that is to say, what is understood as the "core" activity, what activities are considered to be "subcontractable" and what network of relationships is established with the external suppliers.

Source: http://www.eiro.eurofound.ie/2000/08/study/tn0008201s.html .

8.2. The transfer of R&D from manufacturers to suppliers

Outsourcing has the potential to defray manufacturers' development costs. It is reported that key Tier-1 suppliers will be the recipients of €240m (44 per cent) of the €540 million Renault was investing in its forthcoming Modus car, which is based on an existing platform. The investment would go into retooling for the car.

Manufacturers' policies in relation to outsourcing are based on strategic decisions taken in the light of the available competences and capacities in the supplier sector, potential cost advantages, and the cultural conditions that influence the structure of manufacturer-supplier relations as a whole. In some developing markets where an inward-investing manufacturer imports assembly lines designed elsewhere, the lack of a components supplier base in the local market may impose a relatively high level of local vertical integration.

The strategic basis of outsourcing, as described in the strategies widely advocated by management consultants in the 1990s, is not a purely pragmatic response to potential labour cost advantages, but rather, based on two ideas.

First, in an industry crowded with competitors, individual firms are unlikely to optimize production volumes if they make their own exclusive versions of equipment where exclusivity provides no strategic benefit. Outsourcing to specialists who can offer lower prices than internal operations by sharing resources with other customers at least

partially overcomes volume limitations, and may also reduce the development risk capital required from the manufacturer. The wisdom of this approach has become increasingly accepted within the automotive sector as manufacturers increasingly venture into relatively small-volume market "niches", and as competitive pressures and technical advances reduce product lifecycles.

Commentators have recently urged VW to pursue this path in order to reduce vertical integration. They have noted that the firm's cost-sharing efforts have so far principally involved its internal subsidiary manufacturing entities, while it retains a relatively high degree of vertical integration, and that platform-sharing has not yielded all the profit enhancement sought by the shareholders.

Nonetheless, VW itself sees the pursuit of scale via greater use of common components throughout its Audi, SEAT and Skoda subsidiary brands as a means of reducing costs by centralizing production in-house in some instances. Notably, its decision to repatriate the production of retractable roofs for one of its forthcoming cabriolet models from its long-standing supplier of this technology, Karmann, will have a major effect on the latter's turnover. VW itself developed a retractable steel roof structure on the assumption that spreading the investment over more than one car in its range would defray the costs involved.

Perhaps because of this specific loss of custom, and because it expects its share of a near-saturated market for cabriolet model derivatives to peak in 2006-07 while it already faces "constant competitive pressure and overcapacity", Karmann expects to reduce its labour force, according to various German news sources of 18 June 2004.

One strategic review (see box 8.2) showed that R&D capabilities must be globalized to meet the demand for product differentiation at competitive price levels in the global marketplace. Electronics competence will play a very important role in the future, especially since half of all warranty costs are attributable to electronics hardware and software.

The second idea was the strategic direction that influenced Ford in the late 1990s, but has subsequently lost favour within the firm. It ran directly counter to the traditions of companies such as Ford itself, which in the 1920s had considered not only operating its own foundries for engine castings, etc., but even contemplated investment upstream in steel making. Investments by former Ford CEO Jacques Nasser in the 1990s in *non-manufacturing* enterprises (since divested following Nasser's dismissal amid rising losses from Ford's core activities) were linked by some analysts to the idea that a "manufacturer" need scarcely manufacture its products at all, but should instead act as a custodian of its brand equity, commissioning all production capacity from third parties and investing in controlling *markets* rather than fixed and often under-used productive capacity.

The general thrust of this extreme approach to outsourcing was supported by evidence that manufacturers' non-manufacturing subsidiaries (principally involving finance) were growing faster, and were more profitable, than the manufacture of the cars whose sales they facilitated. However, the notion of the "manufacturer" as principally a procurer and integrator of outsourced production failed to win industry-wide support. Instead, manufacturers have tried to increase the volumes of components – both those produced internally, such as engines, and outsourced items (the majority of all components) – by extending their assembly volumes through acquisitions or alliances.

Different manufacturers display markedly different attitudes with regard to the types of equipment they consider too strategically important to outsource. Virtually all car engines are assembled, and mostly designed with specialist assistance, by manufacturers rather than their suppliers, although many are shared among firms operating alliances. This

also applies to other elements of common "platforms" which include chassis, basic running gear and other elements that are cost-critical but not easily distinguished by end-users.

Box 8.2
Suppliers predicted to account for 60 per cent of automotive R&D by 2010

Automotive Engineering 2010, a research report prepared by Roland Berger Strategy Consultants, predicts that suppliers will be responsible for nearly 60 per cent of the industry's research and development work by the end of the decade, compared with approximately 40 per cent today. Despite the tremendous price pressures on automakers and their suppliers in recent years, cost-reduction efforts will most likely continue. In order to remain competitive, companies must seek innovation and efficiency in the way they currently conduct business.

The industry is dealing with an unprecedented growth in vehicle models and product features. Since the 1960s the number of basic vehicle segments has grown from four to more than 15. The industry's top five manufacturers alone are expected to introduce nearly 160 new models and facelifts in the American market between 2003 and 2007. The number and complexity of new-model features also continue to climb. The electronics content of an average car in the 1970s was less than 10 per cent; it is expected to top 40 per cent by the year 2010.

Regulatory requirements will also have a major impact on product development. Rising fuel economy, safety and environmental standards will put additional pressure on OEM product development. Despite significant increases in product content and complexity, R&D budgets have remained flat and are expected to remain so in the future.

Since 1998, R&D budgets as a percentage of sales at five of the industry's top OEMs have remained virtually unchanged, at an average of 4 per cent. At the same time, leading manufacturers have reduced the amount of time required to develop new vehicles from about 36 months in the mid-1990s to 24 months or less today.

To remain competitive, vehicle manufacturers and their suppliers will need to employ the following six strategies:

- develop global R&D networks;
- create sustainable "communization"/reuse of parts;
- focus on electronics and emerging technologies;
- develop world-class product creation processes using best practices;
- improve integration with suppliers; and
- increase share of electronic engineering staff.

Source: http://www.rolandberger.com .

However, even in the case of engines, both large-volume small components and complex units such as high-pressure diesel injection systems are outsourced to the few Tier-1 suppliers capable of investing in their development or simply of maximizing scale, thanks to revenues from two or more manufacturer contracts.

One cultural issue connected with outsourcing (and referred to in Chapter 6) is illustrated by the contrast between the *Keiretsu* system which binds Japanese suppliers to their manufacturers (reinforced in many cases by manufacturers' investments in their suppliers which attest to a desire to cultivate long-term, mutually beneficial relationships) and the more adversarial relationships of which suppliers complain in North America and Western Europe.

Most American suppliers, when asked in 2003 to rate their customers in terms of profitability and overall relations, noted that United States manufacturers issued long, complex contracts, whereas their Japanese counterparts were more inclined to proceed on the basis of greater trust, reflected in relatively brief contractual documents.

It has not been possible to determine the pace of progress in outsourcing. Adequate data do not exist, since supplier contracts are not disclosed in detail. The largest single impact in this area was felt when Delphi and subsequently Visteon were both "spun-off" from their respective parent companies GM and Ford. The transactions created the largest and fifth-largest companies in the global automotive supplier sector. Both companies still overwhelmingly depend on sales to their former parent companies, and were formed by aggregation of a series of former in-house component manufacturing operations. No comparable divestment by any manufacturer has occurred since Visteon's creation in 1999.

Box 8.3
The pros and cons of outsourcing

There appear to be at least four reasons why outsourcing should increase relative to total components output:

1. Labour cost differentials between manufacturers and suppliers provide the most obvious advantage to manufacturers who outsource. [1]
2. As manufacturers devote increasing proportions of their investments in new production capacity in China and other growth markets, they can less easily afford to maintain in-house capacity that may be replaced by, or even sold to, a supplier.
3. Continuing pressure on unit costs favours recourse to external suppliers, especially when these are prepared to supply at prices based on "offshoring" production to the lowest cost location in an increasingly globalized components market.
4. The growth in electronics content and in specialist materials supply has already transferred expertise to suppliers which manufacturers would find difficult to repatriate, especially since some of the suppliers concerned are able to transfer technology from other fields to automotive technology in a way not open to vehicle manufacturers.

There are also three reasons why progress may be hesitant in further outsourcing of development and manufacturing to suppliers:

1. Manufacturers have suffered rising costs, regardless of their previous reputations for product quality, in connection with product recalls, especially relating to electronic equipment failures in which suppliers have been implicated.
2. To control their rising costs in respect of quality issues, some manufacturers may take back some of the control previously delegated to preferred Tier-1 suppliers over the assembly of units such as "front-end modules"; some have voiced concern about the difficulty of assuring quality control when the responsibility for integrating outsourced first- and second-tier equipment is itself outsourced. The US$2 billion-plus costs of litigation resulting from the misadventures of Ford Motor Co. in the United States in connection with Bridgestone-Firestone tyre failures in 2002 showed manufacturers and suppliers how serious the implications for their survival quality control may be. The tendency to conduct components procurement on a "lowest cost" basis, which can result in more adversarial than collaborative supply chain relations, exacerbates the risks.
3. A third limitation on the growth of outsourcing may be that pricing pressure on suppliers leaves more of them without the financial resources to assume growing responsibilities, especially in relation to long-awaited returns on early-stage product development. Whether manufacturers will find themselves better able to assume the same responsibilities, in part by sharing them with joint venture or alliance partners, parent companies or subsidiaries, is a matter for conjecture.

[1] The argument does not apply to Visteon since the workforce retained their UAW contracts with Ford.

8.3. Pressure to increase working hours

In both France and Germany, many automobile assemblers and component manufacturers are making increased working hours part of contract negotiations, under the threat of relocation. Although the agreed working week in the western German metalworking industry is currently 35 hours (38 in the former German Democratic Republic), the new collective agreement concluded between IG Metall and the regional employers' organization Südwestmetall on 12 February 2004 increases working time flexibility, allowing a greater number of workers to work up to 40 hours a week, particularly in the automotive industry. DaimlerChrysler will increase working hours for all its 10,000 workers in development and planning at its Sindelfingen plant. Porsche is about to enter into discussions with its works council to introduce the 40-hour week for 3,000 employees at its development centre. Siemens is still engaged in talks on introducing the 40-hour week for certain categories of employees.

A 40-hour working week for research and development staff is also being considered by the Stuttgart-based components manufacturer Mahle. Similarly, the tyre manufacturer Continental, which falls under the chemical sector agreement, is seeking a return to the 40-hour week for some staff categories, and is fighting an uphill battle with the unions to increase weekly working time from 37.5 to 40 hours, without a corresponding increase in pay. The supplier Bosch, which already has a 40-hour week for R&D staff at three sites, is thinking of extending this, and lifelong working time accounts are one of the innovative arrangements at Bosch in Baden-Württemberg. In France, Bosch has also reached agreement to increase the current 35-hour week. BMW is reportedly still looking into the matter, while VW's in-house agreement (the company is not covered by the sectoral agreement) already allows its employees the flexibility to work 40 hours per week.

Why would unions give up a hard-won shorter working week? In the first place, the previous sectoral agreement already enabled 18 per cent of the workforce to work up to 40 hours a week under company-level opening clauses; the current agreement merely extends this to 50 per cent of employees and is aimed mainly at R&D staff who were already most likely to work longer hours. In addition, employers argue that the sector's workers already have one of the shortest working weeks in Europe, while increased R&D will lead to product development which will secure more jobs in the long term.

9. The impact of legislation

New legislation affecting the components sector has either been enacted or is pending since the publication of the ILO's report in 2000 on the automotive components sector. [1]

Two pieces of European legislation affect equipment suppliers' rights to enter the vehicle aftermarket in their own right, as distinct from supplying solely through their manufacturer customers' service parts operations. These are the European Commission's Block Exemption Regulation (BER) No. 1400/2002, which came into force on 1 October 2003, and a pending "Eurodesign" Directive on design rights protection. Restricting supply to vehicle manufacturers forces components suppliers to forego the substantially higher gross margins enjoyed by the manufacturers, which by tradition maintain spare parts inventory for their models for up to 12 years from production (less for some parts) in order to support owners and repairers through the vehicle's life cycle.

This service parts aftermarket represents a substantial opportunity – 81.9 million units, or 37.3 per cent of EU-EFTA Member States' registered light vehicles, were at least ten years old as at 1 January 2003.

It has been estimated (manufacturers' financial accounts are not so organized as to permit easy verification) that sales to the parts aftermarket account for up to 20 per cent of European manufacturers' consolidated sales, and up to 40 per cent of their operating profits. The exact figures will naturally vary between fast-growing markets with young parcs and mature replacement markets with relatively aged parcs, and between individual firms.

9.1. Block Exemption Regulation (BER) No. 1400/2002

Until 1 October 2003, when revised Block Exemption Regulation (BER) No. 1400/2002 came into force, manufacturers could legally deny their components suppliers direct access to their own dealer networks, and effectively to independent parts wholesalers, and maintained aftermarket parts prices at levels reflecting this monopoly position; only suppliers of certain "generic" types of part, such as tyres and spark plugs, were exempted. Specifically, Regulation No. 1400/2002:

- prohibits vehicle manufacturers from preventing sales of parts by suppliers directly into the aftermarket – including sales to manufacturers' own franchise networks; and
- prevents manufacturers from insisting on the use of their own parts by their dealers, other than for warranty repairs.

Tier-1 firms such as Delphi, Bosch, Tenneco and several others, are sufficiently strong economically to sell alternatives to manufacturer-branded replacement parts for repairs. Being a conglomeration of former GM original equipment and service parts subsidiaries, with a global components market share of over 5 per cent, divisions of Delphi (under different names) have had a presence in the global aftermarket since the early 1900s, and Delphi, since being spun-off from GM, has added acquisitions to its

[1] ILO: *The social and labour impact of globalization in the manufacture of transport equipment*, Report for discussion at the Tripartite Meeting on the Social and Labour Impact of Globalization in the Manufacture of Transport Equipment, ILO Sectoral Activities Programme (Geneva, 2000), Chapter 3.

aftermarket portfolio. This now includes vehicle electronics, consumer electronics, diesel engine components, air conditioning, steering and suspension (with a 16 per cent share of the global original equipment (OE) market), lubricants, batteries, clutches, brakes (covering 95 per cent of the European vehicle parc) and filters. Despite this unusually extensive market coverage for an aftermarket manufacturer, aftermarket sales represent only one-fifth of Delphi's total sales, although Delphi is the largest and one of the most diversified of global automotive suppliers.

It seems unlikely that Regulation No. 1400/2002 or related legislation elsewhere, such as the Right to Repair Bills being debated by the United States Congress, will encourage components suppliers not already active in the aftermarket to become so.

The service parts market requires extensive sales support. For firms supplying complex mechanical or electronic OE parts, trained technicians are required throughout the customer's repair networks to handle them. Suppliers' resources for such training are by definition scarce, as are the means available to independent service outlets to pay for such training.

A further factor that has excluded many OE suppliers from the aftermarket is related to corporate cultures and the allocation of scarce resources to core activities: components manufacturers tend inevitably to be manufacturing-focused rather than marketing-focused firms. For those not already active in the aftermarket, entry into it requires a diversion of financial and marketing resources from core R&D and manufacturing activity.

The BER not only permits OE components suppliers to sell into the aftermarket without going through their OE customers; it also allows non-OE suppliers to sell substitute parts (as many have done, notably in relatively fast-moving areas such as exhaust systems). The new BER places the onus on manufacturers to prove that a substitute part has not been of "matching quality" compared to an OE equivalent, thus invalidating the manufacturer's warranty.

In sum, all these constraints on original equipment suppliers entering the aftermarket, via their own or independent channels, have led to a *fall* in their shares of revenue from the aftermarket, in the case of at least one national market. In 2002, only 69 of the 150 member companies of the French automotive components trade association FIEV sold their wares in the aftermarket. Only the largest of FIEV's Tier-1 members derived a significant proportion of their revenues from such activity.

9.2. Design protection

Within the European Union, different legislation is currently in force in different Member States concerning the protection of vehicle manufacturers' rights in respect of the prevention of copying of car parts. A proposed EC Directive is due to be submitted to the Council of Ministers and the European Parliament in September 2004, following delays resulting from car manufacturer lobbying. It seeks to restrict the right of manufacturers to limit parts copying for aftermarket supply purposes to components that are visibly distinctive, such as body panels or light clusters.

When this legislation comes to cover the EU's current 25 Member States, it may encourage further incursions into the vehicle parts aftermarket by non-OE suppliers. Since such supplies need to be significantly cheaper than OE equivalents to appeal to repairers, they are likely to expand EU sales opportunities for exporters from low labour-cost countries.

Counterfeit automotive parts, including safety-critical "wear-and-tear" parts and lighting sets, are distributed primarily in markets in North Africa and the Middle East, where suppliers have relatively poor prospects of legal redress.

The French Tier-1 components and systems supplier Valeo estimates that counterfeit parts account for between 5 and 10 per cent of the total global parts aftermarket, representing an aggregate loss for manufacturers of authentic components of US$10 billion. This claim, which can be compared to an alternative US$12 billion estimate by the Automotive Aftermarket Suppliers Association (AASA), has not been officially confirmed, and there is no international authority capable of enforcing anti-counterfeit product legislation beyond national courts.

9.3. Product liability

The United States Department of Transportation in June 2004 set out a policy whereby vehicle manufacturers would be entrusted with responsibility for announcing product recalls, rather than these being instituted by the National Highway Transport Safety Administration. No other recent new legislation has been enacted specifically affecting vehicle or parts manufacturers' product liabilities, but high-profile litigation in the United States over fatalities linked to technical failures, and the growing expense of vehicle safety recalls linked to component quality, have ensured that product liability remains a significant issue for both manufacturers and their suppliers – to whom costs can be passed on if parts are shown to be faulty.

In this respect, the supply of components creates a liability for the duration of a vehicle's life cycle – ten to 12 years or even more.

In 2002, a series of accidents in the United States involving rollovers of Ford Explorer sports utility vehicles equipped with Bridgestone-Firestone tyres led to replacement and compensation costs in excess of US$2.25 billion. Since then, it has become apparent that recalls, both voluntary and mandated by government agencies such as the National Highway Transport Safety Agency, have come to involve increasing numbers of vehicles as more and more parts are shared between different vehicles, and some types of components, including electronic items, have been difficult to test adequately before product launch.

Recent research has suggested that warranty repair/component replacement costs for the American automotive industry amount to some US$412 billion annually, equivalent to no less than US$712 per new vehicle sold. Since these costs may be shared between manufacturers and suppliers or borne entirely by suppliers (if their responsibility for failures is proven), the issue of quality is a preoccupation that should deter suppliers from competing to supply "matching quality" parts into the aftermarket without careful assessment of the risks involved.

9.4. EU End-of-Life Vehicles Directive

The End-of-Life Vehicles (ELVs) Directive (2000/53/EC) passed into European law in October 2000. Its main requirements are for Member States to ensure that:

- producers limit the use of certain hazardous substances in the manufacture of new vehicles and automotive components, and promote the recyclability of their vehicles;
- ELVs are subject to de-pollution before dismantling, recycling or disposal;

- treatment facilities operate to higher environmental standards and have permits if they want to deal with ELV waste;

- certain recovery and recycling targets are met by 1 January 2006 and 1 January 2015;

- by 2007, producers (i.e. vehicle manufacturers) pay all, or a significant part of, the costs of treating negative or nil-value ELVs at treatment facilities.

Currently, between 74 and 80 per cent by weight (of metal components) of a typical ELV is reused or recycled and the remainder committed to landfill. The Directive was due to be transposed into national law in all Member States by 21 April 2002; most of them missed this deadline.

The aim of the Directive is to increase the rate of reuse and recovery to 85 per cent by average weight per vehicle and year, and to increase average reuse and recycling to at least 80 per cent, by 2006. A subsequent draft EU Directive of March 2004 raised the reuse and recovery rate for 2015 to 95 per cent, and the mandated rate of re-use and recycling to 85 per cent.

In 2007 manufacturers will assume responsibility for the costs associated with recycling ELVs, and the liability thus created will be greatest for those manufacturers whose European parc is relatively old and large. The responsibility will be discharged in different ways in different EU Member States, which are responsible for administrative implementation of the Directive.

The ELV Directive has not directly affected suppliers in terms of creating new liabilities, but is already impacting to some degree on the materials specifications of forthcoming models and on demand for replacement parts. Some vehicle manufacturers are paying more attention to re-manufacturing units for the aftermarket, where they might previously have reordered new replacements from the original suppliers.

The requirement for components to be recycled where possible, and for the weight of non-recyclable parts to be reduced as far as possible, may exert increased pressure on the product development budgets of both manufacturers and suppliers. The increased use of plastics for weight reduction in vehicles poses more problems for manufacturers than using aluminium, as the prospective values of a variety of recycled plastics are generally insufficient to make reclamation cost-effective.

9.5. Targets for reducing noxious and carbon emissions

The European Union has taken a lead in issuing successive noxious emission reduction targets for vehicle manufacturers (and targets for sulphur reduction in road fuels) ahead of governments in Japan, North America and other regions. These other regions differ in being more hostile to diesel, which has grown rapidly in popularity in Europe owing to its fuel economy and CO_2 performance. The objective of successive EU limits for noxious vehicle emissions – from Euro 1 to the Euro 4 specifications due to come into force in September 2004 for new vehicles – has not apparently affected suppliers beyond encouraging profitable, ongoing investment by specialists such as Bosch, Siemens and Delphi to develop fuel injection systems of increasing efficiency (which have incidentally helped diesel power to acquire a share of European car sales not seen in other "triad" markets).

Targets for Euro 5 noxious emissions levels have yet to be agreed, but manufacturers affiliated to the European Automobile Manufacturers Association (ACEA) have indicated that their anticipated severity may make it harder to reduce carbon dioxide emissions to the 140 g/km average required by 2008, itself specified by a voluntary ACEA/EU agreement. The reduction of noxious emissions without a corresponding improvement in fuel "cleanliness" tends to increase fuel consumption in the absence of concurrent improvements in engine efficiency, vehicle weight and drag resistance. As the popularity of larger, heavier sports utilities and performance vehicles in Europe has increased, it is in any case doubtful whether the ACEA's 140 g/km target can be reached.

The year 2005 will see the inception of the EU's Emissions Trading Scheme, the world's most ambitious scheme to reduce carbon emissions under the Kyoto Protocol. In the United Kingdom, which was the first EU Member State to introduce a scheme linking taxable company car benefits to carbon dioxide output per vehicle, car manufacturers have attacked the Government's National Allocation Plan for the Emissions Trading Scheme as too severe. They claim that their United Kingdom facilities have already invested in the best available technology, and there is only limited scope for further improvements. Disputes between governments and industry over emissions regulation seem likely to continue. In late June, the French Government announced plans for graduated vehicle purchase taxes that would penalize buyers of carbon dioxide- and noxious emission-intensive vehicles such as 4x4s, and provide incentives to buyers of small, fuel-efficient and clean cars. In general terms, any acceleration of a generalized shift towards smaller cars from upper medium-sized cars will impact on the profitability of both manufacturers and their suppliers, despite the concurrent rise in popularity of 4x4s and multi-purpose vehicles (MPVs, known as minivans, in North America).

9.6. Safety legislation

The European Union has committed vehicle manufacturers to designing future vehicles to minimize fatalities in accidents involving pedestrians, a factor that will influence vehicle design throughout the world, since the EU is part of the market for vehicles produced in most countries, and safety and emissions legislation tends to be convergent at national and international level. An executive of Ford-UK has suggested that EU pedestrian safety regulations will involve an additional cost per manufacturer of as much as £3,000 per unit, although in the United States, Ford has recently absorbed the cost of equipping "anti-rollover" technology as standard for many of its popular sport utility vehicles .

In general terms, future safety and environmental legislation is likely to favour those suppliers most capable of investing in the new tooling and technologies required by it, although the pressure on end-user vehicle price margins may be increased and this pressure will flow from manufacturers to suppliers and the automotive supply chain overall.

The gradual convergence of vehicle legislation in non-EU markets towards rising EU standards has advantages and disadvantages for manufacturers and suppliers. EU standards currently apply to about 37 per cent of global new vehicle output.

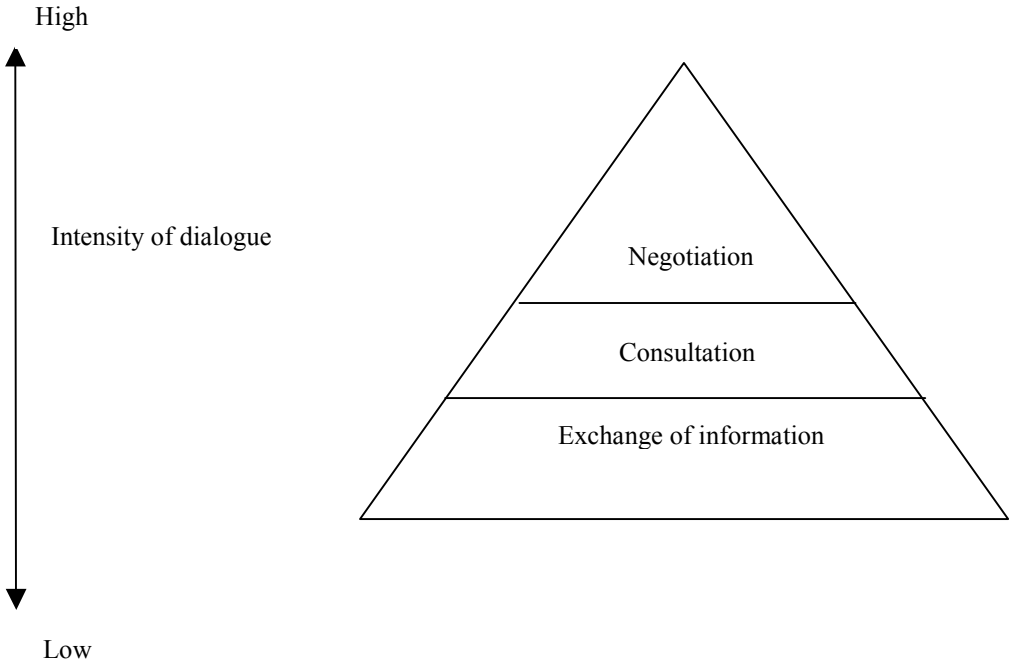
Lower standards pertaining to developing markets such as China (where Euro 1-level noxious emissions limits still apply as of 2004) allow the life of obsolescent technologies to be extended. On the other hand, the requirement to serve different regional markets with different power trains, for example, delays the achievement of global scale in some of the newest technologies to which R&D expenditure must be committed.

10. Social dialogue and industrial relations

10.1. ILO working definition of social dialogue

The purpose of this chapter is to provide a broad introduction to social dialogue and then to look at specific features of the automotive industry. Although there are many definitions of social dialogue and various institutions involved in the subject, the ILO has a broad working definition of social dialogue, reflecting the wide range of processes and practices found in different countries. [1] Its working definition includes all types of negotiation, consultation or simply exchange of information between representatives of governments, employers and workers – and between the social partners themselves – on issues of common interest relating to economic and social policy. The ILO recognizes that the definition and concept of social dialogue vary from country to country and over time. Figure 10.1 illustrates the relationship among the different notions.

Figure 10.1. Social dialogue triangle



Exchange of information is the most basic process of social dialogue. It implies no real discussion or action on the issues concerned, but is an essential starting point for the development of more substantive social dialogue. Consultation is a means by which the social partners not only share information, but also engage in more in-depth dialogue about issues. While consultation itself does not imply decision-making power, it can take place as part of such a process. Collective bargaining and policy concertation can be interpreted as the two dominant types of negotiation. Collective bargaining is one of the most widespread forms of social dialogue, and is an institution which facilitates national level tripartite policy concertation. [2] Policy concertation can be defined as the codetermination

[1] Adapted from J. Ishikawa: *Key features of national social dialogue: A social dialogue resource book* (Geneva, ILO, 2003), pp. 3-14.

[2] See http://www.ilo.org/public/english/dialogue/ifpdial/sd/index.htm .

of public policy by governments, employers' organizations and trade union confederations. Tripartite policy concertation or "social concertation" can be regarded as the "full bloom" of social dialogue, in which employers' and workers' representatives and governments have developed a reflex for acting in a concerted multifaceted manner to address all major national economic and social policy issues by seeking consensus. However, this is possible only when a government fully recognizes the legitimacy and constructive functions of social partners' participation in national policy-making. Tripartite policy concertation sometimes results in agreements in the form of internal notes or social pacts.

Any of these forms of social dialogue can be informal and ad hoc or formal and institutionalized. In reality, however, social dialogue is often a combination of the two. Informal processes are often as important as formal ones. Social dialogue can be a tripartite process, with the Government as an official party to the dialogue, or involve bipartite direct relations between labour and management, with only indirect government involvement, if any. It can take place at the national, regional, sectoral or enterprise level. It can be inter-professional, sectoral, or a combination of both.

10.2. Representation and issues of social policy

Representation in social dialogue can be bipartite, tripartite, or "tripartite plus". As regards government representation, ministries of labour have traditionally played a critical role in tripartite social dialogue. More recently, as a result of the widening scope of national social dialogue, ministries of labour have not necessarily been the exclusive representatives of the government. Depending on the issues discussed, broad participation by a range of government departments, from labour to finance, education/training to justice, trade to economic planning, is desirable and to be expected.

As for the issues addressed, there is no limit to issues that can be covered by tripartite consultation. Wherever governments, employers' organizations and workers' representatives can find areas of common interest and establish some form of cooperation, they can engage in meaningful social dialogue. Social dialogue at the national level is unique in addressing broader issues related to economic and social policies. The following non-exhaustive list indicates the key subject matters dealt with through national social dialogue.

10.2.1. Wider economic and social policy issues

- Macroeconomic policy framework and economic growth.
- Structural change and transformation of the economy.
- Wage increases and inflation; monetary policy.
- Employment policy.
- Gender equality.
- Education and vocational training.
- Productivity and economic competitiveness.
- Taxation and fiscal policy.

– Social welfare, security and protection.

– Economic and social strategies to deal with external pressures for reform, such as:

  - transition to a market economy;
  - regional integration;
  - structural adjustment programmes; and
  - poverty reduction strategy processes.

10.2.2. Labour and industrial relations issues

As for labour and industrial relations issues, wage setting includes minimum wages, pay structures and the level and increase of wages including different forms of financial participation by employees. In many countries, such as Austria, Belgium and the Netherlands, labour relations issues may be narrowly confined to technical matters, or they can be treated as an integral part of broader social and economic policy covering:

– employment policy;

– wage setting, including minimum wage determination;

– labour legislation;

– working conditions;

– labour market policy (also treated as an integral part of wider socio-economic policy issues);

– labour dispute settlement; and

– occupational safety and health.

Social partners have a stake in macroeconomic policy, mainly through their interest in wages and prices policy. Macroeconomic policy is often discussed in the framework of wider economic and social policy or incomes policy. Discussion in the 1990s in many European countries centred around the dilemma of how best to increase the economic competitiveness without compromising social justice. Indeed, the issues covered in macroeconomic dialogue were wide-ranging across macroeconomic, microeconomic and social policies, including monetary policy, exchange rate policy, public spending, the tax regime, wage increases, social welfare reform, promotion of small and medium-sized enterprises, enhancement of workplace collective rights and the reduction of poverty. Social security and protection is one of the prime public policy areas in many European countries where social dialogue is used extensively. Social partners are involved in policy-making and administration in Austria, Germany and France. With the problem of ageing becoming acute in most developed countries, as well as in the EU accession countries of Central and Eastern Europe, social dialogue is increasingly used as a means of achieving social and economic compromises on pension reforms. In addition to being a topic to be dealt with in its own right, gender equality is being integrated into these other topics.

10.3. Classification of different forms of social dialogue at national level

Having indicated the wide range of issues that social dialogue can address, this section expands on how this can be done in different forms. Social dialogue can take many forms, ranging from the most formal and binding negotiated agreements, through publication of purely informal recommendations, to consultation and information sharing. Social dialogue is a dynamic process whose structure and institutions are often worked out during the process of dialogue itself.

In line with one classification, the following is intended as a simplified categorization of the various forms and patterns of social dialogue. It represents three basic variants (A, B and C below) in which labour relations issues or wider economic and social issues are discussed.

(A) "Narrow" social dialogue on labour relations issues

Representation: tripartite or bipartite.

Issues discussed: labour relations issues.

This form of social dialogue takes place in forums where employers, workers and their representative bodies (conventionally termed "insiders") discuss "insider" issues such as pay, terms, conditions and rights at work and social security, through consultation procedures or collective bargaining.

(B) "Broad" social dialogue on wider economic and social issues

Representation: tripartite or bipartite.

Issues discussed: wider economic and social issues.

This form of social dialogue takes place within forums where insiders also discuss "outsider" issues such as job creation measures and employment policy, thus allowing those active in the labour market to engage the interests of those who are not active (i.e. outsiders such as the unemployed, pensioners, school leavers and people with disabilities). This can be extended to include the whole range of economic and social policy-making.

(C) "Wide" social dialogue on wider economic and social issues

Representation: tripartite plus other relevant interest groups.

Issues discussed: wider economic and social issues.

This type of social dialogue takes place in forums where both insiders and outsiders discuss social and economic issues of joint concern. In such forums, representatives of young people, the unemployed, pensioners, consumers and environment groups, among others, participate alongside employers' and workers' representatives.

The rest of this chapter will look at some specific forms of social dialogue within the automotive industry, ranging from European works councils and company councils to international framework agreements.

10.4. Employers' and workers' organizations in Europe [3]

The relatively strong position of trade unions in Europe's automotive industry is well illustrated by the data on unionization in table 10.1. Union density in the automotive sector is usually well above the national and manufacturing sector average. Even in countries where union presence is generally low, as in France, or scattered, as in the United Kingdom, the automotive sector has a strong union presence and relatively high unionization rates. In France, union density in the automobile industry is reportedly around 20 per cent (compared with well under 10 per cent in the private sector as a whole), while in the United Kingdom it stands at a high (in national terms) 44 per cent, and in the main production sites reaches almost 100 per cent among blue-collar workers and around 50 per cent or more among white-collar workers. The automotive sector in the United Kingdom appears to be an area where the role of unions has remained strong and comparatively stable over recent decades, although this situation does not extend to the entire sector in the United Kingdom or even to all major companies. In fact, the position of the unions is particularly strong in the long-established locations of European and United States-based manufacturers. The more recently established Japan-based motor companies are thought to have lower union density, and there is a growing minority of sites in the automotive components segment where no unions are recognized. Unions have a similarly strong role in the automotive sector in EU accession countries, especially Poland, where automotive sector union density (at 40 per cent) is more than double the national average. It is also somewhat higher than average, though not to the same extent as in Poland, in both Hungary and Slovenia, while in Slovakia it is substantially in line with the average national unionization rate.

High unionization tends to prevail in larger companies, especially the vehicle makers. It does not necessarily correspond to the situation in many firms belonging to the components segment, where unions may in some cases be non-existent, as small and medium-sized enterprises (SMEs) are often the dominant business form. This fact may explain the only notable exception, in Denmark, to the "rule" of a higher presence of unions in the automotive sector compared with overall levels. There, the automotive sector is rather marginal and centred around components suppliers, which in many cases are SMEs with a less significant union presence. A division of union presence along subsector boundaries, with higher unionization in vehicle manufacturers than in components suppliers, is reported from a number of countries and can be regarded as a common feature. Possible reasons for this difference may be found in the more fragmented and dispersed structure of subcontracting and the smaller average size of firms. Such an unbalanced distribution of union density across subsectors might be important when we consider the effects of restructuring and of the outsourcing processes often linked to such change. However, the considerable presence of large multinational companies in the automotive supply chains reduces, at least to some extent, the potential impact of

[3] The following sections are based largely on the European Industrial Relations Observatory (EIRO): *Industrial relations in the automotive sector* available at (www.eiro.eurofund.eu.int/2003/12/study/tn0312101s.htm, visited on 7 June 2004). The comparative EIRO study was compiled on the basis of individual national reports submitted by EIRO's national centres. The text of each of these national reports is available at the web site. The national reports were drawn up in response to a questionnaire and should be read in conjunction with it.

outsourcing on union presence and the role of industrial relations, by comparison with other industries where local, often union-free, SMEs predominate.

Table 10.1. Unionization rates in the economy as a whole and in the automotive sector (per cent)

Country	Economy as a whole	Automotive sector
Austria	40	60
Belgium	69	n.a.
Denmark	88	50
Finland	79	90
France	9	20
Germany	30	75
Hungary	20	25
Ireland	45	n.a.
Italy	35	38
Luxemburg	50	n.a.
Netherlands *	25	n.a.
Norway *	52	59
Poland	15	40
Portugal	30	n.a.
Slovakia	35	35
Slovenia	41	50
Spain	15	n.a.
Sweden	79	90
United Kingdom	29	44
United States **	9.3	48

Note:

* Figures were provided by the EIRO national centres. ** US Bureau of Labor Statistics.

Source: EIRO. Data on the whole economy come from the EIRO study Industrial relations in the EU Member States and candidate countries, while those on the automotive sector were collected for this study. When no official or research data were available, the EIRO national centres provided their own estimates.

Trade unions (and employers' associations, as shown below) are usually organized according to criteria which go beyond the automotive sector, although this naturally depends on the particular features of each national industrial relations system. When the main reference point for union structures is the sector, it is usually the metalworking industry – or sometimes manufacturing – which covers automotive operations. A broad definition of the automotive industry which comprises all suppliers can involve a plurality of sectoral unions, such as those in the electronics sector (when it is separate from metalworking) or in the plastics and rubber industry. Specific blue- or white-collar unions may also be present, as well as professional and general unions, depending on cleavages in national union representational domains. Ideological orientations may be important, too, as they are in Italy and France. For all these reasons, union pluralism is generally the rule in the automotive sector across Europe.

The presence of company-specific unions is generally an exception in Western Europe, although one currently exists in the automotive sector in Italy in the form of Fismic, a company union established at Fiat at the end of the 1950s which has since sought wider representation in the metalworking sector. The situation is not the same in Central

and Eastern Europe, where the developments which followed the fall of the communist regimes and the establishment of democracies and market economies led to the emergence of industrial relations systems characterized by a significant degree of decentralization. There are also major differences between large and small businesses and between public and private firms, and a high degree of heterogeneity between geographical areas in terms of economic structure and growth and local labour markets. In these circumstances, a number of company unions have emerged and the automotive sector is no exception. In Hungary, in particular, there are company unions in almost all major production sites. Some of these trade unions are independent, while others are directly affiliated to union confederations. In Slovenia, a company union, the Revoz Trade Union (Sindikat družbe Revoz, SDR) has been established in the major motor company Revoz, a subsidiary of the Renault group and the only vehicle manufacturer in the country, in a split from the main sectoral union. The principal reason behind this division was an attempt by company union representatives to take advantage of the particular conditions of the company in order to obtain better conditions than those which could be won in national-level bargaining.

It seems that the relative weakness of unions in accession countries at national sectoral level, as well as the great variety of situations that can be found in different companies, provide significant incentives for workers in certain firms (those that are larger, with better economic performance and in more economically advanced areas) to establish company unions. However, company unions are not the exclusive form of representation in the automotive sector in these countries, but rather, supplement existing sectoral unions, which continue to be the principal actors in national-level industrial relations.

As with the unions, employer representation in the automotive sector follows the patterns typical of each national system. Here, however, the variety of organizational forms is far less pronounced. In fact, the main representational domain for employers' associations is industry and, in this case, usually the metalworking industry. Where a sectoral association does not have a direct collective bargaining role, it acts essentially as a trade association. Moreover, specific trade associations are usually present for the automotive sector. Given different industry features and members' interests, it is common to find different trade associations for the various subsectors: essentially for manufacturing of vehicles and of components.

There are only two countries – Portugal and Poland – where specific automotive employers' associations as such are present. In Portugal, there are a number of employers' associations which cover all automotive market segments, including sales and repairs, and engage in collective bargaining – e.g. the Association of Automotive Assembly Industries (Associação dos Industriais de Montagem de Automóveis, AIMA) and the National Automobile Sector Association (Associação Nacional do Ramo Automóvel, ARAN). In Poland, there is a sectoral association which represents the major automotive companies – the Association of Automotive Employers (Związek Pracodawców Motoryzacji, ZPM) – while individual companies such as Fiat are members of a cross-sectoral organization, the Polish Confederation of Private Employers (Polska Konfederacja Pracodawców Prywatnych, PKPP). So far, attempts to conclude a sectoral agreement in Poland have been unsuccessful.

10.5. The structure of European collective bargaining

The pattern of collective bargaining in the European automotive sector reflects the characteristics that are typical of national bargaining systems in individual countries (see table 10.2). This means that the main level of collective bargaining in most countries is the metalworking industry, of which the automotive sector represents only a part. However, given the particular features of automotive production and of the changes and restructuring

which have been taking place in recent decades, decentralized bargaining is quite important, especially in the main vehicle manufacturers (assemblers).

Table 10.2. The structure of collective bargaining in the automotive sector, by level

Country	Cross sectoral	Metalworking sector, unless otherwise stated	Company
Austria		***	* (works council agreements, where "opening clauses" apply)
Belgium		**	***
Denmark	* (manufacturing)		***
Finland	** (tripartite regulation)	**	* (increasing importance)
France		***	**
Germany		***	* (works council agreements, where "opening clauses" apply)
Hungary			***
Ireland	*		***
Italy		***	**
Luxemburg			**
Netherlands		** (metal working; metal and electronic engineering)	**
Norway	*	***	*
Poland		(automotive: under discussion)	**
Portugal		*** (automotive)	
Slovakia		** (engineering; electrical engineering; chemicals)	** (increasing importance)
Slovenia	* (manufacturing)	**	*
Spain		*	***
Sweden		**	**
United Kingdom			***
United States			*** (with individual plant ratification)

Note:
Legend: *** More important. ** Important. * Less important.
Source: EIRO survey.

Agreements for the entire metalworking (or similar) sector cover automotive firms in Austria, Belgium, Denmark (where the agreement covers manufacturing generally), Finland, France, Germany (with the exception of Volkswagen – see below), Italy, the Netherlands, Norway, Slovakia, Slovenia, Spain (but see below) and Sweden. In cases such as Belgium, Finland, Norway and Slovenia, these agreements fall within wider national cross-sectoral frameworks. Naturally, this generally results in a high level of bargaining coverage in the sector, which is virtually 100 per cent in countries such as Austria, France, Portugal and Spain.

However, within these essentially sectoral systems, company- or establishment-level bargaining also plays a role in many cases. In France, for example, sector-level agreements are supplemented and improved by company-level agreements, while sectoral agreements in countries such as Denmark, Finland, Italy, Norway and Sweden leave varying scope for subsequent lower-level bargaining. The greatest role for company bargaining in a

nominally sectoral system is probably seen in Spain, where provincial-level sectoral agreements lay down only minimum conditions which are superseded by company agreements in the main vehicle manufacturer and supplier companies. In Denmark, there is significant decentralization in the regulation of all major issues, such as pay and working conditions, within a sectoral framework agreement for manufacturing.

There are some exceptions, however, where collective bargaining covers the automotive sector alone. In France, the metalworking trade unions and the employers' association UIMM (Federation of Metal Trades) sometimes conclude agreements just for the automotive sector. An example of this was a 1999 agreement on early retirement which is valid until 2004. One country where attempts are under way to create an industrial relations system which refers specifically to the automotive sector is Poland. Since 1998, talks have been held between the unions and the automotive sector employers' associations to define an industry-wide agreement. In May 2001, a final document was drafted, but the employers in the end did not sign it, as the Association of Automotive Employers (ZPM) decided to leave the negotiations. These developments occurred at a time when a crisis in the Polish automotive sector was deepening. The situation has not improved since then and, so far, it is not clear whether the parties will be able to reach a multi-employer agreement in future. Portugal, as already mentioned, is the only country with a sectoral industrial relations system for the automotive sector which includes collective bargaining. However, the definition of the automotive sector in Poland is quite broad – encompassing not only manufacturing, but also commerce and services such as post-sales assistance and repairs.

In a number of countries, collective bargaining is fully decentralized to company level. This is the case in the United Kingdom (since the termination of multi-employer bargaining for the engineering industry in 1990), Ireland (within the framework of national cross-sectoral agreements) and Luxembourg. Among the EU-accession countries examined, company-level bargaining is predominant in Hungary, where there is no industry-wide agreement and about half of all unionized automotive companies are covered exclusively by company agreements. An interesting example of company-level bargaining can also be found in Germany, a country where sectoral bargaining represents the main level of bipartite collective regulation. Volkswagen is not a member of the sectoral employers' association, and negotiates a company-level agreement which on average grants better pay and working conditions than those laid down in the metalworking industry-wide accord.

An interesting development in collective bargaining in the automotive sector took place in Italy in 1998 and concerned the conclusion of a "territorial" collective agreement which covers 22 companies belonging to the network of subcontractors located around the Fiat plant in Melfi. This was the first time that a multi-employer agreement was signed for an integrated system of subcontractors. The companies and unions agreed to establish a set of inter-firm joint bodies, and introduced common provisions regarding some pay bonuses and certain aspects of working time management.

10.6. European works councils (EWCs) [4]

After years of preparatory work going back to what was known as the "Vredeling initiative" for an EU directive on information and consultation, a directive was finally adopted in 1994 for the establishment of European works councils (EWCs) or similar bodies. Not surprisingly – unlike other industries which are resisting the move – the European automobile manufacturers have led the way, all of them having established the required machinery for worker representation even before the September 1996 deadline. Although some commentators lament that true worker co-determination does not exist, or that closures such as that of the Renault plant at Vilvoorde in Belgium could not be prevented through the existence of an EWC, relevant court decisions and interpretations by international organizations underscore what is acceptable behaviour in terms of information provision and the need for social dialogue. A survey undertaken for the European Metalworkers' Federation (EMF) noted that workers felt they were overloaded with too much financial and economic data and not enough time was being spent on issues of real interest to them. On the other hand, it has also been argued that it should come as no surprise that worker and employer views differ as to what should be on the agenda, and that management is just as concerned as workers about this (albeit for other reasons). With regard to information overload, a simple solution has been suggested – to provide training to works council members (employers and workers) so that they can cope with and interpret the data.

Whether the information and consultation procedures will be adequately applied and improve understanding and cooperation between the partners will depend on those involved. On the other hand, an EWC or an information and consultation procedure offers a bridge for social dialogue across boundaries which otherwise might not be there.

EWCs are present in practically all major automotive companies, both vehicle and component manufacturers (see table 10.3). Formally, they are essentially a forum for information and consultation on multinational issues. However, on some specific occasions they have provided an important tool both for coordination between national unions and for negotiation on some aspects of company policies. Of course, the informal extension of EWCs' entitlements to include some sort of collective bargaining has required both union capacity to exert concerted pressure and a positive attitude towards such extension on the part of the companies concerned.

Table 10.3. Presence of European works councils (EWCs) in major automotive manufacturers with operations in Europe

Company	Home country	Date of establishment and status* of European works council
Vehicles		
BMW	Germany	11 December 1995, article 13 agreement
Caterpillar	United States	20 December 1996, article 6 agreement
DaimlerChrysler	Germany	25 July 1996, article 13 agreement
Fiat	Italy	18 March 1996, article 13 agreement
Ford Motor Company Europe	United States	16 September 1996, article 13 agreement

[4] See ILO: *The social and labour impact of globalization in the manufacture of transport equipment*, Report for discussion at the Tripartite Meeting on the Social and Labour Impact of Globalization in the Manufacture of Transport Equipment, ILO Sectoral Activities Programme (Geneva, 2000), Ch. 6.

Company	Home country	Date of establishment and status* of European works council
General Motors Europe	United States	16 September 1996, article 13 agreement
Saab Automobile (GM)	Sweden/United States	1 January 1997, article 6 agreement
Honda	Japan	1 March 1995, article 13 agreement
MAN	Germany	30 May 1996, article 13 agreement
Paccar	United States	1996, article 13 agreement
Porsche	Germany	No EWC, not covered by Directive
PSA Peugeot-Citroën	France	10 July 1996, article 13 agreement
Renault	France	5 April 1993, article 13 agreement
Nissan (Renault-Nissan Alliance)	France/Japan	11 June 1998, article 6 agreement
Rover	United Kingdom	No EWC, not covered by Directive
Scania	Sweden	5 November 1998, article 6 agreement
Toyota	Japan	10 July 1996, article 13 agreement
Volkswagen	Germany	7 February 1992, article 13 agreement
Volvo	Sweden	2 December 1996, article 13 agreement
Components		
American Standard	United States	29 May 2001, article 6 agreement
Arvin Meritor	United States	20 January 1998, article 6 agreement
Autoliv Asp	United States/Sweden	16 May 2000, article 6 agreement
Behr	Germany	17 September 1996, article 13 agreement
Benteler	Germany	7 May 2002, article 6 agreement
Bilia	Sweden	26 September 1997, article 6 agreement
Cummins Engine	United States	8 December 1999, article 6 agreement
Dana	United States	22 June 2000, article 6 agreement
Delphi Automotive Systems	United States	10 April 1996, article 13 agreement
Donnelly Europa	United States	5 November 1999, article 6 agreement
Edscha	Germany	6 February 2001, article 6 agreement
Epcos	Germany	26 April 2002, article 6 agreement
Fag Kugelfischer Georg Schaefer	Germany	6 April 1995, article 13 agreement
Faurecia	France	24 June 2003, article 6 agreement
Federal-Mogul	United States	9 July 1996, article 13 agreement
GKN	United Kingdom	1 November 1995, article 13 agreement
Hella Kg Huck & Co	Germany	18 September 1996, article 13 agreement
Honeywell	United States	13 June 1997, article 6 agreement
Ingersoll-Rand	United States	17 October 1997, article 6 agreement
Invensys	United Kingdom	28 June 2000, article 6 agreement
ITT Cannon	United States	19 September 1996, article 13 agreement
Johnson Controls	United States	2 May 1996, article 13 agreement
Knorr-Bremse	Germany	1 May 1995, article 13 agreement
Lear Seating Corporation	United States	6 April 1998, article 6 agreement
Leoni	Germany	7 April 2000, article 6 agreement
Mahle	Germany	20 September 1996, article 13 agreement

Company	Home country	Date of establishment and status* of European works council
Mann & Hummel	Germany	31 July 1996, article 13 agreement
Metso	Finland	21 September 1996, article 13 agreement
Miba	Austria	1 December 2002, article 6 agreement
Mitsubishi Electric	Japan	21 June 1996, article 13 agreement
Norsk Hydro	Norway	11 August 1994, article 13 agreement
Partek	Finland	2 February 1996, article 13 agreement
Raufoss	Norway	(no date)
Rautaruukki	Finland	2 April 1996, article 13 agreement
Rheinmetall	Germany	27 April 2000, article 6 agreement
Rieter	Switzerland	28 March 1999, article 6 agreement
Robert Bosch	Germany	12 May 1998, article 6 agreement
Röchling Gruppe	Germany	6 December 1999, article 6 agreement
Schmitz Cargobull	Germany	31 October 2003 (agreement in principle)
Tenneco	United States	22 May 2002, article 6 agreement
Thyssen-Krupp	Germany	3 November 1999, article 6 agreement
Tomkins	United Kingdom	20 September 1996, article 13 agreement
TRW	United States	10 December 1998, article 6 agreement
Tyco	United States	17 May 2000, article 6 agreement
Valéo	France	21 September 1999, article 6 agreement
Visteon	United States	7 March 2001, article 6 agreement
Wagon Automotive	United Kingdom	5 July 1999, article 6 agreement
Zf Friedrichshafen	Germany	14 September 2000, article 6 agreement

Note: * Article 13 EWC agreements are voluntary agreements initially concluded before 22 September 1996 when the EU Directive on EWCs came into force; article 6 agreements are agreements concluded after that date on the basis of the negotiating procedure and rules laid down in the Directive (and its national implementing provisions).

Source: EIRO compilation, on basis of data from EMF, ETUI and other sources.

The first notable instance of the role that EWCs can play at an international level was the Vilvoorde case. At the end of February 1997, the French motor manufacturer Renault announced the closure of its plant in Vilvoorde, Belgium, which employed more than 3,000 workers. This unexpected decision and the lack of any information and consultation with workers' representatives, and especially with the European Group Committee (as the Renault EWC is called), sparked an unprecedented wave of criticism by political figures and trade unions. This led to what was probably the first ever genuine European-scale strike, involving some thousands of employees in France, Belgium and Spain, with sympathy actions staged at Volkswagen, Volvo, Opel-General Motors (GM) and Ford plants in Belgium, accompanied by specific demonstrations aimed at reversing the company's decision. In April 1997, a Belgian tribunal annulled Renault's decision, finding that the company had ignored legal procedures concerning collective redundancies, information disclosure and negotiation obligations. Renault stood by its decision, but later in 1998 agreed to an amendment in the terms of the EWC agreement, stating clearly that "in the event of a planned exceptional decision which has transnational consequences and is of a nature such as to affect significantly employees' interests, the European Group Committee will meet in extraordinary session", so that the results of consultation could be taken into account in the final decision. The actions which developed around the Vilvoorde case were possible because of the strong role that the EWC was able to play, mobilizing

support among the public and politicians. The EMF also played a supportive role in all this.

A similar situation developed in 2001, when the GM Europe EWC played a major role, alongside the EMF, in organizing a European day of action on 25 January 2001 to protest against a company restructuring plan which envisaged 6,000 redundancies, including, in particular, the end of car production at Vauxhall's Luton plant in the United Kingdom, stating that the EWC had not been informed and consulted in time. The action involved some 40,000 workers around Europe. The GM EWC had already begun to develop a bargaining role in 2000, when it signed an agreement with management on the effects on employment and employee representation of GM's alliance with Fiat, and it was again able to do so over the 2001 restructuring plan. In March 2001, the EWC and GM management reached an agreement on the plan, which included measures to avoid compulsory redundancies and maintain vehicle production at Luton. Later in 2001, GM announced a major restructuring of its Opel subsidiary (the "Olympia plan"); this was again subject to an agreement with the EWC, which reduced planned job losses and closures and provided for "socially responsible" workforce reductions, thereby avoiding compulsory redundancies. The GM EWC has thus taken on a bargaining role which is probably the strongest of any works council (as indicated by research into agreements concluded by EWCs conducted by the European Foundation for the Improvement of Living and Working Conditions). However, it was not the first automotive sector EWC to be recognized as a bargaining partner by company management; that was the Ford EWC, which in early 2000 reached an agreement with management on the consequences for employees' status, employee representation and sourcing of the spin-off of the company's Visteon components subsidiary.

Despite these notable developments, EWCs in most companies remain a relatively weak force in terms of coordinating union actions, as they are designed essentially for information and consultation activities. In some cases, as already seen, they can achieve some further scope for action in the event of reorganization programmes, since they are in a crucial position to organize initiatives across Europe, but their active role has essentially been confined to defensive actions. Trade unions make a number of criticisms of EWCs in this area. First, the absence of any recognition of EWCs as a bargaining agent is felt by some to be a serious drawback. Second, some unions want the EWC to be a genuine trade union structure, rather than a general employee representative body. Third, they point out that such group-level structures may bring together representatives from undertakings operating in quite different sectors, given corporate diversification strategies, so that the potential scope of joint action is considerably reduced and the EWCs' activities inevitably remain at a very general level. According to the Italian unions, this is the situation at the Fiat EWC, where only six of the 30 employee representatives are from the automotive division. Finally, difficulties are sometimes reported in organizing joint and coordinated efforts across different countries, as the specific interests of the different national locations tend to prevail. The unions are trying to address this state of affairs: they are trying, as the Spanish unions put it, to reinforce the "unionization" of EWCs, reduce competition between workplaces, reinforce supranational coordination and strengthen the training of delegates.

10.7. International framework agreements (IFAs)

As of August 2004, there are 31 IFAs, [5] most of which have been concluded since 2002. Such agreements are basically a text negotiated between a large multinational and (usually) a corresponding global union federation (GUF) plus a European sectoral union and/or European or global works council and, in some instances, a national trade union from the multinational's home country. As table 10.4 shows, of the 31 agreements signed with five GUFs, eight have been negotiated with the International Metalworkers' Federation (IMF). Seven of the companies that have signed agreements are in the automobile industry (six with the IMF and one with ICEM), including VW and DaimlerChrysler as assemblers, and Freudenberg, SKF, Leoni, Rheinmetall and Robert Bosch as suppliers. One feature common to all IFAs is a reference to respect for the ILO's core labour standards. And in most cases, the agreement states that the multinationals will encourage their suppliers to abide by these core standards (see table 10.5).

Table 10.4. International framework agreements (IFAs) with motor vehicle companies

Company	Country	Product	Global union federation (GUF)	Year
Danone	France	Food processing	IUF	1988
Accor	France	Hotels	IUF	1995
IKEA	Sweden	Furniture	IFBW	1998
Statoil	Norway	Oil industry	ICEM	1998
Faber-Castell	Germany	Office material	IFBWW	1999
Freudenberg	Germany	Chemicals (auto parts)	ICEM	2000
Hochtief	Germany	Construction	IFBWW	2000
Carrefour	France	Commerce	UNI	2001
Chiquita	United States	Agriculture	IUF	2001
OTE Telecom	Greece	Telecommunication	UNI	2001
Skanska	Sweden	Construction	IFBWW	2001
Telefonica	Spain	Telecommunication	UNI	2001
Merloni	Italy	Metal industry	IMF	2001
Endesa	Spain	Power industry	ICEM	2002
Ballast Nedam	Netherlands	Construction	IFBWW	2002
Fonterra	New Zealand	Dairy industry	IUF	2002
Volkswagen	Germany	Auto assembly	IMF	2002
Norske Skog	Norway	Paper	ICEM	2002
AngloGold	South Africa	Mining	ICEM	2002
DaimlerChrysler	Germany	Auto assembly	IMF	2002
ENI	Italy	Energy (oil and gas)	ICEM	2002
ISS	Denmark	Property maintenance	UNI	2003
Leoni	Germany	Wires and cables (auto parts)	IMF	2003

[5] Although not an entirely new concept (with an example for the food industry going back to 1988), the specific designation IFA – International Framework Agreements – is a relatively recent phenomenon, dating from about 2000.

Company	Country	Product	Global union federation (GUF)	Year
GEA	Germany	Thermal and energy tech.	IMF	2003
SKF	Sweden	Rolling balls (auto parts)	IMF	2003
SCA	Sweden	Packaging, hygiene, forest	ICEM	2004
H & M	Sweden	Retail clothing	UNI	2004
Rheinmetall	Germany	Defence, auto parts, elec.	IMF	2004
Club Mediterannée	France	Tourism	IUF	2004
Robert Bosch	Germany	Electronics, auto parts	IMF	2004
Lukoil	Russia	Oil	ICEM	2004

Source: Based on data from IMF and ICFTU web sites.

Specific examples of recent international framework or similar agreements include the following:

- **Cooperation, responsibility and social dialogue in the Freudenberg Group**

  One of the first IFAs relevant to the supplier industry was signed by Freudenberg AG on 18 August 2000 with ICEM and IG BGE. Freudenberg is a large diversified company, mainly in chemicals, and a main supplier of components to the automotive industry.

  The emphasis in this global agreement is on trade union and other human rights. Specifically cited as touchstones are the relevant Conventions of the International Labour Organization (ILO). Through the agreement with ICEM, Freudenberg undertakes to respect, as a minimum, Conventions Nos. 87 and 98 on freedom of association and collective bargaining; Convention No. 135 on non-discrimination against union representatives; Conventions Nos. 100 and 111 on equal opportunities and treatment; Conventions Nos. 29 and 105 on forced labour; and Convention No. 138 on child labour.

- **Declaration on social rights and industrial relationships at Volkswagen**

  This Declaration was signed in June 2002, by Volkswagen management, the IMF and the Volkswagen Global Works Council (GWC).

  The Declaration states that the principles of the ILO core labour standards will be assured within Volkswagen.

  The VW Declaration deals with freedom of association, collective bargaining, prohibition of child labour and forced labour, non-discrimination, as well as remuneration, health and safety and working time.

  Company management will report to the GWC and its Steering Committee and, in cases of reported violations, one of the two will become active and discuss ways of solving the problems. The IMF's coordinator for the VW Global Works Council is involved in this discussion and will reflect the position of the IMF and its affiliated unions.

  The agreement is applicable to the entire Volkswagen Group – Volkswagen, Audi, Seat, Skoda, Bentley, Lamborghini, Bugatti and Auto-Europa.

- **Social responsibility principles of DaimlerChrysler**

  The above document was signed in September 2002, by DaimlerChrysler and the DaimlerChrysler World Employee Committee, on behalf of the International Metalworkers' Federation.

  In the agreement, DaimlerChrysler acknowledged its social responsibility and supports the principles of human and workers' rights and the environment which form the basis for the United Nations' Global Compact initiative.

  The framework agreement also states that DaimlerChrysler supports and encourages its suppliers to introduce and implement "equivalent principles" in their own companies and expects its suppliers to incorporate these principles as "a basis for relations with DaimlerChrysler".

- **Agreements on principles of social responsibility: General Motors Europe (October 2002, signed by EMF and EWC)**

  Unlike the IFAs, the GM Europe agreement does not mention ILO or United Nations standards but refers to a "private" initiative, the Global Sullivan Principles. However, the GM Europe agreement does not merely reproduce the Sullivan Principles, but adds more specific and extra provisions in a number of areas that mirror ILO core Conventions including: the right to collective bargaining; the right of employees to be neither advantaged nor disadvantaged as a result of their membership of workers' organizations; and promotion of constructive cooperation with trade unions. They also require or encourage suppliers and/or business partners to comply with these principles and rights.

- **Declaration on social rights and industrial relations at Leoni**

  In April 2003, a global framework agreement for the German-based company, covering 18,000 employees at 50 production facilities in more than 20 countries, was signed by the management of Leoni, the Leoni European Works Council and the International Metalworkers' Federation represented by its general secretary, Marcello Malentacchi.

  The agreement at Leoni – a worldwide manufacturer of wires and cables – acknowledges the company's social responsibility, its support of and compliance with "internationally accepted human rights" and the basic right of all employees to establish and join unions and employee representations.

  The IFA stipulates that ILO Conventions Nos. 87 (freedom of association) and 98 (right to collective bargaining) will be respected, and the former right will be granted "even in those countries in which freedom of association is not protected by law".

  The company also "supports and expressly encourages" its contractors to take this declaration into account in their own respective corporate policies. Leoni views this as "an advantageous basis for mutual relationships".

- **SKF code of conduct**

  An international framework agreement (IFA) has been signed by the management of SKF and the president of the SKF European Works Council, also representing the International Metalworkers' Federation. The Swedish company has 39,000 employees at 80 manufacturing sites in 22 countries.

  The agreement at SKF – a worldwide manufacturer of rolling bearings and seals with a large automotive division – acknowledges the company's social responsibility and

the basic right of all employees to establish and join trade unions of their choice and to bargain collectively.

The agreement also states that all employees must be treated equally, fairly and with respect, regardless of race, gender, age, national origin, disability, caste, religion, sexual orientation, union membership or political affiliation. For the purpose of the agreement, the part of the existing "SKF Code of Conduct" covering responsibilities towards employees was copied.

- **Code of conduct (principles of social responsibility) at Rheinmetall AG**

  An international framework agreement for the German-based company Rheinmetall, covering 25,000 employees at more than 20 production facilities around the world, was signed in January 2004 by the management of Rheinmetall, the Rheinmetall European Works Council and by the International Metalworkers' Federation, represented by its general secretary, Marcello Malentacchi. This was the seventh international framework agreement signed by the IMF.

  The agreement at Rheinmetall – a manufacturer of automotive components, weapons equipment and electronics – acknowledges the company's social responsibility and its support of and compliance with the ILO core labour standards.

  The IFA stipulates that ILO Conventions Nos. 87 (freedom of association) and 98 (right to collective bargaining) will be respected. Moreover, the IFA deals with the prohibition of child labour and forced labour and non-discrimination, as well as remuneration, health and safety and working time.

  Also very important, the company "supports and expressly encourages" its contractors to take this declaration into account in their own respective corporate policies. Rheinmetall views this as "an advantageous basis for mutual relationships".

- **Basic principles of social responsibility at Bosch**

  An international framework agreement was signed in April 2004 by management at the German-based automotive and engineering multinational, by the Bosch Group European Works Council and by the International Metalworkers' Federation. The agreement will be implemented throughout the Bosch Group, covering over 225,000 employees at 236 locations in more than 50 countries.

  Stating that a priority at Bosch is to combine "the pursuit of economic objectives with consideration for social and environmental factors", the principles of the agreement are based on the core labour standards of the International Labour Organization.

  Included in the IFA are provisions concerning the right to freedom of association and collective bargaining, children's rights, occupational health and safety, equal opportunities and the rejection of forced labour.

  As well as covering the entire Bosch Group, whose business sectors are divided into:

  – automotive;

  – industrial;

  – consumer goods and building technologies;

  the agreement stipulates that the company will not work with suppliers that fail to comply with the basic ILO standards.

Table 10.5. Specific global union federation (GUF) agreements for the motor vehicle industry

Company	Reference to ILO Conventions	Formal structures and procedures	Reference to subcontractors/ suppliers/business partners	Signature
Freudenberg	29, 105, 87, 98, 100, 111, 138, 182	Consultations shall take place once a year. This includes monitoring the agreement reached. Good examples of developing labour relations, improving occupational safety and health and environmental protection and other items particularly worthy of support can be the object of this dialogue in order to possibly utilize them in cooperation at other corporate levels. Both sides commit themselves to contact each other directly and immediately in case any conflicts or violations of the agreement arise, in order to seek a common solution.		ICEM, IG BGE
Volkswagen	Core labour standards	Will be discussed within the framework of the VW Group Global Works Council.	Volkswagen supports and expressly encourages its contractors to take this declaration into account in their own respective corporate policy. It views this as an advantageous basis for mutual relationships.	Group Global Works Council; Volkswagen AG; International Metalworkers' Federation
DaimlerChrysler	ILO and core labour standards mentioned	Binding for DC throughout the world; a criteria for corporate audit, including the establishment of a central "hotline" empowered to take appropriate action if violated; regular reporting on implementation to employees.	DaimlerChrysler supports and encourages its suppliers to introduce and implement equivalent principles in their own companies. DaimlerChrysler expects its suppliers to incorporate these principles as a basis for relations with DaimlerChrysler. DaimlerChrysler regards the above as a favourable basis for enduring business relations.	DC World Employee Committee(on behalf of IMF)
Leoni	87 and 98. Plus other core standards	Binding for Leoni worldwide; report to EWC.	Leoni supports and encourages its business partners to take this declaration into account in their own respective corporate policies. It views this as an advantageous basis for mutual relationships.	EWC and IMF
SKF	138 and other core standards mentioned	All employees have the obligation to follow the code of conduct. Group Management and the World Works Council presidium will regularly supervise the observance of the code of conduct.	SKF encourages its suppliers to adhere to similar codes of conduct.	For EMF and IMF

Company	Reference to ILO Conventions	Formal structures and procedures	Reference to subcontractors/ suppliers/business partners	Signature
Rheinmetall	87, 98, 100, 105, 111, 132, 182	Binding for Rheinmetall worldwide; report to EWC. All employees have the right to raise problems arising out of the implementation of this code of conduct without fear of sanction.	Rheinmetall supports and encourages its business partners to take this declaration into account in their own respective corporate policies. It views this as an advantageous basis for mutual relationships.	EWC and IMF
Robert Bosch		Complaints regarding possible breaches of the above principles will be investigated; any action required will be discussed and implemented by the responsible senior management and worker representatives. The Executive Committee of the Europa Committee of the Bosch Group will be informed about any complaints that cannot be dealt with satisfactorily at a national level. If necessary, the implementation of this declaration will be discussed at meetings between the Board of Management and the Europa Committee.	Bosch will not work with any suppliers who have demonstrably failed to comply with basic ILO labour standards.	Europa-Committee, IMF for IMF members
Merloni		in the event that the conduct of its own direct suppliers should violate the principles contained in Conventions Nos. 29 and 138 referred to in Art. 1, [Merloni shall] reserve the right to institute sanctions against said suppliers including, for cases of serious violations, cancellation of the contract.	National FIM – FIOM – UILM (also representing the IMF).	

Source: Adapted from Reynald Bourque: International Framework Agreements by year of signature (1989-2004). International Institute for Labour Studies (mimeo).

10.7.1. The impact of IFAs

Because IFAs are a relatively recent phenomenon, little has been written about them. [6] The IMF cites a successful example of DaimlerChrysler using such an agreement to pressure a supplier in Turkey to recognize a local union. VW mentions its agreement in its annual report.

IFAs are a tool now widely used by the IMF and other global union federations to lay down the rules of conduct for multinational enterprises. Since they are negotiated at a global level and require the participation of trade unions, workers feel that IFAs – unlike unilateral codes of conduct – are an ideal instrument for dealing with the issues raised by globalization. Box 10.1 highlights the differences between codes of conduct and IFAs.

Box 10.1

Codes of conduct	IFAs
1. Unilateral initiatives	1. Negotiated between labour and corporate management
2. Do not necessarily recognize all core labour standards	2. Recognize all core labour standards
3. Rarely cover suppliers	3. Usually cover suppliers
4. Monitoring, if any, controlled by management	4. Unions involved in implementation
5. Limited, or no, dialogue with unions	5. Further dialogue between trade unions and management

On the whole it can be said that IFAs are mainly a European phenomenon and, in the automotive industry, largely restricted to German parent companies. They are often signed by the general secretary of a GUF (in this case the IMF). Some have been witnessed by the Director-General of the ILO (or even call for ILO arbitration). Most IFAs are time-bound, which means that they have to be renegotiated at some stage, and this will ensure dialogue and continued relevance.

10.8. Global works councils

In addition to companies that have signed IFAs or have a European works council (EWC), five companies have established works councils/committees for their global operations. Three of these are automotive companies (VW, DaimlerChrysler and Renault). The other two are NatWest and SKF (with a global works council limited to its ball bearings division).

The first automotive company to establish a global works council was Volkswagen, which set up the Volkswagen Group Global Works Council (VW GWC) in May 1999, followed by Renault in 2000 and DaimlerChrysler in 2002. The move is literally an expansion of the EWC to the world level, and formalized the existing practice of inviting workers from VW operations in Brazil, Mexico, South Africa and Argentina to meetings of the EWC (see table 10.6).

[6] See for example, I. Graham, A. Bibby: "Global labour agreements: A framework for rights", in *World of Work* (Geneva, ILO), No. 45, Dec. 2002, pp. 4-6; "Update on global agreements", in *European Industrial Relations Review*, No. 353, June 2003, pp. 26-30.

Table 10.6. Composition of Volkswagen Group Global Works Council

Country	Number of representatives	By marque
Germany	11	8 VW, 2 Audi, 1 VW Sachsen
Spain	3	2 SEAT, 1VW Navarra
Belgium	1	1 VW Brussels
Czech Republic	1	1 Skoda
Slovakia	1	1 VW Slovakia
Poland	1	1 VW Poznan
United Kingdom	1	1 Bentley
Portugal	1	1 Autoeuropa
Total (European)	20	
Mexico	1	1VW de Mexico
Brazil	4	4 VW do Brazil
Argentina	1	1 VW Argentina
South Africa	1	1 VW South Africa
Total (non-European)	7	

The GWC has a president, a general secretary and an executive committee. A full-time union official is entitled to attend meetings of both the GWC and its executive committee. The entire VW group board attends WGC meetings as it does those of the EWC. The GWC elects an executive committee which is responsible for the organization of meetings. Each VW marque and each region in which VW has operations has at least one delegate on the committee (see table 10.7).

Table 10.7. Composition of VW GWC Executive Committee

Marque/region	Competence	Number
VW	VW operations in Germany, Belgium, the United Kingdom, Spain, Poland, Slovakia and South Africa	2
AUDI	AUDI operations in Germany and Hungary	1
SEAT	SEAT operations in Spain	1
Skoda	Skoda operations in the Czech Republic	1
North America	VW plant in Mexico	1
South America	VW operations in Brazil and Argentina	
Total		7

The VW GWC is an information and consultation forum concerned in particular with strategic issues connected with the development of the VW Group on a global scale. The GWC agreement defines a precise right to consultation in the event of planned relocations of production with supra-regional effects. The GWC or its executive committee must be informed of planned relocations as soon as possible, and has the right to issue an opinion within a mutually agreed period of time. The GWC is also entitled to request formal consultations about the proposed relocation.

According to one view there are three roads to setting up a world or global works council. One is what SKF has done, which was essentially to take the formula of the IMF World Company Councils and expand them to include management. The second is to use

the VW model and extend the EWC to all its plants throughout the world. The third may be to create them via IFAs where such agreements call for a structure of this kind to oversee implementation.

10.9. Corporate social responsibility: Global Reporting Initiative (GRI) and the UNEP Mobility Forum

The Global Reporting Initiative (GRI) [7] is an independent global institution with the mission of developing a generally accepted framework for sustainability reporting that covers economic, environmental and social performance. Recognized by the recent United Nations World Summit on Sustainable Development, GRI is based in Amsterdam in the Netherlands.

The UNEP Mobility Forum is a voluntary initiative of 13 automotive manufacturers from Europe, Asia and the United States. These companies are working together with the United Nations Environment Programme (UNEP) to protect the environment while maintaining healthy and profitable businesses operating within the framework of sustainable development. The group prepared a background paper *Industry as a partner for sustainable development: Automotive report* as a contribution to the World Summit on Sustainable Development.

In May 2002, the GRI and the UNEP Mobility Forum convened the first session of a multi-stakeholder working group with the purpose of developing an automotive sector supplement to the 2002 Sustainability Reporting Guidelines. This supplement will become part of a growing set of GRI sector supplements designed for use in conjunction with the Guidelines. These supplements highlight issues and identify performance indicators specific to the sector.

The challenge of defining the content of the supplement was the responsibility of a multi-stakeholder working group with expertise in the automotive industry and sustainability. This group comprised individuals from a number of constituencies including businesses, civil society organizations, trade unions and investors drawn from a range of geographic regions. [8]

The working group subsequently met another three times throughout 2003 (in January, May and December). Following the December meeting (after a 90-day public comment period when the draft supplement had been posted on the web [9]), the group finalized the document for review by the GRI Governing Body prior to release as a pilot version. Although the Automotive Sector Supplement is not yet cleared, a number of large automotive companies are already reporting in accordance with the overall Guidelines, and Volkswagen makes reference to the draft supplement.

Following release as a pilot version, the GRI will establish a structured feedback process under the supervision of its Technical Advisory Council. This process will engage

[7] For further details see www.globalreporting.org .

[8] In addition to the companies and suppliers, industry associations, NGOs, academics, ILO, the EU Commission and the International Metalworkers' Federation participated in various sessions of the working group.

[9] At http://www.globalreporting.org/guidelines/sectors/AutomotiveAug11-03.pdf . In a communication dated 27 February 2004, the IMF stated its disagreement with the supplement and inability to endorse it.

reporters and users in the broader marketplace to provide feedback resulting from use of the supplement. On the basis of that feedback, the Technical Advisory Council will present its recommendations to the GRI Board of Directors as to whether further refinement and consultation is needed prior to release under the title of Final Version.

In addition to environmental concerns, there are many elements under the GRI Guidelines that deal with supply chain management, occupational safety and health (OSH) and freedom of association. For example, the Guidelines require companies to list all suppliers from which 10 per cent of total purchases were made (EC11). Total payroll and benefits, broken down by country or region, are also to be provided (EC5). Evidence of compliance with the ILO's *Guidelines on occupational safety and health management systems* (ILO-OSH 2001) is also required (LA14). With respect to education and training, information is required on hours of training per year by category of employee (LA9), on programmes to support continued employability (LA16) and on policies for lifelong learning (LA17). The gender breakdown of senior managers should also be provided (LA11). Companies are also required to provide a description of their policies and procedures to evaluate and address human rights performance within their supply chain and contractors, including information on their monitoring systems and results of the monitoring (HR3). The human rights social performance indicators are consistent with the ILO's core labour standards, with respect to non-discrimination (HR4), freedom of association and collective bargaining (HR5), child labour (HR6) and the prevention of forced or compulsory labour (HR7). A reference to measures to address the needs of indigenous peoples is also included (HR12).

In reporting under the Guidelines, the automotive supplement has requested the following additional details, as presented in box 10.2.

Box 10.2
GRI Automotive Sector Supplement

Category: Economic

Aspect	Commentary
Employees	When responding to EC5, also provide segmentation of the following: ■ Wages for company's lowest-compensated and median-compensated full-time equivalent employees; and ■ National minimum wage.

Category: Environmental

Aspect	GRI Indicator	Commentary
Emissions, effluents and waste	EN10. NOx, SOx and other significant air emissions by type. Note: This GRI indicator refers to emissions from operations, not product use.	Response to this indicator should include VOC emissions.
Products and services	EN15. Percentage of the weight of products sold that is reclaimable at the end of the products' useful life and percentage that is actually reclaimed. "Reclaimable" refers to either the recycling or reuse of the product materials or components.	In the automotive sector "reclaiming" refers to reusing and recovering materials as well as recovering energy. These three categories of reclaiming should be reported on separately. The automotive industry typically does not perform the actual reclaiming of materials from its products.

Category: Social		
Aspect	GRI Indicator	Commentary
Customer health and safety	PR1. Description of policy for preserving customer health and safety during use of products and services and extent to which this policy is visibly stated and applied, as well as description of procedures/programmes to address this issue including monitoring systems and results of monitoring.	Key customer health and safety issues in the auto industry relate to approaches to active safety, passive safety and security. Active safety can be understood as features to avoid accidents such as ergonomic design or braking systems. Passive safety refers to features to avoid personal injuries to vehicle occupants in case of accident such as safety belts. Safety measures protect not only vehicle occupants, but also other road users. Security relates to the security of the product (theft of/from the product) and personal security. These ideas should form the basis for discussing PR1.
	PR5. Number of complaints upheld by regulatory or similar official bodies to oversee or regulate the health and safety of products and services.	This indicator was also identified as a useful quantitative measure for reporting on customer health and safety related to automotive products.
Training and education	LA9. Average hours of training per year per employee by category of employee.	Automotive companies should provide qualitative information on whether investments in training and education are for skills development or lifelong learning (including third parties).
Employment	LA1. Breakdown of workforce, where possible, by region/country, status (employee/non-employee), employment type (full time/part time) and by employment contract (indefinite or permanent/fixed term or temporary). Also identify workforce retained in conjunction with other employers (temporary agency workers or workers in co-employment relationships).	Companies should provide the occupational distribution of their workforce.

The following new indicators relevant to social and labour issues were included:

New indicators

Category: Social	
Aspect	Indicator
Working time	S1. Specify stipulated work hours per week and average hours worked overtime in production. S2. Percentage of employees not managed on an hourly basis with overtime compensation schemes
Freedom of association and collective bargaining	S3. Percentage of major first-tier supplier facilities with independent trade union organizations or other bona fide employee representatives. State amount of purchases from these suppliers as a percentage of overall purchases

Note on the above: Although working time and employee compensation are issues for many sectors, the 2002 GRI Guidelines recommend that they be addressed in the context of sector supplements. Also note that the GRI Guidelines indicator HR3 is a qualitative indicator relating to human rights performance in the supply chain.

11. The relevance of the Decent Work Agenda to the automotive industry

The Decent Work Agenda brings together the goals of rights at work, employment, social protection and social dialogue in a consolidated, gender-sensitive vision which guides economic and social policy choices across the board. This is especially true in the light of the recommendation contained in the report of the World Commission on the Social Dimension of Globalization that: "Decent work for all should be made a global goal and pursued through more coherent policies within the multilateral system". [1] Decent work was identified in the report as an important goal for national action, encompassing full employment, social protection, fundamental rights at work and social dialogue – all key ingredients for achieving global social justice.

In his Report to the 89th Session of the International Labour Conference in 2001, [2] the Director-General wrote:

> In order to effectively promote the goal of decent work for all, the Office must be able to measure and monitor progress and deficits […]. At present our information systems provide only a partial, and sometimes only a rudimentary, picture of decent work deficits […]. If there is one place in the world where people can turn for quality information on decent work, it should be the ILO. We need to make a major investment in the design and implementation of our data and statistical base.

In order to make that investment, we need to have a clear view of where the priorities lie. Decent work is a broad concept, with many dimensions. Some of its dimensions are much more readily measured than others, and that is reflected in the varying availability of statistics on different topics: it is on the whole easier to measure employment, for example, than to measure freedom of association. But while one inevitably ends up measuring what is measurable, the very nature of decent work as an integrated framework calls for an approach which attempts to address the difficult issues. If we cannot measure progress towards decent work, it is difficult to get beyond rhetoric and into the hard policy choices. This is a fundamental issue, a foundation for much else.

A first attempt to measure decent work was undertaken in an ILO paper entitled: "Measuring decent work with statistical indicators", [3] on which the following sections are based.

11.1. Conceptual dimensions of decent work

The definition of decent work as "opportunities for women and men to obtain decent and productive work, in conditions of freedom, equity, security and human dignity" [4] explicitly includes six dimensions.

[1] World Commission on the Social Dimension of Globalization: *A fair globalization: Creating opportunities for all* (Geneva, ILO, 2004), p. 145.

[2] ILO: *Reducing the decent work deficit: A global challenge*, Report of the Director-General, International Labour Conference, 89th Session, Geneva, 2001, p. 66.

[3] Paper prepared by the ILO's Statistical Development and Analysis Unit, Policy Integration Department, for the Joint UNECE-EUROSTAT-ILO Seminar on Measurement of the Quality of Employment, Geneva, 27-29 May 2002.

(i) *Opportunities for work* refers to the need for all men and women who want work to be able to find it, since decent work is not possible if there is no work at all. The underlying concept of work is a broad one, encompassing all forms of economic activity, including self-employment, unpaid family work and wage employment in both the informal and formal sectors.

(ii) *Freedom of choice of employment* concerns the fact that work should be freely chosen, not forced on individuals, and the fact that certain forms of work are not acceptable in the twenty-first century. This means that bonded and slave labour, as well as unacceptable forms of child labour, should be eliminated in accordance with commitments accepted by governments in international declarations and labour standards.

(iii) *Productive work* is essential if workers are to have acceptable livelihoods for themselves and their families, as well as being a prerequisite of sustainable development and competitiveness of enterprises and countries.

(iv) *Equity in work* refers to the need of workers for fair and equitable treatment at work. It encompasses absence of discrimination at work and in access to work, and the ability to balance work and family life.

(v) *Security at work* reflects the need to safeguard health, pensions and livelihoods, and to provide adequate financial and other protection in the event of illness and other contingencies. It also recognizes workers' needs to limit insecurity associated with the possible loss of work and livelihood.

(vi) *Dignity at work* requires that workers be treated with respect at work, and be able to voice concerns and participate in decision-making about working conditions. An essential ingredient is workers' freedom to join organizations that represent their interests.

11.2. Statistical indicators of decent work

Statistical indicators of decent work are identified in this paper in terms of both general characteristics and specific indicators of decent work. We began with ten general characteristics of work that individuals from around the world would consider important elements of decent work. These ten aspects are complemented by an eleventh group of indicators that summarize key aspects of the economic and social context of decent work, and is intended to describe characteristics of the economy and population that determine levels, patterns, and sustainability of decent work. The 11 groups of indicators are:

1. Employment opportunities.

2. Unacceptable work.

3. Adequate earnings and productive work.

4. Decent hours.

5. Stability and security of work.

[4] ILO: *Decent work*, Report of the Director-General, International Labour Conference, 87th Session, Geneva, 1999, p. 3.

6. Fair treatment in employment and at work.

7. Safe work environment.

8. Social protection.

9. Combining work and family life.

10. Social dialogue and workplace relations.

11. The economic and social context of decent work.

Ten of the general characteristics of decent work do in fact cover the six "dimensions" of decent work included in the Director General's description of decent work referred to in section 11.1. Thus, employment opportunities correspond to *opportunities for work*; unacceptable work to *freedom of choice of employment*; adequate earnings and productive work to *productive work*; fair treatment in employment, combining work and family life, and social dialogue relate to *equity* and *dignity at work*; and safe work environment, social protection, and stability and security of work correspond to *security at work*.

While the major automotive companies and Tier-1 suppliers would probably score well on any decent work index, there is less certainty with respect to the practices of second- and third-tier suppliers. The meeting may wish to discuss the appropriateness of measuring the suggested ILO decent work indicators in the automotive supplier industry.

One example of how the Decent Work Agenda can be implemented is through improved safety and health in the automotive supplier chain. A related ILO technical cooperation project is described in box 11.1.

Box 11.1
ILO Labour Inspection Project on Safety and Health and Supply Chain Management

Occupational safety and health is a cornerstone of corporate social responsibility (CSR) and can significantly contribute to the global goal of poverty reduction through ensuring a safe and healthy working environment. But it also has a direct impact at the workplace, as both, workers and employers are the beneficiaries of a properly functioning OSH system.

Together with Volkswagen, the ILO's SafeWork Programme has started a project in Mexico, Brazil and South Africa to introduce the concept of safety and health to supply chain management. The project was launched in July 2004 by the German Ministry of Economics and Labour and the German Corporation for Technical Cooperation (GTZ) together with Volkswagen management. The project is intended to last three years and will be carried out in the framework of the Public Private Partnership Programme, which means that in addition to the project allocations provided from the German "2015 poverty reduction fund", the private project partners will contribute the same amount in cash and kind.

The main objectives of the project are to establish National SafeWork Programmes and organize training for labour inspectors, as well as for safety and health experts from Volkswagen suppliers. The suppliers will be audited to measure the improvement in their safety and health performance and to reduce the rate of absenteeism related to work accidents and ill health. Special attention will be given to HIV/AIDS at the workplace and accident prevention methods, including the introduction of a national accident recording and reporting system aimed at improved economic performance within the supply chain.

A case study from the diversified utilities multinational RWE indicated that by improving their health and safety standards, the company managed to reduce the rate of absenteeism by 2 per cent, saving US$20 million per year. Similar strategies will be sought in the project. The results of the individual audits will be used to develop an *OSH supply chain management guideline* for broader use in other supply chains at the national and international levels.

More information on the project can be obtained from the project director Gerd Albracht, and the project manager Bernd Treichel, ILO InFocus Programme on Safety and Health at Work and the Environment (safework@ilo.org).

12. Summary of main points and panel themes

12.1. Summary points

Suppliers today play an increasingly important role in the automotive industry as a whole. They already contribute up to two-thirds of the value added of a car, an amount predicted to rise in the next few years to as much as 75 per cent.

- The worldwide employment breakdown between assemblers and suppliers in the automotive sector is currently estimated to be on average 54:46, reaching 33:66 in some cases. The trend appears likely to move towards the latter ratio.

- Emerging markets will increase their share of global components production. This will happen chiefly through the increase in automotive assembly in Central and Eastern Europe, China and India.

- Although component production in developing countries is increasing rapidly, and despite a potential for outsourcing from companies in advanced countries due to lower labour costs, developing countries accounted for only 12 per cent of world components exports in 1999.

- However, domestic suppliers in emerging automotive economies may not always be able to fully capitalize on increased demand for components, as foreign Tier-1 suppliers co-locate in emerging markets, with their major customers as inward investors.

- Vehicle assemblers who market the final product can dictate requirements to suppliers, inter alia, in terms of cost, quality and the location of production.

- It is inevitable that many suppliers will remain vulnerable (despite their technological strength) since – with few exceptions – the automobile assemblers are their only customers. However, suppliers that are able to innovate, exploit intellectual property and support a balanced product base will be "in the driver's seat".

- To match the consolidation in the assembly sector, more and more Tier-1 suppliers are expected to merge and reinforce the coordination role they already play vis-à-vis the activities of Tier-2 and Tier-3 suppliers.

- Nevertheless, should the financial weakness of many of the vehicle assemblers continue – an unhealthy situation for suppliers in particular – and should there continue to be an assumption of greater responsibilities and risks by suppliers, the balance of decision-making power *may* tilt in favour of the Tier-1 suppliers. This will be still more likely if the supplier sector experiences further merger and acquisition activity.

- The pressure to continuously reduce costs, diversify, and deliver to increasingly just-in-time schedules, will invariably impact on working conditions in suppliers, and require even greater flexibility on the part of the workforce.

- Assemblers are passing on more responsibility and risk to supplier firms, in areas as diverse as product liability, research and development, and stock keeping. This shift in turn affects the position of workers within those firms.

- One positive result of this process is the continued migration of competencies from assemblers to components manufacturers. One supplier, for example, registered more patents in 2003 than any automobile manufacturer, and in one major automobile-producing country, a supplier is poised to become the largest employer in the sector.

- With the share per vehicle of electronic components and synthetic material increasing, other firms now outside the automotive industry may enter the market as suppliers, thereby transforming the shape of the industry.

- However, the trend towards an ever greater electronics content per vehicle may not continue as systems become too complex and subject to failure.

- Automobile manufacturers and Tier-1 suppliers have been in the forefront of signing International Framework Agreements (IFAs) with the International Metalworkers' Federation and local union representatives.

- These IFAs recognize the core labour standards of the ILO. The companies involved state that they expect their suppliers to adhere to the same standards as part of their continuing business relationship.

- The Global Reporting Initiative (GRI) also contains reference to ILO core standards. Companies are expected to report on their own compliance, as well as that of their suppliers throughout the value added chain.

- There are considerable difficulties in obtaining up-to-date internationally comparable statistics on the labour market in the automotive components sector, and efforts need to be made to remedy the situation.

12.2. Panel themes

Discussions at this meeting are being organized around three panels.

1. *Employment development.* In the light of the information given in this report, the participants may wish to discuss the likely implications of restructuring and of an ever larger number of jobs being shifted to the supplier industry, the implications of an even greater integration in the global supply chain, and the nature of this employment in suppliers as compared to that in the final assemblers.

2. *Social dialogue.* A number of companies have established World Works Councils and signed International Framework Agreements (IFAs). Since all IFAs refer to ILO core labour standards and indicate that they should be respected by suppliers, the participants may wish to share their experiences about how these function, especially with respect to the assembler-supplier relationship. In view of the fact that union density tends to be lower in suppliers than in the final assemblers, specific issues of freedom of association, trade union recognition and collective bargaining may also be discussed

3. *Other aspects of decent work.* The report has outlined one ILO approach to defining indicators of decent work. The meeting may wish to discuss developing a decent work index for the automotive components industry. Lifelong learning and OSH will also become more important for suppliers as more responsibility and functions are transferred to them.

Annex 1

Table A1.1. Tier-1 suppliers, top 100 motor vehicle suppliers

Company	Headquarters	Total worldwide parts sales $ millions 2003	Total worldwide parts sales $ millions 2002	Employees 2003	Employees 2002	Percent North America 2003	Percent Europe 2003	Percent Asia-Pacific 2003	Percent rest of world 2003	Products
Robert Bosch GmbH	Germany	29 736	29 358	229 439	225 897	23	61		16	Fuel injection systems, chassis systems, energy and body systems, automotive multimedia and electronics
Delphi Automotive Systems	United States	26 200	25 527	189 000	196 000	74	21	3	2	Steering, chassis, electrical, energy thermal and engine management; interiors, electronic components, entertainment systems
Denso Corporation	Japan	16 856	15 348	95 461	89 380	23	12	65		Thermal, power train control, electronic and electric systems; small, motors, telecommunications, industrial and environmental systems
Visteon Corporation	United States	16 513	16 900	72 000	77 000	67	18	8	7	Chassis, climate control, cockpits, electronics, exterior/interior systems, power train control, engine management, fuel systems
Lear Corporation	United States	15 747	14 400	111 022	114 694	60	36		4	Interior systems, seats, instrument/door trim panels, overhead, flooring and acoustic systems, electronic/electrical distribution systems
Magna International Inc.	Canada	15 345	12 422	75 000	73 000	68	30	1	1	Interiors, exteriors, body and chassis systems, seats, mirrors, closures, electronics, engines, transmissions
Johnson Controls Inc.	United States	15 192	13 714	118 000	111 000	53	39	7	1	Seats, interior trim, batteries, electronics, cockpits and instrument panels
Aisin Seiki Co. Ltd.	Japan	13 534	10 716	44 132	40 234	12	7	80	1	Body systems, brake and chassis systems, electronics, drive train and engine components
Faurecia	France	12 700	10 000	52 041	52 226	10	86	3	1	Seats, cockpits, doors, acoustic packages, front ends, exhaust systems
TRW, Inc.	United States	11 300	9 900	60 800	64 000	41	50		9	Steering, suspension, braking, engine components, fasteners, occupant restraint systems, electronic safety and security
Siemens VDO	Germany	9 500	8 500	43 600	43 000	18	73	7	2	Electrical and electronic components and systems

Company	Headquarters	Total worldwide parts sales $ millions 2003	Total worldwide parts sales $ millions 2002	Employees 2003	Employees 2002	Percent North America 2003	Percent Europe 2003	Percent Asia-Pacific 2003	Percent rest of world 2003	Products
Valeo SA	France	8 879	7 693	68 200	69 100	19	71	7	3	Transmissions, climate control, engine cooling, lighting, electrical and wiper systems, motors and actuators, security systems, switches, electronics
ZF Friedrichshafen AG	Germany	8 200	6 900	53 487	53 281	20	70	7	3	Transmissions, steering systems, suspension components axles, clutches, dampers
Dana Corporation	United States	7 918	7 315	59 000	63 100	70	19	6	5	Axles, driveshafts, structures, sealing, thermal management, fluid transfer and engine power products, chassis
Continental AG	Germany	7 600	5 600	32 000	32 000	30	60	5	5	Electronic brakes, stability management systems, tyres, foundation brakes, chassis systems, safety system electronics
ThyssenKrupp Automotive AG	Germany	7 300	6 218	68 829	65 127	50	46	1	3	Body systems, chassis modules, power trains, suspensions, steering systems, drive trains
Yazaki Corporation	Japan	5 900	5 800	41 414	38 425	38	11	43	8	Electrical distribution systems, electronics, instrumentation, connectors and components
DuPont	United States	5 510	5 400	120 000	120 000	50	35	11	4	Coatings, engineering polymers, fibres, chemicals, refrigerants and finishes, small motor and transmission components
Calsonic	Japan	5 436	4 468	81 000	79 000	26	8	66		Climate control, engine cooling and exhaust systems; instrument clusters, console box, cockpit modules, instrument panels
Autoliv, Inc.	Sweden	5 301	4 443	32 100	30 100	35	50	10	5	Airbags, inflators, seat belts, sensors, steering wheels
Michelin Group	France	4 676	4 650	121 345	121 017	27	44		29	Tyres
KOYO SEIKO	Japan	4 062	3 516	6 185	6 557	11	27	60	2	Bearings, hub units, steering systems, driveshafts
Collins & Aikman Corp.	United States	3 984	3 886	23 900	25 000	73	25	1	1	Cockpit modules, instrument panels, flooring and acoustic systems, fabrics, trim, convertible top systems and accessory mats
Arvinmeritor	United States	3 915	3 594	32 000	n/a	50	40	7	3	Air and emission technologies, aperture and undercarriage systems, drive trains, braking and suspension systems, specialty components

Company	Headquarters	Total worldwide parts sales $ millions 2003	Total worldwide parts sales $ millions 2002	Employees 2003	Employees 2002	Percent North America 2003	Percent Europe 2003	Percent Asia-Pacific 2003	Percent rest of world 2003	Products
GKN PLC UK	United Kingdom	3 890	4 733	47 900	47 600	50	38		12	Constant velocity products, powdered metal components, traction systems
American Axle & Manufacturing	United States	3 683	3 480	n/a	n/a	96	3		1	Chassis and driveline systems, forged products, axle driveline modules
TAKATA TK Holdings Inc.	Japan	3 450	3 200	n/a	29 000	38	35	26	1	Airbags, seat belts, electronics, steering wheels, interior trim
Bridgestone/Firestone Inc.	Japan	3 420	3 800	108 741	106 846	28	22	41	9	Tyres, tubes and components
Freudenberg NOK	Germany	3 400	3 000	25 000	25 000	20	40	39	1	Seals, NVH components, precision moulded components for suspension, fuel and electrical systems
Benteler Automotive Corp.	Germany	3 400	2 484	12 324	11 528	21	72	3	4	Chassis, exhaust and impact-management systems, tubular components, engine applications
Goodyear Tire & Rubber Co.	United States	3 296	3 200	13 800	13 700	49	32		19	Tyres, hoses, belts, interior trim, air springs, moulded rubber products
Hitachi Automotive Products Inc.	Japan	3 284	1 513	51 887	54 881	24	6	70		Electrical and electronic devices
Panasonic Automotive Electronics Co.	Japan	3 200	2 950	288 324 (total)	291 232 (total)	31				Audio equipment, navigation systems, compressors, batteries, motors, monitors, sensors, switches
Toyoda Gosei	Japan	3 162	2 555	13 487	12 321	27	3	70		Sealing systems, interior systems, opto-electronics, exterior trim, safety systems, fuel systems
Mahle Inc.	Germany	3 109	2 471	30 646	29 122	17	58	14	11	Pistons, rings, bearings and assemblies, valve train and filter systems
Motorola-Automotive	United States	2 949	2 617	88 000 (total)	97 000 (total)	63	29	5	3	Power train controllers, telematics, interior electronics, chassis electronics, sensors, GPS technologies, semiconductors
Federal-Mogul	United States	2 939	2 999	45 000	47 000	43	53	2	2	Pistons, piston rings and liners, valve train and transmission products, systems protection, bearings, lighting, seals
Magneti Marelli S.p.A.	Italy	2 886	2 674	19 879	20 716	7	80	3	10	Engine control systems, lighting, instrumentation, exhaust, electronics, shocks, suspension systems

Company	Headquarters	Total worldwide parts sales $ millions 2003	Total worldwide parts sales $ millions 2002	Employees 2003	Employees 2002	Percent North America 2003	Percent Europe 2003	Percent Asia-Pacific 2003	Percent rest of world 2003	Products
Tenneco Automotive	United States	2 837	2 551	n/a	n/a	50	39	5	6	Shocks, struts, vibration control, load assist products, springs, bushings, rods, roll control systems, manifolds, catalytic converters, mufflers, filters, exhaust
Tower Automotive	United States	2 816	2 754			71	15	13	1	Structural components, assemblies and suspension modules
ALCOA	United States	2 800	3 100	120 000 (total)	127 000 (total)	70	20	10		Wheels, chassis and suspension, body and closures, electrical systems, sheet, front and rear cradles
NSK Corp.	Japan	2 791	2 572	20 351	22 337	15	15	68	2	Bearings, electro-magnetic clutch, steering columns, electric power steering
BorgWarner Inc.	United States	2 741	2 434			57	28	15		Transmission, engine and power train assemblies
Mitsubishi Electric Corp.	Japan	2 735	2 542	110 279 (total)	116 192 (total)	21	6	73		Engine management, ignition systems, audio systems, alternators, starter motors, navigation systems
Cummins Engine Company	United States	2 607	2 414	24 200	23 700	61	17	18	4	Diesel engines
BASF	Germany	2 400	n.a.	87 159 (total)	89 389 (total)	24	55	16	5	Coatings, plastics, fibres
Dura	United States	2 381	2 360	17 800	18 000	60	39		1	Driver control, integrated glass, seating control systems, structural door modules, engineered assemblies
BEHR	Germany	2 353	2 045	5 276	5 493	12	81	2	5	Engine cooling, air conditioning
Hella Inc.	Germany	2 332	2 151	12 773	12 942	11	84	5		Lighting, electrical systems and modules
Honeywell Transportation & Power Systems	United States	2 300	1 703	108 000 (total)	108 000 (total	45	48	7		Brake friction materials, filters, sensors, turbochargers, refrigerants, spark plugs, brake systems, nylon, plastics and fibres
Stanley Electric. Co. Inc.	Japan	2 276	1 890	n/a	n/a	23	2	75		Lighting, heater controls, bulbs
TI Automotive	United Kingdom	2 189	1 963	20 000	21 000	45	47	5	3	Fluid storage/delivery systems, hydroformed components, brake and air-conditioning applications

Company	Headquarters	Total worldwide parts sales $ millions 2003	Total worldwide parts sales $ millions 2002	Employees 2003	Employees 2002	Percent North America 2003	Percent Europe 2003	Percent Asia-Pacific 2003	Percent rest of world 2003	Products
TOKAI RIKA Co. Ltd.	Japan	2 188	2 030	10 045	8 452	20	1	79		Switches, steering wheels, airbags, shifters, key cylinders, key set locks
Brose	Germany	2 122	1 887	7 500	6 910	12	79	3	6	Window regulators, door modules, seat adjusters, closure systems
PPG Industries	United States	2 100	1 800	34 100	32 900	65	25	5	5	Coatings, glass
Saint-Gobain Corp.	France	2 089	2 222	172 811 (total)	172 357 (total)	22	74		4	Glass, abrasives, fibreglass reinforcements, coatings, compounds, bearing, seals
Kolbenschmidt Pierburg AG	Germany	2 050	1 890	11 316	11 535	16	77	3	4	Pistons
Navistar International	United States	1 956	1 607	14 200	16 174	90			10	Diesel truck engines
Hayes Lemmerz	United States	1 900	1 882	11 000	11 000	54	37	4	5	Wheels, brakes, power train and suspension components
ASAHI Glass Company	Japan	1 800	1 800	55 732	48 362	20	30	50		Glazing systems
NTN Corp.	Japan	1 790	1 736	11 810	11 989	30	16	54		Driveshafts, constant velocity products, hub and clutch units, bearings
plastic omnium	France	1 765	1 353	9 377	9 200	31	65	3	1	Fuel tanks, bumper fascias
Cooper Tire	United States	1 700	1 600	22 899	23 024	73	23		4	Sealing and fluid systems, NVH control systems
Showa	Japan	1 636	1 478	7 556	n/a	38		48		Shock absorbers, power steering gearbox and pump
nhk spring	Japan	1 616	1 584	9 168	8 816	16	1	83		Suspension springs, seats and valve springs
Eaton	United States	1 465	1 383	51 000	48 000	70	25	2	3	Superchargers, valves, valve train components, cylinder heads, differentials, sensors, actuators, cruise control, body mouldings and trim
New Venture Gear Inc.	United States	1 448	1 689	n/a	n/a	92	8			Transfer cases, transmissions and transaxles, differentials
Alcoa Fujikura Ltd.	United States	1 430	1 800	n/a	n/a	55	45			Wire harnesses, controllers, relays, fibre optics
Metaldyne	United States	1 412	1 470	7 250	7 100	84	16			Forged/powdered metal, engines, transmissions, axle/drivelines NVH, wheel end and suspension components

Company	Headquarters	Total worldwide parts sales $ millions 2003	Total worldwide parts sales $ millions 2002	Employees 2003	Employees 2002	Percent North America 2003	Percent Europe 2003	Percent Asia-Pacific 2003	Percent rest of world 2003	Products
Rieter Automotive	Switzerland	1 400	1 265	13 316	12 983	33	61	1	5	Acoustic systems, interior trim, thermal management systems
Webasto	Germany	1 367	1 298	5 779	5 231	27	58	14	1	Roof systems, sunroofs, roof modules, deck spoilers, convertibles, supplemental heaters, cooling systems, power tonneau covers
Flex-N-Gate	United States	1 350	1 300	n/a	n/a	90	5	3	2	Plastic and steel bumpers, fascias, stamping
Timken	United States	1 396	753	26 000	18 000	75	17	4	4	Bearings, hub units, steering and engine products
Pilkington	United Kingdom	1 340	1 808	23 900	25 200	43	48	4	5	Glass products and glazing systems
hutchinson	France	1 318	1 448	24 565	24 820	27	68		5	Anti-vibration products, fluid transfer systems, sealing systems, transmission systems
Karmann	Germany	1 300	1 300			6	94			Convertible roof systems
Eberspächer	Germany	1 300	1 070	5 119	5 198	4	89	1	6	Heaters, exhaust systems, silencers, catalytic converters
MANDO	South Korea	1 300	1 009	n/a	n/a	4	2	94		Brake, steering and suspension systems and components
ALCAN Automotive	Canada	1 250	1 000	48 000	54 000	52	48			Aluminium sheet and ingot, stamping blanks, cut and forged components, structural assemblies
Tomkins PLC	United Kingdom	1 229	1 229	23 692	20 990	59	22	17	2	Drive systems, fluid management systems, hose assemblies, windshield wiper systems
INERGY Automotive System	France	1 200	1 180			42	50	6	2	Fuel systems
Key Safety Systems Inc.	United States	1 200	1 179	14 000	14 000	45	45		10	Airbags, seat belts, steering wheels, electronics
Dow Automotive	United States	1 127	1 025	46 400	50 000	50	38	3	9	Plastics, adhesives, sealants, plastics enhanced products, body structure and NVH systems
skf automotive	Sweden	1 120	949	38 700	39 739	30	60	6	4	Bearings, wheel hub units, clutch assemblies, pistons, grease and oil sealing devices, moulded rubber products, drive-by-wire systems
Schefenacker	Germany	1 119	1 119	6 223	6 303	18				Exterior/interior mirror systems, audio systems, rear and signal lighting systems

Company	Headquarters	Total worldwide parts sales $ millions 2003	Total worldwide parts sales $ millions 2002	Employees 2003	Employees 2002	Percent North America 2003	Percent Europe 2003	Percent Asia-Pacific 2003	Percent rest of world 2003	Products
3M	United States	1 030	998	67 072 (total)	68 774 (total)	39				Abrasives, acoustical insulation, adhesives, trim, lighting, optical films, fasteners, safety equipment, mounts, diesel filters, filtration, design projects
meridian auto systems	United States	1 025	1 064	5 500	5 900	100				Bumper systems, composites, exterior lighting, console modules and trim
oxford automotive	United States	1 007	841	7 200	7 200	48	52			Structural, suspension and chassis, assemblies and components
Clarion	Japan	1 006	1 044	9 100	10 837	19	17	63	1	Audio systems, mobile multimedia systems, satellite and digital radio, in-vehicle computing, camera systems, components and mechanisms
f tech	Japan	1 001	822	3 300	3 300	53		47		Chassis, suspension systems, pedal assemblies, hydroforming
venture industries	United States	1 000	1 676	n/a	n/a	50	50			Interior/exterior components, systems and modules
MITSUI KINZOKU	Japan	1 000	n.a.	8 339	8 619	50	4	44	2	Power slide door and lift gate systems, latches
grupo antolin	Spain	998	951	6 800	6 800	16	76	1	7	Door modules, overhead systems, seat systems
Auto chassis International	France	960	902	4 170	4 000	2	97		1	Chassis modules and components
Edscha AG	Germany	950	771	6 464	5 044	25	72	3		Hinges, roof systems, driver controls, vehicle design
ALPS Electric	Japan	910	850	32 586 (total)	30 243 (total)	43	28	29		Electric and electro-mechanical components
Pioneer Corporation	Japan	903	809	34 656 (total)	31 220 (total)	43	7	46	4	Audio/video entertainment and navigation systems
Teksid Aluminium	Italy	894	746	n/a	n/a	37	51		12	Cylinder blocks and heads
Nemak	Mexico	844	801	36 000 (total)	n/a	98		1	1	Aluminium cylinder heads and engine blocks
Superior Industries International Inc.	United States	840	779	7 000	6 600	85	6	9		Aluminium wheels and suspension components

Source: Compiled for the ILO's Sectoral Activities Department by J.P. Singa, based on *Automotive News* database rankings, 2002 and 2003.

Table A1.2. Top motor vehicle suppliers in the North American Free Trade Association (NAFTA)

Company	Head-quarters	Total North America parts sales $ millions 2003	Total North America parts sales $ millions 2002	Total worldwide Parts sales $ millions 2003	Total worldwide parts sales $ millions 2002	Employees 2003	Employees 2002	Total R&D $ millions 2003	Takeovers	Main product	Total global automotive aftermarket sales M$	Total North American automotive after-market sales M$
Delphi Automotive Systems	US	20 455	21 254	28 096	27 427	126 600 estimated	107 350	2 000	Grundig, Lucas Diesel Systems, ATRi	Steering, chassis, electrical, energy and engine management, thermal management, interiors, electronic components	2 000	1 500
Visteon	US	11 852	13 093	17 660	18 395	72 000 (total)	77 000 (total)	903	Atlantic Automotive Components, L.L.C, Infinitif Speech Systems Corp., VC Regional Assembly & Manufacturing	Chassis, climate control, cockpits, electronics, exterior/interior systems, power train control, engine management, fuel systems	800	700
Johnson Controls (JCI)	US	10 525	10 146	22 646	20 103			929	Varta automotive, Borg Instruments, Sagem	Seats, interior trim, batteries, electronics, cockpits and instrument panels	2 200	1 900
Magna International	Canada	8 867	7 814	15 345	12 422	44 300	42 200			Interiors, exteriors, body and chassis systems, seats, mirrors, closures, electronics, engines, transmissions	125	60
Robert Bosch GMBH	Germany	8 820	6 300	29 736	29 358	35 559 (total)	11 420	2 772	Detection of systems Inc, Mannesmann Rexroth AG completed, Subsidiary Communication, Security, & Imaging from Philips B.V, Buderus AG	Fuel injection systems, chassis systems, energy and body systems, automotive multimedia and electronics		
Lear Corp.	US	8 450	8 507	15 746	14 424	63 000	72 000	171		Interior systems, seats, instrument/door trim panels, overhead, flooring and acoustic systems, electronic/electrical distribution systems		
Michelin North America	France	6 700	7 663	19 366	16 270	23 877	24 671	895	Hankook 10%, EnTire solution LLC for 0,6ME, Apollo 51%, Viborg	Tyres	n/a	7 500
PPG Industries	US	6 294	5 936	8 756	8 067	32 900 (total)	34 100 (total)	306		Coatings, glass		
Navistar International	US	6 081	5 558	7 340	6 784	5 700		216		Diesel truck engines		
Dana	US	5 473	5 516	7 918	7 501	59 000 (total)	63 100 (total)		GKN ayra cardan, S.A.	Axles, driveshafts, structures; sealing, thermal management, fluid transfer; engine power products, chassis, steering and suspension products		

Company	Head-quarters	Total North America parts sales $ millions 2003	Total North America parts sales $ millions 2002	Total worldwide Parts sales $ millions 2003	Total worldwide parts sales $ millions 2002	Employees 2003	Employees 2002	Total R&D $ millions 2003	Takeovers	Main product	Total global automotive aftermarket sales M$	Total North American automotive after-market sales M$
Denso International America Inc.	Japan	4 494	5 062	19 439	19 208	13 312	10 178	1 524		Thermal, power train control, electronic and electric systems; small motors, industrial and environmental systems	1 000	327
Arvinmeritor	US	4 235	4 249	7 788	6 882	4 500	4 500	167	Zeuna Stärker, Mitsubishi Steel Manufacturing (JV),WABCO (JV), ZF (JV)	Air and emission technologies, aperture and undercarriage systems, drive trains, braking and suspension systems, specialty components	845	575
TRW Inc.	US	4 125	4 454	11 308	10 630	22 300		164	Autocruise, S:A, EnTire Solutions, LLC	Steering, suspension, braking, engine components, fasteners, occupant restraint systems, electronic safety and security	500+	100+
Cummins Engine Company	US	3 840	3 570	6 296	5 853	24 200 (total)	23 700 (total)	200		Diesel engines		
American Axle & Manufacturing	US	2 925	2 927	3 683	3 480			60		Chassis and driveline systems, forged products, axle driveline modules		
Collins & Aikman Corp.	US	2 918	3 131	3 984	3 886	23 900 (total)	25 000 (total)		Becker Venture LLC, Joan Fabrics Corp., Trexton Transaction	Cockpit modules, instrument panels, flooring and acoustic systems, fabrics, trim, convertible top systems and accessory mats		
Continental	Germany	2 588	2 950	11 534	11 408	10 152	10 573	496	OAO Moscow Tyre plant, Sime Tyre Group, Continental Tyre South Africa (PTY) Ltd.	Electronic brakes, stability management systems, tyres, foundation brakes, chassis systems, safety system electronics	n/a	1 500
Federal-Mogul	US	2 731	2 834	5 546	5 184			123	WSK Gorzyce, S:A.85%	Pistons, piston rings and liners, valve train and transmission products, friction systems protection, bearings, lighting, seals	2 600	1 700
Dupont Automotive	US	2 755	2 700	5 400	4 868					Coatings, engineering polymers, fibres, chemicals, refrigerants and finishes, small motor and transmission components	8 300	2 500
Siemens VDO	Germany	2 714	2 216	10 552	8 855	44 000 (total)	43 000 (total)	418	Industrial turbine business of Alstom, Draeger Medical	Electrical and electronic components and systems	667	60
GKN PLC	UK	2 366	2 237	5 929	5 302	11 603	11 775		Ecasol S.A., Pilkington Aerospace Ltd. (UK, US, Brazil, Thailand), Ductil Iron Powder S.A.	Constant velocity products, powdered metal components, traction systems		
Yazaki NA	Japan	2 242	2 204	5 800	5 900	120 000 (total)				Electrical distribution systems, electronics, instrumentation, connectors and components		

Company	Head-quarters	Total North America parts sales $ millions 2003	Total North America parts sales $ millions 2002	Total worldwide Parts sales $ millions 2003	Total worldwide parts sales $ millions 2002	Employees 2003	Employees 2002	Total R&D $ millions 2003	Takeovers	Main product	Total global automotive aftermarket sales M$	Total North American automotive after-market sales M$
Valeo	France	2 094	2 447	11 634	10 195	8 050		709		Transmissions, climate control, engine cooling, lighting, electrical and wiper systems, motors and actuators, security systems, switches, electronics	1 600	298
Tower Automotive	US	1 997	1 697	2 455	2 853				Strojane Malacky, Metalurgica Caterina S.A, Algoods, Inc, yoruzo (JV), Metalsa (JV)	Structural components, assemblies and suspension Modules		
ZF Group NAO	Germany	1 906	1 725	11 249	9 535			660		Transmissions, steering systems, suspension components axles, clutches, dampers		
Tenneco Automotive	US	1 883	1 730	3 766	3 459					Shocks, struts, vibration control, load assist products, springs, bushings, rods, roll control systems, manifolds, catalytic converters, mufflers, filters, exhaust	929	466
Motorola-Automotive	US	1 858	1 555	2 949	2 617	88 000 (total)	97 000 (total)	3 771	Winphoria Networks, Inc, Next Level Communications, Inc, Synchronous, Inc, River Delta Networks, Inc, Blue Wave Systems, Inc, Tohoku semiconductor Corporation	Power train controllers, telematics, interior electronics chassis electronics, sensors, GPS technologies, semiconductors		
ALCOA	US	1 712	1 708	2 806	2 800	49 300 (total)	53 500 (total)	194	Camargo Group, Kobe Steel Ltd., KAAL Asia(JV), Amcor (JV), Reynolds, Thiokol	Wheels, chassis and suspension, body and closures, electrical systems, sheet, front and rear cradles		
Goodyear Rubber & Tire Co.	US	1 615	1 536	3 296	3 200			350		Tyres, hoses, belts, interior trim, air springs, moulded rubber products	n/a	7 300
Borg Warner Automotive	US	1 562	1 533	2 741	2 434					Transmission, engine and power train assemblies		
Autoliv	Sweden	1 542	1 598	5 301	4 443	9 309	8 729	318	Electronics Business of Visteon Corp., 60% NSK's Asian	Airbags, inflators, seat belts, sensors, steering wheels		
Dura	US	1 430	1 580	2 380	2 360	9 400			Creation Group	Driver control, integrated glass and seating control systems; structural door modules, engineered assemblies		
Calsonic NA	Japan	1 386	1 028	5 436	4 468					Climate control, engine cooling and exhaust systems; instrument clusters, console box, cockpit modules, instrument panels		

Company	Head-quarters	Total North America parts sales $ millions 2003	Total North America parts sales $ millions 2002	Total worldwide Parts sales $ millions 2003	Total worldwide parts sales $ millions 2002	Employees 2003	Employees 2002	Total R&D $ millions 2003	Takeovers	Main product	Total global automotive aftermarket sales M$	Total North American automotive after-market sales M$
ThyssenKrupp	Germany	1 348	1 357	7 932	7 985	11 882	9 490			Body systems, chassis modules, power trains, suspensions, steering systems, drive train		
New Venture Gear Inc.	US	1 332	1 655	1 448	1 689					Transfer cases, transmissions and transaxles, differentials		
Faurecia	France	1 320	1 277	12 753	10 259	4 790	4 958		Sommer Alibert, SAI Automotive AG, Bertrand Faure, ECTRA, Ap Automotive Systems	Seats, cockpits, doors, acoustic packages, front ends, exhaust systems		
TAKATA TK Holdings Inc.	Japan	1 311	1 280	3 241	2 693	29 000 (total)				Airbags, seat belts, electronics, steering wheels, interior trim		
Cooper-Standard Automotive	US	1 241	1 184	3 514	3 329	22 899 (total)	23 024 (total)		Siebe Automotive, Hercules Tire & Rubber Co., Teknor Apex Co, Max-Trac Tire Co. Inc. Jin Young Standard 49%.	Sealing and fluid systems, NVH control systems	n/a	1 900
Flex-N-Gate	US	1 215	1 170	1 350	1 300					Plastic and steel bumpers, fascias, stamping		
Aisin World Corp.	Japan	1 141	1 000	11 714	10 166	44 132	40 234	666		Body systems, brake & chassis systems, electronics, drive train and engine components	385	84

Source: Compiled for the ILO's Sectoral Activities Department by J.P. Singa, based on *Automotive News* database rankings, 2002 and 2003.

Table A1.3. Top motor vehicle suppliers in Europe

Company	Head-quarter global	Total Europe parts sales $ millions 2003	Total Europe parts sales $ millions 2002	Total world-wide parts sales $ millions 2003	Total world-wide parts sales $ millions 2002	Employees 2003	Employees 2002	Total R&D $ millions 2003	Takeovers	Main product
Robert Bosch GMBH	Germany	12 474	9 256	29 736	24 232	106 600	105 628	2 772	Detection of systems Inc., Mannesmann Rexroth AG completed, Subsidiary Communication, Security, & Imaging from Philips B.V, Buderus AG	Fuel injection systems, chassis systems, energy and body systems, automotive multimedia and electronics
Faurecia	France	10 915	8 688	12 753	10 259	51 820	51 663	303	Smmer Allibert, SAI Automotive AG	Seats, cockpits, doors, acoustic packages, front ends, exhaust systems
Michelin	France	10 127	7484	19 366	16 271	77 308	75 788		Hankook 10%, EnTire solution LLC for 0,6ME, Apollo 51%	Tyres
Continental	Germany	9 805	7 753	14 532	11 864	49 827	48 897	624.9		Electronic brakes, stability management systems, tyres, actuation foundation brakes, chassis systems, safety system electronics
ZF Friedrichshafen AG	Germany	8 050	6 400	9 224	8 010	53 487 (total)	53 281 (total)			Transmissions, steering systems, suspension components, axles, clutches, dampers
Johnson Controls (JCI)	US	7 955	6 098	22 646	20 103	118 000 (total)	111 000 (total)		Varta AG's Automotive Battery Division, Borg	Seats, interior trim, batteries, electronics, cockpits and instrument panels
Valeo	France	7 678	6 728	11 634	10 195	36 500		709		Transmissions, climate control, engine cooling, lighting, electrical and wiper systems, motors and actuators, security systems, switches, electronics
Dupont Automotive	US	7 422 (total)	6 312 (total)	5 510	5 400	81 000 (total)	79 000 (total)	1 349 (total)	Solae, LLC Griffin, LLC Shandong Denghai Pioneer Seed Company ChemFirst, Inc. Merrimac Industries, Inc. Photonics Technologies, LLC ChemFirst, Inc. Atofina Fluorotelomers Antec International Renpar, S.A. DuPont Red Lion Eastman LCP and PCT polymer business Wuxi Xingda Nylon Co. Ltd.	tings, engineering polymers, fibres, chemicals, refrigerants and finishes, small motor and transmission components
Siemens VDO	Germany	7 281	6 188	10 552	8 855	44 000 (total)	43 000 (total)	526	Industrial turbine business of Alstom, Draeger Medical	Electrical and electronic components and systems

Company	Head-quarter global	Total Europe parts sales $ millions 2003	Total Europe parts sales $ millions 2002	Total world-wide parts sales $ millions 2003	Total world-wide parts sales $ millions 2002	Employees 2003	Employees 2002	Total R&D $ millions 2003	Takeovers	Main product
Delphi Automotive Systems	US	6 185	4 495	28 096	27 427	49 000				Steering, chassis, electrical, energy and engine management, thermal management, interiors, electronic components
Magna International	Canada	6 109	4 492	15 345	12 422	28 100	27 100			Interiors, exteriors, body and chassis systems, seats, mirrors, closures, electronics, engines, transmissions
Lear Corp.	US	5 642	4 466	15 746	14 424	33 000				Interior systems, seats, instrument/door trim panels, overhead, flooring and acoustic systems, electronic/electrical distribution systems
ThyssenKrupp	Germany	5 234	4 217	7 931	6 590	30 812	28 434			Body systems, chassis modules, power trains, suspensions, steering systems, drive trains
Visteon	US	3 209	2 878	17 660	18 395	72 000 (total)	77 000 (total)	903	Atlantic Automotive Components, L.L.C, Infinitif Speech Systems Corp., VC Regional Assembly & Manufacturing	Chassis, climate control, cockpits, electronics, exterior/interior systems, power train control, engine management, fuel systems
Hella KG Hueck & Co.	Germany	3 205	2 501	3 815	3 061	18 173	18 303			Lighting, electrical systems and modules
Magneti Marelli SpA	Italy	3 031	2 554	4 039	3 419	10 651	13 051	199		Engine control systems, lighting, instrumentation, exhaust, electronics, shocks, suspension systems
TRW Inc.	US	2 698	2 270	11 308	10 630	32 000		164		Steering, suspension, braking, engine components, fasteners, occupant restraint systems, electronic safety and security systems
Autoliv	Sweden	2 650	2 221	5 301	4 443	32 100 (total)	30 100 (total)	305.4	Electronics Business of Visteon Corp., 60% NSK's Asian	Airbags, inflators, seat belts, sensors, steering wheels
Denso Corp.	Japan	2 285	2 487	19 439	19 202	89 380 (total)	86 639 (total)	1 524		Thermal, power train control, electronic and electric systems; small motors, telecommunications, industrial and environmental systems
Arvinmeritor	US	2 798	2 091	7 788	6 882			167	Zeuna Stärker, Mitsubishi Steel Manufacturing (JV),WABCO (JV), ZF (JV)	Air and emission technologies, aperture and undercarriage systems, drive trains, braking and suspension systems, specialty components

Company	Head-quarter global	Total Europe parts sales $ millions 2003	Total Europe parts sales $ millions 2002	Total world-wide parts sales $ millions 2003	Total world-wide parts sales $ millions 2002	Employees 2003	Employees 2002	Total R&D $ millions 2003	Takeovers	Main product
GKN PLC	UK	2 878	2 520	5 929	5 302	21 156	21 732		Ecasol S.A., Pilkington Aerospace Ltd. (UK, US, Brazil, Thailand), Ductil Iron Powder S.A.	Constant velocity products, powdered metal components, traction systems
BEHR GmbH & Co.	Germany	2 580	1 918	3 786	2 926	11 258	11 039	232		Engine cooling, air conditioning
Benteler Automotive	Germany	2 558	2 074	3 438	2 486	12 324 (total)	11 528 (total)			Chassis, exhaust and impact-management systems, tubular components, design and development
Compagnie de Saint-Gobain	France	2 467	2 037	3 316	2 911			385		Glass, abrasives, fibreglass reinforcements, coatings, compounds, bearing, seals
MAHLE GmbH	Germany	2 110	1 221	4 090	3,193	29 122	30 650			Pistons, rings, bearings and assemblies, valve train and filter systems
Kolbenschmidt Pierburg AG	Germany	1 811	1 509	2 374	1 957			102.5		Pistons
Brose Fahrzeugteile	Germany			1 507	1 428	7 500 (total)		10.9		Window regulators, door modules, seat adjusters, closure systems
Federal-Mogul	US	1 702	1 427	5 546	5 184			123	WSK Gorzyce, S:A. 85%	Pistons, piston rings and liners, valve train and transmission products, systems protection, bearings, lighting, seals
Dana	US	1 455	1 233	7 918	7 501	59 000 (total)	63 100 (total		GKN ayra cardan, S.A.	Drive train, structural, engine, chassis, sealing, brake and fluid system products

Source: Compiled for the ILO's Sectoral Activities Department by J.P. Singa, based on *Automotive News* database rankings, 2002 and 2003.

Table A1.4. Top motor vehicle suppliers in the Asia-Pacific region

Company	Headquarter global	Total Asia-Pacific parts sales $ millions 2003	Total Asia-Pacific parts sales $ millions 2002	Total worldwide parts sales $ millions 2003	Total worldwide parts sales $ millions 2002	Employees 2003	Employees 2002	Total R&D $ millions 2003	Main product
Hitachi Automotive Products Inc.	Japan	44 655	37 045	56 901	46 700	327 758 (total)		861	Electrical and electronic devices
Panasonic Automotive Electronics Co.	Japan	28 781	26 511	61 681	58 948	288 324 (total)	291 232 (total)	4 591	Audio equipment, navigation systems, compressors, batteries, motors, monitors, sensors, switches
Denso Corporation	Japan	15 004	12 116	19 439	19 209	89 380 (total)	86 639 (total)	1 524	Thermal, power train control, electronic and electric systems; small motors, industrial and environmental systems
Sumitomo Electric Wiring Systems Inc.	Japan	13 997	11 627	59 774	49 277	57 934 (total)	50 461 (total)	2 376	Electrical distribution systems
Aisin Seiki Co. Ltd.	Japan	9 911	8 327	11 714	10 166	44 132 (total)	40 234 (total)	666	Body systems, brake & chassis systems, electronics, drive train and engine components
Bridgestone/Firestone Inc.	Japan	7 505	7 721	21 506	20 982			662	Tyres, tubes and components
NSK Corp.	Japan	5 358	4 608	5 597	4 745	20 351 (total)	22 337 (total)	74	Bearings, electro-magnetic clutch, steering columns, electric power steering
Mitsubishi Electric Corp.	Japan	4 738	4 557	5 328	4 805	110 279 (total)	116 192 (total)	181	Engine management, ignition systems, audio systems, alternators, starter motors, navigation systems
Takata Corp.	Japan	3 241	2 693	3 241	2 693	29 000 (total)			Airbags, seat belts, electronics, steering wheels, interior trim
ALPS Automotive Inc.	Japan	2 961	2 267	5 416	4 322	30 243 (total)			Electric and electro-mechanical components
Pioneer Automotive Technologies	Japan	2 682	2 026	5 830	5 156	34 656 (total)	31 20 (total)	378	Audio/video entertainment and navigation systems
north american lighting/ Koito	Japan	2 327	2 039	2 800	2 409	4 449 (total)		159	Exterior lighting
toyoda gosei Co. Ltd.	Japan	2 213	1 832	2 868	2 520	13 487 (total)			Sealing systems, interior systems, opto-electronics, exterior trim, safety systems, rubber/plastic functional, fuel systems

Company	Headquarter global	Total Asia-Pacific parts sales $ millions 2003	Total Asia-Pacific parts sales $ millions 2002	Total worldwide parts sales $ millions 2003	Total worldwide parts sales $ millions 2002	Employees 2003	Employees 2002	Total R&D $ millions 2003	Main product
Koyo Corp.	Japan	2 133	2 208	3 717	3 234	6 185 (total)		382	Bearings, hub units, steering systems, driveshafts
Shanghai Automotive Industry Corporation	China	1 167	853	1 167	853	64 343	59 867		
Akebono Brake ind. Co. Ltd.	Japan	911	788	1 139	1 013	4 554 (total)		78	Brakes
Showa Corp.	Japan	787	750	1 636	1 418			58	Shock absorbers, power steering gearbox and pumps
NHK Spring Co. Ltd.	Japan	262	263	2 078	2 019	9 168 (total)		26.3	Suspension springs, seats and valve springs
Yazaki Corporation	Japan	n/a	n/a	5 800	5 900	120 000 (total)			Electrical distribution systems, electronics, instrumentation, connectors and components
Calsonic	Japan	n/a	n/a	5 436	4 468				Climate control, engine cooling and exhaust systems; instrument clusters, console box, cockpit modules, instrument panels
Stanley Electric Co. Inc.	Japan	n/a	n/a	2 276	1 890				Lighting, heater controls, bulbs
TS Tech	Japan	n/a	n/a	2 218	1 676				Seats, interior trim, roof and door liners
F-tech Inc.	Japan	n/a	n/a	1 001	822				Chassis, suspension systems, pedal assemblies, hydroforming

Source: Compiled for the ILO's Sectoral Activities Department by J.P. Singa, based on *Automotive News* database rankings, 2002 and 2003.

Annex 2

Table A2.1. Estimates of employment in the motor vehicles industry, 1992 to 2002 according to ISIC 34 (Revision 3) (thousands)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Argentina											
Employees, ILO [b,1]	49.9	40.9	49.7	41.6	56.4	75.3	73.2	64.3	51.4	51.2	34.4
Employees, UNIDO	–	64.1	59.8	55.8	52.8	54.4	55.5	44.8	–	–	–
Australia											
Employees, ILO [b,1]	–	60.0	62.9	56.2	68.5	62.2	59.2	58.3	64.2	70.0	74.3
Persons engaged, UNIDO	–	54.4	53.9	55.0	55.8	55.2	55.4	51.7	54.5	62.7	–
Persons engaged, OECD	61.6	61.6	58.6	62.4	68.7	62.7	60.7	67.4	–	–	–
Austria											
Employees, ILO [1]	–	–	–	–	–	–	–	–	–	–	29.8
Employees, ILO [2]	–	–	–	–	23.7	23.9	25.6	27.3	27.9	29.5	27.7
Employees, UNIDO	–	–	–	23.9	–	25.8	27.3	28.0	29.0	–	–
Employees, OECD	26.8	25.6	25.6	24.0	24.7	28.0	31.9	34.3	35.7	37.0	37.0
FTE employees, OECD	26.2	25.0	25.0	23.3	24.0	27.0	29.8	31.4	32.6	33.8	33.6
Persons engaged, OECD	27.1	25.9	25.9	24.3	24.9	28.3	32.2	34.6	35.8	37.2	37.1
FTE persons engaged, OECD	26.4	25.3	25.3	23.6	24.2	27.2	30.1	31.6	32.8	34.0	33.7
Belgium											
Employees, ILO [1]	–	–	–	–	–	–	–	–	–	53.5	51.7
Employees, ILO [4]	–	–	52.5	53.8	54.5	54.5	55.5	53.7	–	–	–
Employees, UNIDO	–	–	–	53.3	53.7	53.7	54.5	52.2	–	–	–
Persons engaged, UNIDO	–	–	–	–	–	–	–	–	54.1	–	–
Persons engaged, OECD	–	–	–	54.5	54.0	53.8	54.2	50.3	52.7	–	–
Brazil											
All persons engaged, ILO [3]	–	–	–	–	283.4	291.4	255.8	258.6	274.0	275.5	–
Persons engaged, UNIDO	–	–	–	–	283.4	291.4	255.8	251.4	–	–	–
Canada											
Employees, ILO [b,1]	156.5	157.5	174.3	177.2	177.4	190.8	197.9	226.3	239.2	225.4	247.4
Employees, UNIDO	124.1	126.3	130.5	141.5	140.3	147.9	150.2	158.8	–	–	–
Persons engaged, OECD	126.1	131.4	137.7	147.2	143.8	153.7	156.6	160.9	157.9	152.4	155.5
Colombia											
Employees, ILO [2]	–	–	–	–	–	–	–	–	9.3	–	–
Employees, UNIDO	–	–	–	–	–	–	–	–	8.0	–	–

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Czech Republic											
Employees, ILO [1]	–	57.0	60.0	60.0	57.0	59.0	67.0	62.0	74.0	70.0	79.0
Wage earners, ILO [2]	–	–	–	37.0	38.0	42.0	45.0	46.0	53.0	61.0	64.0
Employees, UNIDO	–	–	–	–	–	62.0	66.0	–	–	–	–
Denmark											
Employees, ILO [1]	–	–	5.5	8.3	8.1	7.8	8.4	–	7.0	8.0	6.3
Employees, UNIDO	–	5.5	7.1	–	–	–	–	–	–	–	–
Employees, OECD	5.5	5.5	5.9	7.0	7.6	7.7	7.8	7.7	7.6	7.6	7.4
Persons engaged, OECD	5.6	5.6	6.0	7.1	7.7	7.7	7.9	7.8	7.7	7.7	7.4
Egypt											
Employees, UNIDO	–	–	–	–	–	17.3	–	–	–	–	–
Persons engaged, UNIDO	–	–	–	–	–	–	20.6	–	–	–	–
Finland											
Employees, ILO [b,1]	10.0	9.0	10.0	8.0	7.0	6.0	6.0	7.0	8.0	8.0	8.0
Employees, ILO [b,2]	6.6	6.3	6.4	6.3	6.3	7.2	7.3	7.2	7.3	7.3	7.8
Employees, UNIDO	–	–	–	6.3	6.3	7.0	7.3	7.2	–	–	–
Employees, OECD	7.0	6.0	6.2	6.6	6.6	7.1	7.5	7.3	7.5	7.4	–
Persons engaged, OECD	7.2	6.2	6.4	6.8	6.8	7.3	7.7	7.5	7.7	7.6	–
France											
Employees, ILO [4]	309.9	296.8	285.2	285.0	284.2	280.9	276.9	277.2	287.8	295.8	293.3
Employees, UNIDO	310.0	297.6	288.3	290.4	283.0	270.2	261.1	264.3	269.6	–	–
Employees, OECD	277.0	265.0	253.0	252.0	252.0	251.0	248.0	247.0	255.0	262.0	260.0
FTE employees, OECD	275.0	264.0	252.0	251.0	250.0	248.0	245.0	245.0	253.0	260.0	258.0
Persons engaged, OECD	278.0	267.0	255.0	254.0	253.0	252.0	249.0	248.0	256.0	263.0	261.0
FTE persons engaged, OECD	277.0	265.0	253.0	252.0	251.0	250.0	247.0	246.0	254.0	261.0	259.0
Germany											
Employees, ILO [1]	–	–	–	742.0	751.0	752.0	815.0	846.0	867.0	897.0	926.0
Persons engaged, UNIDO	–	–	–	691.9	684.4	698.3	806.2	824.8	–	–	–
Employees, OECD	857.0	797.0	753.0	737.0	781.0	802.0	845.0	880.0	904.0	922.0	–
Persons engaged, OECD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Greece											
Employees, ILO [b,1]	–	2.3	1.8	2.4	1.8	1.7	1.5	1.9	3.2	3.0	2.2
Employees, ILO [3]	–	2.3	–	–	–	–	–	–	–	–	–
Employees, UNIDO	–	2.3	2.2	2.1	1.8	1.9	1.8	–	–	–	–
Employees, OECD	–	–	–	3.5	3.2	3.2	3.1	3.4	3.4	3.2	2.3
Persons engaged, OECD	–	–	–	4.7	4.4	4.3	4.2	4.3	4.4	4.0	2.9

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Hungary											
Employees, ILO [b,2]	–	–	–	23.5	25.2	28.2	33.6	32.1	33.2	36.1	35.9
Employees, UNIDO	–	–	24.5	25.0	25.9	30.8	33.9	31.9	33.2	–	–
India											
Employees, UNIDO	–	–	–	–	–	–	257.4	288.5	–	–	–
Indonesia											
All persons engaged, ILO [2]	–	–	–	–	–	–	38.4	41.7	49.8	48.7	–
Employees, UNIDO	–	–	–	–	–	–	38.4	41.5	49.7	–	–
Iran, Islamic Republic of											
Employees, UNIDO	–	–	27.2	28.1	33.9	–	–	–	–	–	–
Ireland											
Employees, ILO [b,1]	2.9	2.7	2.6	3.6	4.2	2.7	3.7	4.8	4.0	4.4	3.8
Employees, UNIDO	3.9	3.3	3.6	4.4	4.3	4.2	4.1	4.1	–	–	–
Italy											
Employees, ILO [1]	–	182.0	173.0	175.0	185.0	179.0	187.0	184.0	182.0	173.0	176.0
Employees, UNIDO	200.0	184.5	180.1	186.3	189.2	187.7	186.9	–	–	–	–
Employees, OECD	205.0	192.0	184.5	184.9	185.5	186.5	185.8	180.9	179.1	174.5	168.9
FTE employees, OECD	177.2	153.0	164.0	178.3	172.2	180.9	179.2	177.9	174.5	167.2	162.8
Persons engaged, OECD	209.1	195.9	188.5	189.1	189.5	190.7	190.2	185.0	183.5	178.6	173.0
FTE persons engaged, OECD	181.4	156.9	168.0	182.5	176.2	185.1	183.6	182.1	178.9	171.3	166.9
Japan											
Employees, UNIDO	–	–	786.8	767.7	769.1	768.4	752.6	722.9	721.2	–	–
Persons engaged, OECD	1 030.7	1 012.9	1 011.6	968.7	990.1	1 001.1	955.8	937.1	925.2	945.6	–
Korea, Republic of											
Employees, UNIDO	182.0	190.7	207.6	218.2	233.5	221.9	186.9	193.5	–	–	–
Employees, OECD	273.5	270.0	292.4	309.7	328.3	315.8	–	–	–	–	–
Persons engaged, OECD	319.0	312.4	337.3	358.5	382.3	372.0	–	–	–	–	–
Mexico											
Employees, ILO [1]	–	275.0	–	341.9	338.9	386.6	473.8	504.1	594.0	526.0	–
Persons engaged, UNIDO	–	–	121.8	103.9	108.2	123.1	137.8	140.0	148.2	–	–
Employees, OECD	345.4	313.2	305.2	294.9	324.3	368.9	409.9	433.8	473.5	447.4	–
Netherlands											
Employees, UNIDO	–	–	–	–	–	–	–	27.5	–	–	–
Persons engaged, OECD	30.9	26.3	25.5	29.2	32.7	32.2	31.2	32.1	31.7	–	–
FTE persons engaged, OECD	30.1	25.2	24.4	28.1	31.5	31.0	30.2	30.6	30.2	–	–

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Norway											
Employees, ILO [1]	–	–	–	–	5.0	5.0	5.0	6.0	5.0	4.0	5.0
Employees, UNIDO	3.2	3.2	3.5	–	4.8	4.8	4.7	5.4	–	–	–
Employees, OECD	3.1	2.8	3.1	4.3	4.6	4.7	4.5	5.0	5.4	–	–
FTE employees, OECD	3.0	2.7	3.0	4.2	4.4	4.5	4.3	4.8	5.2	–	–
Persons engaged, OECD	3.2	2.9	3.2	4.4	4.6	4.7	4.5	5.0	5.4	–	–
FTE persons engaged, OECD	3.1	2.8	3.1	4.3	4.5	4.5	4.3	4.9	5.2	–	–
Philippines											
Employees, ILO [2]	–	–	–	–	24.5	26.2	–	–	–	–	–
Poland											
Employees, ILO [b,2]	110.1	96.5	95.9	97.4	100.5	105.1	107.9	100.4	96.5	86.1	–
Employees, OECD	110.7	97.4	101.6	99.2	100.7	105.2	108.2	100.3	96.7	86.0	–
Portugal											
Employees, ILO [b,1]	21.0	23.6	23.5	25.1	29.5	31.2	38.3	36.9	32.2	30.4	32.8
Employees, UNIDO	–	–	–	–	25.0	24.1	23.5	–	–	–	–
Persons engaged, OECD	19.5	18.6	18.2	21.2	22.6	24.3	25.7	22.4	–	–	–
Romania											
Employees, ILO [b,2]	117.7	110.2	100.2	105.0	104.5	98.7	89.0	79.3	70.6	66.8	64.7
Russian Federation											
Employees, ILO [2]	–	–	–	–	–	–	574.6	–	–	–	–
Employees, UNIDO	–	–	–	–	–	–	–	533.1	535.0	–	–
Slovakia											
Employees, ILO [1]	–	–	8.1	9.3	15.7	13.8	18.1	17.4	23.0	24.3	27.6
Employees, ILO [2]	–	13.6	12.4	13.2	13.4	13.9	14.2	14.5	14.2	15.9	18.8
Employees, UNIDO	17.8	14.4	13.2	12.9	13.3	14.0	14.0	–	–	–	–
Slovenia											
Employees, ILO [1]	–	11.0	13.0	14.0	12.0	9.0	7.0	8.0	9.0	8.0	10.0
South Africa											
Employees, UNIDO	–	68.6	73.5	80.7	82.1	77.6	77.1	77.7	79.2	–	–
Spain											
Employees, ILO [1]	189.7	179.4	178.2	169.4	173.0	181.1	187.2	200.3	225.7	232.0	229.0
Employees, UNIDO	–	140.9	135.1	137.3	140.0	147.8	152.7	156.6	163.5	–	–
Employees, OECD	–	–	–	170.1	172.7	185.9	195.3	200.4	209.0	207.3	–
FTE employees, OECD	–	–	–	168.9	170.6	182.7	193.4	199.2	207.6	–	–
Persons engaged, OECD	176.0	174.2	167.5	171.2	173.9	186.7	196.4	201.3	209.3	207.8	–
FTE persons engaged, OECD	–	–	–	169.9	171.5	183.5	194.3	200.2	208.4	–	–

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Sweden											
Wage earners, ILO [2]	–	41.5	43.7	47.9	48.0	–	–	–	–	–	–
Employees, UNIDO	67.4	59.3	61.4	66.8	–	68.8	70.5	72.0	–	–	–
Persons engaged, OECD	69.5	61.9	62.4	68.7	69.0	68.0	73.7	75.0	75.6	75.4	76.5
Switzerland											
All persons engaged, ILO	3.9	4.0	4.1	4.6	4.6	4.6	4.5	4.5	4.5	4.8	4.6
Turkey											
Employees, ILO [1]	–	–	–	–	–	–	–	–	136.0	142.0	164.0
Employees, ILO [2]	42.5	39.8	31.2	43.1	47.0	48.2	46.4	43.8	52.2	–	–
Ukraine											
Employees, ILO [2]	–	–	–	–	–	–	–	–	61.0	58.0	53.0
United Kingdom											
Employees, ILO [4]	212.0	182.0	191.0	227.0	237.0	239.0	245.0	232.0	226.0	212.0	207.0
Employees, UNIDO	–	158.0	230.0	221.0	226.0	228.0	–	–	–	–	–
Employees, OECD	212.8	181.1	188.0	221.1	230.6	232.0	238.7	223.7	204.6	187.8	–
United States											
Employees, ILO [2]	–	1 077.8	1 168.5	1 241.5	1 240.3	1 253.9	1 271.5	1 312.6	1 313.6	1 212.8	1 151.6
Employees, UNIDO	–	–	–	–	–	1 043.9	1 059.6	1 067.9	–	–	–
Employees, OECD	821.0	839.0	900.0	970.0	968.0	983.0	997.0	1 023.0	1 020.0	941.0	–
FTE employees, OECD	813.0	830.0	892.0	961.0	959.0	974.0	988.0	1 016.0	1 013.0	934.0	–
Persons engaged, OECD	825.0	844.0	903.0	972.0	970.0	985.0	1 004.0	1 025.0	1 025.0	950.0	–
FTE persons engaged, OECD	817.0	835.0	895.0	963.0	961.0	976.0	995.0	1 018.0	1 018.0	943.0	–

[b] Break in series.

[1] Labour force survey. [2] Labour-related establishment survey. [3] Industrial or commercial survey. [4] Official estimates.

UNIDO series are aggregations of estimates for ISIC 3410, 3420 and 3430.

Sources: ILO LABORSTA database, OECDSTAN database and UNIDO database, various years.

Table A2.2. Variations in estimates of women's share of employment in the motor vehicle industry, 1992 to 2002 (percent)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Argentina											
Employees, ILO [b]	11.2	10.5	7.8	9.6	7.8	4.1	6.0	8.4	4.9	10.0	7.3
Australia											
Employees, ILO [b]	–	17.5	16.2	17.8	19.0	15.0	14.9	16.1	16.2	14.7	14.4
Austria											
Employees, ILO	–	–	–	–	–	–	–	–	–	–	17.8
Employees, UNIDO	–	–	–	13.9	–	14.1	14.0	13.5	13.5	–	–
Belgium											
Employees, ILO	–	–	–	–	–	–	–	–	–	13.3	13.7
Employees, ILO	–	–	9.3	9.7	9.9	9.9	10.3	10.8	–	–	–
Canada											
Employees, ILO [b]	20.3	18.8	20.1	20.9	23.5	22.2	20.6	21.6	23.5	23.5	24.1
Czech Republic											
Employees, ILO	–	31.6	33.3	35.0	31.6	30.5	29.9	33.9	28.4	31.4	34.2
Wage earners, ILO	–	–	–	29.7	31.6	31.0	33.3	32.6	34.0	34.4	37.5
Denmark											
Employees, ILO	–	–	12.7	18.1	14.8	17.9	16.7	–	21.4	22.5	25.4
Employees, UNIDO	–	16.3	14.8	–	–	–	–	–	–	–	–
Egypt											
Employees, UNIDO	–	–	–	–	–	3.1	–	–	–	–	–
Finland											
Employees, ILO [b]	30.0	22.2	10.0	12.5	14.3	16.7	16.7	14.3	12.5	12.5	12.5
Germany											
Employees, ILO	–	–	–	15.9	15.7	17.0	16.7	17.3	17.9	17.6	18.6
Greece											
Employees, ILO [b]	–	13.0	5.6	16.7	11.1	11.8	13.3	26.3	28.1	13.3	27.3
Hungary											
Employees, UNIDO	–	–	26.9	24.0	24.6	–	–	–	–	–	–
India											
Employees, UNIDO	–	–	–	–	–	–	1.9	1.8	–	–	–

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Indonesia											
Employees, UNIDO	–	–	–	–	–	–	10.0	11.1	10.7	–	–
Iran, Islamic Republic of											
Employees, UNIDO	–	–	3.4	3.6	3.7	–	–	–	–	–	–
Ireland											
Employees, ILO [b]	17.2	18.5	26.9	33.3	33.3	33.3	32.4	31.2	35.0	31.8	34.2
Employees, UNIDO	23.5	30.4	33.1	29.2	29.1	27.6	27.6	25.3	–	–	–
Italy											
Employees, ILO	–	17.0	15.0	16.0	16.8	17.9	18.2	17.4	20.3	19.7	17.6
Employees, UNIDO	8.0	8.2	8.8	–	16.1	16.6	16.8	–	–	–	–
Japan											
Employees, UNIDO	–	–	18.2	17.9	17.6	17.4	17.5	17.1	16.9	–	–
Korea, Republic of											
Employees, UNIDO	14.0	14.0	13.9	13.9	14.0	17.6	11.0	12.1	–	–	–
Mexico											
Employees, ILO	–	21.4	–	25.4	28.1	26.8	26.9	31.1	30.4	32.7	–
Norway											
Employees, ILO	–	–	–	–	–	–	–	–	–	–	20.0
Philippines											
Employees, ILO *	–	–	–	–	11.1	10.6	–	–	–	–	–
Portugal											
Employees, ILO [b]	34.3	33.9	33.2	35.9	32.5	34.9	40.7	37.7	32.6	36.2	37.8
Slovakia											
Employees, ILO *	–	28.2	27.6	26.5	26.1	23.0	20.6	16.6	16.8	17.5	18.0
Employees, ILO	–	–	35.8	29.0	21.0	21.7	30.9	35.1	24.3	24.3	30.8
Employees, UNIDO	–	–	–	27.0	25.1	22.6	20.8	–	–	–	–
Slovenia											
Employees, ILO	–	27.3	30.8	21.4	25.0	22.2	28.6	25.0	33.3	25.0	20.0
Spain											
Employees, ILO	8.9	9.5	9.8	9.1	10.2	10.0	9.8	10.1	12.3	14.4	19.4
Switzerland											
Persons engaged, ILO *	15.4	15.0	14.6	15.2	15.2	15.2	15.6	13.3	15.6	14.6	15.2

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Turkey											
Employees, ILO *	9.7	3.8	4.9	11.5	11.6	5.2	5.9	5.9	5.7	–	–
Employees, ILO	–	–	–	–	–	–	–	–	8.8	8.5	9.1
Ukraine											
Employees, ILO *	–	–	–	–	–	–	–	–	–	–	37.7
United Kingdom											
Employees, ILO **	12.7	6.6	6.3	5.7	5.5	5.0	6.9	13.4	13.3	12.7	12.1
Employees, UNIDO	–	17.1	–	12.2	12.8	11.4	–	–	–	–	–
United States											
Employees, ILO *	–	23.3	23.7	23.9	24.0	24.9	25.4	26.0	26.7	26.5	25.9

Note: [b] = break in series. All ILO estimates are from labour force surveys except (*) are from labour related establishment surveys and (**) from official estimates.

Sources: ILO and UNIDO, op. cit.

Table A2.3. Variations in estimated of working time in the motor vehicles industry, 1992-2002 (ISIC 34 (Rev.3) except as noted; hours per week except as noted)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Argentina A, 1, LF	–	–	–	–	44.5	46.8	45.7	44.0	44.9	44.0	43.2
Argentina A, 2, LF	–	–	–	45.9	–	47.1	46.0	44.2	44.6	44.2	44.7
Australia A, 1, b, LF	37.9	38.3	40.2	40.0	39.9	39.5	38.9	39.2	39.3	38.6	38.5
Australia B, 1, ES	–	–	42.0	41.4	41.4	–	41.8	–	40.9	–	41.9
Austria A, 1, b, LF	–	–	–	37.2	37.8	37.3	36.5	36.7	37.7	37.3	37.3
Austria A, 1, monthly, b, CS	–	–	–	–	141.2	138.8	138.9	136.9	136.4	138.9	138.9
Austria A, 2, monthly, b, CS	–	–	–	–	147.4	145.3	143.7	143.2	143.4	145.7	145.0
Austria A, 3, monthly, b, CS	–	–	–	–	139.4	136.8	137.4	135.0	134.2	136.7	136.7
Austria B, 1, monthly, b, CS	–	–	–	–	170.3	169.7	169.6	167.6	166.1	168.9	169.4
Austria B, 2, monthly, b, CS	–	–	–	–	171.7	170.1	167.8	168.1	168.4	171.3	171.1
Austria B, 3, monthly, b, CS	–	–	–	–	169.8	169.6	170.2	167.4	165.4	168.1	168.8
Belgium A, 2, ES	–	–	–	39.4	39.6	39.3	39.4	–	–	–	–
Belgium B, 1, b, ES	–	–	–	–	–	–	–	38.4	–	–	–
Belgium B, 2, b, ES	–	–	–	–	–	–	–	38.0	–	–	–
Belgium B, 3, b, ES	–	–	–	–	–	–	–	38.5	–	–	–
Belgium B, 3, ES	–	–	–	37.7	38.4	35.9	36.4	–	–	–	–
Canada B, 3, ES	40.1	41.1	41.6	40.9	41.0	42.0	–	–	–	–	–
Czech Republic A, 3, ES	36.5	39.1	37.8	39.5	41.7	42.1	42.3	41.8	41.8	40.9	40.5
Egypt B, 3, EC	–	–	–	–	73.0	47.0	54.0	75.0	59.0	59.0	–
Finland A, 1, LF	–	–	–	39.5	39.9	42.2	38.9	39.2	40.3	38.5	39.3
Finland B, 1, ES	–	–	–	40.2	–	–	–	–	–	–	–
France A, 3, b, ISIC, 3843, Rev.2, ES	–	–	–	–	–	–	–	–	–	–	–
Germany B, 3, ES	–	–	–	–	35.4	35.1	35.3	34.9	35.3	35.6	36.1
Germany B, 3, ES	–	–	–	35.7	35.3	35.0	35.2	34.8	35.1	35.4	36.0
Greece A, 2, LF	–	42.0	40.0	39.0	40.0	41.0	38.0	39.0	40.0	43.0	37.0
Hungary A, 3, monthly, ES	–	143.0	142.4	145.6	146.8	148.7	148.4	149.7	150.8	147.0	147.3
Ireland A, 2, LF	38.9	38.9	40.7	38.9	40.3	40.8	40.1	39.8	39.4	38.4	39.4

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Italy A, 2, LF		39.9	39.9	40.1	40.1	40.2	40.4	40.6	40.4	40.5	39.7
Republic of Korea A, 1, ES	–	48.8	49.1	49.7	47.6	45.9	40.5	46.4	46.5	44.2	–
Mexico A, 1, b, LF	–	44.9	–	44.6	44.1	45.3	44.5	45.1	44.8	43.1	–
Mexico A, 3, b, CS	44.5	42.8	43.1	40.3	41.9	43.4	42.6	42.8	43.5	43.4	42.8
Netherlands B, 1, ES	–	–	38.3	38.2	38.0	37.9	37.8	37.8	37.6	–	–
Norway A, 1, LF	–	–	–	–	38.0	37.9	37.6	36.9	37.6	37.7	36.1
Philippines A, 3, CS	–	–	–	–	50.8	48.7	46.8	–	–	–	–
Portugal A, 1, LF	36.9	36.9	38.7	–	–	–	37.2	–	–	–	–
Portugal b, 1, ES	–	–	–	–	–	–	–	39.3	–	–	–
Romania A, 1, daily, ES	–	–	8.0	8.0	7.9	7.9	7.8	–	–	–	–
Russian Federation A, 1, ES	–	–	–	–	28.9	30.8	29.6	32.1	–	–	–
Slovakia A, 1, monthly, b, EC	–	–	129.0	145.0	145.0	144.0	146.0	145.0	150.0	149.0	145.0
Slovenia A, 1, LF	–	40.6	40.9	41.4	41.0	39.4	40.4	40.4	39.4	35.0	38.9
Spain A, 2, LF	35.7	35.0	35.2	35.9	36.6	36.5	36.3	34.5	34.8	34.3	34.5
Sweden A, 1, LF	–	–	32.3	32.5	31.8	31.8	32.2	32.0	31.4	38.5	37.8
Sweden A, 2, LF	–	–	–	–	–	–	–	–	–	38.5	37.8
Sweden B, 2, ES	–	–	–	–	–	–	–	–	39.4	39.4	–
Switzerland B, 1, IR	40.9	40.9	40.9	40.9	40.9	41.0	40.9	40.9	40.8	40.8	40.8
Turkey A, 2, LF	–	–	–	–	–	–	–	–	49.9	50.4	49.9
Turkey B, 3, CC	–	44.1	40.6	42.9	43.4	44.5	43.6	42.9	44.2	–	–
Ukraine A, 1, monthly, EC	–	–	–	–	–	–	–	–	103.0	111.0	119.0
United Kingdom B, 1, ES	41.6	41.1	41.9	42.9	42.2	42.2	43.1	41.6	42.1	41.8	41.5

Notes:
A – Hours actually worked
B – Hours paid for
1 – Employees
2 – Salaried employees
3 – Wage earners
LF – Labour force survey
ES – Labour-related establishment survey
CS – Industrial or commercial survey
EC – Labour-related establishment census
IR – Insurance records
CC – Industrial or commercial census

Source: ILO LABORSTA database, various years.

Table A2.4. Estimates of motor vehicles production, 1997 to 2003 (thousands of units)

	1997	1998	1999	2000	2001	2002	2003
World totals	53 117.0	51 902.1	56 258.9	58 374.2	56 304.9	59 054.0	60 597.4
Argentina	446.3	458.0	304.8	339.6	235.6	159.4	169.6
Australia	348.5	333.5	302.9	347.1	319.4	343.9	413.3
Austria	108.0	103.2	139.3	141.0	155.4	152.6	139.7
Belarus	–	–	13.2	14.6	16.4	15.9	17.3
Belgium	430.9	405.6	1 017.1	1 033.3	1 187.3	1 057.2	904.4
Botswana	–	–	4.6	0.0	1.6	1.6	1.6
Brazil	2 069.7	1 585.6	1 350.8	1 681.5	1 817.2	1 791.5	1 827.0
Canada	2 256.8	2 172.7	3 058.8	2 961.6	2 532.7	2 629.4	2 546.1
Chile	–	–	1.5	5.2	10.5	10.0	5.9
China	1 579.7	1 627.8	1 830.0	2 069.1	2 334.4	3 286.8	4 443.7
Colombia	–	–	7.8	24.0	25.4	21.5	22.0
Czech Republic	367.3	411.0	376.3	455.5	465.3	447.1	441.7
Denmark	–	–	0.0	0.0	0.0	0.0	0.0
Djibouti	–	–	–	0.0	1.7	0.0	0.0
Ecuador	–	–	0.0	0.9	2.8	2.0	2.0
Egypt	0.0	0.0	76.0	59.8	56.1	45.2	50.1
Finland	0.4	31.6	34.4	38.9	42.3	41.5	19.7
France	2 579.9	2 874.9	3 180.2	3 348.4	3 628.4	3 701.9	3 620.1
Germany	5 022.9	5 726.8	5 687.7	5 526.6	5 691.7	5 469.3	5 506.6
Hong Kong, China	–	–	0.0	0.4	–	0.0	0.0
Hungary	79.8	92.9	128.2	137.4	144.3	141.5	126.1
India	596.3	535.4	818.2	801.4	814.6	894.8	1 160.5
Indonesia	0.0	0.0	89.0	292.7	279.2	299.3	322.0
Iran, Islamic Republic of	–	–	119.4	278.0	323.2	487.0	568.5
Italy	1 827.6	1 692.7	1 701.3	1 738.3	1 579.7	1 427.1	1 321.6
Japan	10 975.1	10 049.8	9 895.5	10 140.8	9 777.2	10 257.3	10 286.3
Kenya	–	–	0.3	0.3	0.3	0.5	0.1
Korea, Republic of	2 818.3	1 954.5	2 843.1	3 115.0	2 946.3	3 147.6	3 177.9

	1997	1998	1999	2000	2001	2002	2003
Liberia	–	–	2.0	2.0	6.8	0.0	0.0
Malaysia	266.2	128.6	254.1	282.8	358.8	395.4	345.0
Mexico	1 359.5	1 465.0	1 549.9	1 935.5	1 841.0	1 804.7	1 585.9
Morocco	–	–	21.1	19.4	21.5	25.5	24.5
Netherlands	217.7	270.5	307.2	2 67.3	2 38.9	231.3	218.9
New Zealand	0.0	0.0	0.0	–	–	–	–
Nigeria	–	–	6.2	7.4	8.1	6.5	5.5
Pakistan	–	–	15.0	31.5	17.2	16.0	17.3
Peru	–	–	–	0.0	0.0	0.0	0.0
Philippines	–	–	30.7	41.8	42.3	43.0	45.5
Poland	321.8	414.8	574.8	505.0	347.9	299.1	299.9
Portugal	148.6	159.1	252.3	246.7	239.7	250.8	239.4
Romania	128.2	126.9	106.9	78.2	68.8	79.5	95.3
Russian Federation	1 160.4	1 023.8	1 169.7	1 205.6	1 250.7	1 219.8	1 279.7
Slovakia	1.0	0.7	126.8	181.8	182.0	225.7	281.3
Slovenia	95.9	127.2	118.1	122.9	116.1	126.7	118.2
Spain	2 562.1	2 826.0	2 852.4	3 032.9	2 849.9	2 855.2	3 029.7
Sweden	479.7	482.8	250.7	301.3	289.1	276.2	323.0
Switzerland	–	–	0.1	0.1	0.0	0.0	0.0
Taiwan, China	381.1	403.5	353.0	372.6	271.7	333.7	386.7
Thailand	0.0	0.0	322.8	411.7	459.4	585.0	763.0
Turkey	343.7	344.5	297.9	430.9	270.7	346.6	533.7
Ukraine	4.0	13.5	19.2	31.3	31.8	53.8	107.9
United Kingdom	1 935.7	1 975.6	1 973.5	1 813.9	1 685.2	1 823.0	1 846.4
United States	12 130.6	12 002.7	13 025.0	12 799.9	11 424.7	12 279.6	12 077.7
Uruguay	–	–	11.6	14.4	10.5	4.5	0.0
Uzbekistan	60.0	65.0	44.4	32.3	41.0	29.6	25.5
Venezuela	–	–	5.1	21.2	13.2	9.6	10.0
Viet Nam	–	–	0.0	6.9	10.7	3.5	3.5
Yugoslavia	13.5	16.0	5.3	12.7	9.0	12.0	13.9

Source: ILO calculations based on OICA web site.