Trends and drivers of change in the European automotive industry: (I) mapping the current situation

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Abstract: This paper provides an overview of the European automotive industry and its importance to the European economy. The paper examines the whole automotive system including car and truck/bus manufacture, the upstream supply matrix and the downstream distribution and retail sector. The authors examine the main, and well-documented, manufacturing, technological and geographical trends in the industry and relate these to the fundamental drivers of competition, costs, legislation and consumer choice. The article is one of a series of two that, together, present a comprehensive picture of the European motor vehicle industry and its strengths and weaknesses compared to those in the other main global automotive producing areas. The articles consider the possible future trajectories and the likely effects on total employment, working conditions and contracts, the geography of production and the EU trade balance on vehicles.

Keywords: automobile; industrial organisation; drivers to change; trends; legislation; employment; SWOT analysis.


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1 Introduction

This article seeks to provide a general picture of the European automotive industry and its strengths and weaknesses as well as a brief analysis of the drivers of change and the resulting trends in organisation, technology and employment. Aspect of these trends and drivers will be picked up in the accompanying regional and company case studies.

2 Location

The geographical distribution of the main car assembly parts is shown on the accompanying interactive map – to be found at www.emcc.eurofound.eu.int. This also shows the model production at each site and gives basic statistics for each country. A similar, and related, geography can be shown for the main engine and transmission plants and for the plants of major suppliers. The map clarifies the scale and distribution of investment in the EU Acceding and Candidate Countries, particularly The Czech Republic, The Slovak Republic, Hungary, Poland, Slovenia and Turkey.

3 Present context

Over the past five years there has been a slowdown in economic output across the EU, and, while the forecasts are positive, a modest growth of 2.0–2.3% is expected in 2004. Weak growth has led to weak consumer and business confidence. There have been falls in industrial production including durable consumer goods. The levels of private consumption have fluctuated during early 2003, following modest growth in the previous two years. This was partly due to poor labour market conditions with EU unemployment rising during 2003. Economic indicators are weak in the major EU economies of Germany, France, Italy and Spain. Only the UK has managed to resist these trends. Figure 1 shows the recent trend and forecasts.
As can be seen from the figure, production fell in 2002 and 2003 but, thereafter, it should recover and achieve even higher levels.

4 Scale

In 2002 global production of motor vehicles (passenger vehicles plus light and heavy trucks) was just over 59 m. The main vehicle-producing areas are Asia-Pacific, including Japan and Korea (19.3 m), Western Europe (17.4 m) and North America (16.8 m). These areas are also the largest markets with sales figures in the same year of 14.2 m, 16.7 m and 19.9 m, respectively. The pattern of new car registrations is shown in Figure 2. The growing importance of production in the main vehicle-producing Accession States should be noted with 2002 production at 1.7 m and sales of 1.2 m.

The industry is organised globally with production dominated by large firms and groupings. The largest 10 companies and groupings account for almost 83% of the above figure and six groups (General Motors, Ford, Toyota, Daimler-Chrysler, Volkswagen and Renault-Nissan) account for two-thirds of global car production.

5 Europe

The European market is highly competitive with approximately 40 manufacturers offering products. This is far more than in the other main markets. It is a vital part of the European economy with a positive contribution to the trade balance in 2002 of €30.9 bn with exports of €50.8 bn and imports at €28.9 bn. (ACEA, 2003). The largest trade surplus is with the USA (€3.7 bn in the first two months of 2003) and the largest deficit with Japan (–€1.2 bn for the same period).

Employment is also significant. In 2002 there were 1.9 m people employed in the manufacture of motor vehicles and trailers (NACE, 34) – about 6% of all manufacturing employment. The breakdown of this figure across the EU 15 is shown in Figure 3.

Figure 3 Employment in motor vehicle manufacture in the EU 15

The largest number (856,000 or 44% of the EU total) were employed in Germany. The next largest were in France (277,000 or 14%), the UK (231,000 or 12%), Italy (179,000 or 9.2%) and Spain (166,000 or 8.5%). These five account for 87.9% of employment.

Figure 4 shows the number of people employed in motor vehicle manufacture as a proportion of the manufacturing industry as a whole. The largest percentage is in Sweden where the figure is about 1 in 10. The next largest proportion is in Germany (9.9%), Belgium (7.3%) and France (6.3%). In the UK, Spain and Italy, less than the 6% average are employed in the sector.
Figure 4  Percentage of manufacturing employment in vehicle manufacture

Source: Eurostat Datashop

Figure 5 shows the change according to EU country (total figures and data for Germany are not available). In the 12 EU countries, for which data are available, employment fell by 0.1% to 1.1 m. The largest increase was in Spain where employment levels rose by 16.2%. Employment also increased in Sweden (12.8%), Portugal and Austria (both 12.1%), the Netherlands (11.2%) and Finland (10.9%). Levels fell in three of the largest vehicle-manufacturing countries, Italy (–7.5%), the UK (–5.6%) and France (–4.8%).

Figure 5  Per cent change in motor vehicle manufacturing employment

Source: Eurostat Datashop
The total employment in production, to include component manufacture where companies are outside NACE 34, is less easy to obtain. The European Association of Automotive Suppliers (CLEPA) has members with a total employment of just over 2 million. They estimate that about three jobs in suppliers support each job in the vehicle manufacturers – perhaps giving an overall total of some 3–3.5 million (interview with Mr. R. Bergner, Chief Executive). The overall trend is a decrease in employment in the vehicle makers and an increase amongst the major suppliers.

Figures are also available for the ‘downstream’ part of the motor trade. This covers vehicle distribution, sales and repair, parts and the retail sale of fuel. Figure 6 shows that in 2000, 2.9 m people were employed (excluding Greece and the UK).

The European Council for Motor Trades and Repairs (CECRA) gives the following statistics that demonstrate the scale of the downstream sector and its economic importance:

- 280,000 sales and repair enterprises, 2.2 m employees, € 400 bn turnover
- 110,000 fuel businesses, 440,000 employees and approx. € 250 bn turnover.

Figure 6  Motor trade employment

6 Drivers of industry trends

Over the last decade the industry has experienced major organisational change. Also, there have been major changes in manufacturing and vehicle technology (see MacNeill et al., 2002). The main drivers are global competition, legislation and consumer demand.
7 Competition

Intense competition requires operations to be carried out with maximum efficiency. The key is large-scale production so as to reduce the value of fixed costs per vehicle. With increasingly sophisticated vehicles and rising investment costs, the optimum economic scale increases (Rees, 1999). Companies have sought to achieve economy by maximising volumes and standardising parts across their model ranges. The outcomes are the investment in high capacity, the ongoing trend towards mergers and acquisitions and the increasing number of cooperative ventures, e.g., to share R&D costs, (EUCAR, 2000).

7.1 Consolidation of car makers

Throughout its history the industry has seen mergers and acquisitions (M&As). Recent M&As include the control of Chrysler (1998) and Mitsubishi (2000) by Daimler-Benz, the purchases of Jaguar (1989), Volvo (1999) and Land Rover (2000) by Ford and purchase of Seat (1986) and Skoda (1990) by Volkswagen plus the alliance between Renault and Nissan (1999). Manufactures have also used M&A to enter expanding markets, e.g., entry to the Korean market by Renault’s purchase of Samsung (2000), GM’s purchase of Daewoo (2003). Some analysts predict only six global producers will survive with two in Europe, two in Japan and two in the USA. This prediction is fast becoming true in Japan and the USA – but Europe still retains six major car and five major truck producers.

7.2 Cooperation

Not all consolidations have been successful (Automotive News, Nov. 2003). The best-known recent failure is probably the BMW purchase of Rover in 1994 that ended in 2000. For some others the jury is still out. For example, the share value of Daimler-Chrysler is currently less than that of Daimler-Benz before the merger. Some consolidations, however, have been successful such as the Seat and Skoda purchases by Volkswagen and the Renault-Nissan alliance. Alternative strategies, such as alliances on particular models or engines, are also emerging. Its examples include the cooperation between Peugeot-Citroen and Toyota, to build a new small car in Kolin (CZ), with Fiat on passenger vans and light commercial vans, and BMW and Ford on engines or that between General Motors and Fiat to share platforms and engine and transmission operations. Another possibility is that a web of cooperative ventures will become a prevalent pattern for European car assemblers.

7.3 Overcapacity

Manufacturers plan capacity to achieve economies of scale. In Western Europe there is an estimated car capacity of 18.8 m (Rees, 1999) against production of 15.2 m in 2002. Companies are often overconfident in sales predictions. Fiat, Ford and GM subsidiary Opel have all experienced fall in sales over the last few years. This has resulted in cutbacks including plant closures and almost 45,000 lay-offs or redundancies. GM has closed the Luton factory (UK) and reduced production at Antwerp (B) and Bocham (D) with lay-offs totalling 20,000. Ford has closed five out of 11 European plants, ended car production at Dagenham (UK) and closed a shift at Genk (B) – with 3000 redundancies. Ford is now operating at above 90% capacity in Europe.
Optimism about new markets has led to investments in emerging markets – those that have so far refused to emerge. For example, predictions of Brazilian annual production at 2.5 m, and sales of 4 m have not been realised with 2002 production of 1.5 m and sales of 1.6 m. Similar investments are being made in other markets, such as in China and in the EU Accession countries. The continued investment in capacity makes it more difficult for Western Europe to export its surplus.

The issue of capacity has a strong influence on industry economics. Vehicle prices are calculated on forecast capacities. Reduced capacity means higher unit costs. Vehicle makers, therefore, often attempt a balancing act where a proportion of the excess is discounted heavily through the dealerships. Another outlet is through cut-price deals to the hire and leasing industry.

However, the picture is complex. Excess capacity in some plants is mirrored by shortages elsewhere. Volvo, another part of Ford, is expanding production in its Ghent plant (B) and taking on 800 additional workers. Others suffer from capacity shortages when sales are high. Peugeot-Citroen, for example, on the basis of two-shifts, is operating at 117%. Another success story, that of BMW’s Mini production (UK), is at maximum for the plant. Also, some spare capacity is necessary – as shown by VW’s ability to shift Polo production from Bratislava (CZ) to Spain when sales of the Touareg SUV exceeded forecasts.

7.4 Lean manufacturing

In Europe the drive for efficiency was, originally, thought to be best addressed through automation. However, at that time (1980s), the reliability and accuracy of robots was insufficient to meet the challenge of matching Japanese quality. It was realised that the best approach was better work organisation and the adoption of the Japanese model of ‘lean manufacturing’ (Womack, Jones and Roos, 1990). This seeks to reduce waste through the best possible utilisation of resources including:

- human resources: through better work organisation, teamwork, flexibility and devolved responsibility

- capital investment: by maximising machine and factory utilisation and reducing ‘dead’ resources tied up in stock through a just-in-time delivery system

- factory space: by organising production that is based on a logical flow of materials

- materials: by ensuring high ‘right first time’ quality and minimising waste.

The system of just in time parts delivery has transformed the organisation of the supply industry. Logistics and material movement has become a skill in itself with the growth of firms that specialise in the field – which are increasingly taking over functions previously undertaken by carmakers such as the delivery of components to the production line. Secondly, the efficient use of human resources has seen the integration of quality control and maintenance into the assembly process. This has meant the removal of a number of separate job functions and the introduction of flexible working. Efficiency gains have enabled a reduction in the time to produce a car from 37 hours in 1990 to around 24 hours today (Nelissen, 2002).
8 The supply industry

Another major development has been the restructuring of the supply industry and the growth of the major ‘mega-suppliers’. As outlined above, the supply industry is a major employer. The lean paradigm has brought about major changes in working practices and organisation at all levels.

8.1 Outsourcing

As carmakers seek to cut costs they increasingly outsource to the supply industry. This externalises a proportion of fixed (overheads) and variable costs (materials) and shares the risk for new developments. It also gains from economies of specialisation and scale – since suppliers are more experienced in certain functions and can supply several carmakers. ‘In-house’ component companies were sold to concentrate resources and raise funds (GM and Ford’s two component arms became Delphi and Visteon, respectively).

Vehicle manufacturers have also devolved responsibility for logistics and stock control and try to deal directly with a few large suppliers who purchase individual parts from the large base of small sub-assembly and single component suppliers (Volpato, 2002). For maximum efficiency the whole supply system should be lean and each company in the value chain is required to organise logistics to buy, make and sell components ‘just in time’, and to minimise costs through flexible working and the elimination of waste. This has had significant effects given as follows:

- a rapid growth in value of the supply industry from €530 bn in the late 1980s to well over €1000 bn today and the growth of large ‘mega-suppliers’
- a very high technological base amongst the large suppliers – where Europe has a strong lead
- up to 60% of the value of a new car is from suppliers
- high pressure to reduce costs on the network of SMEs that made up the lower orders in the supply chain – many of which have gone out of business
- outsourcing of design and engineering functions has led to growth in companies offering high value-added services. Examples of these include Pinin Farina, Bertone (I), Mayflower, Prodrive, Ricardo (UK) and AVL (A) – Europe has a strong lead in this area.

8.2 Consolidation of suppliers

The above process, and the logic of scale, has led to major consolidations in the supply industry. The top 10 suppliers with ownership and annual sales are:

- Delphi (US – €30 bn),
- Bosch (EUR – €22.4 bn)
- Visteon (US – €17 bn)
- Denso (JAP – €18 bn)
- Lear (US – €14.4 bn)
- Johnson Controls (US – €16 bn)
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- Magna (CAN – € 14.3 bn)
- Aisin Seiki (JAP – € 12.6 bn)
- Faurecia (EUR – € 11.8 bn)

These data illustrate the dominance of large US corporations. Although four out of the next five in the ‘top fifteen’ are European owned, and are high value and successful firms, the scale of the US corporations poses a potential threat to European ownership in the future.

Under cost pressure from the automakers the trend of supplier consolidation is likely to go further. PricewaterhouseCoopers predict a reduction in tier one suppliers to 30 by 2010 and major reductions in numbers at the second tier and lower – a forecast reduction from 10,000 tier 2 suppliers to less than 1000. The effects have already been felt with global job losses in the last two years at Delphi (17,000), Dana (21,000) and Lear (6500). Consolidation has led to increasing specialisation (Ulrich, 2003). There are now few global suppliers of certain modules such as seats, safety systems, lighting and steering.

**8.3 Modules and systems**

Suppliers have taken increasing responsibility – particularly in areas such as electronics. An outcome has been for whole modules or systems to be pre-assembled by the suppliers and delivered (just in time and just in sequence) to the car factories (Chanaron, 2001). This makes assembly quicker and more convenient for the carmakers and transfers responsibility for quality and logistics to the suppliers. European manufacturers have gone further in the move to modularisation than their US or Japanese counterparts. However, most are cautious about over-dependence on ‘mega-suppliers’ (Ulrich, 2003).

In many cases module/systems suppliers have set up close to the assembly plants – for example, on supplier parks (Ulrich, 2003). The ultimate modular assembly developments are the VW Resende plant in Brazil, the Škoda Octavia plant in Bratislava (VW) and the Smart Car plant (Daimler-Chrysler Group) at Hambach (F). Here the module suppliers have been integrated directly into the production process. For the suppliers, module or system supply gives additional added value and a greater stake in innovation. The carmakers benefit from cost savings but lose competence and jobs are lost through ‘hollowing out’. This is a potential threat and some companies resist too much outsourcing – notably companies such as Mercedes and Toyota.

Modular assembly is operated globally but with local production as far as possible. Logistics are costly and difficult – especially with road and rail bottlenecks in Europe. As modules become more complex the local aspect of production becomes essential. It is unlikely, therefore, that there will ever be a wholesale transfer of production to low-cost locations. However, as outlined below, there will be increasing pressure on the small lower tier suppliers.

**8.4 Smaller, ‘lower tier’ suppliers**

Observation of the above trends could lead to the conclusion that large suppliers would follow the same trend and outsource to sub-suppliers. This has happened to some extent but large suppliers have been reluctant to lose innovation and technological competences. They also tend to view the abilities of many of the lower tier companies on quality, cost
and delivery as inadequate. Thus many training programmes to assist sub-suppliers to improve QCD have been set up in the major automotive countries such as the UK, France and Germany.

The biggest squeeze on suppliers has been in the lower size band amongst producers of single components (Chanaron, 2004). It has been difficult for these companies to find the resources to innovate and they lack the scale to address the high volume requirements of standardisation. Figure 7 illustrates the average size of the supply base companies. As can be seen, with the exception of Germany, enterprises tend to be small. This makes them vulnerable – especially to low-cost competition from outside Western Europe, and in the long run, outside Europe completely. The small and medium sector is faced with three choices:

- to innovate and add value to the product
- to consolidate, or cooperate, in order to reduce fixed costs and achieve larger scale
- to diversify so as not to be heavily dependent on the auto industry.

In a number of European regions public policy has sought to support the local supply base by encouraging ‘clustering’ and the external economies of cooperation. These policies follow the ideas of Porter (1998) and Cooke and Morgan (1998).

**Figure 7** Average size of workplace – EU 15, 2002

![Average size of workplace – EU 15, 2002](source: Eurostat Datashop)
8.5 E-commerce

E-commerce is accelerating the above trends and has become an essential tool for purchase transactions (Chanaron, 2002) and for sharing computer-aided designs. GM, Ford, DCX, Renault-Nissan and PSA launched their online procurement company ‘Covisint’ at the height of the dotcom boom. This was seen as a way of conducting parts auctions, organising a global purchasing network and returning a profit. However, the results have been less than expected and suppliers have resisted putting sensitive information online. Nevertheless the system, and other similar ventures, remains as an information channel and a facility enabling co-design of parts.

The use of e-commerce puts additional pressure on the lower tier suppliers. Rapid responses as well as high levels of expertise are required. Training, and finding the time and resources to train, are significant obstacles that threaten many small companies.

9 Legislation

European legislation is a major driver of the industry. Emissions and recycling legislation have a strong impact both on vehicle technologies and construction.

9.1 Environmental legislation

The EURO emissions standards are compulsory in all member states. The current EURO IV standard is to be met by 2006. These cover emission of CO, NOx and hydrocarbon particulates for both diesel and petrol engines. Sulphur emissions are not covered but are addressed through the introduction of low sulphur fuels which are mandatory by 2005. Also, CO2 is not covered but is subject to a voluntary agreement committing automobile manufacturers to reduce CO2 emissions by means of improved vehicle technology. This means more efficient vehicles and lower weights but also the development of market-orientated measures including improvements in the level of consumer information.

The second main area is recycling and the EU End of Life Vehicle (ELV) Directive. This requires member states to legislate for increased re-use, recycling and other forms of recovery of ELVs and components and phase out certain hazardous substances by 2007. About 25% of each ELV currently goes into landfills and the target is to reduce this to below 5% by 2015. A further requirement is ‘free take-back’ of ELVs, which enables owners to take their vehicles to an authorised treatment facility at no cost to themselves.

It is expected that the costs of compliance will be significant. Analysts estimate the requirements of the ELV Directive might result in an additional cost of €20 to €150 per vehicle. A particular issue for manufacturers is the responsibility for achieving recycling and recovery targets. This will require partnering with downstream operators – and a number of consortia have been set up, e.g., by Fiat in the Turin area. A second line of approach is through re-manufacture of parts – probably more for the aftermarket than new vehicles.

De-pollution/dismantling/shredding will require increased control and monitoring requirements such as certificates of destruction and authorisation of treatment. Existing experiences in the Netherlands, Germany and France demonstrate that increased professional requirements are likely to drive some players out of business, resulting in consolidation. This poses concern for small- and medium-sized enterprises in the industry.
10 Consumer choice

The third driver of change is the consumer! There is a growing demand for more choice in respect of the options that are available. As a result it is expected that volume production will become more like that for premium cars with more vehicles being made to order with multi-option choice, i.e. ‘batches of one’. Online vehicle purchase will accelerate this trend. There is also an increasing market for niche vehicles, i.e. more variation of body shape and styling. This has led to a variety of body shapes being constructed on standard platforms. Its examples include the Renault Scenic, Fiat Multipla, Opel VX220, VW Beetle and Audi TT. There is also an increased awareness of occupant and pedestrian safety. The New Car Assessment Programme (NCAP) tests are becoming the accepted standard in Europe. Another feature is the desire for greater fuel economy which is exemplified by the growing popularity of diesel power units in Europe if not in the USA or Japan.

Another trend has been a move ‘up-market’ in specifications and the inclusion of more onboard electronics and telecommunications systems. Through increased specification, carmakers can extract higher margins. However, there has been a significant effect on sales patterns. Volume producers, such as Ford and Opel, have marketed models that overlap the price bands of premium producers. Consumers have often opted for the prestige marques. Hence sales of vehicles such as the Ford Mondeo and Opel Vectra have suffered. In recent years Mercedes C-Class and BMW 3-series sales exceeded those of the Ford Mondeo and Opel Vectra.

Finally, there is a trend towards the € 5,000 car designed to meet the bargaining power and infrastructure weaknesses in emerging countries, in particular for the eastern and central Europe consumers. Renault has been the first mover in June 2004 with its Logan due to be assembled by its subsidiary Dacia in Romania and later in Russia, China, Turkey, Egypt, Morocco.

11 Technology

The above issues have had a significant impact on both vehicle and manufacturing technology. (UK Department of Trade and Industry, 2002; MacNeill, Srbljanin and Bentley, 2002.) Carmakers seek to improve technology to:

• address the competitive pressure and meet increased customer expectations on quality and cost
• add value to their vehicles to offset the squeeze on costs and profit margins. For example, the electronics content of a passenger car averages about 30% of its sale value. Meanwhile the value of the mechanical parts decreases
• meet the demands of environmental legislation
• address consumer demands for increased safety and sophistication.

On the vehicle the major trend is likely to be a continued move for more electronics and telematics and a shifting value base from mechanical to electrical/electronic parts. A possible change is the move to a 42 V electrical system that will save energy and could enable engine downsizing. A 42 V system would also enable safety improvements with
the integration of electrically controlled steering, braking, ABS and suspension to provide driver assistance.

There will be continued development of electric, hybrid and fuel cell drives, especially for city cars and fleet vehicles. However, the internal combustion engine will continue to dominate in the foreseeable future. Further refinements will produce improvements to the efficiency of both diesel and petrol engines. A major interest is in alternative synthetic fuels that are made from biomass. These would be (more or less) CO₂ neutral. They could also have wide-reaching consequences for the European agricultural environment.

There will be a revolution in vehicle telematics affecting both the ‘in-vehicle’ experience and mobility. The industry, along with planners and policymakers, is concerned about the waste of energy and ‘knock-on costs to business’ (plus the inconvenience and irritation) of congestion. Features likely to be introduced include more sophisticated route guidance, inter-model route planning, lane guidance and proximity radars for speed control and warning systems. Europe, with a lead in communications technology is in a strong position. In-car entertainment systems may also take off – though the market has been ‘slow’ to date.

The pressure for reducing emissions and fuel consumption is driving vehicle weight reductions through material changes such as increased use of aluminium, magnesium plastics and composites. Materials changes will also facilitate cheaper modes of assembly, enhanced occupant and pedestrian safety and recycling.

Europe leads in new vehicle technology and in communications – but Japan and the USA lead in electronics and software. New players, such as Microsoft, could threaten the status quo.

12 The truck industry

The truck industry can be divided into transporter vans, light trucks and heavy trucks. The first operates much in the same way as the car industry with the same drivers towards high volume production and squeeze on costs.

However, the heavy truck segment operates differently. Firstly, volumes are much lower. For example, Volvo, the largest supplier of heavy trucks to the European market, manufactured just 160,800 trucks in 2002 – in nine locations and with 20,000 direct employees in the Truck Division. However, each vehicle represents very high value. In addition large trucks are made on a fixed chassis rather than a platform. This lends itself to modular assembly far more than does car making. Hence in some markets there is a tradition where purchasers can specify engines, or other major parts, other than from the truck manufacturer. This is particularly the case in the US market.

The trend to consolidation is just as apparent. For example, Volvo has acquired Renault’s truck business plus Mack (US) and has 20% of Mitsubishi’s truck and bus division. Mercedes owns the US truck makers Freightliner and Sterling and has strong alliances in other markets. Future consolidations are also likely.

The market for trucks and buses is different from that for passenger cars. Whereas about 85% of the car market is in the Asia-Pacific, Western Europe and Japan, these regions account for only 50% of the market for heavy trucks and buses (Rees, 1999). Truck and bus sales are not dependent on private consumption but are an essential means of communication and trade throughout the world. For example, Brazil, which has failed
to match car sales expectations, is the world’s largest bus market. The opening up of other markets such as C&amp;E Europe, Russia, China and India thus present real opportunities for truck and bus makers.

Europe has a strong advantage in the truck industry – much more than in car or component manufacture. Mercedes is the world’s largest truck and bus manufacturer and, together with Volvo, Scania, Iveco and MAN the European industry has a dominant position. However, as Rees (1999) points out, companies from developing countries may emerge as major players. Hence European manufacturers are forming alliances, e.g., Mercedes with the Indian company Telco.

13 Retail and services

The sales and distribution sector is set to experience considerable change. Currently distribution and sales account for up to 25% of the cost of a new car. It is said by some to be the only part of the supply chain that is not yet ‘lean’.

14 The ‘three day car’

There is likely to be a major drive to reduce the delivery time to customers following their original order. This will not only provide better service to the car buyer but also have a major effect on costs. Car production takes 1 to 2 days and transport to the dealer 8 days on average, yet it takes weeks or even months for the customer to obtain delivery. In theory the customer could get a new car, manufactured to order, and with his/her own particular specification in just three days – one to order, one to make and one to deliver. Of course this is a theoretical ideal. However, with an online ordering system and a flexible ‘up-stream’ supply chain to the vehicle manufacturer, a time of one week from anywhere in Europe could be feasible. Increased customisation to buyers’ specifications could also be a way for manufacturers to extract higher margins.

This would also save costs. Reduced delivery time would be a major squeeze on inventory. Significant cuts in the whole pipeline could see inventory costs reduced from around €1000 per vehicle to less than €100 (Nick Scheele, CEO Ford, speaking in 2000). Any such move will put considerable pressure on the distributors and retailers.

15 The new block exemption

The new block exemption regulation (NBE) which governs how vehicle manufacturers distribute their products in Europe took effect on 1st October 2003. The European Commission’s aim is to promote competition and provide a better deal for consumers. It separates new car sales, repair and parts supply and gives more autonomy to dealers and repairers.

For new cars the manufacturer can choose an exclusive system (where the dealer is given an exclusive territory) or a selective system (where the dealer is restricted to selling the vehicle to an end user or another dealer in the network – although there is liberalisation regarding seeking customers throughout the EU). All but one manufacturer (Suzuki) have chosen the latter option with particular quality and display criteria. It is
unlikely that the multi-brand outlets once foreseen will emerge. The new system has encouraged vehicle manufacturers to rationalise their distribution networks. A 12% reduction in franchised dealer numbers was seen in 2002 (*Automotive News*, Nov. 2003). Low margins on sales, and ever-present cost competition, have meant dealers need to increase the number of sales per site – hence a cut in numbers follows.

The NBE itself will also lead to reductions in the number of franchises through consolidation. It allows dealers to sell franchises (within the network) and after 2005, dealers can open additional sites both without the need for the manufacturer’s agreement. These changes will benefit larger dealerships and lead to major consolidation. This is very significant. In most member states the average dealership is a small business with a single franchise. These are now vulnerable. The exception is the UK where there are already large multi-outlet dealerships.

Consolidation may have a significant effect on jobs. There may also be a long-term shift in employment patterns, with fewer jobs in traditional dealer networks but increasing numbers in retailing formats. It is predicted that online purchase by consumers will grow – perhaps to more than 50% of sales in the next few years (internet intermediaries, however, must have a permanent sales point.). Fiat has developed online selling in Brazil with computer ‘plug-ins’ enabling 360° viewing, option and colour changes, plus online finance.

The NBE also separates the contracts VMs sign for new car sales, repair and parts supply. Sales and service can therefore be separated. Most franchises will retain both businesses. However, there is an opportunity for independent authorised repair centres and for new players at non high street locations. This is especially so because technical information and training must (reasonably) be provided by the vehicle manufacturers.

For spare parts the NBE has potentially far-reaching consequences. Authorised dealers currently account for over 40% of all repairs, and 80% in cars that are less than four years old. Carmakers supply most of the spares that are used. They make about 20% of these themselves and buy in, and sell on, the rest from suppliers. The NBE will enable repairers to buy parts directly from an authorised parts producer (made the same as the original part in many cases). Thus, the suppliers and repairers can extract higher margins whereas and the carmaker extracts less. However, major suppliers will be cautious in their approach. They cannot afford to lose the goodwill of their major customers.

### 16 A move to the acceding and candidate states?

The accession of the new member states and the opening of markets have led to investment in C&E Europe and Turkey. Since the fall of communism, western auto manufacturers have invested € 20 bn in the Czech Republic, Poland and Slovakia alone. Along with new markets the acceding states offer low labour costs, availability of a skilled workforce, incentives and ‘green-field labour relations. The opening of new assembly plants has been followed by new suppliers’ plants – often in close proximity to supplier parks. A major concern has been the significant transfer of the industry from Europe’s industrial heartlands. Table 1 shows the huge increase in production in the main vehicle producing new member states and candidate countries.

However, decentralisation from the industrial centre is not new (Lung, 2002). In the past the industry has spread to more peripheral areas such as the south of Italy and the Iberian peninsula.
Trends and drivers of change in the European automotive industry

Table 1
Acceding and candidate states: change in vehicle production 1990–2002

<table>
<thead>
<tr>
<th>Production</th>
<th>Cars 1990</th>
<th>Trucks 1990</th>
<th>Total 1990</th>
<th>Cars 2002</th>
<th>Trucks 2002</th>
<th>Total 2002</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>187,773</td>
<td>28,587</td>
<td>216,360</td>
<td>454,400</td>
<td>5800</td>
<td>460,200</td>
<td>112.70</td>
</tr>
<tr>
<td>Hungary</td>
<td>9003</td>
<td>9003</td>
<td>134,600</td>
<td>3300</td>
<td>137,900</td>
<td>137,900</td>
<td>1431.71</td>
</tr>
<tr>
<td>Poland</td>
<td>283,890</td>
<td>51,604</td>
<td>335,494</td>
<td>309,900</td>
<td>39,400</td>
<td>349,300</td>
<td>4.12</td>
</tr>
<tr>
<td>Romania</td>
<td>90,000</td>
<td>11,400</td>
<td>101,400</td>
<td>70,300</td>
<td>14,100</td>
<td>84,400</td>
<td>–16.77</td>
</tr>
<tr>
<td>Slovakia</td>
<td></td>
<td></td>
<td></td>
<td>235,700</td>
<td>200</td>
<td>235,900</td>
<td></td>
</tr>
<tr>
<td>Slovakia</td>
<td></td>
<td></td>
<td></td>
<td>106,000</td>
<td>106,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td>175,561</td>
<td>33,489</td>
<td>209,050</td>
<td>197,750</td>
<td>142,367</td>
<td>340,117</td>
<td>62.70</td>
</tr>
<tr>
<td>Total</td>
<td>737,224</td>
<td>134,083</td>
<td>871,307</td>
<td>1,508,650</td>
<td>205,167</td>
<td>1,713,817</td>
<td>96.69</td>
</tr>
</tbody>
</table>

Yet, as Lung observes, the attractiveness of the heartlands continues to draw new investment (Mercedes A-class, MCC Smart and Toyota Yaris). As Table 2 shows, the investment in C&E Europe has not necessarily weakened the base of production in the traditional industrial areas.

Table 2
Opening and closing of assembly plants in Europe (from Lung, 2002)

<table>
<thead>
<tr>
<th>Year</th>
<th>Closure</th>
<th>Opening</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>Renault, Valladolid 1 (E) Saab, Malmö (S) Renault, Billancourt (F) Lancia, Desio (I) Lancia, Chivasso (I) Innocenti, Lambrate (I)</td>
<td>Eurostar, Steyr (A) Opel, Eisenach (D) Mercedes, Rastatt (D) Honda, Swindon (UK) Toyota, Burnaston (UK) Suzuki, Esztergom (H) Seat, Martorell (E)</td>
</tr>
<tr>
<td>1992</td>
<td>Volvo, Uddevalla (S)</td>
<td>Volkswagen, Bratislava (SK) Sevelnord, Hordain (F) AutoEuropa, Palmela (P) Volkswagen, Mosel (D) Fiat, Melfi (I)</td>
</tr>
<tr>
<td>1993</td>
<td></td>
<td>1995 NedCar, Born (NL) Ford, Płonsk (PL)</td>
</tr>
<tr>
<td>1994</td>
<td>Volvo, Kalmar (S)</td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>Seat, Barcelone (E) Chausson, Creil (F)</td>
<td>Autonova, Uddevalla (S)</td>
</tr>
<tr>
<td>1996</td>
<td>Renault, Vítvorde (B)</td>
<td>MCC, Hambach (F)</td>
</tr>
<tr>
<td>1997</td>
<td></td>
<td>Opel, Gliwice (PL)</td>
</tr>
<tr>
<td>1998</td>
<td>Renault, Setubal (P)</td>
<td>Audi, Győr (H)</td>
</tr>
<tr>
<td>1999</td>
<td>Opel, Szegothard (H)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2  Opening and closing of assembly plants in Europe (from Lung, 2002) (Continued)

<table>
<thead>
<tr>
<th>Year</th>
<th>Closure</th>
<th>Opening</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>Ford, Azambuja (P)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ford, Plonsk (PL)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Foden, Sandbach (UK)</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>GM, Luton (UK)</td>
<td>Ford (T)</td>
</tr>
<tr>
<td></td>
<td>Fiat, Rivalta (I)</td>
<td>Toyota, Valenciennes (F)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Volkswagen, Dresden (D)</td>
</tr>
<tr>
<td>2002</td>
<td>Ford, Dagenham (UK)</td>
<td>Porsche, Leipzig (D)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BMW, Leipzig (D)</td>
</tr>
<tr>
<td>2005</td>
<td></td>
<td>PSA-Toyota (CZ)</td>
</tr>
</tbody>
</table>

16.1 A threat to lower tier suppliers

As discussed above, Western European production continues to increase and notable new investment has been made in Western Europe. Investment by the major suppliers has followed since the modular mode of production demands proximity. Most of the new assembly plants are for the manufacture of small, lower cost vehicles designed for entry to the new markets. Table 3 shows the sales figures for the accession states – demonstrating their importance as markets in their own right.

Table 3  Sales in acceding and candidate states 2002

<table>
<thead>
<tr>
<th>Sales</th>
<th>Cars</th>
<th>Trucks</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>147,754</td>
<td>18,675</td>
<td>166,429</td>
</tr>
<tr>
<td>Hungary</td>
<td>173,491</td>
<td>33,292</td>
<td>206,783</td>
</tr>
<tr>
<td>Poland</td>
<td>308,158</td>
<td>26,877</td>
<td>335,035</td>
</tr>
<tr>
<td>Romania</td>
<td>88,904</td>
<td>22,452</td>
<td>111,356</td>
</tr>
<tr>
<td>Slovakia</td>
<td>64,606</td>
<td>9,812</td>
<td>74,418</td>
</tr>
<tr>
<td>Slovenia</td>
<td>52,758</td>
<td>5,579</td>
<td>58,337</td>
</tr>
<tr>
<td>Turkey</td>
<td>66,115</td>
<td>52,140</td>
<td>118,255</td>
</tr>
</tbody>
</table>

Source: Automotive News

However, the current EU 15 States have a negative trade balance in vehicles with these same countries as is shown in Table 4. Primarily these plants use parts assembled locally but manufactured in Western Europe. Finished cars are then imported back (Allen, 2001). In the short term at least this implies a loss to the traditional areas and a growing capacity in the new Member States. The table also illustrates the considerable volatility of the market.

In the long term the main threat to the traditional manufacturing areas is probably not the loss of car making, or of sophisticated systems from the major suppliers, but of the manufacture of simple components such as metal or plastic parts, which can be made
more cheaply away from the traditional industrial centres and transported relatively easily to where they are assembled into modules or systems to go to final vehicle assembly. Our case study work, particularly on the UK West Midlands, shows that many small and medium companies in the sector are unprepared to meet the challenge of competing less on price and more on value and quality.

### Table 4  Trade balance in motor vehicles (Jan/Feb)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Imports (000 Euros)</th>
<th>Exports (000 Euros)</th>
<th>Balance (000 Euros)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2002</td>
<td>2003</td>
<td>2002</td>
</tr>
<tr>
<td>EU</td>
<td>4,608,920</td>
<td>5,124,400</td>
<td>9,972,902</td>
</tr>
<tr>
<td>Acceding and Candidate States, of which:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>239,287</td>
<td>243,189</td>
<td>312,369</td>
</tr>
<tr>
<td>Slovenia</td>
<td>158,647</td>
<td>146,015</td>
<td>83,731</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>381,046</td>
<td>363,139</td>
<td>169,322</td>
</tr>
<tr>
<td>Slovakia</td>
<td>311,038</td>
<td>484,907</td>
<td>45,652</td>
</tr>
<tr>
<td>Hungary</td>
<td>245,486</td>
<td>199,260</td>
<td>172,035</td>
</tr>
<tr>
<td>Romania</td>
<td>283</td>
<td>401</td>
<td>69,128</td>
</tr>
<tr>
<td>Turkey</td>
<td>197,740</td>
<td>283,398</td>
<td>69,265</td>
</tr>
</tbody>
</table>

The threat to these companies also comes from outside the EU. Considerable investment has been made in other emerging markets. A prime example is China where companies that include VW, Peugeot-Citroen, BMW and Daimler-Chrysler, are involved in major joint ventures with local manufacturers. These often involve local content agreements. In the medium to long term it is likely that a significant proportion of ‘commodity parts’ and those involving labour-intensive operations will be imported from these markets. A good example is the wiring loom that weaves through the vehicle. These are labour intensive to make – and all are now made in low cost locations.

### 17 Employment trends

In all developed countries the number of manufacturing jobs is declining. This is primarily because of efficiency gains rather than transfer to low-cost locations – though this does play a part. In the short term, the main threat is the sluggishness of the European economy. Although the positive trade balance indicates outlets, fall in demand leads to overcapacity. If downward trends continue there will be reduced shift patterns and lay-offs though not necessarily plant closures. The extra capacity in the new member states exacerbates the situation – but it will be essential if the upward forecast is realised.

The motor industry is amongst the better-paid business sectors. The average wage in the EU in 2000 was €34,310 pa, but with considerable variation. Workers in Portugal received the lowest (€11,800) whilst those in Germany the highest (€41,000). Amongst the other major producing countries, workers in the UK had higher wages (€36,900) than
those in France, Spain and Italy. Wages are significantly higher than other manufacturing sectors – in 2000 26% higher on average. In Germany, Spain, the UK and Portugal, they were 15% higher than in the manufacturing industry as a whole (Portugal 31%). In Finland, Ireland and the Netherlands, however, wages were lower than in other manufacturing.

In some places there are still poor industrial relations. A number of well-publicised instances, e.g., in UK and Belgian factories, illustrate this – with improvements possible on both sides.

17.1 Skills and recruitment

The industry has mainly blue-collar employment with about 90% in this category. It is also largely male dominated. However, the skills base is changing as vehicles become more sophisticated and demands for quality become more stringent. Lean manufacturing has flattened out employment structures and given production workers more responsibility. In addition, the increasing sophistication of vehicles and production requires new skills – for example in fitting and testing electronic components, in tending robots or analysing process control statistics. All major companies have ongoing training programmes. In general the large companies do not experience major recruitment problems, and often have the pick of the workforce in each area. However, a number of particular skills shortages are apparent particularly in the design and development of electronics and in the software to integrate different systems. Skills shortages do pose a problem for the smaller companies in the supply chain. These businesses find recruitment difficult, and with lean production, have little spare capacity to engage in training programmes.

17.2 Flexibility

The industry thinks globally but operates locally while trying to maintain flexibility. There is no social dialogue with the industry in Europe and hence, no industry-wide, or company-wide, agreements. Bargaining is at plant level (except in Germany where there is a two-tier system of national and plant-level bargaining). The key, as far as the industry is concerned, is flexibility. To a large extent this is more important than wage costs (e.g., BMW chose Leipzig for three series production over lower cost locations). Vehicle manufacturers and major suppliers also tend to operate internal ‘competitions’ for which the plant gets a new model or order. The 1994 Directive gives rights of consultation through European Works Councils. This provides a platform to discuss changes but the levels of inter-plant solidarity tend to be low. Both management and workforce vigorously promote ‘their’ plant to the parent company. This joint recognition of competitiveness is, to a large extent overcoming the traditional, adversarial, industrial relations.

Fluctuations in the market, and difficulty in forecasting, means that changes and shifts in production capacity are inevitable. To achieve flexibility, there is increasing use of flexible contracts and the use of temporary or agency staff. The former are employed on a short-term basis (e.g., for two years), though often with the prospect of achieving ‘permanent’ contracts. The latter is the use of workers employed by outside agencies. The agency employer is responsible for meeting the requirements of employment legislation. From the receiving company’s viewpoint agency workers allow a flexibility
that full-time employment would not. For example, agency workers can be used over the
summer period to end the annual shutdown. As might be expected the pay rates are less.
This is not to say that we will see very large numbers. Agency and temporary workers are
a minority. The downside of lower training, motivation and commitment to quality is
likely to ensure that this remains the case.

17.3 The working time directive

The Directive was adopted in November 1993 and aims to protect workers against the
adverse effects of excessive hours, inadequate rest or disruptive working patterns.
However the Directive allows for flexibility when there is a need for continuity of
production or where there are surges of activity. In addition derogations are allowed
through collective agreements – provided that workers are afforded equivalent periods of
rest. In the case of the maximum working week of 48 hours on average, derogations
allow the average to be calculated over six months over 12 months by agreement.
This has enabled some manufacturers to negotiate annual hours contracts and align
production schedules with demand. Manufacturers operate differently at different plants,
according to the principle of local bargaining, but most operate the system somewhere.
Agreements share the common principle of exchanging extra hours worked for time off
later. There are likely to be more such flexibility deals in the future.

17.4 Upstream and downstream changes

Outsourcing also puts pressure on the supply industry to be lean. Efficiency gains have
led to job losses in many cases – particularly in the small- and medium-size band.
However, outsourcing also leads to transfer of employment into the supply industry.
This can lead to a reduction in wage levels and conditions if the trend goes beyond the
major supply companies. A particular concern is concerning non-production jobs, such as
logistics, in the factory. Outsourcing these to logistics specialists saves money but often
results in lower wage rates and reduction of security.

The new Block Exemption Regulation threatens a major reorganisation and potential
loss of jobs in the retail and distribution sector. Major consolidation might result in
significant losses. The squeeze will come from two directions. Firstly, vehicles have
become much more reliable. Hence service intervals are further apart and fewer
components have to be replaced. Secondly, as vehicles become more sophisticated
additional skills, for example in electronics, are required. Individual retailers and repair
shops are likely to experience considerable difficulties in recruiting the skills they will
need.

18 Conclusion: a SWOT analysis

Taking account of all these trends it is possible to consider a SWOT analysis of the
European automotive industry in comparison to its main competitors. Some ‘SWOTs’ are
common to all carmakers. In addition the effect of some changes are not yet clear, for
example, the New Block Exemption for retail and repair.
• A competitive market and demanding consumers – which drives innovation
• Strong lead in many future automotive technologies and in ‘infrastructure communications technology’
• Innovative and well-engineered products
• Strong lead in the expanding ‘knowledge-intensive services’ sector
• A strong presence in the premium and high performance sectors which generate innovation and are highly profitable
• Presence in all world markets – and a strong presence in emerging ones
• A lead in the truck and bus industry
• A strong and independent supply base
• Supportive public policy framework

Weaknesses
• A long-standing difficulty in matching the Japanese companies on quality threatens market share
• Less consumer oriented than the US industry
• A number of (relatively) smaller scale companies – vulnerable to take over. Especially true amongst the supply industry
• Relative failure to enter the US market because of lack of appropriate products – except in the premium segment
• Industry has mostly been a follower rather than a leader of major trends – e.g., on lean manufacture
• Poor industrial relations in some plants – and a lack of flexibility in some traditional working practices

Opportunities
• Potential to gain a lead new vehicle technologies
• Potential to gain a lead in ‘traffic management’ technologies
• Very strong presence in the emerging Chinese market
• Future economies of scale and innovation through cooperative ventures
• Increased demand for trucks and buses from developing world
• To develop a customer-oriented retail system – linked to the upstream component supply
• Export of high-value services – design and engineering
• Export of recycling expertise
• To gain external economies via strategic networks
• To work more closely with the supply industry and the retail sector to provide more consumer orientation – and take a market lead

Threats
• Some companies that are in a weak position financially, are losing market share
• Takeovers could threaten technology lead – especially in the supply industry
• Outsourcing strategy may lead to a loss of core competences - especially compared to Japanese manufacturers
• New players such as Japanese or US electronics or software companies could threaten the technological lead
• Capacity in new markets may be under utilised – exacerbating capacity issue in Europe
• Lack of brand loyalty amongst European consumers
• Smaller suppliers, lower in the supply chain, threatened with competition from low-cost locations
• Difficulties in recruiting the skills needed for the future – especially in the smaller supply companies
Acknowledgements

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References


Notes

1 The 25 EU countries are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, the UK and the ten recently acceding countries, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia, plus the three candidate countries of Bulgaria, Romania and Turkey.


3 The main vehicle-producing states are the Czech Republic, the Slovak Republic, Hungary, Poland, Slovenia and Turkey.

4 For example, companies whose business is metal or rubber processing or electrical trades where the automotive industry is one of a number of sectors into which they supply components or parts of components.

5 Source: Automotive News.


7 The top line of Table 4 shows the overall positive balance of trade in motor vehicles with the rest of the world. The figures incorporate those for the acceding and candidate states shown in the remainder of the table – and summarised in the second line.