

PART II
Chapter 2

Automotive Components

1. Summary

In recent years the global automotive industry has experienced sweeping changes. On the demand side, consumer requirements are evolving from better performance and reliability to a wider range of features at low prices. Styling and environmental awareness, in particular, have emerged as important drivers of consumer demand. On the supply side, rising material costs, falling car prices and ever stricter environmental regulations have increased pressure on carmakers to reduce costs in order to remain competitive. Focusing on cost reduction has led to important changes in the industry, in particular consolidation and increasing competition between major car brands. Stagnant worldwide sales, consolidation and product proliferation have contributed to excess capacity throughout the industry. In addition, increased competition has forced carmakers to shift their main focus from vehicle manufacturing to design, brand management and customer relationships. Carmakers are also shortening product lifecycles to compete for customer loyalty.

These shifts in demand and supply have two major implications for automotive component suppliers: modularisation and outsourcing an increasing part of the vehicle to suppliers. As carmakers expect their suppliers to take on significant responsibility for the design, development and manufacture of entire module and systems, the ability to increase sales and profitability of component manufacturers depends on the following key success factors: quality levels, innovation, product design and production engineering capabilities, management of their own supply chain, and the ability to deliver on time.

Within this evolving market, the Western Balkans can still compete effectively due to cost competitiveness, geographical proximity to markets and a historical legacy of manufacturing automotive components. The Western Balkans is clearly cost competitive. Operational costs can be up to 60% lower than in Hungary and Poland (including labour, property and utility costs). In addition, suppliers in the Western Balkans are able to respond to shorter launch cycle requirements by sending products within two days to key markets like Germany and Italy, including the new automotive hub in Central and Eastern Europe. Historically, the automotive industry has had a strong presence in the Western Balkans. Vehicle assembly in Bosnia and Herzegovina and Serbia encouraged the emergence of a supply base for automotive components, with metalworking, mechanical and electrical engineering skills available across the whole of former Yugoslavia.

The main challenge for the region is to move out of the “cost trap” and respond to the requirements of OEMs and global system integrators with respect to design and the development of components. Cost competitiveness is likely to be eroded based on wage increases following EU integration, as happened in Central and Eastern European countries after the 2004 and 2007 enlargements.

Strong and sustainable collaboration with customers (OEMs and first tier suppliers/global systems integrators) can only be achieved if suppliers are able to show that they can meet specific requirements in terms of quality standards, innovation, design and development

capabilities and supply chain management. To meet these requirements, Western Balkans suppliers will need to focus in particular on three elements:

Improve information on the advantages for OEMs to collaborate with Western Balkans suppliers: In spite of the existence of some investment promotion material dedicated to the automotive components sector, there is a lack of awareness of local suppliers' strengths and capabilities among international customers and investors. This is mainly due to a general lack of sector specific investment promotion tools, such as targeted interactive databases or sector specific linkage programmes.

Further develop skills: A majority of automotive component companies in the Western Balkans suffer skill gaps in areas where it is necessary to build and maintain strong and long-term collaborations with customers, especially design, supply chain management and quality assurance. In addition, 51% of the companies surveyed in the region feel that they are experiencing some degree of skills gap in engineering.

Enhance collaborative innovation efforts: There is a need to channel innovation by enhancing stronger collaboration between foreign and local companies as well as research centres and academia.

To address these challenges, the OECD recommends both short- and medium-term actions.

The first action of Western Balkans economies in the short term should be to improve the quality of information available on their automotive component suppliers. This involves assessing the tools and modalities used by OEMs and first tier suppliers/system integrators to find potential suppliers and purchase their components and modules. It also entails assessing the extent to which automotive component suppliers in the Western Balkans have the necessary informative material in place (e.g. an interactive database, access to e-auctions) to raise awareness of their capabilities and the extent to which they are included in instruments used by international customers to purchase components.

To further develop skills in the automotive component sector, training programmes involving the private sector should be implemented. A network of local and foreign companies to develop regional training programmes could be set up.

In addition, collaborative innovation efforts can be developed through the launch of one or two pilot linkage programmes to facilitate technology transfers and involving exchanges of professionals.

In the long term, there is a need to integrate the three components of the actions (marketing, skills development and collaborative innovation) at both national and regional level through networks or competitive clusters. As a follow up to the project *Defining and Strengthening Sector Specific Sources of Competitiveness*, a "Regional Competitiveness Initiative" could help achieve these objectives. Networks or clusters could be built around the relative strengths of individual Western Balkans economies.

2. Sector definition and segmentation

2.1. Sector definition

The global automotive industry is characterised by the presence of a limited number of large international vehicle manufacturers and integrators of systems and modules, as well as several suppliers of components and raw materials. The industry value chain is characterised by a structure in "tiers". Original equipment manufacturers (OEMs), which

are responsible for the assembling of the final product, sell the vehicles under their brand names. Along the value chain, suppliers are ranked in terms of the complexity of the products they manufacture.

The definition of the automotive industry used in this report includes the production of light vehicles (mainly passenger cars) and heavy ones (truck and buses). In statistical terms, NACE code 3430 (“Manufacture of parts and accessories for motor vehicles and their engines”) covers the production of most traditional car components. However, as vehicles become more technologically complex products, the share of components which are not covered by traditional automotive component statistical classification has been increasing. NACE code 3430 does not include engine and tyre manufacturing, most electrical and electronic components, glass, plastics, certain castings and other metal parts. Therefore, limiting the analysis to the narrow coverage of code 3430 would exclude important parts of the sector. The analysis will be as wide in coverage as possible, and NACE code 3430 will be used as a proxy for the entire sector only in cases of statistical constraints. The structure and main players in the automotive industry supply chain are described in Box 9.

2.1.1. Original equipment manufacturers (OEMs)

The creation of a new car starts with consumer research and trends review and then design of the model. In the past, this process was very much driven by the manufacturers themselves, and consumer preferences had relatively little influence on the design of new vehicles. However, carmakers are nowadays paying much more attention to the features that consumers desire. Therefore, new vehicles have to be tailored to suit buyers’ preferences and the design phase always follows an accurate market research analysis. This shift towards the development and production of more customised vehicles received an additional push by the introduction of the Japanese lean production and just-in-time model. While in the past the process of designing new models could take up to five years, today computed aided design (CAD) techniques make it possible to develop a prototype (the so called “concept car”) in one year or less (Duke University, 2007).

Once the vehicle model has been designed, the actual manufacturing of the parts start with the procurement of raw materials, which include steel, rubber, glass, plastic and aluminium. In the automotive industry raw materials are typically supplied by players positioned at the third or fourth tier of the value chain.

Steel is the predominant material in car manufacturing. However, OEMs have been looking into the possibility of increasing the percentage of other materials such as aluminium and magnesium, as they are increasingly under pressure to manufacture lighter vehicles that optimise fuel consumption. Accordingly, aluminium weight per light vehicle in Europe, Japan and the United States has increased from ranging between 51 and 75 kilograms in 1990 to between 114 and 144 kilograms in 2004 (ALTG, 2006).

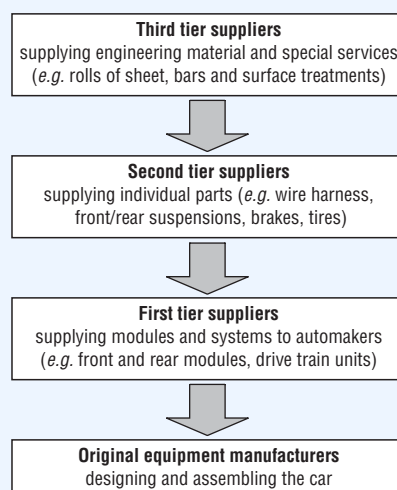
2.1.2. First and second tier suppliers

The production of the components is undertaken by second tier suppliers (mostly parts with lower manufacturing complexity) and by first tier suppliers. The latter typically supply OEMs directly, and not only individual parts but also entire modules and sub-systems of the vehicle.

Box 2.1. Automotive industry value chain

The following industry-specific definitions are used in this report:

- An *original equipment manufacturer (OEM)* is a company that manufactures and/or assembles the final product. A vehicle is made of many different components, which have been produced by various companies specialised in the production of those components e.g. glass, tires, electronics, telematics. Suppliers then deliver the components to the OEM. The OEM is responsible for final assembly and sells the final vehicle under its brand name.
- A *first tier supplier* is a component manufacturer delivering directly to final vehicle assemblers. First tier suppliers work hand-in-hand with automobile manufacturers to design, manufacture and deliver complex automobile systems and modules, such as significant interior, exterior or drive train units. First tier suppliers in turn purchase from second tier and third tier suppliers.
- A *second tier supplier* produces value adding parts in the minor sub-assembly phase. Second tier suppliers buy from third tier and deliver to first tier.
- A *third tier supplier* supplies engineered materials and special services, such as rolls of sheet steel, bars and heat and surface treatments. Third tier suppliers rank below second tier and first tier suppliers in terms of the complexity of the products that they provide.



Source: OECD analysis based on Plunkett Industrial Almanac, cited in Heneric, Licht and Sofka (2005).

Individual components and modules are then delivered to the OEM, which takes care of the final assembly. The car manufacturing process consists of four key steps: stamping, body shop, paint shop, trim and final assembly.

2.1.3. Marketing, dealership and customer relationship management

Marketing and advertising is an integral and very important step in the value chain. As the car is becoming more of a service than a product, OEMs increasingly focus their attention on brand management and customer relationship (Veloso and Kumar, 2002).

Finally, after the assembly process is terminated, vehicles are distributed to dealers. Car dealership has become a thriving business on its own, where players compete fiercely to attract the attention of the customers by investing in advertising and offering special incentives. Vehicle distribution and repair is also a relatively highly regulated sector, especially in the European Union in the framework of competition law.

2.2. Segmentation

This sectoral analysis focuses on the manufacturing of automotive components in the Western Balkans. Automotive components manufacturing refers to the development, design and manufacturing of parts, systems and technical units for final assembly and all other aspects related to the first, second and third tiers of the automotive value chain.

The world market for automotive components is growing. A study by the Original Equipment Manufacturers Association (OESA) and strategy consultants Roland Berger forecasts that the market for auto part will grow at a compound annual growth rate (CAGR) of 3.4%, soaring from USD 876 billion in 2003 to USD 1.1 trillion in 2010 (OESA and Roland Berger, 2004). Growth in the size of the world market represents a tremendous opportunity for component manufacturers, especially in countries where competitive advantage is accompanied by excess capacity.

As the analysis below shows, the Western Balkan economies are well-positioned to take advantage of the growth in the global market for automotive components. They have a strong historical advantage with a significant legacy of skills and infrastructure; they are cost competitive; and they are geographically close to the important markets of Western and Central and Eastern Europe.

With regard to the OEM presence, vehicle assembly is limited to Zastava in Serbia and a Volkswagen plant in Bosnia and Herzegovina. Assembly activities are slowly recovering after the disruptions caused by the war, as shown by the recent deal between the Serbian government and Fiat for the privatisation of Zastava and a recent announcement that Volkswagen plans to move an assembly line from Slovak Republic to Bosnia and Herzegovina. Nonetheless, OEM activities are still too limited to justify a full sectoral analysis.

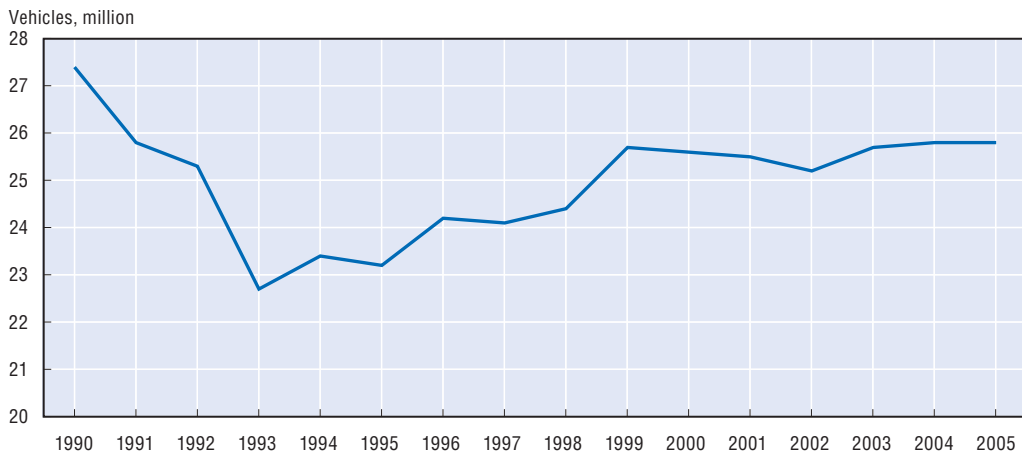
Finally, evidence suggests that the car dealership business is also growing in the countries of the Western Balkans. Calculations based on figures from the OECD International Transport Forum show that aggregate sales of new cars in Bosnia and Herzegovina, Croatia, the Former Yugoslav Republic of Macedonia and Serbia grew by 5% per year in the period 2003-06. However, the car dealership business is very focused on the domestic market. An analysis of this segment would go beyond the scope of this report.

In conclusion, given current competitiveness and future growth prospects, this analysis focuses on first, second and third tier suppliers of components to OEMs and systems integrators. The following sections will focus on market trends in the global automotive industry and the implications for component suppliers in the Western Balkans.

3. Sector trends

Empirical studies suggest that the automotive industry moves in parallel with the overall economy.¹ Motor vehicles are the largest durable consumer goods in terms of total household expenditure (next to housing). This means demand for them is highly correlated with the general business cycle. Periods of lower GDP growth in OECD countries are therefore accompanied by a fall in automotive production. An analysis of worldwide new registrations of passenger cars shows that the automotive industry is mature and has been characterised by slow growth in recent years. After a deep plunge in the early 1990s, new car sales in Europe, the US and Japan have recovered and have remained virtually flat since 2000 (Figure 2.1).

Both demand and supply shifts have led to sweeping changes in the global automotive industry.

Figure 2.1. **New car sales in the EU, US and Japan, 1990-2005**

Source: ACEA, US Bureau of Transportation Statistics, JAMA.

3.1. On the demand side: major changes in consumer requirements

Styling and environmental awareness are increasingly shifting consumers' attention away from basic safety requirements. Today they almost take it for granted that the cars they purchase include basic safety and security features. Therefore, the ability to respond to these expectations is no longer the most important differentiator, but rather an essential requirement to be a credible player in the market.

Newly produced cars increasingly display ever higher levels of safety and reliability. A report by the US National Highway Traffic Safety Administration (2006) showed that a large majority of 2006 passenger car models included the most advanced safety features.² In addition, an analysis of road accident fatalities in OECD countries over ten years showed that despite an increase in vehicles in circulation, road fatalities had been constantly decreasing (OECD, 2007a).

Styling is emerging as an important driver of consumer demand in the global automotive market. Econometric analysis has contributed to the identification of the main drivers of motor vehicle purchases and shows that consumers are increasingly seeing their cars as a status symbol (European Commission, 2004). Consumers also want high-technology features such as stereo systems and navigational aids at ever lower prices.³

Finally, car users are becoming increasingly aware of the environmental impact of road transport, mainly in relation to CO₂ emissions and their contribution to climate change.⁴ Although the perception of the environmental impact of car usage is likely to vary from one country to another,⁵ public opinion in most countries acknowledges the importance of climate change and the need to introduce stricter regulations limiting carbon emissions.

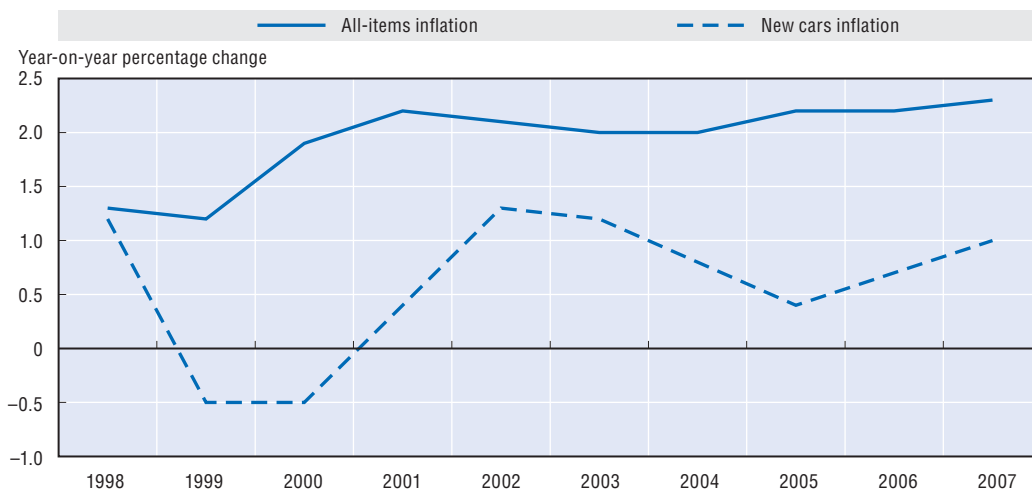
3.2. On the supply side: cost pressure

Cost pressure has emerged as one of the most pressing challenges that carmakers face in order to remain competitive, forcing them to explore every opportunity to cut costs. An analysis of the latest available annual reports of the world's ten largest car manufacturers reveals that cost-effectiveness, cost reduction and cost performance are among the top strategic objectives for all major players in the industry in the coming years. This also means

carmakers are passing cost pressure on to suppliers: the McKinsey Global Institute (2004) estimates that carmakers will need to reduce their component costs by 30% over the next decade to remain competitive.

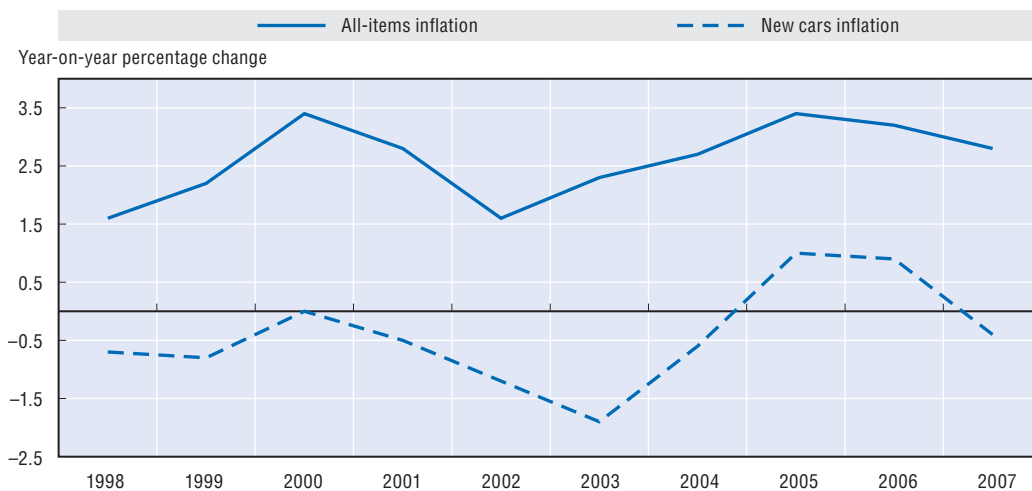
Rising material costs, falling car prices and ever stricter environmental regulations can be singled out as the factors with the most weight in the cost equation. The automobile industry relies heavily on raw materials, whose costs have been rising steadily. Strong competition and product proliferation have placed increasing pressure on car prices; over the next years the price of a base model car is likely to remain flat, while consumer demand for high-quality products at low cost and tougher environmental regulations are forcing competing car manufacturers to add expensive new features. An analysis of historical trends in consumer prices shows that the prices of new cars have failed to keep pace with inflation (Figures 2.2 and 2.3).

Figure 2.2. **Inflation in the EU: all items and new cars**



Source: Eurostat (2008).

Figure 2.3. **Inflation in the US: all items and new cars**



Source: US Bureau of Labour Statistics (2008).

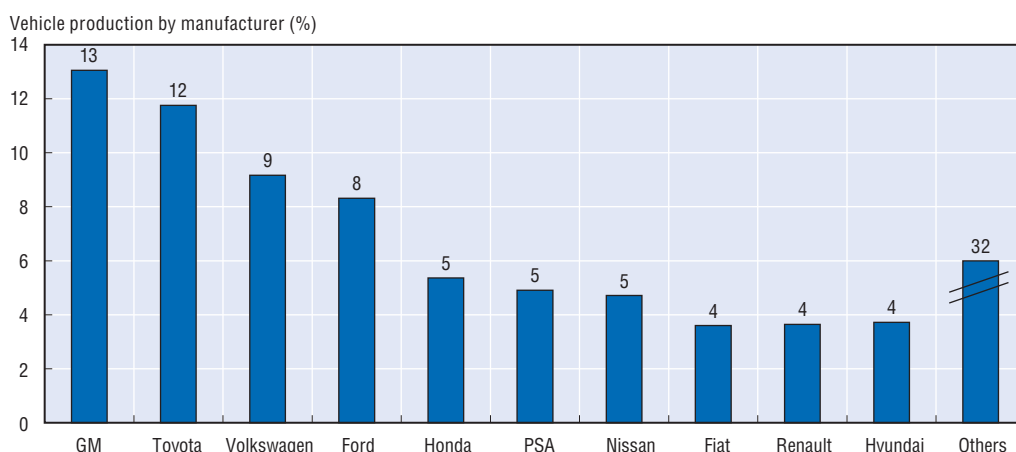
Finally, stricter carbon emission regulations in Europe and in the United States are increasing the cost burden for carmakers. The European Automobile Manufacturers' Association estimates that the target proposed by the European Commission of cutting average emissions to 130 grams CO₂ per km by 2012 will lead to a price increase per car of up to EUR 3 000 on average (ACEA, 2007). Similarly in the US, the Congressional Budget Office (2003) estimated that increasing corporate average fuel economy (CAFE) standards to 31.3 miles per gallon for cars and 24.5 miles per gallon for light trucks would impose costs on producers and consumers of new vehicles of approximately USD 3.6 billion.⁶

Focusing on cost reduction has led to important changes in the global automotive industry, in particular consolidation and increased competition.

3.2.1. Consolidation and increasing competition between major car brands

Looking at the supply side of the global automotive industry since the 1950s, one of the most consistent trends has been a dramatic wave of consolidation. The industry is increasingly concentrated around a limited number of major OEMs. In 2007 the top ten motor vehicle manufacturers represented 68% of total world production (Figure 2.4).

Figure 2.4. **Concentration of world motor vehicle production (2007)**



Source: OECD analysis based on OICA (2007).

While the industry is becoming increasingly consolidated, product proliferation is occurring as carmakers launch more models or variations on existing ones. This phenomenon, coupled with slow growth in sales of new cars, is leading to a situation in which the more mature markets are showing signs of saturation.⁷

3.2.2. The consequences of increased competition: excess capacity, a focus on brand management and shorter product cycles

Stagnant worldwide sales, consolidation and product proliferation have contributed to a situation of excess capacity throughout the industry. In addition, increased competition has forced carmakers to shift their main focus of activities from vehicle manufacturing to design, brand management and customer relationships. As they compete fiercely through aggressive advertising and improved brand management to win customer loyalty, carmakers are also shortening product lifecycles.

Excess capacity. An analysis of capacity utilisation levels across regions clearly shows that the global automotive industry is under considerable strain. While it is generally recognised that a capacity utilisation rate of 85% is the minimum threshold for carmakers to be profitable, North America is the only region which attained an 84% rate of capacity utilisation in 2007.⁸ Although excess capacity has a non-permanent component caused by the cyclical variation in demand for cars, it is often seen as a distinctive feature of the global automotive industry. However, the picture of excessive capacity varies in different world regions. In Central and Eastern European countries the increase in capacity utilisation has been caused by massive investments in car manufacturing: between 1991 and 2006 western carmakers invested about USD 20 billion in the region (PricewaterhouseCoopers, 2007). This wave of investments was driven by cost considerations (especially cheap labour) and by the prospects of penetrating an untapped and growing market. Today, 13% of total EU automotive production is located in Central and Eastern Europe and this share is growing (ACEA, 2008).

Focus on brand management. Carmakers increasingly need to give attention to brand related aspects of their businesses in order to differentiate their offer from that of their competitors. Evidence of this comes from the growing focus on brand management and advertising. Accenture (2005) calculated that expenditure on sales and marketing by major US carmakers increased from 7% of the manufacturer's suggested retail price (MSRP) in 1985 to 15% in 2003. US carmakers spend far more on advertising and incentives than on global product development.

Shortened product cycles and time to market. Evidence suggests that the product life cycle has significantly shortened and that time to market has become a key aspect in the car industry. Advances in computer aided design and engineering, coupled with increased flexibility in manufacturing, enable carmakers to bring new models to market much more quickly (Griffiths, 2007). Accenture (2005) estimated average showroom age⁹ in the US market at 2.2 years, against 4.3 years in 1990. In addition, an ever larger share of carmakers' turnover comes from sales of recently launched vehicles.¹⁰

4. Sector implications

The shifts in demand and supply described above have two major implications for the automotive sector: modularisation, and outsourcing of an increasing amount of the value of the vehicle to suppliers. Vehicle characteristics are becoming increasingly homogenous among the different models produced by the same carmaker, but also among vehicles designed and manufactured by competing ones. This trend has led OEMs to design vehicles so that they can share individual components, modules and systems. Therefore, several models are normally built around the same "platform". As they move towards modularisation and shift the core of their activities from manufacturing to brand management and customer relationship, OEMs outsource more and more of the value of a vehicle to suppliers.

The new industry configuration has had an impact on the traditional tier-based value chain. It has seen the emergence of a new category of players, the "tier 0.5" suppliers or systems integrators, assuming design, development and supply chain management responsibilities that previously belonged to OEMs and supplying complete modules and systems to carmakers for final assembly (Veloso and Kumar, 2002; US International Trade Administration, 2004).¹¹

4.1. Modularisation

Automotive industry analyst group CSM Worldwide (2004) estimated that 33% of the world's light vehicles would be based on global platforms exceeding 1 million units per year by 2008, against 28% in 2002. By using common platform sharing modules and sub-systems, OEMs can ensure that all models in their portfolio meet the same basic comfort, safety and reliability requirements. At the same time, carmakers can rapidly adapt each model to the specific needs and tastes of different consumer target groups and regional markets, hence being in a better position to cope with the phenomenon of product proliferation. This also allows them to leverage design and development efforts and to exploit economies of scale.

Sturgeon and Florida (2000) define "modularisation" as the process whereby automakers "[...] ask both outside suppliers and in-house part facilities to do more design and sub-assembly work... The aim of modularisation is to take labour out of the final assembly process." For example, part suppliers can deliver bumpers, trim, radiators, fans and lights as complete front and rear end modules. Fifteen modules represent roughly 75% of the value of an average vehicle.

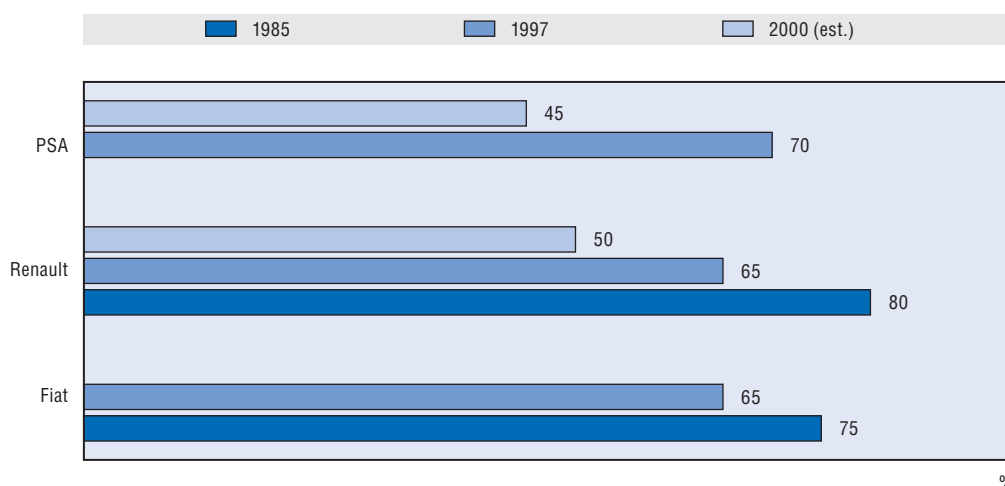
The next step in the modularisation process is the assembly of models by component manufacturers into sub-systems that can be supplied to OEMs for final assembly in the vehicle. For example, the seat, interior trim and cockpit module can be delivered as a complete interior system. The trend of modularisation has gone so far that automakers are no longer capable of developing some modules and systems themselves (Autobusiness, 2004, cited in Frignant, 2007).

4.2. Outsourcing

Figure 2.5 shows the evolution in the percentage of car value outsourced by three major carmakers to their suppliers from 1985 to 2000.

OEMs not only ask their suppliers to manufacture large portions of the value of the vehicles. They also pass the responsibility for designing and developing important sections of the car on to their suppliers. In the past, OEMs' engineers designed and developed all the characteristics of the components whose production was outsourced to suppliers. They

Figure 2.5. **Car value outsourced (%)**



Source: Economist Intelligence Unit, cited in Veloso and Krumar (2002).

would invite potential suppliers to bid at an auction and then give the contract to those that could produce the components for the lowest price. This process did not contemplate building up long-term relationships: contracts typically stipulated that part manufacturers would supply an agreed quantity of the components at a fixed price and over a relatively short timeframe (normally one year). Price was the major driver of this process, and the main requirement suppliers were expected to fulfil was to manufacture at the lowest cost with a reasonable profit. Other criteria used by OEMs to evaluate suppliers' capabilities included capacity, reliability and product quality, although some defects were tolerated (US International Trade Administration, 2004).

5. Key success factors for automotive component suppliers

The relationship between OEMs and suppliers has undergone a fundamental change since the 1980s. As carmakers expect their suppliers to take on significant responsibility for the design, development and manufacture of entire modules and systems, the ability to increase the sales and profitability of component manufacturers crucially depends on the following key success factors: quality levels, innovation, product design and production engineering capabilities, management of their own supply chain, and the ability to deliver on time.

5.1. Higher quality levels

With the increasing importance of just-in-time production and delivery systems, assemblers have embraced the principle of "quality at source". They therefore impose strict quality requirements on their suppliers (Humphrey and Memedovic, 2003). Besides carrying out firm-specific audits, carmakers expect their suppliers (especially first and second tier suppliers) to be certified for at least the general ISO 9001 standard, and increasingly the industry specific ISO/TS 16949 standard.¹² In addition, the increasingly more stringent environmental regulations being imposed on the automotive industry foster the importance of ISO 14001, the environmental management system (EMS) standard. Implementing the latter also allows component suppliers (especially SMEs) to reap substantial benefits in terms of cost reduction, stemming from savings in consumption of energy and materials and lower distribution costs, among others (Baxter, 2004).

5.2. Upgraded innovation and design and development capabilities

Early involvement of the suppliers in new product design is the current predominant model for OEM-supplier relations in terms of product development and vehicle innovation. This model originated in the Japanese automotive industry and was then widely adopted by US and European carmakers. It allows reducing stocks and achieving more on-time deliveries (CoCKEAS, 2001). OEMs and first tier suppliers carry out detailed enquiries to assess the design and development capabilities of their potential suppliers, including: number and qualifications of employees involved in design and development; number of CAD stations at the supplier's premises; use of testing, calibration and prototyping tools, such as FMEA technology;¹³ adoption and knowledge of design software specific to the automotive industry, such as CATIA. Another criterion on which part suppliers are evaluated by potential customers is their collaboration with organisations active in research and innovation, such as universities and research institutes. Often the number of designs and patents registered is also taken into account (Velošo, 2000).

5.3. More robust supply chain management and ability to deliver on time

The traditional customer-supplier relationship was based on a division of tasks, whereby the OEM would fully develop the product and then ask suppliers identified through an auction to manufacture a certain number of components at a negotiated price. Suppliers' involvement in the development of components has fundamentally changed this relationship, which has evolved from being based on purely commercial terms to a potential long-term partnership involving the exchange of projects and designs, demand planning and forecasting, on-line cataloging and data integration (CoCKEAS, 2001; Morell and Swiecki, 2002). This results in the following additional requirements for suppliers:

1. *Implementation of electronic data interchange (EDI) systems (e.g. Odette, the standard most widely used in the automotive industry).*¹⁴
2. *Adoption of enterprise resource planning (ERP) systems, which results in shortened cycle times through the optimisation of joint production planning and delivery processes.*
3. *Increased participation in on-line procurement initiatives through specialised B2B portals: E-business activities include requests for bids/proposals, reverse auctions, sending/receiving of interoperable CAD files, joint product design, and maintenance of a common database.*

6. Sector attractiveness in the Western Balkans

The automotive component sector in the Western Balkans is attractive overall in terms of market growth, FDI and employment.

Table 2.1 presents some key data on the regional automotive components industry. Growth in the market of automotive components averaged 13% in 2004-05 across the region. Total regional exports of automotive components were EUR 209 million in 2007, up by 17% from 2004. Automotive component suppliers in the Western Balkans perform

Table 2.1. The regional automotive components industry, key data

Value-added ¹	EUR 169.9 million
Market growth ²	13%
Cumulative FDI inflows ³	EUR 116 million
FDI inward stock ⁴	EUR 63.5 million
Exports ⁵	EUR 209 million
Employment ⁶	33 785 persons employed
Number of firms ⁷	230

1. 2005: Includes gross value-added in the manufacturing of transport equipment in Bosnia and Herzegovina and the Former Yugoslav Republic of Macedonia and of motor vehicles, trailers and semi-trailers in Croatia and in Serbia.

2. 2004-05: The table refers to average growth in automotive component suppliers' sales in Croatia, the Former Yugoslav Republic of Macedonia and Serbia, weighted by each country's value-added in the manufacturing of automotive components.

3. 2003-07: The table at the time of publication does not include 2007 data for Bosnia and Herzegovina (not reported for confidentiality reasons).

4. 2006: The table does not include data for Serbia (due to ongoing collection at the time of publication by the National Bank of FDI stock time series).

5. 2007: The table includes exports from Bosnia and Herzegovina, Croatia, the Former Yugoslav Republic of Macedonia and Serbia.

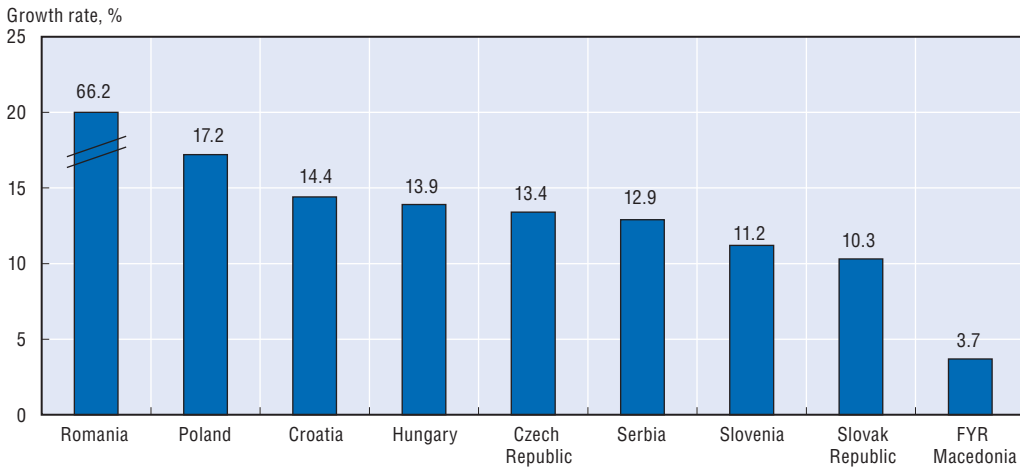
6. 2006: The table includes employment in Bosnia and Herzegovina, Croatia, the Former Yugoslav Republic of Macedonia, Montenegro and Serbia.

7. Estimate based on figures from local Business Registers, Chambers of Economy and Investment Promotion Agencies; does not include the Republika Srpska.

Source: Roland Berger, Vienna Institute for International Economic Studies, national offices of statistics, National Central Banks, UN Comtrade.

relatively well, even when compared with individual Central and Eastern European countries. As shown in Figure 2.6, between 2004 and 2005 Croatian and Serbian automotive suppliers displayed sales growth value in line with the average in the region.¹⁵ Both countries showed higher growth rates than Slovenia or Slovak Republic. On the other hand, the market growth value for The former Yugoslav Republic of Macedonia was by far the lowest in the region, partly reflecting the near absence of significant FDI inflows into this sector until recently.

Figure 2.6. **Growth in sales by automotive suppliers per country (2004-05)**



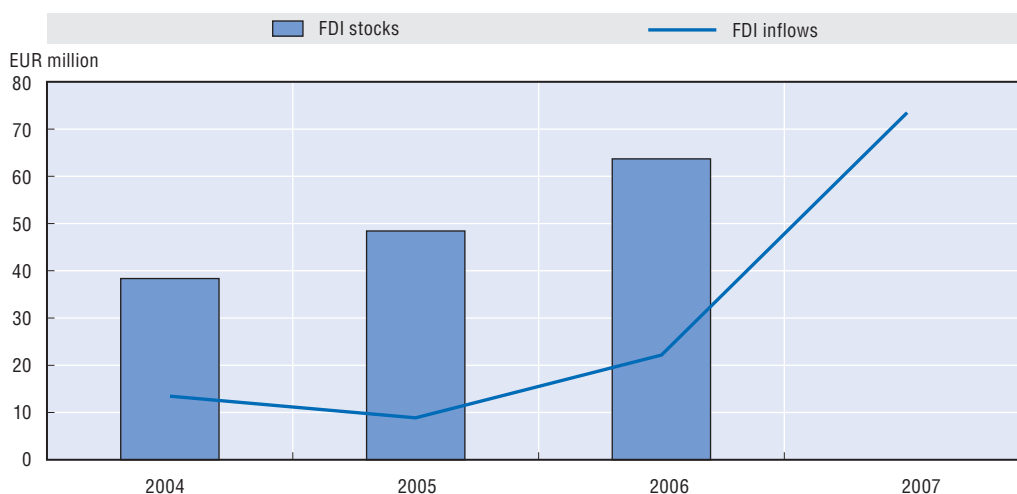
Source: Roland Berger (2007).

Cumulative FDI inflows were EUR 116 million between 2004 and 2006. Official statistics confirm that FDI inflows into the automotive sector have been relatively low in the Western Balkans, accounting for only 2% of total inflows in 2007.¹⁶ This seems to be a consequence of investment in the sector having been driven in recent years mainly by the privatisation of SMEs. But several automotive companies in the region remain state or socially owned, offering opportunities to increase foreign investment through further privatisation. For example, in Serbia about 20 automotive suppliers are still in the process of privatisation, according to the most recent information from the Serbian Investment and Export Promotion Agency (SIEPA, 2008). The importance of greenfield automotive investment appears to be increasing in the region, as shown by the estimated EUR 100 million which will be invested in the construction of new plants in The former Yugoslav Republic of Macedonia. The recent privatisation deal and the estimated investment of EUR 700 million by Fiat in the joint venture with the Serbian carmaker Zastava bodes well for the future pace of the privatisation of existing suppliers and for potential new investment across the region.

In spite of relatively low levels compared to other sectors, the Western Balkans has experienced robust growth in both FDI inflows and FDI inward stocks with respect to the automotive industry (Figure 2.7). FDI inflows grew at an annual rate of 74% between 2004 and 2007.

In addition, it should be noted that these figures underestimate the real impact on other sectors (such as manufacturing of basic metals and fabricated metal products) that have strong backward linkages with the automotive components industry. It is estimated that inputs into the automotive industry account for twice the value-added in the industry

Figure 2.7. **FDI inflows and inward stocks in the automotive sector in the Western Balkans**



Source: OECD analysis based on data from National Office of Statistics.

itself (Heneric, Licht and Sofka, 2005). In addition, the automotive industry has the potential to generate significant levels of employment in other sectors of the economy. A recent study on the employment contributions of motor vehicle suppliers to the US economy estimated that it created 4.7 additional jobs for every job in a parts making company (Center for Automotive Research, 2007). A simple model, used to estimate the size of backward linkages created by the regional automotive industry in the Western Balkans, is described in Box 2.2.¹⁷

The Western Balkan economies benefit from several competitive advantages in the automotive component sector, in particular cost competitiveness, proximity to both the traditional Western European market and the new automotive hub in Central and Eastern Europe and a historical legacy of manufacturing automotive components.

6.1. Cost competitiveness and labour productivity

The Western Balkans is clearly still cost competitive. Figure 2.8 compares sector specific wages for the manufacture of motor vehicles and vehicle parts in Bosnia and Herzegovina, Croatia, The former Yugoslav Republic of Macedonia and Serbia with those in selected countries in Central and Eastern Europe.¹⁸ The Western Balkan countries, with the notable exception of Croatia, have very competitive labour costs compared with neighbouring manufacturing locations. These results are in line with the findings of the OECD Regional Capability Survey and past studies in the region.¹⁹

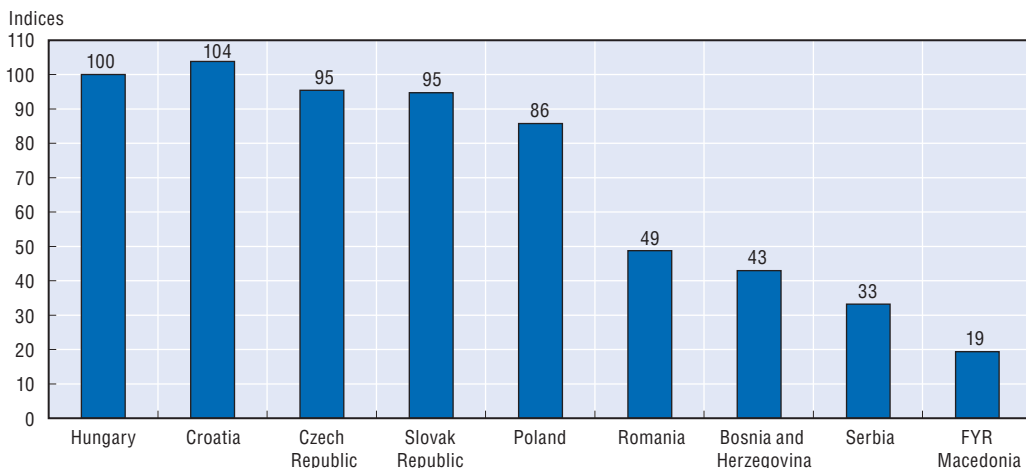
While the Western Balkans competes well on cost, labour productivity could be further improved. Labour productivity, measured as gross value-added per person employed, is another crucial determinant that should be factored into the price competitiveness equation. If a country has high labour costs, this apparent competitive disadvantage could be offset by high productivity levels, and *vice versa*. Apparent labour productivity in the manufacturing sector was calculated for the Western Balkan economies and selected EU Member States in Central and Eastern Europe where significant automotive manufacturing activities are located.²⁰ As shown in Figure 2.9, cost competitiveness in the Western Balkans is eroded by lower productivity levels in the manufacturing sector compared with

Box 2.2. Backward linkages of the automotive components industry in the Western Balkans

An analysis of backward linkages allows capturing the real weight of an industry by looking at its effects on other sector of the economy, mainly the ones that contribute to the final output as suppliers. Not only are backward linkages important in terms of investment and employment, but also because of broader spillover effects and export growth. An input-output analysis would result in more accurate estimates of backward linkages. However, given the absence of input-output tables for all the economies of the region, a good indicator that can be used to account for the importance of backward linkages is represented by the ratio of value-added in an industry to its total production. In 2005, this indicator was 44% across the region, showing a strong contribution of inputs from other sectors in the total output of the automotive components sector. From this figure it appears that the magnitude of backward linkages in the Western Balkans is on par with EU-15, US and Japan levels.

It should be noted that these linkages are not only domestic. Given the international nature of the value chain in the automotive industry, it may well be that a large part of the inputs used to produce automotive components are imported. An analysis of intermediate consumption – defined as value of the goods and services consumed as inputs by a process of production – of the Croatian automotive industry based on the 2005 Enterprise Survey of the Croatian Central Bureau of Statistics shows that over nearly 40% of the inputs were actually imported. Therefore, there is a potential for further linking the economies of the Western Balkans and the countries of the EU along the automotive value chain.

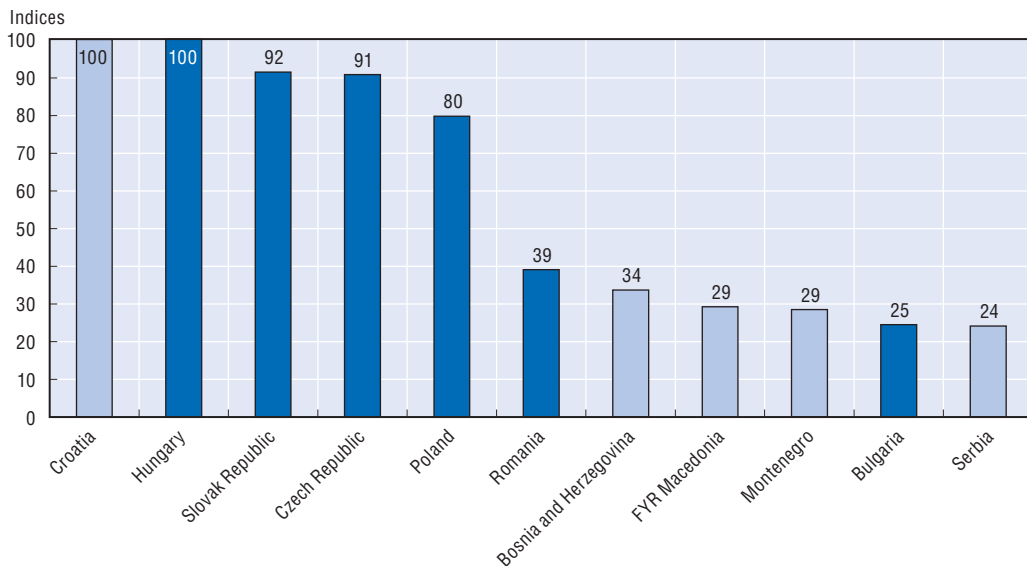
Figure 2.8. Average wages in the automotive industry, 2006 (indexed on Hungary's wage levels)



Source: OECD analysis based on ILO Bureau of Statistics.

those in some of the new EU Member States. Croatia's labour productivity level is higher than that in most CEE countries. The low levels of labour productivity in the other Western Balkan economies can be explained by the low level of FDI and technology transfers in the sector to date, as well as the large number of persons employed, especially in state and socially owned enterprises.

Figure 2.9. **Labour productivity in the manufacturing industry, 2004**
(indexed on Hungary's productivity level)



Source: OECD analysis based on Eurostat, national offices of statistics.

6.2. The proximity advantage

Proximity to the important markets of Western, Central and Eastern Europe is an advantage for the Western Balkan economies. A recent study predicts that labour cost differentials will increasingly be reduced due to rising transport costs, making it cheaper for Western Europe to source goods from other European countries than from the Far East. This seems true, in particular, for heavier or bulkier goods, goods with a relatively lower labour content, and goods that require a fast turn-around (Jen and Bindelli, 2008).²¹

Geographical proximity is one factor enabling firms in the region to ensure just-in-time delivery. OEMs' lean manufacturing process management requires suppliers of components to improve the supply chain and reduce inventories. Expectations for on-time delivery are between 98.5% and 100%. The OECD Regional Capability Survey (RCS) shows that a majority of surveyed companies list order lead time and on-time delivery among the top customer requirements in the automotive industry (Figure 2.10).

Part suppliers in the Western Balkans deliver to EU-based customers principally through:

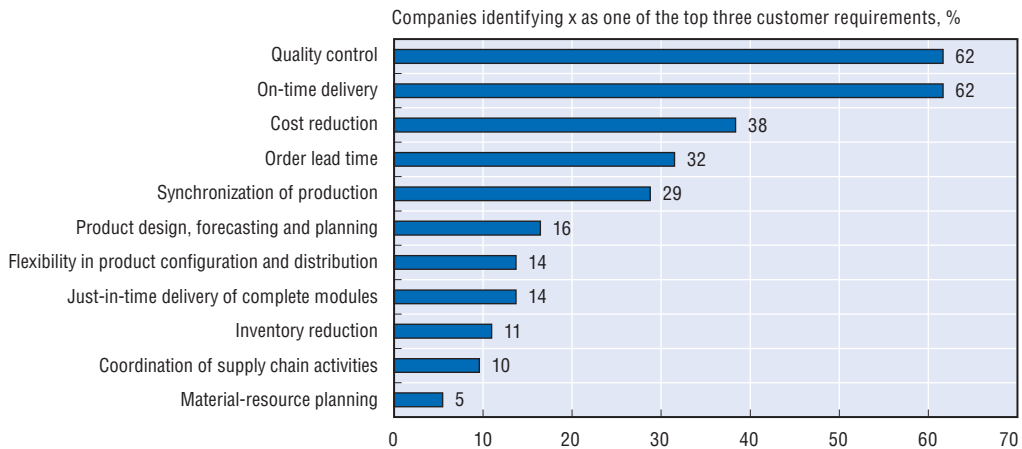
Direct delivery to customer plant, mainly in the case of delivery to the German market. It takes from 12 to 24 hours for suppliers in the Western Balkans to deliver to Germany and 24 hours to deliver to Sweden;

Warehouse near customer plant, mainly for delivery to the French market. Suppliers are required to hold a ten-day buffer stock in the warehouse.

The RCS showed that order lead times vary widely among automotive component suppliers in the Western Balkans, depending on where the customer is located. The average lead time for supplying locally is two days. Lead times increase to about one week for supply of EU markets.²²

Over 70% of companies surveyed by the RCS supplied locally based customers. Western Europe is also a relatively important market (for up to 16% of respondents), whereas only 4%

Figure 2.10. **Key customer requirements for automotive component suppliers in the Western Balkans**



Source: OECD RCS (2008).

of the companies surveyed had customers based in Central and Eastern Europe. This is quite surprising given the increase in automotive production in some of the new EU Member States. These findings suggest that geographical proximity could allow suppliers in the Western Balkans to tap into the growing automotive markets in neighbouring Central and Eastern Europe.

The RCS results also shed some light on the position of the customers of suppliers in the Western Balkans along the automotive value chain. OEMs and final assemblers have been the main customers by far, as they have been directly supplied by just over 70% of the companies surveyed. In addition, over one-third of respondents have first tier suppliers as customers. This suggests that parts manufacturers in the Western Balkans already have the basic capabilities to supply players at the higher end of the value chain. In addition, one-quarter of companies surveyed could be characterised as third tier suppliers. This shows that the Western Balkans has a good supply base in terms of the production of basic metals and other raw materials.

6.3. A strong historical legacy

Historically, the automotive industry has had a strong presence in the Western Balkans. Vehicle assembly in Bosnia and Herzegovina and in Serbia encouraged the emergence of a supply base for automotive components, with metalworking, mechanical and electrical engineering skills available across virtually the whole of the former Yugoslavia. Broadly, the structure of the industrial value chain reflected the comparative advantages and strengths of each of the former Yugoslav republics. As car manufacturing activities have slowed but are steadily recovering in Bosnia and Herzegovina and in Serbia, the Western Balkans offers a strong and attractive supply base for OEMs and first tier suppliers in the region and beyond.

Serbia was a centre of motor vehicle production in the Socialist Federal Republic of Yugoslavia. Before the wars during the breakup of the former Yugoslavia and the imposition of economic sanctions, the automotive industry was dominated by the Zastava factory. Zastava produced motor vehicles for the domestic market under licence from Fiat. During the 1970s and 1980s, it exported cars to Western Europe and to North and South America under the

well-known Yugo brand. By the end of the 1980s Zastava boasted an annual production capacity of 220 000 vehicles, with 26 777 vehicles exported. Table 2.2 shows that car manufacturing in Yugoslavia grew by 12% per year in the period 1960-90. By the beginning of the 1990s, and in spite of starting from a lower or comparable basis, motor vehicle production in the former Yugoslavia had surpassed levels in all the neighbouring socialist countries, with the exception of the USSR.

Table 2.2. **Passenger car production in the CEE, 1950-90**

	Yugoslavia	Poland	GDR	Romania	USSR	Czecho-slovakia	Total CEE
1950	0	0	7 165	0	64 600	24 463	96 228
1955	760	4 015	22 247	0	108 000	12 530	147 552
1960	10 461	12 683	64 071	1 200	139 000	56 211	283 806
1965	35 880	24 800	102 877	3 653	201 000	77 705	445 915
1970	110 709	64 200	126 611	23 604	344 000	142 856	811 980
1975	183 000	164 000	159 147	68 013	1 201 000	175 411	1 950 571
1980	255 000	351 000	176 761	88 232	1 327 000	183 745	2 397 139
1985	228 000	283 000	210 370	134 000	1 332 000	183 701	2 386 071
1990	291 724	266 000	145 000	100 000	1 259 000	191 233	2 267 598
CAGR 1960-1990	12%	11%	3%	16%	8%	4%	7%

Source: OECD analysis based on Pavlinek (2008).

During the war period, production continued but was minimal compared with previous years. A Zastava factory was heavily bombed by NATO in 1999. Production has grown slowly but steadily since 2000.

Bosnia and Herzegovina has been a centre for vehicle manufacturing since the days of the former Yugoslavia. Before 1992, Volkswagen produced passenger cars and light vehicles for the entire Yugoslavian market at its plant near Sarajevo. Kosmos and Soko manufactured buses in Banja Luka and Mostar, respectively.

The presence of motor vehicle manufacturing in Serbia and Bosnia and Herzegovina stimulated the creation of a network of around 240 component suppliers throughout Yugoslavia (Palairt, 1992). The structure and development of the value chain was based on the so-called “Yugoslav policy” whereby each of Yugoslavia’s republics and provinces would have a supply base to serve Zastava and thus share the benefits of the motor vehicle manufacturing industry in terms of income and employment creation. However, this sourcing policy translated into high costs and low profitability for Zastava, and in virtually no incentives for component suppliers to improve their equipment and quality standards.

One of the main legacies of the automotive components industry in the former Yugoslavia is a high level of automotive specific training and a strong skills base, including in skills that have backward linkages with the manufacture of vehicle parts, e.g. metalworking, welding, plastics, electrical and mechanical engineering, production of high-precision components. Foreign investors already present in the region and interviewed by the OECD reported that the existence of a good automotive related skill set, in comparison with the situation in other emerging markets, was crucial to their decision to locate in the Western Balkans.

7. Recommendations

7.1. Operational recommendations

Section 2.5 showed that automotive component suppliers need to meet specific requirements in terms of quality standards, design and development capabilities, and supply chain management. Both the RCS results and direct OECD interviews with foreign investors and local companies have shown that this is the main challenge for companies in the Western Balkans, based on the following aspects:

- *Quality standards:* Local suppliers consider quality management and quality control to be among the top customer requirements in their industry. OEMs and first tier suppliers need their own suppliers to satisfy at least the basic requirements of ISO 9001. Although the majority of part suppliers in the Western Balkans appear to have ISO 9001 certification, over one-quarter of companies surveyed by the OECD have not been certified (mainly in Bosnia and Herzegovina and in Kosovo under UNSCR 1244). This finding implies that those companies do not stand a chance of being considered as partners by international customers. Besides ISO certification, carmakers and global systems integrators are increasingly requesting that their suppliers have, or at least meet the requirements for, the automotive industry specific quality certificate ISO/TS 16949. The ISO 2006 survey reports that very few automotive companies in the Western Balkans have obtained this industry specific quality certification. Using raw data weighted by population, the figures can be compared. Bosnia and Herzegovina, Croatia, the Former Yugoslav Republic of Macedonia and Serbia have only one TS 16949 certificate per million population, against 17 certificates per million in the EU-27 (OECD analysis based on ISO, 2007). This was confirmed by the RCS: at regional level only 12% of the companies surveyed had the industry specific certification. Direct interviews with local suppliers showed that some companies were also certified for the environmental management system (EMS) standard, ISO 14001.
- *Innovation:* Only 34% of companies surveyed had developed a new product, design or service since 2004. Croatia and Serbia are the frontrunners in this area, whereas in Bosnia and Herzegovina and the Former Yugoslav Republic of Macedonia only a minority of companies reported undertaking any significant activity linked to innovation. At regional level, only ten patents were registered among the companies surveyed in the same period.
- *Design and development capabilities:* Companies in the Western Balkans should be able to show that they are competitive in areas such as number and qualifications of workers involved in development, characteristics of testing and prototyping facilities, and knowledge of design methods and tools. The RCS results clearly show that there is much room for improvement. For example, the majority of respondents did not have computer aided design (CAD) stations at their facilities and were not using the software suites most commonly used in automotive engineering. Again, the situation varies widely from country to country: unlike the other economies in the region, the majority of respondents in Serbia had CAD stations at their facilities.
- *On-line procurement initiatives:* Business-to-business procurement web portals have become a common and widely used instrument for OEMs and first tier suppliers to source components in the required quantities, and with the required specifications and delivery terms. Only 16% of part suppliers surveyed in the Western Balkans as a whole participated in on-line procurement initiatives, with percentages as low as 5% in the Former Yugoslav Republic of Macedonia.

7.2. Policy recommendations

The experience of CEE countries suggests that once the initial wave of privatisation related investment is over, the importance of market size and low labour costs as FDI determinants diminishes and gives way to other factors, such as institutional development, infrastructure and the quality of the business environment (Demekas, Horváth, Ribakova and Wu, 2005). In this respect, the RCS and face to face interviews with foreign investors and local suppliers show that there are several barriers that need to be overcome to unleash the region's potential and improve business conditions for automobile component suppliers.

Given existing on-going initiatives, and after consultation with government representatives and the private sector in the region, the OECD recommends focusing on the promotion of FDI-SME linkages to facilitate technology transfers.

7.2.1. Focus first on investment promotion and human capital

Strong and sustainable collaboration with customers (both OEMs and first tier suppliers/global systems integrators) and productivity gains can only be achieved if suppliers are able to show that they can meet specific requirements in terms of quality standards, design and development capabilities. This seems to be the main challenge for companies in the Western Balkans, with ways to meet the challenge based on the following types of activities:

Improve information on the advantages for OEMs to collaborate with Western Balkans suppliers: In spite of the existence of some investment promotion material dedicated to the automotive components sector, there is a lack of awareness of local suppliers' strengths and capabilities among international customers and investors (Table 2.3). This is mainly due to a general lack of sector specific investment promotion tools, such as targeted interactive databases or sector specific linkage programmes.

Further develop skills: A majority of automotive component companies in the Western Balkans suffer skill gaps in areas where it is necessary to build and maintain strong and long-term collaborations with customers, especially design, supply chain management and quality assurance (Figure 2.11). In addition, 51% of the companies surveyed in the region feel that they are experiencing some degree of skills gap in engineering.

Enhance collaborative innovation efforts: There is a need to channel innovation by developing stronger collaboration between foreign and local companies as well as research centres and academia.

Table 2.3. **Automotive components supply and demand: information gaps**

	Sector specific investment promotion activities	Sector specific linkage programmes	Interactive database to find relevant local and foreign companies
Bosnia and Herzegovina			
Croatia			
Kosovo under UNSCR 2144			
The Former Yugoslav Republic of Macedonia			
Montenegro			
Serbia			

Source: Company interviews, Investment Promotion Agencies

Key:

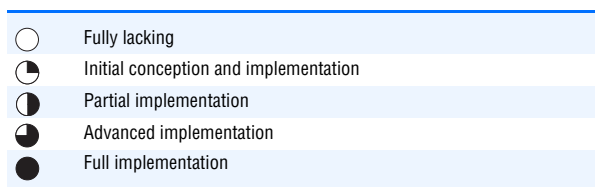
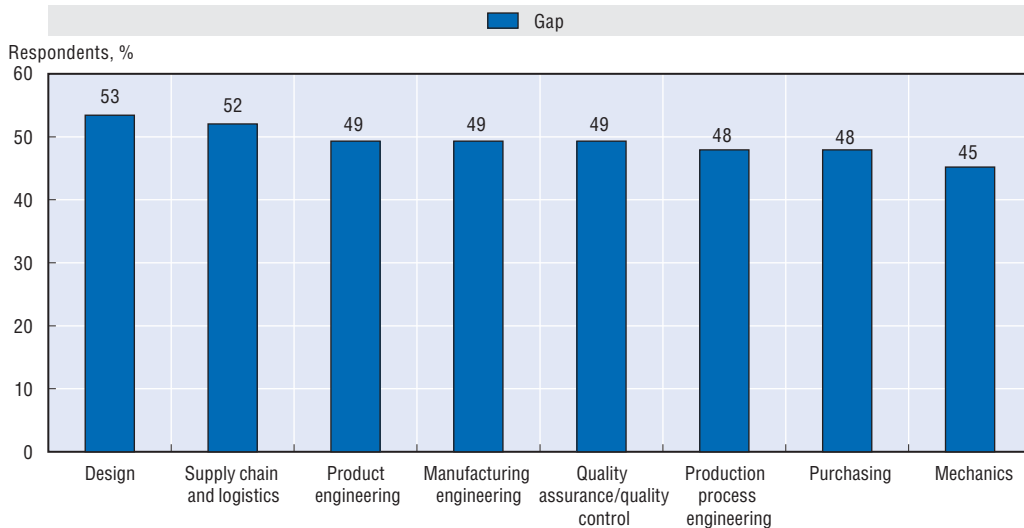


Figure 2.11. Skills gaps in the automotive sector in the Western Balkans



Source: OECD RCS (2008).

To address these challenges, the OECD recommends both short- and medium-term actions.

The first action of Western Balkans economies in the short term should be to improve the quality of information available on their automotive component suppliers. This involves assessing the tools and modalities used by OEMs and first tier suppliers/system integrators to find potential suppliers and purchase their components and modules. It also entails assessing the extent to which automotive component suppliers in the Western Balkans have the necessary informative material in place (*e.g.* an interactive database, access to e-auctions) to raise awareness of their capabilities and the extent to which they are included in instruments used by international customers to purchase components.

To further develop skills in the automotive component sector, training programmes involving the private sector should be implemented. A network of local and foreign companies to develop regional training programmes could be set up.

In addition, collaborative innovation efforts can be developed through the launch of one or two pilot linkage programmes to facilitate technology transfers and involving exchanges of professionals.

Some other policy barriers that have emerged from the analysis of the data gathered through RCS, private sector focus groups and interviews with automotive suppliers are described below. Most of these barriers are already being tackled by ongoing initiatives at

the regional or national level, *e.g.* in the framework of EU accession or stabilisation and association processes.

7.2.2. Improve customs and trade regulations

Time to market and the ability to ensure just-in-time delivery are fundamental requirements with respect to the automotive supply chain. Evidence suggests that customs procedures, including a large number of documents required for imports and exports as well as unnecessary inspections, can hamper the ability of suppliers in the Western Balkans to meet these requirements.²³ Barriers associated with customs and trade regulations were reported by 58% of the companies surveyed. Anecdotal evidence suggests that administrative procedures and time to clear customs are especially problematic in the Former Yugoslav Republic of Macedonia and in Serbia.

Another trade issue for automotive component manufacturers concerns the import regime for capital goods.²⁴ Import duties on them range from 0 to 20% in the Western Balkan economies. Duty free access is normally allowed in two cases: i) for capital goods coming into a country with which there is a free trade agreement (FTA); ii) for capital goods that are part of an initial capital investment or foreign direct investment (*e.g.* in Bosnia and Herzegovina, Montenegro and Serbia). In Bosnia and Herzegovina, the Former Yugoslav Republic of Macedonia, Montenegro and Serbia capital goods are exempt from duty when imported into a free trade zone (OECD Investment Compact, 2006). Local companies interviewed by the OECD feel that these special regimes create discrimination among companies and, in particular, put local suppliers at a disadvantage compared with foreign invested companies.

7.2.3. Enhance transport infrastructure

To ensure just-in-time delivery, an extended network of good quality transport infrastructure is a key element, especially in export markets. The advantage of proximity to EU markets enjoyed by suppliers in the Western Balkans could be negatively offset by poor road and rail infrastructure conditions. In addition, transport infrastructure is one of the fundamental factors assessed by potential investors, as confirmed by the OECD interviews with foreign automotive companies that had decided to invest in the Western Balkans. For example, a global automotive supplier that has set up a manufacturing facility in one of the Western Balkan economies lists the prospective completion of Pan-European Corridor X in 2012 as one of the major drivers behind its location decision.²⁵

About half the companies that responded to the RCS indicated that the quality and availability of transport infrastructure should be improved. In particular, several local suppliers interviewed by the OECD pointed to the need to improve local roads connecting with highways to Austria, Hungary and Slovak Republic. Along with investment in new road infrastructure, investment in maintenance should be stepped up to improve capacity and safety.

7.2.4. Address labour regulations

Labour market rigidities need to be improved across the region. Given the requirements of just-in-time delivery, employers need to be able to count on a stable and reliable presence of skilled and unskilled workers. A recent OECD study suggests that economies in transition should adopt less stringent employment protection legislation than that in OECD countries, *e.g.* on employee dismissals (OECD, 2008).

The RCS results show that over half of automotive companies in the Western Balkans consider labour regulations a barrier to the growth of their business. For example, a fairly high labour tax wedge hampers job creation in the Federation of Bosnia and Herzegovina (in the Republika Srpska the tax wedge has been decreased).²⁶

7.2.5. Improve cost and access to financing

The investment required for automotive component manufacturing is mostly split between the car body and the internal engine. Models are continuously being redesigned, and both body and engine require regular and substantial modifications. While the same engine can be utilised for several different models, frequent changes in ever stricter emissions legislation result in shorter life cycles. Hence, as well as being high during the start-up phase investment needs to be sustained at very high levels (European Commission, 2004).

Given the high degree of investment required, credit constraints can represent a significant barrier to the growth and sustainability of businesses operating in this sector. This seems to be a major obstacle for firms in the Western Balkans. Around 75% of respondents believe that difficult access to and the cost of financing limit the operations of their businesses. In particular, this seems to be the case in Bosnia and Herzegovina, The former Yugoslav Republic of Macedonia and Serbia. Anecdotal evidence suggests that the cost of financing is the major problem, as weighted average annual lending rates ranged from 8% to 12% across the Western Balkans (European Commission, 2007). The privatisation and liberalisation of financial institutions have contributed to a reduction of interest rates in the region. However, more effort should be put into stimulating competition in the banking sector, which would help reduce the cost of financing.

7.2.6. Reduce the regulatory burden

Small and medium-sized part suppliers in the Western Balkans list cumbersome administrative and regulatory procedures as one of the main obstacles to their operations. These procedures include company registration, access to land, business licensing and operating permits. In particular, several companies report that regulations are often not clear or transparent, and that regulations are subject to differing interpretations depending on the inspector or agency in charge.

To improve the business environment, most of the Western Balkan economies analysed in this report have embarked on a process of legislative and administrative simplification, sometimes referred to as the “regulatory guillotine”.²⁷ Despite the positive results obtained so far, as reported in recent European Commission Progress Reports, efforts in this policy area should be improved. For example, the procedure for obtaining building permits remains very cumbersome in Croatia and licensing procedures hamper business operations in Bosnia and Herzegovina.

7.3. Possible regional strategy

Manufacturers in the Western Balkans are in a privileged position to tap into the fast-growing market created by the recent boom in investment in vehicle assembly in the CEE countries. While it is unlikely that potential investors will consider setting up new vehicle assembly facilities in the Western Balkans, the region can present itself as a cost competitive and geographically closer alternative for sourcing labour-intensive to highly technological components.

This gives the Western Balkans the possibility to develop further business opportunities with several of the OEMs and first tier suppliers that have relocated to Central and Eastern Europe. Potential growth is shown by the RCS results: Central and Eastern Europe was the main customer base of only 4% of companies. Overcapacity further enhances this potential. The RCS results show an average capacity utilisation rate of 60% in the region. Once again, figures differ widely between countries: the average capacity utilisation rate of respondents in Croatia was around 75%, while in Kosovo under UNSCR 1244 this was 28%

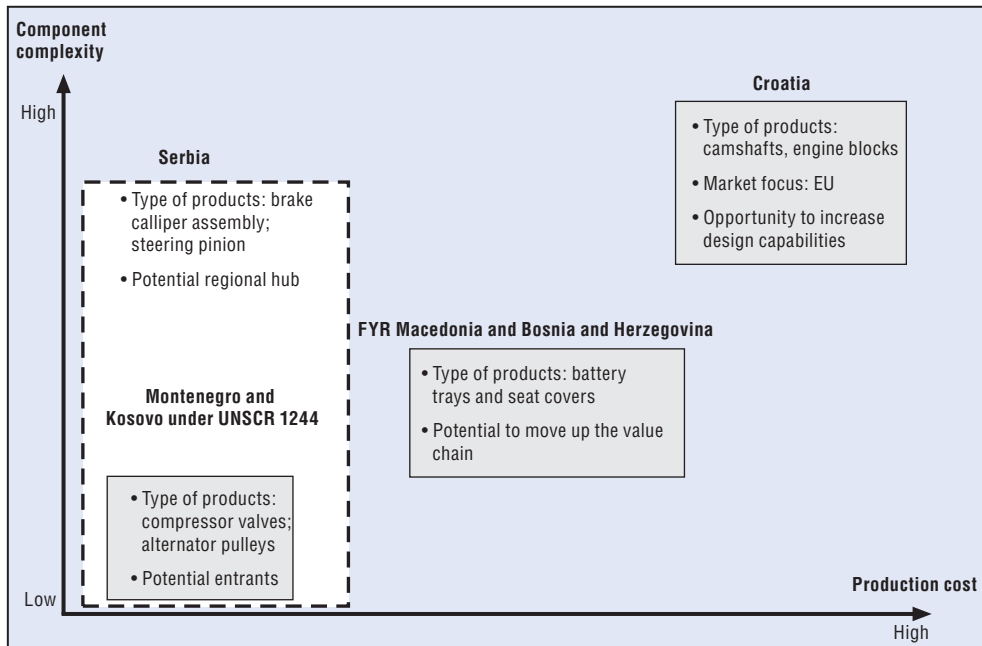
In particular, for the majority of part suppliers located in the Western Balkans there is an opportunity to focus on the second tier of the supply chain. This typically involves producing components with high unskilled labour content and low technological sophistication. However, as first tier suppliers have increasingly taken on the new role of global systems integrators, second tier suppliers should specialise in the production of niche components and upgrade their ability to develop and manufacture more sophisticated products. Again, this requires the ability to demonstrate that they can meet standards for quality, design and development, and supply chain management (Humphrey and Memedovic, 2003).

The main challenge for the region is to escape the “cost trap” by increasing productivity and being able to respond to the requirements of OEMs and global systems integrators in terms of the design and development of components. Cost competitiveness is likely to erode, based on wage increases following EU integration, as happened in the Central and Eastern European countries after the enlargements of 2004 and 2007.²⁸

The Western Balkan economies could further benefit from their individual strengths and implement an integrated investment promotion strategy through, for example, a cross-border clustering approach. Like other emerging markets with complementary offerings, each country could target specific categories of potential investors and customers, based on their position along the automotive value chain. Croatia would be well positioned to supply technologically sophisticated parts with low labour content, given its relatively high labour costs and the proven capability of its manufacturing firms to produce zero-defect- tolerant components. Serbia could become the regional hub for both first and second tier supply of components (technologically sophisticated component with high labour content requirements), given its very low labour costs. Bosnia and Herzegovina and the Former Yugoslav Republic of Macedonia have strong potential for the supply of components whose cost is driven equally by labour, materials and capital. Kosovo under UNSCR 1244 and Montenegro should capitalise on their cost competitive operational environment and specialise in the production of components whose costs are driven predominantly by labour, such as compressor valves and alternator pulleys.

Figure 2.12 summarises the potential competitive positioning of the automotive components sector in the Western Balkans.

Figure 2.12. **Potential competitive positioning in the automotive components sector in the Western Balkans**



Source: OECD analysis, based on data from McKinsey Global Institute (2004).

8. Country specific recommendations

This section provides country specific overviews of the current status and future prospects for the automotive components sector in the Western Balkan economies.

Albania is not included in this section. Desk research and direct interviews conducted in the region appear to show that Albania does not have significant potential to attract FDI and grow a competitive industry for the manufacture of automotive components.

8.1. Bosnia and Herzegovina

8.1.1. Sector overview

Some key factors about the automotive components sector in Bosnia and Herzegovina are summarised in Table 2.4.

Industrial production rose by 483% in 2004-06, outperforming by several percentage points any other manufacturing sector.²⁹ Exports in 2007 were EUR 32.9 million, having increased by an annual rate of 26% since 2003.

Historically, Bosnia and Herzegovina has been a producer of automotive components, mainly for final assembly in Serbia but also for export to other markets. Before 1992, Volkswagen produced passenger cars near Sarajevo and Kosmos and Soko manufactured buses in Banja Luka and Mostar. As a consequence of the presence of final vehicle assembly, suppliers of automotive components emerged with metalworking, mechanical and electrical engineering skills. The industry was disrupted and damaged by the conflict in the Balkans, but in 1996 ASA Auto signed an agreement with Volkswagen to distribute its products in the region with a view to starting automotive production. Bosnia and Herzegovina is also exporting textile and leather seat covers and accessories to major global automotive players.

Table 2.4. The automotive components sector in Bosnia and Herzegovina, key figures

Value-added ¹	EUR 19.4 million
Cumulative FDI inflows ²	EUR 35.8 million
FDI inward stocks ³	EUR 71.6 million
Exports ³	EUR 32.9 million
Employment ¹	2 226 employees
Number of firms ¹	24

1. 2006; does not include the Republika Srpska.

2. 2004-06.

3. 2007.

Source: Agency of Statistics of Bosnia and Herzegovina, Central Bank of Bosnia and Herzegovina, Business Register.

Currently, Volkswagen Sarajevo has semi-knocked down (SKD) production of various Skoda, Audi and VW car models.³⁰ Although before the war it produced cars for the entire Yugoslavian market, Volkswagen Sarajevo now assembles only about 4 000 vehicles for the domestic market. However, it was recently announced that the company plans to move an assembly line from Slovak Republic to Bosnia and Herzegovina employing some 600 to 700 additional people (Reuters, 2008).

Since 2004, automotive component suppliers in the country have been organised in an automotive cluster funded with the support of the German development agency GTZ (Box 2.3).

Box 2.3. The Automotive Cluster Bosnia and Herzegovina

The Automotive Cluster Bosnia i Hercegovina (AC Bosnia and Herzegovina) was founded in 2004 with the support of GTZ. Its aim is to promote the reconstruction and expansion of the automotive industry in Bosnia and Herzegovina. There are currently 19 members: 12 manufacturing firms, 4 mechanical engineering faculties, 2 software suppliers and a certification agency. The AC Bosnia and Herzegovina supports its members by providing advice on optimization of processes, introduction of quality management systems (ISO 9001, TQS, TS 16949) and adaptation to international standards in the fields of logistics, IT, supply chain management and marketing. In addition, at the end of 2006 the AC Bosnia and Herzegovina opened a representative office in Germany. Through that office, international suppliers and manufacturers can obtain first-hand information on suppliers in Bosnia and Herzegovina. The cluster also supports the participation of member companies in international fairs and exhibitions and the organisation of bilateral meetings with potential foreign partners.

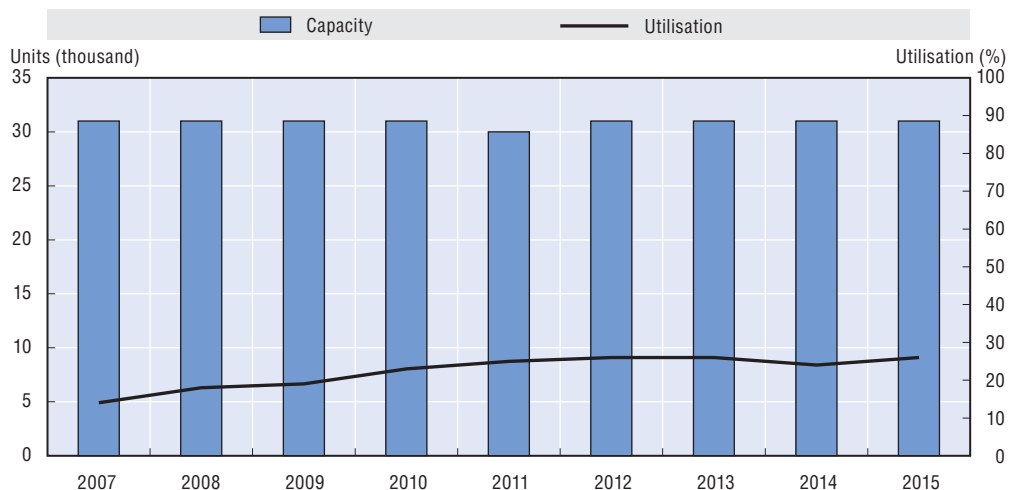
The cluster is currently involved in a project financed by the Austrian government in co-operation with the Automotive Cluster Styria and three automotive component companies in Romania. This project started in October 2007 and will last 18 months. The AC Bosnia and Herzegovina is hoping to be able to join other projects financed by the European Commission through the Seventh Framework Programme. It is also participating in the GTZ-sponsored project "Open the regional funds", in co-operation with the Automotive Clusters of Serbia and the Former Yugoslav Republic of Macedonia.

Source: Automotive Cluster Bosnia and Herzegovina.

According to most of the automotive companies and stakeholders consulted by the OECD in Bosnia and Herzegovina, the country's main strength is its long tradition of manufacturing components for the automotive industry. The automotive components sector has many of the required skills, especially in regard to the manufacture of basic metal and metal products. The metal processing industry is very important to the economy of Bosnia and Herzegovina, and the automobile industry is an important consumer of its production. In 2004 manufacturing of basic metals represented more than 18% of total manufacturing production, second only to the food processing industry (OECD, 2007b).

The presence of local vehicle assembly can also stimulate the growth of the components industry, owing to potential backward linkages along the supply chain. Although capacities in Bosnia and Herzegovina amount to only around 30 000 vehicles per year, they are significant in relation to the size of the automotive components sector. In addition, current and projected utilisation rates are very low (Figure 2.13).

Figure 2.13. **Capacity and capacity utilisation of automotive production in Bosnia and Herzegovina**



Source: PricewaterhouseCoopers (2008).

Although Volkswagen currently assembles around 4 000 vehicles per year at its plant near Sarajevo, none of the components are sourced within Bosnia and Herzegovina. It is unlikely that the company will resume full-scale production in the near future, as this would only be justified for volumes above 18 000 to 20 000 vehicles per year.

8.1.2. Challenges and policy barriers

Automotive firms surveyed by the OECD in Bosnia and Herzegovina place strong collaboration with customers at the top of the list of factors that contribute to sustaining and expanding a successful business. At the same time, they have indicated that maintaining such collaboration is the main challenge they face. Based on several parameters, it appears that many automotive firms in Bosnia and Herzegovina are not in a good position to meet the standards required by international customers.

The RCS responses and interviews with foreign investors and local companies show that general quality levels are not adequate. A majority of firms surveyed were not ISO

9001 certified. In 2006 only two companies were certified for the industry specific standard TS 16949 (ISO, 2007). One foreign investor maintained that quality is an essential requirement if a supplier is to be considered by international customers, but that currently many suppliers in Bosnia and Herzegovina did not meet minimum quality requirements. Of the local companies surveyed, 60% felt that there is a skills gap in the area of quality assurance and quality control. Therefore, supporting companies in obtaining international quality certification and training people in business functions related to quality should be the top priority. The Automotive Cluster Bosnia and Herzegovina is already supporting its members in introducing quality management standards and upgrading skills in IT, logistics, supply chain management and marketing. However, cluster membership remains low, as shown by the RCS responses (85% of companies surveyed did not participate in any cluster initiative).

Stronger collaboration with customers is hindered by lack of design, development and innovation capacities. Only a minority of companies surveyed indicated that they had upgraded an existing product line or created a new product or service in the previous three years. A majority of companies were unable to offer any design services and did not have CAD stations at their facilities. Anecdotal evidence from interviews with foreign investors suggests that suppliers in Bosnia and Herzegovina should focus more on the development portion of the new product development (NDP) process.

In addition, a majority of respondents did not use a website in interactions with clients and a very small minority (15%) took part in on-line procurement initiatives. However, joint procurement and purchasing is at the top of the list of areas where local suppliers collaborate with customers. Of all the companies interviewed directly, only those with foreign investment interacted with customers through a B2B internet portal. Unlike the other Western Balkan economies, Bosnia and Herzegovina did not have a sector specific database with exhaustive and detailed information on the capabilities of its automotive supplier base. This should be an essential step in a targeted investment promotion strategy aimed at closing the information gap with international customers and foreign investors.

Finally, automotive suppliers interviewed by the OECD point to two other major barriers:

- *High labour taxes*: As stated in the latest European Commission Progress Report (European Commission, 2007) and confirmed by OECD interviews with local automotive component suppliers, a fairly high labour tax wedge has hampered job creation in the Federation of Bosnia and Herzegovina, while in the Republika Srpska the tax wedge has been decreased. Total contributions amounted to 69.47% of the net wage in the Federation and ranged between 42% and 57% in the Republika Srpska;
- *Burdensome licensing procedures*: According to local suppliers interviewed by the OECD, burdensome administrative procedures continue to make it difficult to do business in Bosnia and Herzegovina. This is confirmed by the World Bank *Doing Business Report 2009*, which shows that Bosnia and Herzegovina is one of the worst performers among the Western Balkan economies in terms of days required to start a business. This duration (60 days) is also significantly higher than the average OECD figure (13.4 days). Moreover, companies complain that regulations are often subject to very arbitrary and non-transparent interpretations at different levels of government.

8.1.3. Key policy recommendations

1. Support companies in obtaining international quality certifications and training people in business functions related to quality assurance and quality control;
2. Create a sector specific database with detailed information on the existing supplier base (types of companies);
3. Expand and develop existing clusters by refining the value proposition;
4. Reduce the labour tax wedge to help maintain the competitiveness of Bosnia and Herzegovina;
5. Simplify procedures for obtaining licenses and streamline administrative procedures.

8.2. Croatia

8.2.1. Sector overview

Some key figures on the automotive components sector in Croatia are summarised in Table 2.4.

Table 2.5. **The automotive components sector in Croatia, key figures**

Value-added ¹	EUR 65.5 million
Cumulative FDI inflows ²	EUR 43.2 million
FDI inward stocks ³	EUR 50.7 million
Exports ³	EUR 112.7 million
Employment ¹	3 064
Number of firms ⁴	21

1. 2006.

2. 2003-07.

3. 2007.

4. The number of companies reported by official statistics does not include firms included in other categories of manufacturing activities (e.g. manufacture of metals and metal products, and of rubber and plastic products) whose main activities are nevertheless related to the automotive components sector. OECD interviews with companies in the country allow an estimate of the presence of some 60 to 70 companies manufacturing parts for motor vehicles in Croatia.

Source: Central Bureau of Statistics, Croatian National Bank, Vienna Institute for International Economic Studies, UN Comtrade.

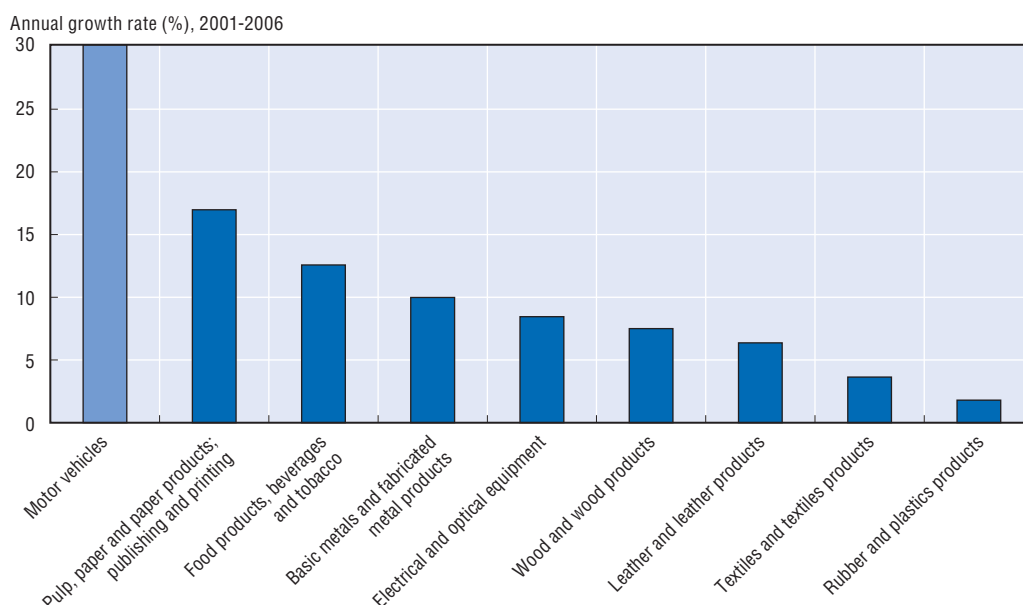
The production of automotive components in Croatia has been generating increasing value-added. It grew by an annual rate of 30% from 2001 to 2006 and has outperformed growth in any other manufacturing sector by several percentage points (Figure 2.14). The sector is also significantly export oriented: 62% of income from sales in 2006 was generated through exports. From 2002 to 2007, exports of automotive components increased at a 16% annual growth rate.

As in other Western Balkan economies, a Croatian Automotive Cluster was established in 2006. It currently has 24 members (mainly second and third tier suppliers) and co-operates with other companies on specific projects. As a member of the Pro Inno Europe Cluster Network, it benefits from co-operation with other European partners.³¹ Besides the Croatian Automotive Cluster, established within the Chamber of Economy, five first tier suppliers specialising in aluminium parts have founded another cluster, A.C.H. GIU.

Croatia does not have a long-standing tradition of manufacturing of automotive components, mainly reflecting the absence of domestic car manufacturing. Yet the country

possesses many of the engineering and technical skills required in this industry, such as metalworking and plastics and machinery manufacture.

Figure 2.14. **Annual value-added growth in the manufacturing sector, 2001-06**



Source: OECD analysis based on data from the Central Bureau of Statistics of the Republic of Croatia (2007).

An advantage for an automotive components industry in Croatia is the high level of quality standards. A majority of the companies surveyed or directly interviewed had acquired at least one international quality certification, in particular ISO 9001. Five companies held the industry specific certification TS 16949 as of the end of 2006, and other suppliers were in the process of obtaining it. Anecdotal evidence gathered through interviews with foreign investors suggests that the quality levels of Croatian automotive suppliers are comparable to those of equivalent firms in the EU.

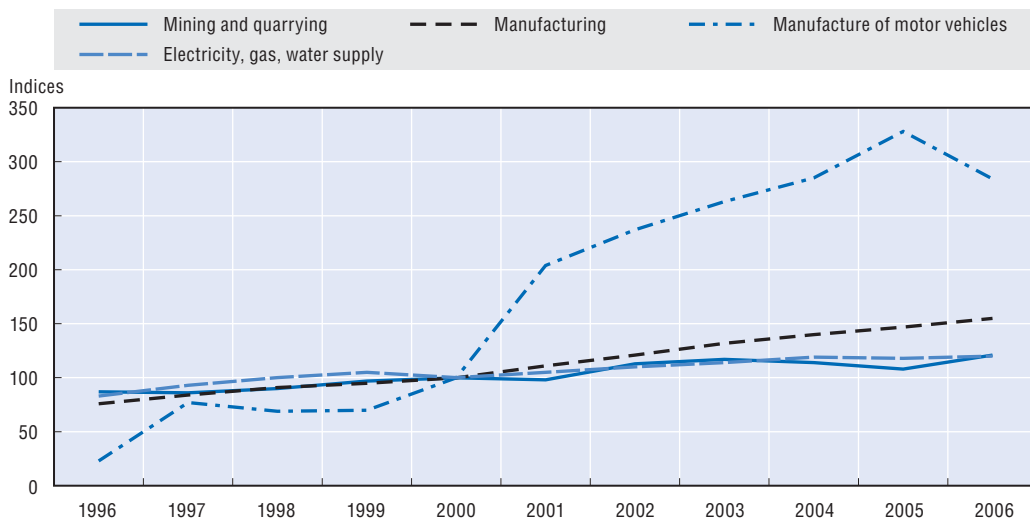
In addition, Croatian component suppliers seem well positioned to respond to the challenge of strengthening collaboration with their customers. Many have successfully developed a new product line or service, or upgraded existing ones in the past three years. The use of AutoCAD and other software for the design and development of components is relatively widespread compared with the situation in other Western Balkan economies. Based on the results of the RCS and company interviews, many Croatian part suppliers already collaborate with their customers in areas that require a deep, stable and medium- to long-term business relation, such as product development, product design and production planning. They do so at a level which remains virtually unmatched elsewhere in the region. Unlike in other Western Balkan economies, most of the firms surveyed use websites to interact with their customers and regularly participate in on-line procurement initiatives. All these elements point to the existence of relatively deep and strong relationships between local suppliers and international customers.

8.2.2. Challenges and policy barriers

Croatia's relatively high labour costs in the automotive components industry could place the country at a competitive disadvantage in relation to the other Western Balkan economies. However, labour costs represent only one factor in the price competitiveness equation, which will also depend to a large extent on productivity. Croatia's labour productivity in manufacturing outperforms several EU members in Central and Eastern Europe, some of which actually benefit from lower labour costs.

Figure 2.15 shows the evolution of labour productivity in three industries at NACE one-digit level (mining and quarrying, total manufacturing and electricity, gas, and water supply) and in the automotive industry in Croatia in the period 1996-2006. A comparative analysis of trends in annual industrial labour productivity shows that labour productivity grew at a much higher rate than in any other sector in the period under examination.

Figure 2.15. **Labour productivity trends for selected sectors in Croatia, 1996-2006, indices (2000 = 100)**



Source: OECD analysis, based on Central Bureau of Statistics of the Republic of Croatia.

In spite of this relatively strong performance in terms of productivity, high labour costs translate into Croatia not being an attractive location for manufacturing of components whose production requires labour intensive processes. However, the automotive components sector can further capitalise on the country's know-how and strong tradition in high precision and zero defect tolerance in manufacturing. In particular, Croatian part suppliers should continue to focus on niche segments, where they can ensure high levels of quality and satisfy customer needs that cannot be met by firms located in other Western Balkan economies. A clear example of this strategy is represented by a Croatian firm producing glass for the automotive industry. As it cannot compete in high volumes, the company has targeted niche sub-segments of the automotive industry and supplied high-end customers such as Bentley, Aston Martin, Ferrari, Mercedes, Alfa Romeo, McLaren and Lamborghini.

Evidence from both the RCS and direct interviews with Croatian suppliers points to the need to further upgrade skills if the country is to maintain and expand its competitiveness in the production of parts with high technological sophistication. In particular, suppliers point to the existence of some degree of skills gap in the areas of design and product

engineering. Croatia lacks a programme to create R&D centres (within public universities or private bodies) for the automotive components industry. Anecdotal evidence suggests that although Croatian universities produce graduates in mechanical and electronic engineering with a very good level of preparation, there are not enough of them to meet the needs of the automotive components industry.

Automotive suppliers interviewed by the OECD point to two other major barriers:

- *Excessive length of judicial proceedings.* This issue was also highlighted by the European Commission in its latest Progress Report (European Commission, 2007). The backlog remains very high and judges make limited use of the instruments they have to control the length of procedures. As anecdotal evidence, one automotive component supplier interviewed by the OECD reports that a dispute involving land ownership has lasted for 15 years;
- *Cumbersome procedures for obtaining building permits.* In spite of the progress made with regulatory simplification through the “guillotine” process, many companies report that procedures for obtaining building permits and licenses remain very cumbersome. According to the World Bank *Doing Business Report 2009*, Croatia requires the highest number of documents in order to build a warehouse of any Western Balkan economy and a much higher number than in OECD countries.

8.2.3. Key policy recommendations

1. Facilitate the improvement of skills in design and product engineering by promoting linkages with foreign companies through supplier collaborative initiatives;
2. Support the creation of R&D centres specific to the automotive components industry;
3. Propose clustering co-funding with the private sector and enhance collaboration among different clustering initiatives;
4. Reduce the length of judicial proceedings;
5. Simplify procedures for obtaining building permits.

8.3. Kosovo under UNSCR 1244

8.3.1. Sector overview

The automotive components industry in Kosovo under UNSCR 1244 dates to the 1960s, when several subcontractors to Zastava were established in this then autonomous region. The most prominent included Ramiz Sadiku in Peć or Peja (manufacturing 169 different parts, such as differentials, seats, silencers, axles and lorry chassis), Trepca in Kosovska Mitrovica (manufacturing accumulators) and the Pristina Shock Absorber Factory (producer of shock absorbers, as suggested by the name of the firm). Ramiz Sadiku supplied Zastava through a fixed supply arrangement and, by the end of the 1970s, was the biggest state-owned enterprise in the autonomous region of Kosovo (European Stability Initiative, 2002).

The establishment of these factories in the autonomous region of Kosovo mostly responded to the needs of the so-called “Yugoslav policy” of developing and maintaining an automotive components industry in each of the republics and provinces of the Federation, rather than in response to efficiency reasons. Kosovar suppliers were reported to be particularly unreliable both in terms of the volumes required to fulfil their delivery commitments and the quality of their products. In the case of Ramiz Sadiku, the main cause for its inadequate performance seems to have been the lack of skilled personnel. Palairat

(1992) reports that in 1972 the company had only one graduate mechanical engineer out of 1 043 employees. In addition, Kosovar automotive component suppliers suffered heavily from the lack of maintenance of equipment and machinery and serious financial mismanagement. Reportedly, one of the main factors underlying Zastava's own poor performance was the unreliability of its suppliers across the federation (Palairret, 1992).

In June 1999 Ramiz Sadiku was occupied by KFOR forces. In April 2006 the company was sold to New York-based United Steel of Albania through a privatisation programme led by the Kosovo Trust Agency. The company has been renamed Kosova Steel and currently produces vehicle chassis, frame beams, seat skeletons, exhaust systems, car mouldings and trim and other steel products.

The automotive component supplier base of Kosovo under UNSCR 1244 displays strengths that make the country a good location for manufacturing of components with high labour content and a low level of technological sophistication.

Labour costs are low and therefore represent a significant competitive advantage. In the absence of official statistics on industry-specific labour costs, the OECD Investment Compact gathered data from automotive suppliers in Kosovo under UNSCR 1244 through the RCS and calculated total labour costs based on that data. Total labour costs for a skilled worker in the automotive components industry amount to an average of EUR 300. This is very competitive relative to other manufacturing locations in the Western Balkans and in the rest of South East Europe.

The main customer bases for part suppliers from Kosovo under UNSCR 1244 are South East Europe and Central and Eastern Europe. All companies directly supply OEMs and final assemblers. The RCS results show that local suppliers are aware of the importance of building strong collaboration with customers. Local firms declare that they are already collaborating with customers in the area of product development. One company has AutoCAD facilities at its premises.

Kosovar part suppliers also list order lead time and on-time delivery as the most important customer requirements. Other key customer requirements identified by part suppliers in Kosovo under UNSCR 1244 are product design, forecasting and planning, and quality control.

Finally, there is an opportunity to tap into capacities that are currently under-utilised. The RCS results show that the average capacity utilisation by local suppliers from Kosovo under UNSCR 1244 is currently very low, at around 30%.

8.3.2. Challenges and policy barriers

Improving quality levels and upgrading skills emerge as the most compelling challenges that need to be tackled by automotive component suppliers in Kosovo under UNSCR 1244. The RCS results show that local suppliers do not hold any international quality certificates (not even ISO 9001, let alone the industry specific standard TS 16949). Most international customers in the automotive industry consider that low production costs are not sufficient if they are not coupled with high enough levels of quality. The ability to offer quality products and processes is what differentiates suppliers in the Western Balkans from locations that have cost advantages.

In addition to quality levels, availability of skills is one of the main challenges identified by local suppliers. All companies surveyed through the RCS believe that there is a significant gap between the skills that employees currently have and those needed to

meet business objectives. Reportedly, a major skills gap exists in the following areas: purchasing, manufacturing engineering and quality assurance and control. Other areas where the lack of skills is less severe are supply chain and logistics, design, mechanics, product engineering, and production process engineering. In addition, companies report that they are experiencing skills gaps across occupations, with a lack of skills being more acute for engineers and designers.

Improving investment policy and investment promotion could be an effective first step towards tackling the challenges represented by the level of quality and the availability of skills. Those two policy areas are identified by local automotive suppliers as the ones that have the most impact on their operations. In particular, local suppliers acknowledge that protection of intellectual property rights (IPR) should be further enhanced. IPR protection encourages investment in research and development, innovation and technology transfers. In line with the OECD findings, the latest European Commission Progress report points out that massive IPR infringement are taking place in Kosovo under UNSCR 1244, and there is not yet sufficient administrative capacity to enforce IPR. In addition, lack of an effective investment promotion and facilitation strategy is seen as issues that should be acted upon to stimulate new investment in the Kosovar automotive components sector.

8.3.3. Key policy recommendations

1. Implement programmes to support companies in obtaining international quality certification.
2. Design and implement a sector specific investment promotion and facilitation strategy.
3. Support local suppliers' participation in international fairs (such as the Automechanika Fair in Frankfurt).
4. Enhance the legal framework and the administrative capacity for IPR protection.

8.4. The Former Yugoslav Republic of Macedonia

8.4.1. Sector overview

Some key figures for the automotive components sector in the Former Yugoslav Republic of Macedonia are summarised in Table 2.6.

**Table 2.6. Automotive components sector
in the Former Yugoslav Republic of Macedonia,
key figures**

Value-added ¹	EUR 15.8 million
Cumulative FDI inflows ²	EUR 1.9 million
FDI inward stocks ¹	EUR 12.8 million
Exports ³	EUR 20 million
Employment ¹	1 510
Number of firms ⁴	35

1. 2005; includes all transport equipment.

2. 2004-06; official statistics do not yet include investment from Johnson Controls and Johnson Matthey.

3. 2007 figure.

4. 2008.

Source: State Statistical Office of the Former Yugoslav Republic of Macedonia, National Bank of the Former Yugoslav Republic of Macedonia, UN Comtrade, InvestMacedonia.

In the period 2001-07, exports grew at an annual rate of 7%. They currently represent more than 90% of total sales. The principal export markets are Russia, Serbia and the EU (mainly Germany and Greece).

In the period 2003-06, investment in equipment grew at 8.5% and R&D expenditure grew at 7%, according to data provided by the Group of Automotive Industry of the Former Yugoslav Republic of Macedonia. EUR 3.35 million was invested in equipment, new technologies and certification, and there are plans to invest an additional EUR 2.82 million in the period 2006-09.

Investment by major global players is significantly changing the landscape of the country's automotive industry. As a consequence of the establishment of two such global players in the Bunardzik free economic zone, it can be expected that other major world players and suppliers in the second and third tier of the supply chain will follow their example and locate in the same area. This could lead to the geographical concentration of manufacturing activities and services related to the automotive industry, as has occurred in the past in other regions.³²

The US company Johnson Controls has invested USD 30 million in the construction of a facility in the Bunardzik free economic zone. The 6 000 m³ workspace will be used for the assembly of printed circuit boards. The new operation will start by employing 150 workers, with the objective of generating around 500 new jobs. Pilot production began in December 2007, and six assembly lines will be fully operational by the end of 2009 (Wilson, 2008).

In addition, in November 2006 UK catalyst manufacturer Johnson Matthey announced a EUR 50 million investment in a manufacturing facility, also to be constructed in the Bunardzik free economic zone. The plant is expected to begin operating by May 2009.

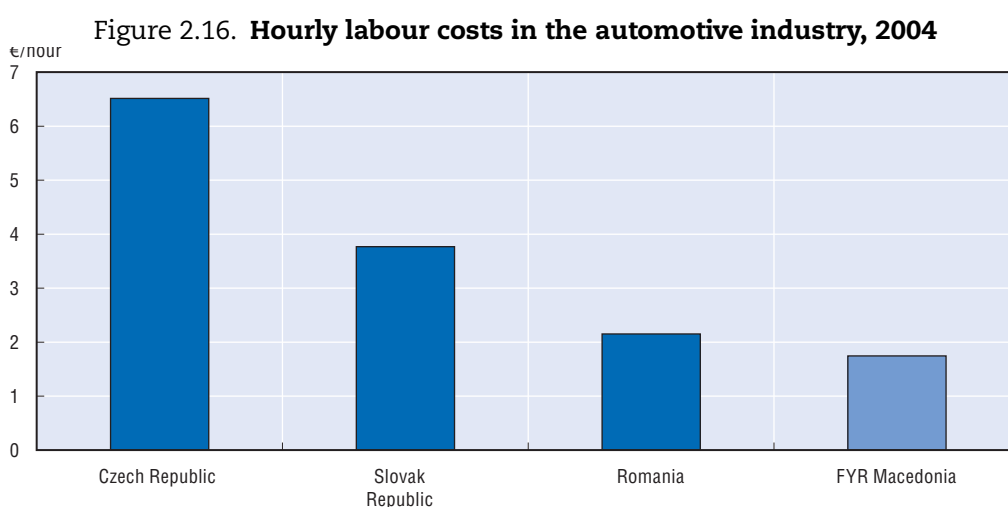
The local manufacturing base is setting up a partnership and collaboration structure. In May 2007, a Group for Automotive Industry of the Former Yugoslav Republic of Macedonia was established. It represents 22 automotive suppliers and acts within the Macedonian Metal Association in the Economic Chamber of the Former Yugoslav Republic of Macedonia. The group's medium-term goal is to develop a cluster with the support of the government, and by establishing links with other relevant stakeholders such as academia and research institutes. Recently, the group has started to participate in a project financed through the Open Regional Funds of the German Federal Ministry for Economic Co-operation and Development. The project also includes the automotive clusters of Bosnia and Herzegovina, Serbia and Slovenia. It aims at strengthening co-operation among regional automotive suppliers and supporting their promotion and foreign trade, both within the region and with respect to the EU. The following are examples of some potential concrete deliverables:

1. Creation of an internal portal to facilitate research on potential business partners in the region.
2. Support for investment promotion activities.
3. Support for trade promotion through encouraging participation in international fairs and exhibitions.

Companies in the Former Yugoslav Republic of Macedonia supplied automotive components to Zastava from the 1960s. The privatisation process led to some foreign acquisitions of part suppliers. The local automotive industry is likely to benefit from recent greenfield investment by the first tier suppliers Johnson Controls and Johnson Matthey.

The presence of these two major players in the global automotive industry is likely to have at least two beneficial effects: i) it could have positive spillover effects on local suppliers, in terms of new business opportunities, the creation of new skills and the improvement of existing ones; and ii) these early moves could stimulate a “herding” effect whereby other suppliers decide to locate in the Former Yugoslav Republic of Macedonia.

Among the main success factors in the country’s automotive components industry, cost competitiveness is one of the most important. This has been recognised by international investors as one the key drivers in their investment location decisions. It is also fully acknowledged by local suppliers, which place cost reduction at the top of the challenges they face in expanding their operations and businesses. From this perspective, the Former Yugoslav Republic of Macedonia’s automotive suppliers seem to be well positioned to maintain a competitive edge, thanks to low labour costs (Figure 2.16).



Source: ILO Bureau of Statistics.

According to international investors, the availability of skills is another recognised asset of the country’s automotive components industry. According to figures published by the State Statistical Office of the Former Yugoslav Republic of Macedonia, the number of graduates in engineering and other technical fields related to the automotive industry was 702 in 2006, an increase of 22% since 2003.³³ However, direct interviews with local suppliers reveal general agreement on the need to further upgrade the skills of engineers and technical workers. This is considered a necessary step if the country’s automotive components suppliers are to shift their focus from parts with high labour content to components that have a higher degree of technological sophistication. A good example of how the private sector can be involved in a skill development programme is the course sponsored by Johnson Control within the Department of Mechanical Engineering of the University of Skopje.

8.4.2. Challenges and policy barriers

Availability of skills is a key success factor for the future development of the Macedonian automotive industry. The theoretical background of mechanical and electrical engineers and technical workers is generally considered to be good. However, both foreign investors and local suppliers confirm the need to upgrade applied skills if the country is to expand

beyond the production of components with high labour content and develop capabilities in regard to the design and development of more technologically advanced components.

Local Macedonian firms also need to significantly step up efforts to improve their quality levels. Although a majority have been ISO certified, as few as three companies held the automotive specific certification TS 16949 at the end of 2006 (ISO, 2007). This represents a significant impediment to local suppliers' prospects of moving up the value chain and producing components with higher technological sophistication. Among the main objectives of the recently created automotive cluster is the organisation of courses and training that would equip companies with the knowledge required to succeed in the difficult process of obtaining international certification. However, membership in the cluster is still limited.

Macedonian component suppliers recognise the importance of an effective investment policy and investment promotion strategy. The RCS shows that these are perceived as being the policy dimensions with the biggest impact on the operations of the country's automotive firms. A proactive investment promotion strategy specific to the automotive industry has recently been implemented by the government. This strategy originated from the acknowledgment that poor performance in attracting FDI since independence is likely to have been a result of international investors' scarce knowledge of the country. (The Economist Intelligence Unit, 2007). Information on existing suppliers is already available in a database, but this database should include more details on the strengths and capabilities of each player in the supply chain.

Simultaneously, the Former Yugoslav Republic of Macedonia should focus less on promoting investment incentives with a territorial dimension, such as those linked to free industrial zones. For instance, the government has solved problems concerning land ownership within the free economic zones. However, both foreign investors and local suppliers report that the system of acquiring land and protecting ownership still represents a major hurdle to investment (as reported by The Economist Intelligence Unit and confirmed by OECD direct interviews). Moreover, incentives linked to a free industrial zone can be a good tool to stimulate investment in the short term, but a long-term investment promotion strategy requires more structural reforms. On the other hand, an investment promotion strategy should further highlight the wider benefits deriving from the "regulatory guillotine" programme.

Finally, one of the main findings of OECD interviews is that customs administration represents a serious barrier for local automotive component suppliers. Anecdotal evidence suggests that customs clearance can take up to three or four days. In addition, customs duties on imports of capital goods are among the highest among the Western Balkan economies, ranging from 0 to 21% (OECD Investment Compact, 2006).

8.4.3. Key policy recommendations

1. Continue to support the implementation of a sector specific investment promotion strategy, including the creation of an interactive database of automotive suppliers.
2. Promote the improvement of quality levels and applied skills in mechanical and electrical fields through the adoption and implementation of sector specific linkage programmes and clustering.
3. Streamline customs administrations and reduce import duties on capital goods.

8.5. Montenegro

8.5.1. Sector overview

In spite of the fact that Montenegro does not have a strong tradition in the manufacturing of automotive components, it managed to attract a significant investment project in the sector. In 2002 the Japanese company Daido Metal acquired the Kotor Baring Plant with an initial investment of EUR 1 million. Kotor Baring was established in 1956 as a state-owned company. Daido owns 96.61% of the company and currently employs around 122 workers. Before privatisation, production peaked at 7 million pieces per year in 1991. This figure has almost doubled since, with production reaching 13 million pieces in 2007. In the past five years the company has supplied important OEMs such as Honda, Ford, Volvo and Daimler.

The manufacture of roller bearings soared at a 70% annual growth rate in the period 2001-06. It is significant that this surge in production took place in the run-up to Daido's investment in Kotor Baring. However, employment in the manufacture of machinery and equipment, including the production of bearings, fell by 5% in the period 2004-06, reflecting the fact that Daido Metal's workforce in Kotor has been reduced by more than half since the acquisition. In addition, employment in the manufacture of motor vehicles fell by 43% between 2004 and 2006. Therefore, employment in the sector represents a very small share of total employment in manufacturing.³⁴

Going forward, it could be envisaged that the presence of Daido will generate positive spillovers in the automotive industry beyond Montenegro through backward linkages in the regional supplier base. This development is currently hindered by the fact that around 90% of production material is sourced from Japan and not from regional suppliers.

Daido Metal's investment in the Kotor plant is the only example of foreign investment in the automotive components sector in Montenegro. It is nonetheless a significant one, as it refutes the common belief that Japanese firms are not inclined to invest in the Western Balkans. Montenegro is well positioned to meet several key requirements for being competitive in the automotive industry, mainly in terms of quality and infrastructure.

Quality is cited as the most important success factor and differentiator for investment decisions in the automotive sector. Reportedly, Montenegro's firms have quality levels on a par with those of neighbouring countries in the Western Balkans and superior to those in other countries in South East Europe, such as Bulgaria and Romania.

Infrastructure is reported by foreign investors to be another important driver of investment location. From this perspective, Montenegro is well positioned to supply the Zastava assembly plant in Serbia, where production is expected to be revived after the conclusion of the privatisation process. Beyond that, the improvement of the railway network presents further opportunities to supply other plants recently located in other neighbouring countries such as Hungary and Romania (Ministry for Foreign Economic Relations and European Integration of Montenegro, 2006).

8.5.2. Challenges and policy barriers

The main challenge faced by Montenegro's automotive components sector is the cost structure. Foreign investors report that the operational environment is less cost competitive than in neighbouring countries. However, this perception is somewhat disproved by average labour costs in the manufacture of machinery and equipment.³⁵ Average wages (including taxes and social security contributions) amounted to EUR 137 in 2006 (MONSTAT, 2007). This is lower than the average wages in manufacturing (EUR 354) and in line with the most

competitive countries in South East Europe. Therefore, labour costs in this specific segment of the automotive components industry justify the focus on manufacturing of parts with high labour content.

Montenegro has yet to demonstrate the ability to attract further significant investment in the automotive components industry. Unlike its neighbours in the Western Balkans, Montenegro does not have a strong tradition in this sector. Therefore, to attract further foreign investment it should implement a sector specific investment promotion strategy focused on sectors that have backward linkages with the automotive industry. For instance, the steel and aluminium castings sectors have shown robust growth in recent years, with production increasing by 20% and 9% per year, respectively, between 2003 and 2006 (OECD analysis based on MONSTAT, 2007).

8.5.3. Key policy recommendations

1. Implement an investment promotion strategy focused on sectors that have strong backward linkages with the automotive components industry.
2. Define an investment promotion strategy to attract greenfield investment from automotive components manufacturers (second and third tier suppliers).

8.6. Serbia

8.6.1. Sector overview

Some key figures for the automotive components sector in Serbia are summarised in Table 2.7.

Table 2.7. **Automotive components sector in Serbia, key figures**

Value-added ¹	EUR 71 million
Cumulative FDI inflows ²	EUR 35.2 million
FDI inward stocks ³	N.A.
Exports ⁴	EUR 93.8 million
Employment ⁵	26 726
Number of firms ⁴	100

1. 2005.

2. 2003-07.

3. The National Bank of Serbia is currently collecting data in order to develop time series for FDI stocks by sector of activity.

4. 2007.

5. 2006.

Source: Statistical Office of the Republic of Serbia, National Bank of Serbia, UN Comtrade, Serbian Investment and Export Promotion Agency.

The automotive components sector in Serbia is growing. Value-added increased by 7% per year from 2002 to 2005. Employment in the sector grew by a 7% annual rate in the period 2004-06, while total employment in manufacturing actually shrank in the same timeframe. Employment fell in all manufacturing sectors but the automotive sector.³⁶ Exports in automotive components increased by 11% per year between 2002 and 2007.

Serbia has been a historical centre for automotive vehicle production thanks to the presence of the carmaker Zastava. The long-standing presence of car assembly activities in the country has resulted in a strong tradition of production of auto parts, with many firms already having first tier supplier status and selling directly to major vehicle or component

manufacturing brands. The combination of mid to high levels of technical skills and very low labour costs makes Serbia a location for the manufacture of parts whose production requires low labour costs and high technological know-how.

A scenario of Serbian automotive production based on historical data and forecasts shows a projected annual growth rate of 18% in value and 20% in physical output between 2006 and 2011 (Figures 2.17 and 2.18). The increase in car production could open new growth opportunities for automotive component manufacturers based not only in Serbia but also in other countries of the Western Balkans. These forecasts underestimate the boost in vehicle manufacturing volumes that will result from the privatisation of Zastava.

Currently, Zastava assembles only completely knocked-down kits imported from Italy for Fiat. However, the memorandum of understanding on the privatisation of Zastava

Figure 2.17. **Automotive production in Serbia, in value**

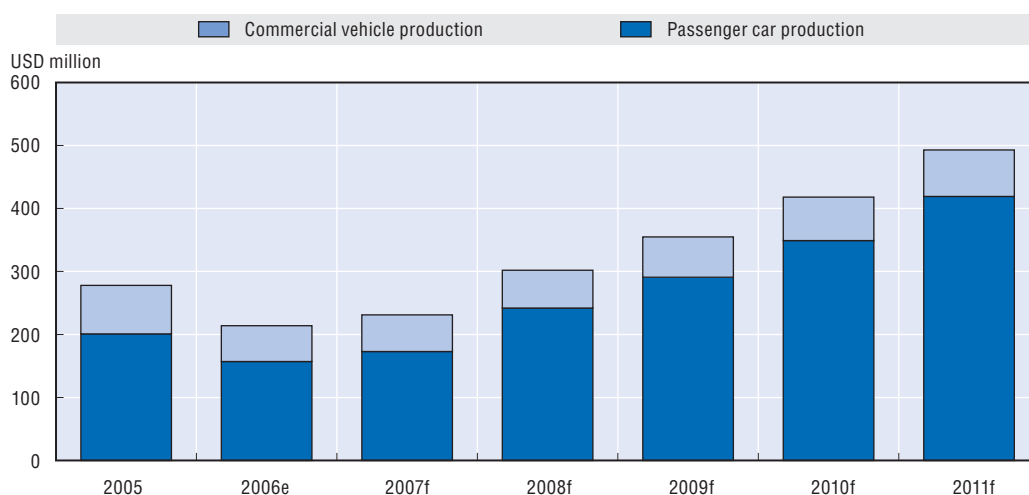
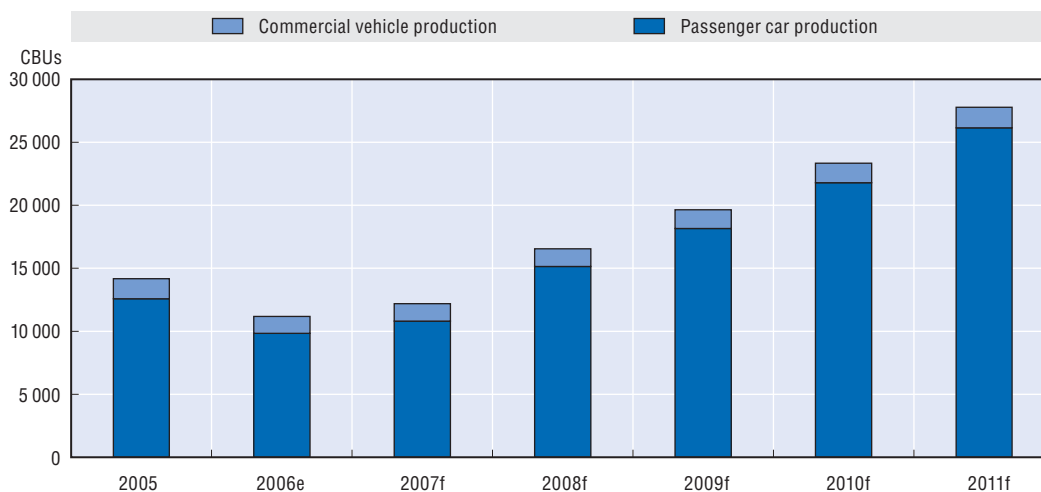


Figure 2.18. **Automotive production in Serbia, complete build-up units (CBUs)**



Source: Business Monitor International, Serbia Autos Report, Q3 2007 www.businessmonitor.com.

signed by Fiat and the Serbian government foresees a 70% majority holding for the Italian carmaker, while the Serbian government is to retain the remaining 30%. Fiat will be investing around EUR 700 million, and the Serbian government will invest around EUR 300 million in infrastructure over the next four years. According to the agreement, Fiat would be increasing car production at Zastava to about 150 000 vehicles per year and 95% of its output would be for export (B92, 2008a, b). This means that Zastava would be in a position to source components from manufacturers in the region (Devic, 2007).

Following a trend common to automotive component industries in Central and Eastern European countries, as well the neighbouring Western Balkan economies, a Serbian automotive cluster was created with the support of the Serbian government and the German Organization for Technical Co-operation (GTZ). Membership includes 12 companies and three scientific institutes.

The creation of a cluster stemmed from the crisis experienced by the Serbian automotive industry in the wake of the dissolution of the former Yugoslavia. Most automotive component suppliers were linked to Zastava and did not have exporting capabilities. The crisis of the big state-owned car manufacturer hit them particularly hard.

The industry is also supported by the presence of five faculties of mechanical engineering (in Belgrade, Kragujevac, Novi Sad and Nis) specialised in automotive mechanics and three institutes (in Belgrade, Kragujevac and Vinca) specialised in design, testing, homologation and certification for the automotive industry.

Among the key success factors of the Serbian automotive components industry, cost competitiveness has had a strong impact on investment location decisions. MIGA (2006) singled Serbia out as the South East European country with the most competitive operational environment for the automotive components industry. Thus, it is well placed to manufacture parts with a high labour content.

At the same time, the long-standing presence of car assembly activities in Serbia has resulted in a strong tradition of production of automotive parts, with many firms already having first tier supplier status and selling directly to major vehicle or component manufacturing brands.

In addition, local Serbian suppliers already have many of the characteristics required to build up and maintain strong collaboration with international partners. A good number of companies have quality levels that meet international standards. According to industry sources, foreign investors value the good quality ensured by Serbian suppliers. Quality levels are high even compared with that of suppliers in Bulgaria and Romania. However, out of 160 companies operating in sectors directly linked to the automotive industry only about 50 are currently ISO 9001 certified. As for the industry specific quality certification, only five companies were certified for the TS 16949 at the end of 2006 (ISO, 2007). The analysis therefore shows that despite the relatively good quality levels already existing, Serbia needs to step up efforts to further improve in this area. The Serbian Automotive Cluster, in co-operation with the Ministry of Economy and Regional Development, is actively organising training on issues related to quality, such as quality assurance and control, and supports local suppliers throughout the difficult process of obtaining international certification. However, some companies interviewed feel that support at government level lacks effectiveness. This is not necessarily a sign of poor commitment on the government side. Rather, it points to a need to increase the involvement of foreign investor

in supporting local suppliers. In fact, the Serbian government announced that it will set aside about EUR 30 000 for the automotive industry cluster in 2008.

OECD interviews with foreign investors and local suppliers show that Serbian automotive component firms have the capabilities required to establish strong collaboration with customers. The RCS results show that Serbian suppliers consider product development the top area for collaboration with customers. A majority of companies surveyed have computer aided design (CAD) stations at their premises. Some of the companies interviewed already develop their own products, based on enquiries made by key customers (Box 2.4).

Box 2.4. **The new product development process**

The development of new products typically goes through the following phases:

- After the initial enquiry by the customer, a feasibility study is carried out using failure modes and effects analysis (FMEA) technology.
- The necessary technical documentation is prepared (i.e. 2D drawings and 3D models).
- The newly created product goes through the prototype and check phases. These procedures are performed using 3D testing machines and controlled environmental testing.
- Following validation of the product, the “0” series is produced and sent to the customer for final validation.

Source: OECD interviews with local suppliers.

Besides being able to develop their own products based on customer specifications, some companies interviewed show flexibility in adapting to potential customers’ new needs and requirements, which is another key differentiator in the choice of a supplier. For instance, a local Serbian supplier reported that it is always willing to adopt new software for 3D modelling based on the systems used by potential new customers.

The development of new design capabilities is also supported by the presence of five faculties of mechanical engineering specialised in automotive mechanics and three research institutes (in Belgrade, Kragujevac and Vinca) specialised in design, testing, homologation and certification for the automotive industry. Collaboration between these academic and research bodies and firms has already started within the Serbian Automotive Cluster, but should be further improved. The Virtual Manufacturing Network (VMnet) and the Center for Virtual Manufacturing (CeVIP) are examples of projects that can be used to improve the design and development capabilities of local suppliers by fostering co-operation between companies and academia and among companies themselves (Box 2.5). The Centre should aim at further involving foreign investors in its activities, for instance by promoting structured linkage programmes. This would lead to increased opportunities for more financing and better technology transfer. The same model could also be applied to other economies in the region.

Serbia also enjoys a trade advantage. It is the only country in the Western Balkans that has signed a free trade agreement (FTA) with Russia. This FTA will most likely be ratified in the autumn of 2008 and enter into force in January 2009 (TND, 2008). It will give Serbian suppliers duty-free access to the vast and largely untapped market for automotive components, thanks to the presence of big customers such as the vehicle manufacturer AvtoVaz. The Russian market is growing and car sales are soaring. Local manufacturers are

Box 2.5. The Serbian Center for Virtual Manufacturing

The Center for Virtual Manufacturing (CeVIP) was founded in 2006 within the Faculty of Mechanical Engineering of the University of Kragujevac. Creation of the Centre took place in the framework of the EU-funded project “Virtual Manufacturing Support for Enterprises in Serbia,” managed by the European Agency for Reconstruction. The main objective of CeVIP is to support the competitiveness and innovation of Serbian automotive companies by upgrading their capabilities in advanced technologies and techniques for virtual product development and process optimisation. To attain this objective, the Centre carries out the following activities:

- Acts as a catalyst for participation in EU-funded projects (through the 7th Framework Programme, Eureka, EAR and others).
- Has created a Virtual Manufacturing Network (VMnet) of Serbian R&D bodies, large enterprises and SMEs. The main objectives of the network are: i) to establish strong and long-term linkages between research institutes and automotive companies; and ii) to foster collaborative R&D (especially in terms of financing). The network has launched a web portal to disseminate EU best practices in virtual manufacturing techniques and new materials. Another function of the website is to support the commercialisation of R&D activities.

Source: OECD interviews, www.cevip.kg.ac.yu.

increasing production, while global carmakers are setting up assembly plants in Russia.³⁷ Traditional historic ties and the existence of an FTA favour Serbian suppliers over those based in the neighbouring economies. In addition, the quality levels of Serbian companies are significantly higher than those of Russian part suppliers.

8.6.2. Challenges and policy barriers

A majority of Serbian suppliers surveyed through the RCS report that the main challenge they face is to maintain strong collaboration with customers. Serbian firms already partly meet some of the requirements for maintaining such collaboration. However, there are some areas where further improvement is needed if Serbian automotive suppliers are to be considered as stable and reliable partners by international customers. In particular, there is a need to improve skills.

The RCS shows that the Serbian companies surveyed identify availability of skills as the second most hampering policy barrier with an impact on their businesses and operations. Interviews with local suppliers reveal a broad consensus on the fact that there is a strong base of mechanical engineering in Serbia. However, there is a lack of education in applied skills. Firms report the existence of skills gaps in key business functions such as purchasing, supply chain management, product engineering and manufacturing engineering.

These findings suggest that the main challenge for the Serbian automotive industry is to improve existing mechanisms for upgrading skills and to introduce innovative ones. The presence of the Serbian Automotive Clusters and other forms of collaboration between companies and academia in the fields of quality control and virtual manufacturing is already a good start. However, existing forms of collaboration would greatly benefit from the implementation of structured and sector specific linkage programmes with foreign investors. These could bring critical assets such as new forms of finance, technology transfers and specialised knowledge.

However, there seems to be a lack of knowledge by international investors of the capabilities offered by Serbian local suppliers. The situation could be improved through stronger involvement by international OEMs such as Fiat in the privatisation of the state-owned carmaker Zastava. A targeted investment promotion strategy is starting to be implemented, using tools such as a sector specific supplier database. At the same time, there is a strong case for closing the information gap concerning Serbian suppliers' strengths and capabilities. This would facilitate the creation of stable partnerships and the improvement of skills to the required level.

Although the Serbian automotive industry is very cost competitive relative to other countries in South East Europe, its labour productivity levels in manufacturing remain relatively low. This could be due to the fact that many companies in the manufacturing sector are still state-owned or socially owned. OECD research shows that besides being stimulated by policies that foster investment in physical and human capital, labour productivity can be increased by increasing competition and bringing down barriers in the form of state control (OECD, 2007).

In its latest Progress Report on Serbia, the European Commission noted that there had been little or no progress on the restructuring and privatisation of large and inefficient state-owned companies. A deadline for privatising all remaining state-owned enterprises by mid 2007 has been missed and moved to the end of 2008 (European Commission, 2007). According to estimates relating to the same period from the European Bank for Reconstruction and Development, the private sector accounted for 55% of GDP, the lowest figure among all Western Balkan economies (EBRD, 2007). Currently, it is estimated that around 400 companies remain to be privatised.

This is also true for the automotive components industry. The recent deal for the privatisation of Zastava between Fiat and the Serbian government is an important step towards creating the right policy setting for significant productivity improvements. However, further effort needs to be put into the privatisation process. According to the latest figures from SIEPA, the Serbian Investment and Export Promotion Agency, about 20 large to medium-sized automotive suppliers employing around 6 500 persons remain to be privatised. Therefore, the country should support productivity improvements by accelerating privatisation and facilitating further technology transfers from foreign companies.

8.6.3. Key policy recommendations

1. Adjust the investment promotion strategy to ensure that the sector specific supplier database and other information material reach the right targets.
2. Increase international customers' involvement in existing forms of collaboration between R&D bodies and firms, and among firms themselves.
3. Support increased labour productivity by i) intensifying competition in the sector by strengthening the privatisation programme: and ii) further promoting technology transfers from abroad.

Notes

1. Greenspan and Cohen (1996) estimated a statistically significant contemporaneous correlation of quarterly growth rates of motor vehicle sales and real GDP of about 0.5 over four decades, a correlation that rose to about 0.6 in the 1990s.

2. In particular, 63% of new models had electronic stability control; 84% were equipped with head-protecting side air bags; 85% had seat belt reminders; and 100% had anti-lock braking systems.
3. Consultancy Accenture surveyed 500 US consumers who owned or leased a car. The results shed some light on the factors that drive car purchasing habits: 84% of respondents wanted some form of in-vehicle technology, including telematics, in their cars. The survey findings confirmed the importance of safety and security: 69% of respondents ranked safety and security technologies as the most important features. However, information services, communications and entertainment were considered the most important features after safety and security. Half of respondents said they did not have the in-vehicle technologies they desired because of high costs.
4. A survey conducted by the UK Office for National Statistics on behalf of the Department for Transport found that respondents were most likely to believe that cars and vans/lorries were the forms of transport that contributed most to overall climate change. In addition, 88% of respondents agreed that the government "should do more to persuade people to buy more fuel-efficient, environmentally friendly cars" and 63% agreed that the government "should do more to stop people driving more polluting cars" (UK Department for Transport, 2005). Impacts on supply were: cost reduction, consolidation and new value chain configuration
5. For example, Fujii (2006) found that in Japan environmental concerns did not have a significant relationship to the intention to reduce automobile use.
6. In July 2007 the US Senate passed a bill raising CAFE standards to 35 miles per gallon by 2020 for all passenger cars, SUVs and pick-up trucks (Reed and Simon, 2007).
7. Accenture (2005) reported that the number of existing models (including trucks and passenger cars) on the US market increased by 69% over ten years, from 925 models in 1994 to 1 566 in 2004. The average number of models per maker in the US market rose to 34 in 2004, compared with 20 ten years earlier.
8. However, PCW autofacts has estimated that the global capacity utilisation rate will grow to 85.2% in 2015. By the same year, Eastern Europe's capacity utilisation rate should be 91.7%.
9. Showroom age can be defined as the number of years a model is on the market (FTI Consulting, 2007).
10. As an example, 36% of General Motors' expected retail sales in North America in 2007 consisted of vehicles launched within 18 months (as reported in the company's 2006 Annual Report).
11. Evidence suggests that the tier 0.5 supplier or system integrator has become a very important player in the automotive value chain. The importance of its role is bound to increase in the coming years. The University of Michigan Transportation Research Institute and Oracle Corporation (2003) surveyed a sample of first tier suppliers and found that only half of them expected to be at the same step of the supply chain by 2007: 20% expected to position themselves as second or third tier suppliers, and 30% predicted that they would evolve into 0.5 tier suppliers or systems integrators.
12. ISO/TS16949 is a technical specification developed by the International Automotive Task Force (IATF) and the Japan Automobile Manufacturers Association (JAMA). It is based on ISO 9000. In conjunction with ISO 9001, it defines the quality management system requirements for the design and development, production and (when relevant) installation and service of automotive related products. The requirements are intended to be applied throughout the supply chain.
13. The Failure Modes and Effect Analysis (FMEA) is a methodology that allows identifying potential failures within a system and the underlying causes of such failures. When implemented in the design phase, it is a tool to reduce or eliminate the risk of failures related to cost, safety, performance, quality and reliability at an early stage of the product development cycle.
14. Odette stands for "Organisation for Data Exchange by Tele-Transmission in Europe". According to its website it "...sets the standards for e-business communications, engineering data exchange and logistics management, which link the 4000 plus businesses in the European motor industry and their global trading partners" (www.odette.org).
15. It should be noted that one reason for the relatively good sales performance of automotive suppliers in the Western Balkans is likely to be the fact they start from a much lower basis.
16. OECD analysis based on data from national offices of statistics.
17. A relatively accurate way to account for these backward linkages would be to use input-output (I-O) tables. However, this is currently constrained by a general lack of I-O tables for the Western Balkan economies.
18. Wages refer to average earnings per month. They include: direct wages and salaries, remuneration for time not worked (excluding severance and termination pay), bonuses and gratuities and

- housing and family allowances paid by the employer directly to this employee. All indices are calculated on the basis of 2006 average earnings of all employees (i.e. manual or production workers and salaried employees). For the Czech Republic only, the index was calculated on the basis of 2005 average earnings of wage earners (i.e. manual or production workers).
19. MIGA (2006) estimated operating costs in the automotive components sector in the Western Balkans and Eastern Europe, based on field interviews with investors, and obtained similar results.
 20. Following Eurostat methodology, apparent labour productivity is a simple indicator of productivity calculated as value-added divided by persons employed.
 21. Along similar lines, in 2006 the Boston Consulting Group (BSG) estimated the difference in landed costs to Western Europe from the CEE and from China for a number of products. Cost estimates were based on cargo value, labour costs, content and logistics costs. The study found cost savings ranging from around 2% to 6% for importing from the CEE instead of China for the following products: tyres, steel products, automobile batteries, and motor vehicles themselves (BCG, 2006).
 22. . Best performing suppliers show a lead time on the order of a day (Veloso and Kumar, 2002).
 23. The OECD estimates that reducing trade and transactions costs on trade in goods by 1% could result in an average increase in GDP of 0.47% in non-OECD countries (OECD, 2003).
 24. High barriers on imports of capital goods have a negative effect on a country's international competitiveness and on FDI inflows. Through free access to capital goods at world prices, local companies could attain export competitiveness. In addition, the host country would benefit from an increase in capital accumulation (OECD, 2005).
 25. Pan-European Corridor X (Ten) connects Salzburg in Austria with Thessaloniki in Greece via Ljubljana, Zagreb, Belgrade, Skopje and other major cities. The Western Balkans can also benefit from Pan-European Corridor V, which connects Turin in Italy to Kiev in Ukraine through Zagreb and Sarajevo.
 26. FIPA. Total contributions amount to 69.47% of net wages in the Federation of Bosnia and Herzegovina. They range between 42% and 57% in the Republika Srpska.
 27. Regulatory guillotines have begun to be used in Croatia, the Former Yugoslav Republic of Macedonia, the Republika Srpska and Serbia.
 28. In the mid-1970s lower labour costs caused several European and US carmakers to relocate production to the Iberian peninsula, mainly Spain. However, subsequent wage increases eroded cost competitiveness and by the late 1990s this was no longer an attractive destination for the automotive industry. Evidence suggests that the same process is occurring in Central and Eastern Europe, but at a much faster pace. See Betts (2008).
 29. OECD analysis based on data from the Agency for Statistics of Bosnia and Herzegovina, 2007.
 30. In SKD manufacturing the vehicle is assembled at a site other than that where the body is produced. In CKD (completely knocked down) manufacturing, individual parts are not welded together at the site where they are manufactured. Assembly in the case of CKD manufacturing yields a high added value but entails high investment costs. The reverse is true for SKD manufacturing.
 31. Pro Inno Europe is a European Commission initiative which aims to become the focal point for innovation policy analysis, learning and development in Europe (www.proinno-europe.eu). In the framework of this initiative, the CEE-ClusterNetwork consortium involves 11 neighbouring cluster regions in Central and Eastern Europe that are keen to mobilise and support national and regional innovation policy actors in carrying out and designing co-operation activities together with other competent public authorities. The Croatian Automotive Cluster is a partner in this project through the Croatian Employers' Association National Centre for Clusters.
 32. Examples of geographical concentrations of automotive manufacturing activities include the Västra Götaland region in Sweden, the city of Turin in Italy, the Detroit/southeast Michigan area in the US and the Shanghai region of China. For more information, see OECD (2007c).
 33. These fields include technical engineering, mechanical engineering, electrical engineering, technology and metallurgy.
 34. OECD analysis, based on data from the Statistical Office of Montenegro.
 35. Metal bearings are currently the main product manufactured in the Montenegrin automotive components industry. They are classified under NACE code 29, manufacture of machinery and equipment not elsewhere classified.
 36. OECD analysis based on data from the Statistical Office of the Republic of Serbia.

37. In 2007 sales of new cars grew by 36% in volume and by 57% in value. Renault, Volkswagen, Toyota and Ford have already invested in vehicle assembly. General Motors, Nissan, Suzuki and Hyundai will follow. (The Economist, 2008).

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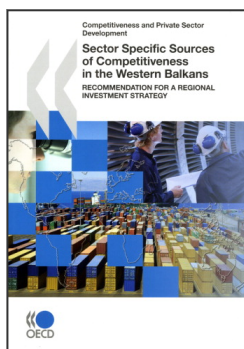
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