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Oliver Heneric · Georg Licht · Wolfgang Sofka (Eds.)

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Europe's Automotive Industry on the Move

Competitiveness in a Changing World

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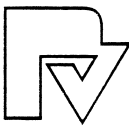

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“An American can have a Ford in any color so long as it is black.”
Henry Ford

Preface

The automotive industry is a major pillar of the modern global economy and Europe is one of the key players. It has a unique role to play in Europe in employment, manufacturing, R&D, transportation and investment, and there are crucial challenges and opportunities ahead. We shed light on a broad range of issues – globalisation and restructuring, trade and foreign direct investment (notably in China and Russia), innovation, regulation, and industry policy – and put a special focus on the new member states. While change may be inevitable, progress is not. This book shall serve as a map to all stakeholders: business executives, policy makers, investors and scholars.

The contents originate from the 8th European Competitiveness Report 2004 project of the European Commission. They document the contribution made at the Zentrum für Europäische Wirtschaftsforschung (ZEW) – Centre for European Economic Resarch – in Mannheim, Germany, in cooperation with several external researchers. We as editors wish to mention and sincerely thank the many persons and institutions who have helped us in this effort. Special thanks go to the contributors: Thomas Cleff (Professor at the University of Applied Sciences in Pforzheim, Germany), Stefan Lutz (then researcher at the Centre for European Economic Resarch, Mannheim, Germany), Alfred Spielkamp (Professor at the University of Applied Sciences in Gelsenkirchen, Germany) and Waltraud Urban (Vienna Institute for International Economic Studies in Vienna, Austria). We are also grateful to Eva Anderson, Thomas Eckert, Martin Hoffmann, and Tzvetana Kaicheva for their assistance at every stage of producing this book.

Mannheim, Germany, March 2005

Oliver Heneric
Georg Licht
Wolfgang Sofka

Table of Contents

1 Introduction

Oliver Heneric and Wolfgang Sofka

Europe is on the move. Automotive mobility is part of European everyday life: on the job and during vacation, with friends or family, from Poland to Portugal. The importance of the European automotive industry runs much deeper. The automotive industry is one of Europe's key industries. There can hardly be any doubt about the important role of this sector as an engine for employment, growth and innovation in Europe. Given its importance, menaces and barriers to its competitiveness cannot be neglected. A number of challenges such as new technologies, overcapacity, the need for cost reductions and sluggish market growth are currently at the top of manufacturers' and suppliers' agendas. Besides, the industry has undergone major structural and organisational changes, most notably eye-catching mergers such as the one by DaimlerChrysler as well as the abortive acquisition of BMW and Rover. However, there are still a number of issues which need to be considered with regard to the present and future of the industry:

- What is the impact of reorganisation in the industry?
- What are the consequences of reorganising the value chain for the innovation capabilities in the automotive sector?
- Are there new players on the market or just new markets?
- What is the impact of the EU enlargement on the European automotive industry?

The purpose of this report is to draw a broad picture of the *European automotive industry – competitiveness, challenges and future strategies.* The intention is to offer an overview of the industry and its sources of competitiveness as well as the challenges it faces and to outline policy implications.

Today the term "competitiveness" is widely used in various contexts and with sometimes ambiguous definitions. In its most general form competitiveness is defined here as the ability to defend and/or gain market share in open, international markets by relying on the price and/or the quality of goods. This ability is affected by a wide range of factors, frameworks and conditions. Hence, one has to look at a multitude of indicators to assess competitiveness ranging from production costs to technological and organisational innovation, from the regulatory framework to macroeconomic conditions. Given this variety competitiveness cannot be expressed in a sole number or ranking. Instead, our approach is to compare a wide set of indicators internationally and assess their development over time, too.

The research framework, and subsequently methods and data, rests upon six chapters which determine the competitiveness of the European automotive industry. Following this introduction chapter the analysis sets the stage by presenting the economic importance, the industry structure and the major players in the automotive industry. Chapter 3 focuses both on international and domestic mar-

kets as an indicator and source of competitiveness. Chapter 4 pays closer attention to the innovation aspect of competitiveness while the following part highlights the same context with regard to the impact of regulation. Eventually, the report closes with a summary of major results and conclusions.

The new member states (NMS) are already an important part of Europe's automotive system. The report emphasises their special role wherever appropriate. Besides, for stylistic reasons the report occasionally uses the term "motor vehicle industry" instead of automotive industry[1], both terms are considered synonyms and should not be interpreted as factually different.

The report comprises the following chapters:

The European Automotive Industry in a Global Context

By means of a detailed analysis of different economic indicators the economic activity of the automotive industry is described. The report covers key data which highlights the importance of this industry and its dynamic developments. The chapter provides industry specific indicators such as value added, employment as well as capital stock and investment. The significance of the automotive industry indicators is emphasised by drawing comparisons with other sectors and countries dynamically over time. An industry profile carries the chapter forward. The purpose of this section is to present both the market players and the industry itself. The industry is divided into *car, truck and bus* segments. Each segment is analysed in a *global and a European context.* The underlying indicator of this analysis is the output of the manufacturers which is measured in terms of production units. The global view describes the distribution of output volume between America, Europe, Asia and Africa.

The European view covers the EU member states and as far as possible the new member states as well. A ranking of the leading manufacturers is given for each segment. The section also includes a description of the *supplier* industry and its important role for manufacturers. Different supplier strategies and a ranking of the top supplier firms highlight their crucial role in this industry. A deeper analysis of the suppliers is provided later in the report. Furthermore, the document contributes to discussion of the internationalisation strategy of the automotive companies. The

[1] Passenger cars are motor vehicles with at least four wheels, used for the transport of passengers, and comprising no more than eight seats in addition to the driver's seat. Light commercial vehicles are motor vehicles with at least four wheels, used for the carriage of goods. Mass, given in tons (metric tons), is used as a limit between light commercial vehicles and heavy trucks. This limit depends on national and professional definitions and varies between 3.5 and 7 tons. Minibuses, derived from light commercial vehicles, are used for the carriage of passengers, comprising more than eight seats in addition to the drivers seat and having a maximum mass between 3.5 and 7 tons. Heavy trucks are vehicles intended for the carriage of goods. Maximum authorised mass is between 3.5 to 7 tons. They include tractor vehicles designed for towing semi-trailers. Buses and coaches are used for the carriage of passengers, comprising more than eight seats in addition to the driver's seat, and having a maximum mass between 3.5 and 7 tons. The industry includes also component suppliers.

discussion points out the *globalisation* trend in the industry and the closely connected restructuring process among manufacturers and suppliers. Besides pointing out mergers and acquisitions, the demonstration of the spread of intra-industrial connections represents the current picture of the automotive industry. Finally, the chapter tackles the issue of capacity utilisation.

Competitiveness: A Market Perspective

This chapter starts by focusing on measuring competitiveness of the European automotive industry on international markets. World market shares and revealed comparative advantage (RCA) numbers are presented to assess competitive performance and potential. The subsequent section emphasises foreign direct investments (FDI) as the second major instrument in internationalisation strategies both on a country and firm level. Additionally, the chapter analyses two specific promising emerging markets, China and Russia, in more detail. Finally, the chapter turns to the European home market to identify sources of competitiveness from domestic demand. Apart from market size and growth special attention is paid to market segmentations and brand esteem in the passenger car and commercial vehicles segment.

Innovation and Competitiveness

Competitiveness can hardly be described as a static concept. Innovation and R&D activities pave the way for future success. Those projects reflect a company's assessment of its future prospects and its willingness to exploit market opportunities by investing in new technologies. Necessarily, the chapter starts with a broad examination of productivity. Subsequently, we focus on skilled labour, R&D expenditures as well as patents and emphasise the relevance of innovation patterns and research networks in the automotive sector. While innovation is often confined to technical innovations we extend this view towards organisational aspects especially in the automotive value chain.

Regulation and Industrial Policy

The automotive industry is more and more affected by regulation at the EU level. In general, this regulation can foster competitiveness on the one hand by increasing competition within the sector and may induce new innovation trajectories. On the other hand regulation also might pose a threat as it can be seen as a major driver of additional costs and may point innovation activities into dead ends where global demand will not follow. This chapter points out the importance of the transportation system as well as its social costs and the major elements of regulation initiatives which affect the automotive industry. This section highlights specific regulations e.g. Block Exemption or end of life vehicle as well as the efforts of the industry to take the environmental challenges into account. Therefore, the report provides a deeper look at the sustainability endeavours of the automotive industry.

Challenges and Opportunities for the European Automotive Industry

Consequently, the report reaches its final stage: the *SWOT Analysis*. The SWOT Analysis provides a systematic overview of strengths (S), weaknesses (W), opportunities (O) and threats (T). It is a well established and straightforward concept which is helpful in matching an industry's resources and capabilities to the competitive environment in which it operates. The aim is to conclude from each section mentioned above the strength, weaknesses, opportunities and threats of the European automotive industry. To extend the scope of this analysis into the future while still providing meaningful results an additional scenario analysis is conducted to highlight major connections and interactions among SWOT factors in a best and worst case scenario. These steps lay the groundwork for the formulation of implications and policy issues.

2 The European Automotive Industry in a Global Context

Oliver Heneric, Georg Licht, Stefan Lutz, and Waltraud Urban

2.1 Economic Importance

2.1.1 Overview

The automotive industry is one of Europe's biggest industries. It contributes about 6% to total manufacturing employment and 7% to total manufacturing output in Europe making it a major driver of the European economy. Employment in the EU motor vehicle industry amounts to 1.9 million employees and annual value added produced is about EUR 114 bn. The US automotive industry produces about the same volume (in value added at current exchange rates). However, employment figures are only 60% of the European level thus exhibiting a significantly higher level of labour productivity per employee. Japan's automotive production volume is about 65% of that of the EU-15 or the US; with only 56% of the US employment level, the Japanese industry boasts even higher labour productivity levels than the US.[2] However, labour productivity growth has been consistently higher in the EU-15 since the early 1990s, so that European automotive manufacturing productivity is in a continuous process of catching up with the US and Japan. Catching up has continued since 1995, contrary to evidence about a relative European slowdown since the mid-90s in total manufacturing. However, the relative sizes of the three big regions of automotive production have not changed very much during the last decade or so.

In addition to its own size, the automotive industry generates more economic activity through various backward (to supplier industries) and forward linkages (to customers). A comparison of total production, value added, production volumes and imports for the EU-15, the USA and Japan, puts imports and value added, respectively, at roughly a quarter of total production. This is evidence for upstream inputs of up to two times the volume of value added in the automotive industries. Inspection of input-output tables supports these findings. E.g. in Ger-

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[2] Employment figures in automotive industry vary significantly according data source. E.g. OECD/STAN data reports about 950,000 employees for the USA whereas US BLS (the original data source) reports around 1.2 million employees. Similar differences can be found with respect to Japan. Even more, there seem to be differences with regard to the (detailed) definition of what belongs to the automotive sector, and it seems that in some countries different definitions of the sector are employed with regard to output figures (production value, value added, etc.) and labour input figures. Hence, one should be extremely cautious when comparing productivity figures (level) across countries.

many, backward linkages provide products worth about EUR 1.3 for every euro in final demand for automotive production.

Probably due to differences in outsourcing behaviour along the value chain, the domestically generated value added component in total vehicle production has increased in the EU-15 while it was about stable in Japan and fell in the US. This might have been exacerbated by a relatively high decrease in total manufacturing relative to GDP in Europe and the introduction of domestic content requirements following NAFTA in the US.

It is noteworthy that the EU-15 automotive industry is highly concentrated with Germany alone accounting for close to half of total value added generated. The six largest national industries, i.e. Germany, France, the United Kingdom, Italy, Spain, and Sweden account for over 90% of total value added generated.

Nevertheless, since the total manufacturing sector is shrinking relative to the service sector in advanced economies, i.e. total manufacturing is less than one third of total domestic product, the automotive industry accounts for less than 2% of GDP in the USA, Japan and the EU-15. Likewise, the automotive industry provides less than 1.5% of total employment in these regions. Hence its importance follows to a large degree from linkages within the domestic and international economy.

While the automotive industry is not a high-tech industry in the strict sense, it is a major driver of new technologies and of the diffusion of innovations throughout the economy. Almost 20% of all R&D in manufacturing is undertaken by car manufacturers. Its close links to many other manufacturing sectors (such as chemicals, plastics, electrical and electronic parts, etc.) contribute to the rapid diffusion of new technologies. Moreover, the industry is an important demand source for innovations from other industries, including high-tech sectors such as ICT.

Finally, motor vehicles are one of the most important consumer goods in terms of total household expenditures. As motor vehicles are the largest durable consumer goods in terms of expenses (next to housing), demand for motor vehicles is highly correlated with and contributes to general growth and business cycle movements.

2.1.2 Value Added

The automotive industry contributes about 6% to total manufacturing employment and 7% to total manufacturing output in Europe. Employment in the EU motor vehicle industry is in excess of 1.9 million and annual value added produced in excess of EUR 114 bn.

Table 1. Value added in motor vehicles in EU, USA, Japan

		2000	2001	2002
EU-15	EUR mn	117,154	118,156	114,170
USA	USD mn	120,400	109,334	120,800
	EUR/USD	1,086	1,118	1,062
	EUR mn	110,866	97,794	113,748
Japan	JPY bn	8,129	8,753	9,254
	1000 JPY/EUR	0.1078	0.1215	0.1253
	EUR mn	75,408	72,041	73,855

Source: VDA, International Auto Statistics 2003. OECD/STAN and own calculations.

Total value added produced in the motor vehicle industry in the EU-15 was about the same in 2002 as in the USA – roughly EUR 114 bn at current exchange rates. A similar calculation for Japan puts that the country's motor vehicle value added about 35% lower at EUR 74 bn.

Within the EU, the largest national motor vehicle industries by percentage of total EU-15 value added in 2002 were Germany (45%), France (17%), the United Kingdom (11%), Italy (7%), Spain (7%) and Sweden (6%). Together, these six countries account for about 93% of motor vehicle production within the EU-15.

Table 2. Value added in motor vehicles in the EU by country in 2002

Year	EUR mn	% of EU total
Austria	2,223	1.95
Belgium	2,774	2.43
Denmark	345	0.30
Finland	344	0.30
France	19,047	16.68
Germany	51,490	45.10
Greece	75	0.07
Ireland	145	0.13
Italy	7,967	6.98
Luxembourg	n/a	n/a
Netherlands	1,766	1.55
Portugal	968	0.85
Spain	7,665	6.71
Sweden	6,840	5.99
United Kingdom	12,521	10.97
EU-15	114,170	100.00

Source: VDA, International Auto Statistics 2003.

Value added[3] in motor vehicles as a percentage of value added in total manufacturing has been stable since 1991 in Japan and the EU-15 but increased signifi-

[3] Source: OECD/STAN data.

cantly in the US. In 1991 it was about 8% in Japan, 4% in the US, and 6% in the EU-15. Up to the year 2000, this percentage grew to 9% in Japan, 8% in the US and 7% in the EU-15.

Within the EU, motor vehicles are most prominent as a percentage of manufacturing value added 2002 in Sweden (15%), Germany (13%), France (10%), Spain (7%), Belgium (7%), Austria (6%), UK (5%) and Italy (4%). All other EU member countries have percentage rates of below 4%.

This supports the notion of an industry concentrated in a few countries. Since in the EU-15 as a whole, automotive value added accounts for less than 2% of total GDP, it follows that it is rather negligible in about half the EU countries. More precisely, this ratio is less than 0.5% in Denmark, Finland, Greece, the Netherlands and Portugal. Note that it is also less than 0.5% in the US.

2.1.3 Employment

In the year 2002, the motor vehicle industry employed 1.91 million workers in the EU-15, 1.15 million in the USA, and 0.65 million people in Japan, respectively. From 2000 to 2002 employment in the USA decreased by about 12%, whereas it fell more moderately in EU-15 (by 2%) and in Japan (by 5%).

Since the ratios of value added and employment suggest much higher labour productivity levels in Japan and the US than in the European Union, the relative employment dynamics of the US and the EU indicate a slowdown in the catching-up process of the European auto industries since the turn of the millennium.

Table 3. Employment in motor vehicles in EU, USA, Japan (thousands)

	1999	2000	2001	2002
EU-15	1,901	1,944	1,933	1,907
USA	1,312	1,313	1,212	1,151
Japan	705	683	664	646

Source: VDA, International Auto Statistics 2003. OECD/STAN and own calculations.

Employment in the motor vehicle industry as percentage of employment in manufacturing[4] in Japan, the USA and the EU-15 increased by about one percentage point from 1991 to 2000. The highest percentage in both years was in Japan, where it grew from about 6.5% in 1991 to 7.5% in 2000. This is followed by the EU with an increase from 5.5% to 6.5% during the same period. The USA exhibits the lowest levels over the same period, moving from 4.5% to 5.5%. However, since industrial production is only a fraction of total production in these three regions, this translates into less than 1.5% of total employment in the respective economies. Between 1995 and 2000, this percentage remained roughly stable at 1.4% in Japan, 0.7% in the USA, and 1.1% in the EU-15. The table also shows that the automotive industry is in a critical situation in all three regions. Since

4 Source: OECD/STAN data.

2000 a significant drop in the number of employees can be observed in the US. Also, Japan and the EU show a trend towards lower employment figures in recent years. However, looking at the long-run trend employment in the EU automotive industry is still increasing.

Within EU-15, 45% of employment in vehicle manufacturing was in Germany in the year 2002. Other major employers are France (14%), the United Kingdom (11%), Italy (9%), and Spain (8%).

Table 4. Employment in the motor vehicle industry in the EU by country 1999-2002 (thousands)

Country	1999	2000	2001	2002
Austria	28.2	29.1	30.7	30.2
Belgium	52.7	53.9	53.2	51.0
Denmark	8.1	7.5	7.1	6.5
Finland	7.3	7.5	7.2	7.1
France	273.9	277.3	276.8	273.2
Germany	835.5	855.6	867.6	866.6
Greece	1.7	n/a	n/a	n/a
Italy	181.0	178.8	175.8	163.9
Ireland	3.3	3.4	3.7	3.5
Luxembourg	n/a	n/a	n/a	n/a
Netherlands	28.0	28.0	26.8	26.8
Portugal	24.4	28.2	20.9	20.0
Sweden	72.3	77.5	79.1	80.6
Spain	159.5	165.6	161.9	158.5
United Kingdom	224.7	231.3	222.4	219.2

Source: VDA, International Auto Statistics 2003.

Within the EU, percentages of manufacturing employment in the motor vehicle industry in the year 2000 are largest in Germany (11%), Sweden (10%), Belgium (8%), Spain (7%) and France (7%). These numbers have increased since 1991 by about half to one percentage point in all those countries with the exception of France, where that percentage rate remained stable.
A similar picture emerges when looking at individual EU countries' employment as a percentage of total employment in the respective national economies. In the year 2000, this percentage was the highest in Germany (2.4%), Sweden (1.8%), Spain (1.3%), Belgium (1.2%), France (1%), and Italy (0.75%).

2.1.4 Production, Backward and Forward Linkages

In addition to its own size, the automotive industry generates more economic activity through various backward and forward linkages. A first indicator of backward linkages is the ratio of total production to value added, since the difference between production and value added are inputs. Generally, value added in motor vehicles is about one quarter of total production in motor vehicles.

Measured in current USD and using OECD purchasing power parities[5], production in motor vehicles[6] has remained roughly constant in Japan at about USD 250 billion. In the US production increased from USD 200 billion in 1991 to USD 400 billion in 2000. In the EU-15, production increased during the same time frame from USD 300 billion to USD 550 billion.

Between 1991 and 2000, value added as a percentage of total production in motor vehicle manufacturing[7] has been between 20 and 30% in Japan, the USA and EU-15. While this percentage has increased in Japan (25% to 27%) and the USA (22% to 30%), it has dropped in the EU-15 (30% to 22%) from the beginning to the end of that time period.

In comparison, between 1995 and 2000, value added as a percentage of total production has increased by about 10% in Japan while it fell by about 10% each in the US and the EU-15. Since automotive value added as a percentage of manufacturing total was slightly increasing in all three regions, the different directions of trends seem to reflect general trends in manufacturing.

The explanation for the different movements in value added relative to production in Europe and the US might therefore be found in two recent developments. Firstly, outsourcing has recently been developed to a higher degree in the EU than in the US. Secondly, the introduction of domestic content requirements in the US following the ratification of NAFTA may have contributed to the observed trend in the USA.

This gives a first rough estimate of backward linkages, i.e. production of inputs demanded by motor vehicle manufacturers. Since a part of these inputs are foreign imports, they have to be subtracted to obtain the domestic backward linkage effect. As imports account for approximately 25% of total production on average, this results in a backward linkage effect of a magnitude of 2. Consequently, each dollar, euro or yen of value added in motor vehicles demands approximately two more dollars, euros or yen of domestic inputs for production. A similar effect would be expected for employment relationships.

A more precise way of quantifying the magnitude of backward linkages is through input-output tables. We restrict the analysis to the latest available input-output tables for Germany (published by the Statistical Office in December 2003) as EU-wide input-output tables are not available. Figure 1 shows the impact of a EUR 1 increase in final demand for cars on production values and imports (in EUR) of goods produced by the automotive sector itself and other sectors. It is important to bear in mind that the coefficients presented there also account for indirect effects including the additional demand for cars as response to an increase in the induced output of other sectors. The interpretation is straightforward. The main impact of an increase in final demand for cars is visible in the automotive sector where the production of automotive products (including parts) increases by EUR 1.4. Not surprisingly, an increase in the demand for cars has a large impact

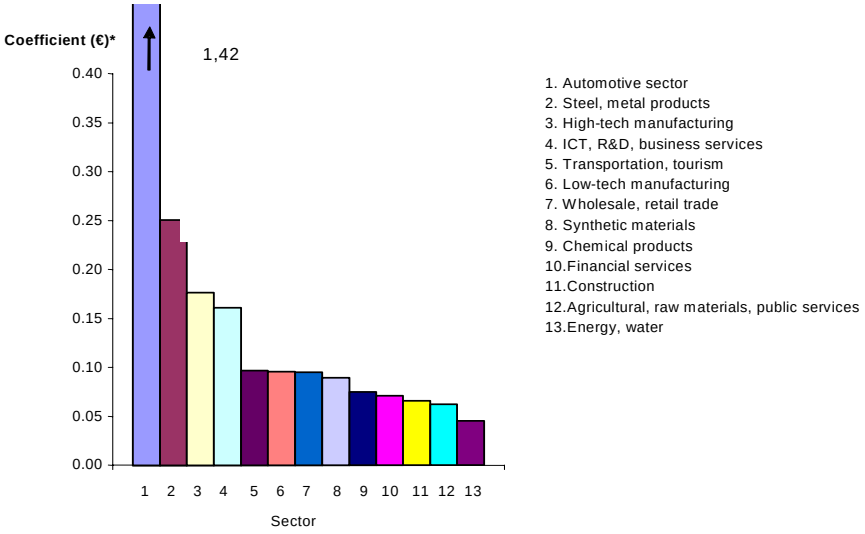
5 Note that this results in European production being relatively higher when compared to using industry association data with current nominal exchange rates.

6 Source: OECD/STAN and own calculations.

7 Source: OECD/STAN and own calculations.

on steel production, the metal working industry, high-tech manufacturing (i.e. mechanical and electrical engineering, measurement and control, electronics, etc.), chemical products and rubber.

Fig. 1. Backward linkages of final demand for automotive products in Germany



* The coefficient shows the impact of a EUR 1 increase in final demand for cars on production values and imports (in EUR).
Source: ZEW calculations using data from the Federal Statistical Office Germany.

Surprisingly, there are strong links between car production and several service sectors namely business services (including R&D and IT services), financial services, transport and trade. In sum, service sector output is raised by nearly EUR 0.5. Low-tech sectors are also linked through the supply chain to the automotive sector, however. These links through the value chain also demonstrate the importance of the automotive sector as an engine for growth and employment. Although this data only refers to the German automotive sector, the results probably hold for other EU countries as well. In a recent study Garel Rhys (2000) reports various estimates linking employment in the automotive industry and the rest of the economy. He concludes that one should expect an “employment multiplier” between the automotive sector and the rest of the economy in the magnitude between 1:0.6 and 1:1.4. These estimates are in line with the estimated link which indicates a 1:0.9 relation between automotive and other products and other sectors. However, note that this link is not a national one. Given the international nature of the automotive value chain the reported numbers also show a large potential for linking the European economies (from which the bulk of automotive part imports stem) through the car industries value chain.

At first glance, domestic production and employment effects through forward linkages outside of vehicle manufacturing seem to be rather insignificant. However, the structure of the input-output tables masks major downstream effects for

the automotive repair and maintenance services industries, since these services are contracted through final users of vehicles. Domestic demand for these services originates from the total stock of new and used vehicles owned by domestic firms and consumers and is fuelled by the about 25% of total turnover demanded by domestic consumers and firms. Another major downstream effect within the EU-15 is given by intra-EU exports, which are in the order of magnitude of 35% of total production.

2.2 Capital Stock and Investment

Motor vehicle manufacturing is an investment-intensive industry. This is borne out by consistently high levels of investment in fixed capital like plants and equipment. The aggregated level of investments in the motor vehicle industries of the EU-15 countries was EUR 30.5 bn in the year 2001. The largest investing national industries were in Germany (39% of EU-15 motor vehicle industry investment), France (21%), United Kingdom (14%), and Spain (7%). The German motor vehicle industry alone invested EUR 11.6 bn in 2001. Germany and France together contributed roughly 60% of total EU-15 industry investments.

Table 5. Investment levels in the motor vehicle industry by country in 2001

	EUR mn 2001	% of EU-15 total 2001	ECU mn 1995	% of EU-15 (1) total 1995
Austria	424	1.39	215	1.27
Belgium	926	3.03	n/a	-
Denmark	44	0.14	62	0.36
Finland	35	0.11	43	0.25
France	5,129	16.81	3,649	21.48
Germany	11,642	38.16	6,565	38.65
Ireland	31	0.10	n/a	-
Italy	4,209	13.79	1,957	11.52
Luxembourg	n/a	-	n/a	-
Netherlands	162	0.53	n/a	-
Portugal	224	0.73	307	1.81
Spain	2,874	9.42	1,143	6.73
Sweden	1,041	3.41	710	4.18
United Kingdom	3,771	12.36	2,335	13.75
EU-15	30,512	100.00	(1) 16,985	(1) 100.00
Japan	n/a	-	12,497	-
USA	n/a	-	15,813	-

(1) No comparable data available for Belgium, Ireland, Luxembourg and the Netherlands. Hence EU-15 figures exclude those countries.
Source: VDA, International Auto Statistics 1999 and 2003.

The investment rate, i.e. investment relative to value added[8], ranged between 7 and 38% for individual EU countries in the year 2001. Similarly, investment per worker employed in 2001 varied between 3 and 18 EUR/employee. By both measures, the lowest investment levels were those in Finland (note that these are values from one year earlier, though).

Highest investment rates were achieved in Spain (38%), Portugal (32%), the United Kingdom (29%), and France (29%). Highest investment levels per employee were exhibited by France, Spain, and the United Kingdom (all three close to 18%). The latter three countries seem therefore to have been major contributors to the recent productivity increases in the European automotive industry.

Trends in investment activity[9] in the motor vehicle industry are, again, similar to trends in total manufacturing. Investment levels as percent of value-added and production tend to remain stable.

Table 6. Investment ratios in the EU motor vehicle industry by country in 2001

	Investment per person employed (in EUR)	**Investment per value added (in %)**
Austria	13.2	18.8
Belgium	10.9	18.0
Denmark	9.0	17.8
Finland	3.2*	6.9*
France	17.9	29.3
Germany	13.5	20.3
Greece	n/a	n/a
Ireland	8.0	19.5
Italy	10.7	26.5
Luxembourg	n/a	n/a
Netherlands	6.0	9.2
Portugal	12.0	31.6
Spain	17.8	37.9
Sweden	15.0	23.4
United Kingdom	17.5	29.4

*) Value for the year 2000.
Source: Eurostat, New Cronos, March 2004.

2.2.1 Special Focus on the New Member States

The new member states (NMS) are small but highly specialised road vehicle producers in the European context. The automotive industry is also growing much faster in these countries than in the old member states (OMS). A new automotive industry ‘axis’ is emerging, comprising the Czech and the Slovak Republics,

8 Source: OECD/STAN and own calculations.
9 Source: OECD/STAN data.

Southern Poland and Western Hungary, based on skilled workers, low labour costs and large potential demand. Although this will enhance the international competitiveness of the EU automotive industry, global overcapacities may lead to companies moving out of the OMS.

2.2.1.1 The Relative Size of the NMS Automotive Industry

When comparing production values in the NMS with those in the OMS, one has to take into consideration the still undervalued currencies of the NMS. Converting output with purchasing power standards (PPP) instead of market exchange rates brings the share of the NMS automotive industry in EU-25 production up from 5% to 10%, the truth may be somewhere in the middle. The share in EU-25 employment is 11% (Table 7).

Table 7. Overview of number of establishments, production and employment 2002 in motor vehicles, trailers and semi-trailers (NACE 34)

	No of enterprises	Production[1]					VAD[3]			Employment[2]		
		EUR millions		% of manuf.	% of EU-25		EUR millions		% of manuf.	People (thousands)	% of manuf.	% of EU-25
		at exch.rates	at PPP		at exch.r.	at PPP	at exch.r	at PPP				
Cyprus	46 [3]	18.3	24.6	0.6	0.0	0.0	7.5	10.1	0.8	0.4	1.0	0.02
Czech Rep.	385 [3]	9.093.6	17663.5	16.2	1.7	3.2	1620.7	3148.1	10.9	87.0	8.4	4.08
Estonia	20	74.0 [3]	145.5 [3]	2.2 [3]	0.0	0.0	24.3	47.8	2.5	1.5 [3]	1.2 [3]	0.07
Hungary	399	6.813.6	12901.3	14.5	1.2	2.4	1166.3	2208.4	10.1	36.1	4.8	1.70
Latvia	21	10.7 [3]	23 [3]	0.3 [3]	0.0	0.0	5.8	12.4	0.4	0.6 [3]	0.4 [3]	0.03
Lithuania	32	9.0 [3]	21 [3]	0.1 [3]	0.0	0.0	1.2	2.7	0.1	0.3 [3]	0.1 [3]	0.01
Malta	16	3.1	5.6	0.1	0.0	0.0	1.3	2.3	0.2	0.1	0.2	0.00
Poland	1092 [3]	7.242.3	13708.4	6.4	1.3	2.5	2044.5	3869.9	4.5	78.0	3.5	3.66
Slovak Rep.	74	2.939.8	6976.2	17.2	0.5	1.3	321.4	762.7	8.2	18.2	4.8	0.85
Slovenia	144 [3]	1.329.9	1888.9	9.7	0.2	0.3	133.6	189.8	3.3	7.0	3.0	0.33
NMS-10	2229	27.534.2	56612.4	10.3	5.0	10.3	5326.6	10951.9	6.2	229.1	4.4	10.76
EU-15[4]		520.000.0		10.7 [5]						1.900.0	6.9 [5]	
EU-25		547.534.2		10.7						2.129.1		

VAD = value added, PPP = purchasing power parity. 1) at current prices; 2) employees only; 3) 2001; 4) Eurostat (2004: 240), rounded values; 5) year 2000.
Source: wiiw Industrial Database; Panorama of Czech Industries, Eurostat, New Cronos, SBS.

2.2.1.2 'Big' and 'Small' Producers

In terms of production value and employment, the 'Big Three' automotive producers among the NMS are the Czech Republic, Poland and Hungary – followed by the Slovak Republic and Slovenia (See Table 7 and Figure 2). However, in terms of the *number of vehicles* produced, Slovakia ranks third, before Hungary, indicating a lower unit value of cars produced in the former than in the latter country.

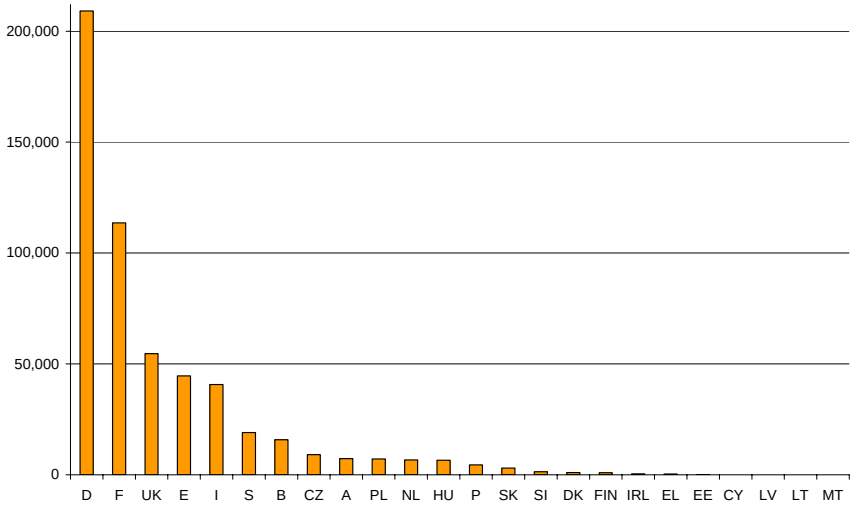
Comparing individual countries, the automotive industries in the Czech Republic, Hungary and Poland – and probably Slovakia in the near future as well – are similar in size to that of Austria and the Netherlands and rank in the lower middle field of European automobile producers, while the other NMS belong to the group of minor producers in the EU, such as Denmark, Finland, Greece and Ireland.

Specialisation

Although rather small in the overall European context, the automotive industry plays a very important role in these NMS and is a major driver of their economies. The most specialised NMS countries are the Czech Republic, Slovakia and Hungary.

In 2002, the share of the automotive industry in total manufacturing output reached 17.2% in Slovakia and 16.2% in the Czech Republic and 14.5% in Hungary (see Table 7 and Figure 3). In these countries, the share of the automotive industry is in fact higher than in the big West European car producing countries, such as France, Italy, UK and Spain, ranging between 5 and 14%, except Germany (17%).

Fig. 2. Motor vehicle production in the old and in the new member states (2001/2002) in EUR mn



Source: Eurostat, New Cronos, SBS, Panorama of Czech Industries 2003.

However, while the automotive industry is the most important manufacturing sector in the Czech and the Slovak Republics, indicating a clear specialisation in this field, it ranks just third in Hungary, with the electrical equipment and the food industry taking the lead there. Notably, in Slovenia where the automotive industry is very small in absolute size, it nevertheless has a relatively high share in manufacturing (9.7%), while in Poland, which ranks second in car production after the

Czech Republic, the role of the industry is relatively small (6.4%), due to the large size of the overall economy.

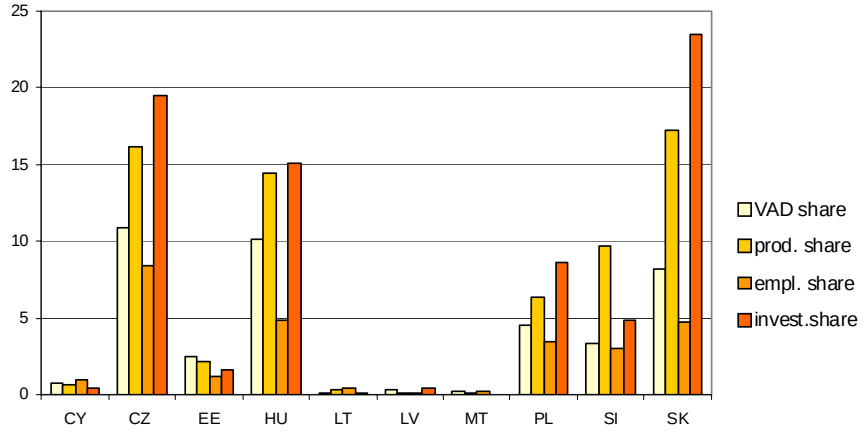
Comprising many assembly plants, the value added shares of the automotive industry in the NMS are typically lower than the production shares, but the investment shares are generally higher, driven by foreign direct investment and pointing to the dynamic development of the industry. Employment shares are relatively low due to the capital intensive character of the industry (see Figure 3).

2.2.1.3 A Small but Fast-Growing Automotive Industry

The automotive industry in the NMS is small measured by EU standards, but has been developing very dynamically and much faster than in the old member states and also faster than total manufacturing in the NMS. This outstanding growth can be attributed to the high inflow of foreign direct investment (attracted by skilled and cheap labour which makes the industry internationally very competitive), by investment promotion by local governments, and the expectation of expanding domestic markets.

Between 1995 and 2002, average annual growth of output (at constant prices) reached an impressive 28% in the Slovak Republic, 25% in Hungary, and 20% in the Czech Republic, surpassing average manufacturing growth in these countries by 15 to 20 percentage points per annum. Only minor automobile producing countries such as some Baltic states showed below average growth in this sector. In Poland, the automotive industry developed rapidly until the year 2000, but has performed poorly ever since (Figure 4 and Figure 5). This is partly due to specific problems such as the Joint Venture between Daewoo and the Polish government

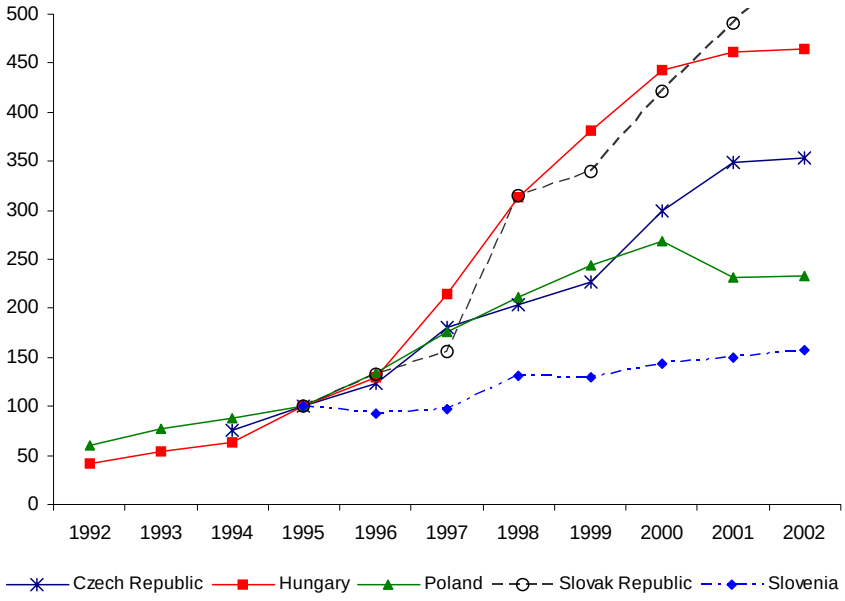
Fig. 3. NMS automotive industry: VAD, production, employment and investment percentage in total manufacturing, 2002



Source: See Table 7 and Eurostat, New Cronos, SBS.

and the indirect impact of the 1997/1998 Asian economic crisis, but there are signs of overall weakness in the automotive industry in Poland as well – probably linked to demand which has developed less well than expected and a relatively high wage level compared to other NMS competitors.[10]

Fig. 4. Industrial production index for the automotive industry (NACE 34) in major car producing NMS



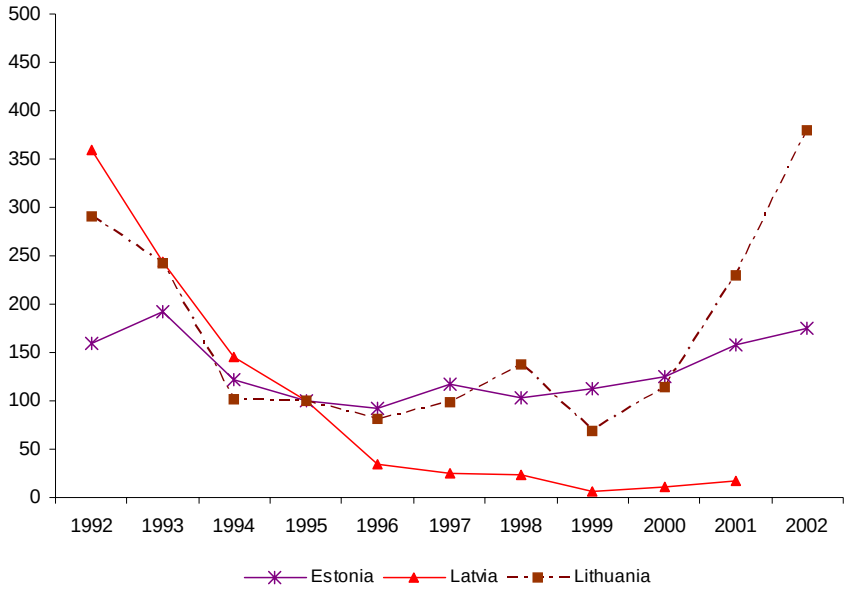
At constant prices 1999, national currency; 1995=100.
Source: wiiw Industrial Database; Panorama of Czech Industries, Eurostat, New Cronos, SBS.

Output in the vehicle industry is also decelerating in Hungary, although it is important to bear in mind that 2002 was a bad year for the automobile industry all over Europe due to a fall in overall demand which hit the car industry in particular. The recent data indicating very high production growth in Lithuania must be interpreted with care as the level of production is very low and fluctuates strongly; this is probably due to changes in the classification of automobile parts which can, for example, be assigned to the automobile industry one year and the electrical industry (wires, electronic components) or the plastic & rubber industry (bodies,

[10] The production of Fiat Auto declined from 340,630 cars in 1999 to 178,044 in 2002. Production of FSO Polonez (Daewoo) came down from 18,891 cars in 1999 to just 1,444 in 2002 – the number of trucks produced fell from 7,625 to mere 350 during the same period (Ward, 2003).

components) the next. But there is no doubt that the supplier industry is developing rather well in Lithuania[11].

Fig. 5. Industrial production index for the automotive industry (NACE 34) in secondary car producing NMS



At constant prices 1999, national currency; 1995=100.
Source: wiiw Industrial Database; Panorama of Czech Industries, Eurostat, New Cronos, SBS.

2.3 Industry Profile

2.3.1 Automotive Production

The automotive industry is a key strategic industry within the European economy. A considerable number of the leading automotive companies have their origins in Europe. The industry is characterised by large internationally owned manufacturers and suppliers as well as a number of small and medium-sized companies which meet the criteria of component suppliers (tier 1 to tier 3, see below). Manu-

[11] Lithuania produces mainly bodies (NACE 34.2) and parts (NACE 34.3), but is supplying a wide range of components for the automobile industry from other industries, in particular electrical equipment and plastic parts (Ekonomines Konsultacijos ir Tyrimai UAB, 2002).