Car Industry in Slovakia
Recent Developments and Impact on Growth

first draft, comments welcomed

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Abstract
This report analyses recent automotive investment in Slovak Republic and shows how the development of the automotive industry influenced the economy’s productivity and growth. The study also contains conclusions related to the motivations behind investing in Slovakia. The example of Slovakia is interesting, because the country moved from the relative backward position in terms of development by the regional standards to the transition frontrunners.

It is argued in the text that the adherence to reforms and liberalisation planned crucial role in attracting automotive investments to Slovakia and made it possible to flourish. Taking into account the specificity of the industry other factors related either to factor endowments or to current industrial policies have also played a role. Once the investment projects started to materialise, their impact on the growth of export and employment has been significant. Still, the major developments are yet to come and the main impact on the whole economy is yet to be experienced, since the car producing plants alone are expected to increase their production three times in the text two years.
1. Introduction

This report analyses recent automotive investment in Slovak Republic and shows how the development of the automotive industry influenced the economy’s productivity and growth. One of the central objectives of this report was also to formulate conclusions related to the motivations of investing in Slovak Republic.

Since terms of reference of this study spoke mainly about the production of final products, the paper is qualitative and descriptive. This is for the reason that to date there have been three major foreign investments connected with the production of cars in Slovakia. And even though two large investment projects started in 2003-2004, still in 2006 one producer dominated car production. What seems now to be the most interesting, and of highest value, are the future effects that the automotive production will have on the Slovak economy. This is, however, yet to come.

The example of Slovakia is very interesting, since until 1997 the country has been regarded as a regional ‘laggard’ in terms of economic reforms and transition from the state-dominated economy. Following the 1998 elections, the country has embarked on a path of economic reforms. The changes included privatisation, restructuring, improvement of public service, and then continued with the necessary pension, tax system, labour code, social protection and the health care reforms. All this happened together with improvement of public finances and inflation converging to low levels. At the same time, Slovakia continued its integration with the European and global economy, decreasing trade and investment barriers, and entered the European Union in 2004. At present, it seems that Slovakia is the only country in the region (Central and Eastern Europe) that is going to enter the euro zone in 2009.

We argue throughout the text that the adherence to the reforms and liberalisation planned crucial role in attracting automotive investments to Slovakia and made it possible to flourish. Taking into account the specificity of the industry, other factors related either to factor endowments or to current economic policies have also played a role.

As a result of large investment in recent years, automotive industry in Slovakia has rapidly developed, and in the period 2000-2006 was responsible for over 40% of increase in manufacturing employment. The share of automotive output in all Slovakian exports went to 30% and is further expected to expand. As the sector takes an important place in the Slovak economy, its higher than manufacturing average labour productivity is of particular importance.

These and the other topics are discussed further in the text. In order to give the background of the automotive investments in the Central and Eastern Europe, the study starts with the description of major developments since 1980s. The section on Slovak reforms, industry-specific policies and the country relative factor endowments follows. The next section assesses effects of the development of automotive industry in Slovakia for the domestic economy and the last section summarises.
2. Automotive production in Central and Eastern Europe since early 1990s

2.1 Pre-1989

The countries of Central and Eastern Europe (CEECs)\(^1\) have a long history of production of motor vehicles. Czechoslovakia had the strongest tradition in automobile production among the CEE states due to the existence of the biggest and oldest manufacturer of cars in the region, Škoda, whose origins dated back to the 19\(^{th}\) century. Škoda was the first automobile manufacturer in the region to specialize in the design of cars (Werner 2003: 2). The most modern model of the Škoda production in the communist times was Favorit introduced in late 1980s. Other producers of motor vehicles were also present in the country (Tatra: heavy trucks, TAZ – vans, BAZ – Škoda licensed models), but size of their production was nowhere close to Škoda’s. The yearly output of the Czechoslovak car industry before 1989 was 193,000 units (Dobosiewicz 1992: 74), most of it produced in Škoda plants in Mladá Boleslav, Kvasiny and Vrchlabí. In 1989, Škoda exported 45,500 cars to the West (Dobosiewicz 1992: 74).

As part of the industrial policy shaped by the Council for Mutual Economic Assistance (CMEA), Hungary specialized only in manufacturing of Ikarus buses and in the production of car components (Havas 2000: 98). At the peak of its production, the Ikarus company manufactured 15,000 buses a year becoming one of the largest bus manufacturing companies in Europe (Havas 2000: 98 and Automotive Industry Association of Hungary MGSZ).

Two indigenous car-manufacturing companies (FSO and FSM) were established in Poland before 1989 with traditional production of automobiles using Fiat licensing. The FSO plant in Warsaw produced Polski Fiat 125p and later Polonez, while the two FSM plants in Bielsko-Biała and Tychy manufactured primarily Fiat 126p.

Overall, car production in Eastern Europe was 1 million units annually in 1990 (Dobosiewicz 1992: 76). The exact products manufactured in different CEE country differed. However, their factor endowments seemed to be similar. They have all been abundant in skilled labour force and – although obsolete – some production facilities.

2.2 Major investments since 1990

It was the industrial tradition in the automotive sector and other heavy industry sectors, skilled labour and the growth potential of the emerging CEE markets that lured massive investments into the manufacturing industry in the early 1990s. Foreign investments in the car industry accounted for a large share of the FDI inflow into the CEE countries due to several large investments that came into the region in the first wave of automotive FDI at the beginning of the post-communist transformation (Doerr and Kessel 1999: 9).

In 1991, Volkswagen acquired a stake in the Czech Škoda (then called Škoda AZNP - Automobilové závody národný podnik) in a bidding contest of 24 foreign companies. Renault’s offer was also seriously considered by the Czech government in the final stages of the privatisation process. The French automaker offered a complete modernization of the plant (capital investment of $2.5 billion) and production of its low-end Twingo model in the Škoda factories, while VW proposed investing more than $5 billion and planned to

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\(^1\) In this report CEEC stands for Czech Republic, Hungary, Poland and Slovakia.
run Škoda as a separate brand in the VW group besides Audi, Seat and VW (Legard 2005: 6-7 and Dobosiewicz 1992: 74-75). VW acquired a 31% share in 1991 for $416 million, which, according to the agreement, grew to 70% in 1995 for an additional $520 million (Legard 2005: 7). The privatization of Škoda turned out to be one of the largest foreign investments in Central and Eastern Europe in the early 1990s (Dobosiewicz 1992: 74). Škoda Auto is currently wholly owned by VW, successful and rapidly expanding. The company employs 22,000 workers in the Czech Republic and produces over half a million automobiles a year, of which almost 90% is exported.

Independently of the Škoda investment, Volkswagen acquired an 80% stake in Bratislavské automobilové závody (BAZ) in Slovakia also in 1991. Six companies were interested in a joint-venture with BAZ, three were selected for the final consideration (Renault, GM/Opel and Volkswagen), but serious talks were eventually started only with GM/Opel and VW. Despite the initial good position of GM/Opel in the negotiations (the company was granted exclusive negotiating rights for 6 weeks) Volkswagen won the contest and became a strategic partner of BAZ. According to the then Slovak Prime Minister Vladimir Mečiar, the GM offer obliged the government to pay subsidies for infrastructure building and training, which VW did not. Mečiar stated that there were 10 important indicators, according to which the government was deciding: “GM was leading in two: company’s name and faster start. VW was leading in everything else” (Slovak National Council 1991). VW used BAZ’s facilities and buildings near Bratislava, but invested in completely new equipment and technology. After a slow start in 1994-1996, the factory has eventually exceeded the original production expectations (238,000 cars produced in 2006) and has become one of the most modern plants in the VW group (see Section 4.1.). VW has invested EUR 1.5 billion in the Bratislava plant so far.

VW has also invested in the Polish city of Poznan, where it first set up a joint-venture with Polish Tarpan in 1993 and in 1996 VW became a 100% owner of the factory. The plant produced Škoda models for the local market until 2002 and currently manufactures VW T5 and Caddy vans and employs over 2,500 people (Global Auto Index). Another brand from the VW group, Audi, founded a factory in Gyor, Hungary in 1992 for the manufacturing of engines and invested DM 1.3 billion until 2000. The plant quickly expanded and became the biggest manufacturer of Audi engines in the world, Audi Group’s third biggest operation (producing not only engines, but assembling Audi TT sports cars as well) and Hungary’s biggest exporter (FDI Magazine and MGSZ).

Hungary is also the primary European production site for the Japanese brand Suzuki, which started to negotiate its entry into the country already in mid-1980s. Suzuki’s production commenced in 1992 and the company invested $260 million in the country by 1997 (Havas 2000: 100-101). Expanded production capacity of the plant is planned to reach 300,000 cars a year by the end of 2007 manufacturing Suzuki Swift, Ignis and SX 4 models as well as Fiat Sedici (SX4’s sister model; Global Auto Index).

Besides VW, Fiat was another European car manufacturer that adopted a fast and aggressive take-over strategy in CEE (Van Tulder and Ruigrok 1998: 13). As of the end

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2 Interview with Jozef Uhrik, the president of the Automotive Industry Association of Slovak Republic and a former CEO of Volkswagen Slovakia, 14 March 2007

3 Interview with Jozef Uhrik
of 2000, Fiat invested more than $2 billion in its two Polish facilities (10% owned by FSM) making it the second largest foreign investor in Poland (Dunin-Wasowicz, Gorzynski and Woodward 2002: 11). The carmaker has produced primarily low-end cars either for domestic production (Fiat 126 until 2000) or mostly for export (Cinquecento, later Seicento and Panda; Global Auto Index). Fiat is currently planning to double its production in the country to 530,000 by 2008 to produce a new Fiat 500 and a sister model Ford Ka. When Fiat’s plans of becoming a strategic investor in the Polish FSO plant did not materialize, Daewoo struck the deal with Polish government in 1996 and offered to invest $1.1 billion in the FSO plant. After the Korean parent company was hit with financial problems, FSO was sold to the Ukrainian company Ukr-Avto in 2005, which plans to produce Chevrolet licensed cars and export them to Ukraine.

Table 1 - Major Car Manufacturing Investments in Central Europe after 1989

<table>
<thead>
<tr>
<th>Country</th>
<th>Investor</th>
<th>Location</th>
<th>Start Date</th>
<th>Type of investment/activity</th>
<th>Products</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>Volkswagen/Škoda</td>
<td>Mladá Boleslav, Kvasnice, Vrchlabi</td>
<td>1991</td>
<td>Brownfield</td>
<td>Octavia Fabia Roomster Superb</td>
<td>450,000*</td>
</tr>
<tr>
<td></td>
<td>TPCA</td>
<td>Kolin</td>
<td>2002</td>
<td>Greenfield</td>
<td>Peugeot 107 Toyota Aygo Citroen C1</td>
<td>300,000*</td>
</tr>
<tr>
<td></td>
<td>Hyundai</td>
<td>Nošovice</td>
<td>2006</td>
<td>Greenfield</td>
<td>i30</td>
<td>300,000*</td>
</tr>
<tr>
<td>Hungary</td>
<td>Suzuki</td>
<td>Esztergom</td>
<td>1992</td>
<td>Greenfield</td>
<td>Ignis Justy Swift SX4 Fiat Sedici</td>
<td>300,000*</td>
</tr>
<tr>
<td>Poland</td>
<td>Audi (VW)</td>
<td>Gyor</td>
<td>1992</td>
<td>Greenfield</td>
<td>TT</td>
<td>40,000*</td>
</tr>
<tr>
<td></td>
<td>Fiat</td>
<td>Bielsko-Biala</td>
<td>1991</td>
<td>Brownfield</td>
<td>Seicento Panda</td>
<td>250,000*</td>
</tr>
<tr>
<td></td>
<td>Volkswagen</td>
<td>Poznan</td>
<td>1993</td>
<td>N/A</td>
<td>Transporter Caddy</td>
<td>50,000*</td>
</tr>
<tr>
<td></td>
<td>Daewoo/FSO</td>
<td>Warsaw</td>
<td>1996</td>
<td>Brownfield</td>
<td>Nubira Matiz</td>
<td>35,000</td>
</tr>
<tr>
<td></td>
<td>Opel (GM)</td>
<td>Gliwice</td>
<td>1998</td>
<td>Greenfield</td>
<td>Agila Astra Zafira Wagon R+</td>
<td>120,000*</td>
</tr>
<tr>
<td>Slovakia</td>
<td>Volkswagen</td>
<td>Bratislava</td>
<td>1991</td>
<td>Brownfield</td>
<td>Polo Touareg Audi Q7 Porsche Cayenne (assembled in Leipzig)</td>
<td>300,000*</td>
</tr>
<tr>
<td></td>
<td>PSA</td>
<td>Trnava</td>
<td>2003</td>
<td>Greenfield</td>
<td>207</td>
<td>450,000*</td>
</tr>
<tr>
<td></td>
<td>Kia</td>
<td>Žilina</td>
<td>2004</td>
<td>Greenfield</td>
<td>Cee’d Sportage</td>
<td>300,000*</td>
</tr>
</tbody>
</table>

Source: based on Deloitte (2006) and Global Auto Index
Note: * - planned

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4 The main reason being the unwillingness of the Polish government to allow such a concentration in the automotive sector in Poland with Fiat controlling both of the biggest car producers in the country – FSO and FSM. GM was another serious contender in the FSO negotiations (Van Tulder and Ruigrok 1998: 16).
General Motors was unsuccessful in acquiring BAZ in Slovakia and FSO in Poland and later decided to invest over $600 million in a major greenfield manufacturing plant in the Southern Polish city of Gliwice. Opel also had a car assembly in Hungary, but the plant ceased to assemble cars in 1998 and now only manufactures engines (Havas, 2000: 101-102).

All the greenfield investments in the automotive industry in the region after 2000 have been located in Slovakia and the Czech Republic. Once the new plants go into operation, the two countries will become two of the largest producers of cars per capita in the world. TPCA (Toyota Peugeot Citroën) selected Kolín in the Czech Republic as its new production location for manufacturing of small cars in 2001 with the annual capacity of 300,000 cars and Hyundai pledged to invest in a new factory also in the Czech Republic in 2006 (model i30). Slovakia ‘outcompeted’ its neighbours for the PSA Peugeot Citroën investment and the Kia Motors plant, each worth between €700 million to €1 billion. Section 4 analyses these investments in greater detail. Table 1 summarizes all major automotive investments in CEE since 1989.

2.2.1 Motivations for automotive investments in CEE

The motivations of large car manufacturers to invest in the CEE states were driven by a combination of factors. Automotive TNCs have been motivated by cheap, productive and skilled labor in Central Europe (resource-seeking and efficiency seeking according to Dunning 1993), but also by gaining access to local market in the region (market-seeking). The EU accession process of the CEE countries further stimulated expansion of manufacturing activities to serve the EU market (Sturgeon and Florida 1999 as cited in Radosevic and Rozeic 2005: 6).

Tariff-substituting motivations for car investors were particularly important in the case of Poland. Restrictive trade policies of the Polish government in the 1990s and high import duties are repeatedly cited as the main reasons for investors to establish their assemblies in Poland (Van Tulder and Ruigrok 1998: 43 and Dunin-Waswicz, Gorzynski and Woodward 1998: 11).6

Investors have a strong tendency to invest in safe markets to reduce the potential of market failure stemming from information deficiency. This is the reason why TNCs tend to invest in locations where there are already established foreign operations in the same or similar industries (Charlton 2003: 10). This follow-the-leader pattern (or agglomeration effect) is also clearly evident in the automotive industry in Central Europe in recent years.

The emergence of Central Europe as a major car manufacturing hub is compatible with global trends in the automotive industry. New manufacturing plants in the CEE states serving the EU market are signs of the new ‘network-led’ model of industry (firms producing within every large market). The need for just-in-time delivery, which

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5 As a result of gradual phasing out of tariffs on imports in EU-CEECs trade on the basis of Europe Agreements signed in early 1990s, as well as elimination of intra CEE tariffs within Central European Free Trade Agreement CEFTA

6 Import of EU-produced cars to Poland was protected with quotas relatively long, until the year 2002, although quantitative restrictions on other manufacturing products in bilateral trade started to be phased out in 1992.
characterizes vertically integrated production, made the Visegrad region even more attractive for automotive TNCs for its advantageous geographical position within Europe. Car producing operations in Central Europe use the most modern equipment and usually become the most advanced of their kind, which is very different from the way factories in the region operated two decades ago – using old manufacturing equipment and production technologies.

7 Perhaps with the exception of Fiat. However, for example PSA Peugeot Citroën in Trnava was specifically planned to be the “show-case” of the French automaker. According to the PSA president, Jean Martin Folz, “this will be a new type of factory, where we will utilize all our capabilities. Trnava will be a demonstration of PSA’s know-how.”
In this chapter, we will first look at Slovakia’s economic development since the 1990s in more general terms and then we will identify factors, which have contributed to the country’s economic growth and its attractiveness for the automotive investors.

3.1 Overview of Slovak economic development

3.1.1 Slovak economy before 1998

Slovakia started the transformation process with a very low level of foreign debt and with no previous market-oriented reforms. Soon after the split of Czechoslovak federation in 1993, the Slovak economy suffered a deep transition-related recession after which growth followed. The post-independence governments continued to pursue orthodox macroeconomic policy: budget deficits and debt were kept below the average of the other transforming economies (EIU 1998: 19). The National Bank of Slovakia practiced strict anti-inflationary policy and managed to keep inflation under 10 percentage points for the period of 1994-1998 (EBRD 2005). Slovakia reported the highest growth among the transition countries in 1996 and the country’s success started to be dubbed ‘Mečiar’s economic miracle’.

From 1996 onwards, however, situation gradually started to deteriorate. Government began to practice an incompetent and expansionary budgetary policy. Deteriorating external and internal trade imbalances were accompanied by failure to promote and protect competitive economic environment. Slovakia’s rate of growth of debt at that time was among the fastest among the transition economies. In addition, the structure of debt was inappropriate as 40% was composed of short-term liabilities with maturities up to one year (Jurzyca et al 1999: 197-201). All this eventually led to a gradual depreciation of the currency, which eventually fell by 19% in October 1998 (Jurzyca et al 1999: 200). Unemployment which grew from 12.8% in 1996 to 15.6% in 1998 was becoming a major social issue (EBRD 2000: 193).

While the macroeconomic indicators were still considered relatively good, the development on microeconomic level was considerably less encouraging. First, the process of privatization in Slovakia was viewed as particularly corrupt. With the pretext of creating a national entrepreneurial business class capable of ‘sustaining Slovak independence,’ foreigners as well as ordinary citizens were after 1994 kept away from privatization deals (Appel and Gould 2000: 114, see also Vachudova 2005: 51-52). The property was handed out for symbolic prices to the benefit of government parties’ proponents or directly to party colleagues which further increased economic power of Mečiar’s coalition (Niznansky 1999: 41). Second, insolvency became a staggering problem in the industrial sector.⁹ Not only the state subsidized uncompetitive enterprises privatized to communist managerial elite, also the government-run monopolies accumulated heavy debts. The poor performance of Slovak enterprises was worsened by

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⁸ We are grateful to Lucia Kurekova, Central European University, who co-authored this chapter.
⁹ In March 1999, Slovak enterprises accounted for 80% of the debt out of which government had guaranteed 60%.
difficulties in the Slovak banking sector, namely the existence of ineffective big socialist-era state-owned banks (Beblavý 1998) and the crisis gripping the world financial markets (Jurzyca et al. 1999: 202-204, see also The Slovak Spectator 1998). Low transparency and rampant corruption were characteristic for the Slovak economy in 1998. (Jurzyca et al. 1999: 204).

3.1.2 Progress after 1998

3.1.2.1 Macroeconomic Reforms

Electoral change of 1998, in which a pro-Western but ideologically hybrid Dzurinda government was formed, brought modest improvement of macroeconomic indicators. Overall, the economic performance of Slovakia could be described as having a ‘U-shape’ in the period between 1996 and 2006 (see Figure 1). After an impressive GDP growth in 1996, the figure fell down to 0.3% in 1999, budget deficit grew to 12.3% in 2000 and external debt increased. Reforms left away under the Mečiar regime and the problems related to late start were blamed for the economic hardship and severity of the process.

The progress started to materialize only towards the end of the government term in the office. After several years of declining real wages, increasing unemployment and debt, the trend was finally reversed from 2002. The coalition was successful at implementing several necessary reforms, which included restructuring of the banking sector, improvement of the general business environment and state regulation of the financial sector and restructuring and privatization of state-owned enterprises, including some of the so-called ‘strategic industries’ (Vachudova 2005: 201, see also Slovakia. Country Report 2000: 32-33). Most importantly, trust to policy makers improved and fear was removed from the Slovak political and public life. Although several corruption affairs threatened the popularity of the Dzurinda coalition, most of the scandals ended in the resignation of the incriminated officials (Vachudova 2005: 202). All this resulted in mitigation of political and economic risks formerly associated with the country.

Figure 1 - GDP growth in Slovakia

![GDP growth in Slovakia](image)

Source: Statistical office, SME

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10 Opinion polls from that time reveal that while in 1998 66% of population viewed crime and personal safety as a pressing problem, in 2001 this was significantly less - 46%. Similarly, perception of crime and organized crime as a problem decreased from 36% in 1999 to 24% in 2001.
The reforms which were put off during the first Dzurinda government, namely the pension system, tax, labor law, social protection and reorganization of health care, were introduced by the centre-right coalition elected in the 2002 elections and again led by Mikulas Dzurinda. As part of the reform of the social welfare system, a three pillar pension system with individual savings accounts administered commercially was introduced.\(^{11}\) The structure of social security contributions was changed significantly as part of a wider array of measures to tackle unemployment and liberalization of labor market policies was introduced.\(^{12}\) The Slovak tax reform based on a flat 19% tax rate earned the country considerable international recognition and has been regarded as the main factor which gave Slovakia the image of the ‘world leading reformer.’

In 2004, Slovakia joined the EU as a stable market economy with austere macroeconomic policy and good investment environment. Thanks to significant currency appreciation, inflation has been kept at low levels. Due to the ability to adhere to the Maastricht criteria, the Slovak government was able to announce entry to the ERM II system in early 2006 with the ambition to join to the euro-zone in 2009 (EBRD Transition Report 2005). The government of Robert Fico consisting of nationalist SNS, semi-authoritarian HZDS and leftist SMER elected in the 2006 elections has maintained the adoption of euro as one of its top priorities. Despite the initial promises of the populist government, there is a significant gap between the proposed systemic overhaul of the reforms and the actual implementation - the government have opted for measures which face little resistance; have an immediate impact on the selected target group; and draw appropriate media attention rather than for a fundamental revision of the Dzurinda’s reforms.

### 3.1.2.2 Foreign Investment and Trade

Participation of foreign companies in the process of economic transition of Slovakia has been low for the most of the 1990s compared with the neighboring countries. Major discouraging factors were lack of good enterprise governance and hence low transparency, political instability and the absence of adequate protection for minority shareholders. FDI inflows remained low even immediately after the change in the government in 1998 (see...)

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\(^{11}\) For more see for example Jurzyca and Goliáš 2005: 7- 10.

\(^{12}\) For more see: Beblavý 2005: 4-7.
Figure). In 2000 the situation started to change. Gradual progress in privatization together with sound macroeconomic policy, increased transparency, attractive packages of investment incentives and low labor costs started to strongly attract foreign capital.\footnote{Since 2000, Slovakia has occupied first or second position among V4 countries in FDI inflows as share of GDP (see Figure 8A in the Appendix). See also Jakoby, Kováč and Morvay 2004: 506.}
Importantly, investments targeted mainly export industries, such as transport and electronic goods (EIU 2005: 37). FDI success, however, has been accompanied by widening gaps in productivity and human capital between the high-performing FDI sector and lagging domestic and state-owned enterprises (EIU 2005: 37). In addition to the record levels of investments in regional terms, exports also became significantly more competitive. Trade with highly developed countries increased already in 1998 (Table 1A in the Appendix) and share of trade in GDP augmented in 2001 showing increasing openness of Slovakia and increased integration with the global economy (Table 2A in the Appendix).

The adoption of EU common external tariff and the EU common external trade policy in 2004 together with harmonization of rules regulating economic activity with those of the EU played additional role in attracting FDI. Not only the country has been progressing with economic reforms, this progress and future conditions for trade and investment were anchored by the EU membership.

3.2 Slovakia as a destination for automotive FDI: factor endowments and policies

Slovakia has become a ‘hot spot’ for automotive FDI in recent years. We will now analyse factors and policies, which have contributed to Slovakia’s attractiveness for foreign investors. While we recognize that investors take into account a number of factors in the decision-making process and analyse all aspects of the investment environment, we find evidence proving that some factors and policies are more prominent in locational decisions of strategic automotive investors than others. Nevertheless, identifying such dominant elements is an uneasy task, since there is a disparity between real and declared reasons for a decision to locate an investment and between reasons offered by the investor and the government. We will first look at indicators comparing skills and costs of labour in the four CEE countries, rank the states in terms of their infrastructure development, compare tax rates (and overall labour costs) and then analyse the role of incentive policies in investors’ locational decisions.

Before we proceed with the analysis of factor endowments and policies, an important note needs to be made with regards to investors’ decisions to locate an investment in a particular country. We assume strategic investment decisions to have several stages. In
the first stage of the selection process, company’s top management selects a general region where it makes strategic sense to invest; in the second stage the corporation shortlists two or three countries (or regions within a country) and negotiates specific terms and conditions of the investment and in the last stage, the final investment site is selected (see Oman 2000). We therefore suggest that investors in most cases first consider the four Central European countries as a general ‘cluster’ and only then analyse country-specific factors/endowments/policies. The analysis in this paper considers mainly this last step of decision process i.e. why Slovakia recently emerged as the regional leader in attracting automotive FDI.

3.2.1 Labour and human capital

Skilled and abundant labour is commonly understood as an important factor for attracting FDI in manufacturing. Slovakia was largely industrialized during the communist regime, becoming the ‘heavy industry’ part of the Czechoslovak Federation. Thus, steel (Vychodoslovenske zeleziarne Kosice, Zeleziarne Podbrezova), arms (Zbrojovka Martin), machinery (Mostaren Brezno) as well as car manufacturing (BAZ, TAZ) plants were present in the economy. The greatest benefit of such legacy lies in the particular structure of workforce and educational system tailored to such structure, which have fed in as important factors in the success of production sites set up by foreign investors at the very early period of transition and then after the opening up to FDI in late 1990s. Three factors related to Slovak labour force can be considered important in this context: structure/quality of labour force, its abundance and price and the lack of tendency of the labour force to go on strike.

First, in terms of labour structure and quality, Figure 3 below demonstrates that above 80% of working age population in 1998 reached at least upper secondary education with the figure rising to over 87% in 2004. Similar levels are unparalleled in the whole EU with only the Czech Republic scoring slightly higher. In terms of university educated workforce, however, Slovakia has been lagging behind with only 12% of population having university degrees in 2003. Although the figures in the region are roughly similar, this ratio represents only about half of the OECD average (see Table 5A in the Appendix, Kiss and Siskovic 2006). Regarding the share of technical education, which is relevant for attracting manufacturing FDI, over 23% of all university students were enrolled in engineering, manufacturing and construction field in the late 1990s (Figure 4), with comparable levels again only in the Czech Republic.

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14 The common communist history between the two countries of former Czechoslovakia can be clearly detected via educational structure although divergence has been appearing as the transition progressed.

15 The percentage decrease in this particular field as shown in Figure 4 is due to the overall rise in the university students throughout the transition as the net figure of students enrolled in this field has remained relatively unchanged.
Second, labour in Slovakia at the time when investors were considering their entry was abundant due to the fact that the country was suffering from severe unemployment averaging around 18.4% between 1999 and 2003 (EBRD Transition Report 2005). Unit labour costs in Slovakia have been the lowest or similar to other countries in the region, particularly at the beginning of 2000s when the major investment decisions were taken (Figure 5). Clearly, minimal and average wage in the country was comparatively lower than in other Visegrad states (Table 2).
Although the Slovakian or CEECs labour costs are to converge gradually to the ‘old’ EU levels, the difference will stay substantial for the years to come. At present, production of a mid-size car is today on average 23% cheaper in Eastern Europe than in Germany according to the estimates of the German Institut für Automobilwirtschaft (Automobil Industrie). Research by PricewaterhouseCoopers Automotive Institute shows that Slovakia’s labour costs advantage in manufacturing compared to the German levels will remain significant for several decades to come (PricewaterhouseCoopers 2007: 5).

Third, the tendency of the Slovak labour force to go on strike is significantly lower than in the neighbouring Poland or in Hungary (see Table 3 below), which might also play a role in investors’ decisions.
Table 3 – Strikes and lockouts in CEE

<table>
<thead>
<tr>
<th></th>
<th>Czech Republic</th>
<th>Hungary</th>
<th>Poland</th>
<th>Slovakia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strikes and lockouts (1994-2005)</td>
<td>7</td>
<td>77</td>
<td>1574</td>
<td>9</td>
</tr>
</tbody>
</table>

Source: Laborsta ILO

In sum, abundance of skilled labour has been a very important factors for the entry of car manufacturing investors. According to Jozef Uhrik, the ex-CEO of Volkswagen Slovakia and the current president of the Slovak automotive association VW’s Bratislava plant has prided itself with the quality human capital and significant company investments into enhancing the quality of the plant’s workforce.\(^{16}\) The educational level of current VW employees is rather high: over 7% have university degrees and more than 47% have secondary education (SME, 12 January 2007). Moreover, according to Uhrik, the quality of VW’s labour force and the complexity of its products might have persuaded the management of PSA to invest in Slovakia, since the French top managers had visited the VW plant just days before the final decision to invest in Slovakia.\(^ {17}\)

3.2.2 Financial intermediation

This section on relative costs of capital is still to come

3.2.3 Infrastructure

With regard to the level of transport infrastructure, the most developed country of the region is the Czech Republic, followed by Hungary and Slovakia. As Table 4 demonstrates, Poland is the least developed of all Central European states when it comes to infrastructure. However, this disparity should not be perceived as absolute, since both Poland and Slovakia have relatively well developed infrastructure in the regions that compete for strategic automotive investments (Southern Poland and Western Slovakia). Moreover, the quality of infrastructure in the proximity of a projected investment can be significantly improved as a result of the TNC-host government bargaining process (see later text on investment incentives). Moreover, the geographical proximity of Slovakia not only to other CEEC but also to old member states (relatively close to Austria and Germany) who are known to posses good quality infrastructure, secured low level of transport costs.

Table 4 – Infrastructure in CEE countries

<table>
<thead>
<tr>
<th></th>
<th>Czech Republic</th>
<th>Hungary</th>
<th>Poland</th>
<th>Slovakia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total length of motorways in km</td>
<td>518</td>
<td>542</td>
<td>405</td>
<td>313</td>
</tr>
<tr>
<td>Total length of railway lines in km</td>
<td>9,612</td>
<td>7,950</td>
<td>19,900</td>
<td>3,657</td>
</tr>
<tr>
<td>Area/motorways</td>
<td>152.3</td>
<td>171.4</td>
<td>772.1</td>
<td>156.7</td>
</tr>
<tr>
<td>Area/railways</td>
<td>8.2</td>
<td>11.7</td>
<td>15.7</td>
<td>13.4</td>
</tr>
</tbody>
</table>

Source: Eurostat, author’s calculations, data from 2003

\(^{16}\) Interview with Jozef Uhrik

\(^{17}\) Interview with Jozef Uhrik
3.2.4 Taxation

Slovakia has adopted fundamental tax reform in 2004, which introduced a flat rate of 19% for corporate income tax (with no tax on dividends), personal income tax as well as VAT (with lower VAT rates applied only to medicines). Table 5 below shows comparative figures of tax rates for the four Visegrad countries. The table indicates that – with the exception of Hungary – differences in corporate income tax rates virtually disappear if we consider effective corporate income tax rates. Hungarian effective corporate income tax is almost 3 percentage points below the Slovak one. Nevertheless, the advantage of the Slovak tax system is not necessarily in lower rates, but in the simplification and transparency of the system. The new tax reform for instance eliminated 21 different types of taxation of direct income (Slovak Ministry of Finance 2005). Slovakia’s tax system has been assessed as motivating work and investment (see for example Moore 2005).

Table 5 – Tax rates in CEE countries

<table>
<thead>
<tr>
<th>Taxation</th>
<th>Czech Republic</th>
<th>Hungary</th>
<th>Poland</th>
<th>Slovakia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate income tax</td>
<td>24%</td>
<td>16%</td>
<td>19%</td>
<td>19%</td>
</tr>
<tr>
<td>Effective corporate</td>
<td>17.1%</td>
<td>14.0%</td>
<td>17.5%</td>
<td>16.8%</td>
</tr>
<tr>
<td>income tax rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAT (general rate)</td>
<td>19%</td>
<td>20%</td>
<td>22%</td>
<td>19%</td>
</tr>
<tr>
<td>Personal income tax rate</td>
<td>15%-32%</td>
<td>18%-38%</td>
<td>19%-40%</td>
<td>19%</td>
</tr>
</tbody>
</table>

Source: Allen&Overy

3.2.5 Investment incentives

Even though we do not discard the abovementioned reasons that made Slovakia an attractive investment location, we find strong evidence of ‘incentive-based competition’ among the Central European states for investments of ‘strategic’ nature, particularly in the last half a decade. Investors were granted subsidy packages throughout 1990s. Nevertheless, it is highly probable that an intense competition for strategic investments in the Visegrad region did not start until late 1990s and early 2000s. The reasons were the introduction of an investment incentive scheme by the Czech government in 1998 and Slovakia’s extreme effort to catch up with its neighbours in closing its saving-investment gap by attracting FDI. Our focus later in the chapter will be on the two major car investments that significantly affected the rise of the Slovak automotive industry – PSA Peugeot Citroen and KIA Motors.

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17 Suzuki, for instance, was offered by the Hungarian government “grants towards the cost of investment as well as a ten-year tax holiday and other tax concessions which gave Suzuki 22% customs preference over other vehicle importers. In sum, Suzuki Motor Corp. provided just 16.6% of the joint venture’s start up capital,” Swain 1998: 10.
3.2.4.1 National schemes for the provision of state aid and limits on the provision of investment incentives

The European Union provides a multilateral framework for the provision of state aid, which is relevant and applicable in the case of automotive sector in the Visegrad region. The European Union sets an upper ceiling of the total amount of incentives that can be granted to foreign investor in the automotive industry. This level is 15% and applies to the ‘motor vehicle industry’ as defined by the European Commission (EC 1997). The EC has to approve the amount of investment incentives proposed by the member state’s government for a strategic investor. The structure of investment incentives, however, is not restricted by the EC, which gives the member states flexibility and ample opportunities for competition even within the 15% limit. Also, as Charlton (2003) rightly points out, it is very difficult to calculate the exact value of the financial benefits of a specific incentive package (Charlton 2003: 30). In order for an incentive to be excluded from the 15% rule (so-called ‘indirect’ incentive), it has to qualify as a public good. However, building a top-of-the-line hospital or an airport serving primarily the needs of an investor is a public good sense stricto, but it can be disputed how much it will actually serve the public. It is also important to note that the nature of the investment agreement itself can be part of the bidding process as well, since the EU does not have to approve the agreement itself, only the amount of incentives offered.

Besides the European limits on state aid that every Visegrad state has to comply with, every CEE country has its own rules for the provision of investment incentives. The scope of this work does not allow to go into details of each of the investment schemes in the Visegrad region, but a few remarks need to be made here. The general reasons for adopting national rules for the provision of investment incentives are increased transparency and credibility towards foreign investors. Negotiations with individual investors about the amount of investment incentives without any general guidelines limiting state aid are not sustainable politically, but also with regard to the budgetary effects of incentives. Slovakia was the last country to adopt an investment scheme in 2005 after a significant pressure mounted as a result of country’s generous treatment of KIA Motors (and Hankook Tire). According to the former advisor to the state secretary of the Slovak Ministry of Finance, Marek Jakoby, it was a ‘moral hazard’ not to have an incentive scheme. Well-defined rules are an important sign for investors, but also for domestic government institutions, since an incentive scheme clearly defines expectations for the negotiating process with investors. In general, national incentives schemes in the CEE states limit state aid offered to investors based on regional characteristics (e.g. unemployment rate) and type of industry (e.g. manufacturing, R&D, technological centers, etc.). Nevertheless, no matter how detailed an incentive scheme, the CEE states usually allow for a ‘special treatment’ of investors of ‘strategic importance,’ which gives governments flexibility in negotiations with big investors.

The bottom line of the discussion on the limits of state aid in the Visegrad countries is that the existing national rules and general guidelines at the EU level do restrain

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19 For a comprehensive account of the European Union limits on state aid as well as national rules for the provision of investment incentives, see “Foreign Direct Investment in Central and Eastern Europe,” Allen and Overy
20 Interview with Marek Jakoby, Advisor to the State secretary of the Slovak Ministry of Finance, Bratislava, 19 May 2006
governments, but only to a limited degree. Contrary to the expectations of most experts on FDI in the region, the EU accession of the CEE states has not meant uniformity in incentive rules or state aid offered and the cessation of competition in the V4 based on investment incentives. Table 3A in the Appendix summarizes investment incentives granted to the four largest automotive investments in the region for the past 6 years.

3.2.6 Case studies: PSA Peugeot Citroen and KIA Motors

The investments of PSA Peugeot Citroen and KIA Motors have been the largest greenfield investments in the Slovak automotive sector. They are also investments, which helped create the image of the country as a ‘hot spot’ for foreign direct investments and a symbol of economic reforms. The two case studies cast into fine relief the complexity of TNC-host government relationship and shed light on the importance of specific factor endowments and policies used for attracting foreign investors.

3.2.5.1 PSA Peugeot Citroen

Several months after the French automaker PSA Peugeot Citroen together with its Japanese partner Toyota decided to invest in a joint manufacturing plant in Kolín, Czech Republic, PSA commenced negotiations about its investment into another operation in the eastern part of Europe. In October 2002, the company announced it had selected Central Europe as a site for its new €700 million factory for the production of small cars, because the region offered “many advantages in labour skills and labour costs” (MF Dnes 2002). The candidates for the investment were initially all four Visegrad countries, but the most frequently mentioned sites were Žatec in the Czech Republic, Radomsko in Poland and Trnava in Slovakia. Only Poland and Slovakia were subsequently short-listed, since building two plants (TPCA and PSA) in one country – the Czech Republic – was considered too risky (MF Dnes 2002).

The final weeks of negotiations were characterized by mixed reports in the media and often contradictory information about who was ‘leading the race’ for the PSA investment. According to the Euro OnLine server, the top management of PSA was in early January most inclined to locate the investment in Poland (Pravda 2003). Nevertheless, on January 15th 2003, the company officially selected Slovakia for its new manufacturing operation in Central Europe. The most often cited reasons for the decision were advantageous geographical position and proximity of large markets, skilled labor force, railway and highway accessibility of the site and country’s tradition in car manufacturing. PSA stated that “the manufacturing facility will enable the group to get closer to the market, in which it is strengthening its position” (SME 2003). Slovak Investment and Trade Development Agency declared that “Slovakia was not even a candidate half a year ago, but we managed to bring the project to a successful finish” (SME 2003).

21 MF Dnes, 30 October 2002
22 MF Dnes, 30 November 2002
23 Pravda, 08 January 2003
24 Sme, 16 January 2003
25 Sme, 15 January 2003
overall financial incentives granted to the French investor amounted to more than €160 million.

The investment was of crucial importance for Slovakia and the planned factory was termed “the investment of the decade” by the Minister of Economy and “another Slovak locomotive” by the prime minister Mikuláš Dzurinda (SME 2003). The Slovak government could thus present the country as a reforming and rapidly developing Central European nation, which was increasingly attractive for foreign investors. This media effect of the PSA plant was also stressed by analysts, who expressed that the new investment would “draw attention of the whole Europe and it is thus probable that various investors deciding to invest in Eastern Europe will focus on Slovakia more” (SME 2003).

It is clear that Slovak ministers wanted to do everything they could to attract the first major investor to the country after the change of the government in 1998. The government was in a very favourable position for several reasons. First, PSA was already building a plant in the Czech Republic (Kolín) and the proposed site in Žatec was in close proximity to the factory. This put the Czech Republic in a big disadvantage compared to the other candidates. Second, the Polish offer could have been attractive, but, although the region in the proximity of the site did not have sufficient infrastructure and a favorable geographical position, the Polish government tried to lure the investor to Radomsko at any cost. There were also indications that the plots were not well prepared for the investment. And third, Slovakia’s proposed site had an advantageous geographical location, was connected to infrastructure and situated in a region, which had skilled and abundant labor force.

Overall, it is difficult to assess which factors were crucial in PSA’s locational decision – the decision-making process was characterized by a high degree of secrecy and uncertainty among candidate countries, which was intended to increase PSA’s bargaining position vis-à-vis the governments of the Czech Republic, Poland and Slovakia. If some of the additional influences mentioned above were not present and the Czech and Polish governments would have offered more attractive sites that would be comparable to the Slovak one, the investor would have had the potential to get even ‘more’ from the governments than it eventually did. The PSA case study hence sheds light on the context in which investment incentives matter – the investors tend to be lured by generous incentive packages if the sites offered by candidate countries are comparable, which might not have been the case with the PSA Peugeot Citroen investment. The final investment agreement appears to be relatively more balanced than the later agreement with KIA Motors.

3.2.5.1 KIA Motors investment

Expanding production to Europe was an obvious step in KIA’s expansion strategy, since the Korean manufacturer recorded the fastest growth in sales (49%) in EU countries among all car producers.

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26 SME, 16 January 2003
27 SME, 16 January 2003
As in the case of the PSA investment, all four Visegrad countries were initially considered for the KIA investment as well. In early September 2003, head of KIA’s export in Hungary, Tibor Királyi, declared that only the Czech Republic and Hungary were from then on candidates for the investment. According to a statement by the Korean press agency Jonhap from early-October, the Czech Republic was the main and favourite candidate for the Hyundai investment, which the company refused to comment (SME 2003).\(^{28}\) Slovakia was at this stage, according to a Ministry of Economy official, no longer considered a serious candidate for the investment; however, Minister of Economy Pavol Rusko, visited South Korea and allegedly made ‘a very attractive subsidy offer’ to the KIA management and Slovakia ‘got back in the game.’\(^{29}\) Minister Rusko officially declared at a press conference on November 25 that Slovakia and Poland made it to the final round of the selection process (SME 2003).\(^{30}\)

Mixed reports, misinformation and confusion were typical of the first stage of the selection process. According to the available information, the whole process was not dissimilar to price bidding – whichever two countries offered the most incentives to the investor made it to the shortlist. A representative of Czechinvest commented on Hyundai’s decision by saying: “we are sorry, but we had to refuse requests for above standard investment stimuli that are in conflict with Czech laws and EU directives” (Korzar 2004).\(^{31}\)

Despite the fact that both Poland and Slovakia had to comply with the 15% EU limit on state aid, there were important differences in the competing offers. Some of the “trump-cards” (term used by Zilina’s mayor Ján Slota) of the Slovak offer were provision of English-language education for employees’ children, hospital, support of the Technical University in Zilina specializing in transport, construction of the railway terminal, finishing of construction of the highway to Zilina and a reconstruction of the nearby airport in Dolny Hricov (SME 2003).\(^{32}\) The amount of investment stimuli offered by Slovakia was officially more than €170 million, which was about 15% of the total sum to be invested by KIA. This sum, however, covers only direct state assistance, which falls under the limit of the European Commission, but much higher sums were to be spent by additional stimuli like highway construction (about €700 million), airport reconstruction, etc. Tax breaks were not part of the offer since the investor had not asked for them (SME 2004).\(^{33}\)

On March 2, 2004, the Chief Executive Vice President of KIA Motors, Yong-Hwan Kim, announced at the Geneva car show that the company had decided to build its first European plant in Slovakia. The reasons for the decision to invest in Slovakia varied, but most commonly mentioned were cheap and skilled labour in the country, lack of tendency of the labour force to go on strike, lower taxes and commitment to develop infrastructure in the region (SME 2004, TREND 2004).\(^{34}\) High Slovak representatives nevertheless stressed Slovakia’s improving economic policies, successful reforms and

\(^{28}\) SME, 12 October 2003  
\(^{29}\) Interview with a former high Ministry official, who did not wish to disclose his identity, 30 March 2007  
\(^{30}\) SME, 25 November 2003 and 25 November 2003  
\(^{31}\) Korzar, 03 May 2004  
\(^{32}\) SME, 14 December 2003  
\(^{33}\) SME, 17 January 2004  
\(^{34}\) SME, 03 March 2004 and TREND, 15 March 2004
favourable business environment. According to the Slovak Minister of the Economy Rusko, the offer to Hyundai changed five times only in the last week of negotiations: “The agreement was worked on in parallel with the prolonging of the decision-making process.” Rusko further stated that if the government were to negotiate more favourable conditions for Slovakia, there would be a real threat that KIA would not come (SME 2004).\(^\text{35}\) This statement indicates, albeit unintentionally, that it was not only the ‘nature’ of the Slovak business environment like lower taxes and costs that attracted KIA to the country, but the government stimuli played an important, if not key, part in the selection process. Rusko’s statement moreover implies that the last stage of the negotiating process was similar to price-bidding for the investment – the process kept going until a country offered the best possible investment conditions for the investor and if the conditions (price) Slovakia had offered had been any worse (lower), it would jeopardize the investment. Mayor of Zilina, Jan Slota, stated shortly after KIA’s decision to build a factory close to the city of Zilina that “the Poles could not compete with our offer... no investor could resist our offers” (TREND 2004).\(^\text{36}\) One of the ‘irresistible offers’ of the Slovak government was the promise to build a village that would house the Korean management not far from the KIA factory. In addition, the government also pledged to build a complex of luxurious houses near Bratislava that would include tennis courts and a ‘club house.’ The two housing facilities will amount to more than €40 million (SME 2005, 2006).\(^\text{37}\) Another above standard commitment made by Pavol Rusko, which was, however, not included in the investment agreement, but only in non-binding memorandum was a promise to provide investment incentives to KIA’s subcontractors (SME 2006).\(^\text{38}\)

The investment agreement between KIA Motors and the Slovak government was heavily criticized, since KIA was not obliged to invest any minimum sum in the project or employ a minimum number of people and even if the project was not carried out at all, it would not be considered a breach of the agreement.\(^\text{39}\) Furthermore, even in case KIA did not carry out all investments as described in the investment plan, it would not have to refund any state assistance or other expenses that Slovakia or the city of Zilina invested in the project.\(^\text{40}\) Taking into account the overall character of the agreement between Slovakia and KIA, it is very likely, according to one economist, that Slovakia’s competitors did not succeed, because “they did not cross the threshold of decency towards their own citizens and dignity of the state” (Zachar 2005: 74).

The KIA investment was a second major automotive investment in the country in a relatively short span of time and it helped promote Slovakia as an “investors’ paradise.” Nevertheless, even if other factors such as Slovakia’s tax or labour code reforms were

\(^{35}\) SME, 06 March 2004
\(^{36}\) TREND, 02 March 2004
\(^{37}\) SME, 03 February 2006 and 30 May 2005
\(^{38}\) SME 01 February 2006
\(^{39}\) “Investičná zmluva týkajúca sa navrhovanej výstavby závodu na montáž automobilov v Žiline, Slovenská republika”
\(^{40}\) “Investičná zmluva týkajúca sa navrhovanej výstavby závodu na montáž automobilov v Žiline, Slovenská republika”
taken into account, this case study provides evidence that investment incentives played a prominent role in KIA’s decision to invest in the country.  

3.3 Assessment of Slovakia’s FDI-related factors and policies

The Visegrad countries have become a prime European target for foreign automotive investors in recent years. What have made Slovakia stand out in the automotive FDI in recent years?

First, Slovakia had a favourable manufacturing legacy from the Communist era, which attracted VW’s investment into BAZ in the early 1990s. Significant expansion of VW Slovakia and quality and complexity of its products has not gone unnoticed by other car manufacturers, which created favourable conditions for the agglomeration effect in the industry. Existing suppliers’ network was also of great importance for investors that followed in 2000s.

Second, Slovakia underwent a significant change in economic policies after 1998, adopting a tax and labour code reforms and creating a generally pro-investment environment. This created a ‘brand’ of Slovakia being the most progressive reformer and most investor-friendly country in Central Europe.

Third, the abundance of skilled labour force in manufacturing made Slovakia attractive even in comparison to the three neighbouring countries competing for the same investments.

Fourth and most importantly, in its desperate effort to catch up with other Central European countries in economic growth and FDI inflows, Slovakia was particularly generous in offering investment incentives to strategic automotive investors. The two case studies presented above illuminate the principal role of state aid played in the competition for automotive FDI among the Visegrad countries.

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41 It needs to be noted, however, that personal political ambitions of Pavol Rusko played a very important role in the whole process. Some of my interviewees confirmed that it was Rusko’s ambitions and his failure to communicate with other ministers that contributed to the weaker position of the government vis-à-vis the investor.
4. Current condition of the sector in Slovakia

Slovak automotive industry is the single most important industrial sector in the economy and will, according to analysts, soon account for as much as one third of country’s GDP. The importance of the sector for the economy is not only underlined by the employment of more than 10% of the Slovak labour force in manufacturing, but more importantly by high propensity for linkages with local suppliers. Moreover, it is projected that by the year 2010, the number of Slovak-produced cars will reach 800,000, placing the country among the world leading car-producing economies on per capita basis (Slovakia Guide 2006).

This chapter analyses current condition of the automotive sector in Slovakia and outlines the most important characteristics such as geographical concentration, foreign ownership, production, export, profitability, linkages with local suppliers and labour productivity. Perspectives of the automotive sector in Slovakia and its future challenges are outlined at the end.

4.1 Geographical concentration

The automotive industry in Central Europe is strongly concentrated in the region of Southern Poland, Eastern Czech Republic, Western Slovakia and Northern Hungary. In fact, most of the production is located within a circle with an approximately 400 km diameter and a centre in the north-eastern part of Czech Republic. (See Figure 1A in the Appendix).

Figure 6 - Geographical concentration of automotive production in Slovakia


According to the analysis of the Slovak Ministry of Economy, automotive production in the country is concentrated in three regional clusters (see Figure 6). The first and

42 Information given by Business and Innovation Centre Bratislava
strongest cluster covers the Western part of the country, where both Volkswagen and PSA factories are located. The second regional cluster can be identified in the Northern and Central part of Slovakia with a major car producer Kia Motors and the last cluster in Eastern Slovakia, where Kechnec industrial park is situated in Kosice with several large automotive investors (e.g. Gertrag Ford transmissions, Molex).

4.3 Production

The four Central European states – Slovakia, Czech Republic, Hungary and Poland – manufacture 12.2% of the total EU 27 production of passenger cars, or, 2 million of the more than 16 million cars produced in the EU.\textsuperscript{43} Slovakia’s production was 300,000 motor vehicles in 2006, but two of the three car manufacturers only started their production during that year – PSA in July 2006 and KIA in December. The production numbers are thus expected to grow rapidly in the following years – it is estimated that VW, PSA and KIA will manufacture over 800,000 cars by 2009.

Figure 7 - Production of passenger cars in Slovakia, 1992-2006

![Graph showing production of passenger cars in Slovakia, 1992-2006](image)

Source: ZAP SR

Figure 7 shows the gradual increase in car production in Slovakia. Until 2006, production numbers directly reflected performance of Volkswagen Slovakia, since it was the only automobile producer in the country. Production capacity of the factory did not meet the initial expectations until 1997. Heavy investments into training as well as tax breaks set by government decree in 1998\textsuperscript{44} stimulated rapid expansion of the company and in 2002, the factory exceeded 200,000 cars produced for the first time (see Box 1 for an overview of the company). During 2003-2005, the factory underwent massive technological upgrading in order to meet the requirements necessary for starting the production of Audi Q7. At the same time, both PSA and Kia were just starting their investments. Hence, there is a temporary decline visible on Figure 7, with the number of Slovakia-produced cars higher again in 2006. In 2006, the majority of the market still belonged to VW. KIA

\textsuperscript{43} Calculated on the basis of ACEA 2007: 19

\textsuperscript{44} Government decree no. 192/1998 stipulated a possibility for foreign investors to obtain tax breaks; VW Slovakia, for instance, received EUR 31.2 million in tax allowance in 1999. See “The State Aid Office as a Tool for Draining Public Funds”
produced 5,014 passenger cars (KIA Cee’d), PSA 51,719 Peugeot 207s and Volkswagen 238,647 cars (VW Touareg, Audi Q7, VW Polo).

Figure 8 - Current and forecasted production of cars in CEECs, 2004-2010

Source: ACEA, ZAP, authors’ estimates

In a comparative perspective with other Visegrad countries, Czech Republic leads the production in the region with almost 850,000 cars produced in 2006, followed by Poland (632,300), Slovakia and Hungary (187,633). On the per capita basis, however, Slovakia moves to the second place in the region and will become the top producer of automobiles per capita both in the region and globally when both PSA and KIA reach their full capacity (see Figure 8). This means that the automotive industry has already and will have in the close future, high significance for the whole economy.

Figure 9 - Index of production of automotive industry (NACE 34) in CEE, 1998-2006

Source: Eurostat

Nevertheless, when analysing automotive industry, the whole production process should be taken into account. Nowadays, the production of particular car parts (including car engines) is typically subcontracted. This is to say that a whole car is rarely produced in one factory. This is also the case of Slovakian automotive industry. Therefore, when
talking about the development of the automotive industry, it is worth considering also the dynamics of intermediate output. Indeed, the output of the whole automotive industry (NACE 34) was growing even higher that output of manufacturing of motor vehicles in Slovakia in 1998-2005 (see Figure 2A in the Appendix).

**Volkswagen Slovakia**

Established in 1991 as a joint-venture with BAZ Bratislava. The original plan was to assemble 30,000 cars and produce 200,000 transmissions. The factory initially assembled VW Passats, later more complex all-wheel drive models (Golf Syncro). It was the skilled workforce as well as experience with producing Syncro models that influenced VW's decision to start production of the company's first ever sport-utility vehicle, the Touareg, in 2003. Besides the Phaeton, Touareg is VW's most complex automobile, production of which requires top-quality technology and workforce. The Bratislava plant also produces two other luxury SUVs from the VW group - Audi Q7 and Porsche Cayenne (Cayenne and Touareg models are based on the 7L platform; Q7 on the modified 7L platform). However, Porsche is the only model of the three, which is not 'made in Slovakia' but whose final assembly takes place in Leipzig, Germany – for marketing reasons.

VW Touareg and Audi Q7 are, in the words of Jozef Uhrik, former CEO of VW, 'truly Bratislava cars', since 60% of the car is produced in Slovakia. The third model assembled in the Slovak factory, VW Polo, has a local content of about 20-30%.

VW Slovakia is the leading company in Slovakia in terms of turnover and exports and ranked fourth in revenues. VW is the second largest foreign employer in the country with the workforce of over 10,000. The average age of its employees is 33 and average monthly salary approximately EUR 950. 7% of the workforce holds a university degree and 47% completed secondary education. Turnover of the company in 2005 was over EUR 4 billion.

VW Slovakia has another factory in Martin employing over a 1,000 workers and specialized in production of transmissions and transmission parts.

VW Bratislava is considered an “ultramodern” factory by VW management in Wolfsburg. The plant is leading the way when it comes to innovative techniques of management (e.g. system of ‘balanced scorecard’) among VW plants around the world.

VW plans to invest EUR200 million into the factory in 2008-2009. Although increase of the total number of produced cars in the factory in Bratislava is not planned, Volkswagen Slovakia will increase the share of complex SUV models in its production in the following years.

*Source: Interview with Jozef Uhrik; Trend 05 January 2007 and Trend Top 200 2006*

### 4.4 Export

Most of the passenger cars produced in the three Slovak car factories – about 99% - are exported. Total export of the Slovak Republic has been continually growing – it more than tripled since 1998. Growth in automotive industry exports has been even more dramatic – the total value of exported goods in the sector is four times larger than 8 years ago. VW Slovakia is by far the biggest exporter in the country.\(^{45}\) In 1998, automotive industry accounted for slightly more than 20% of the total exports. In 2006 the share of automotive industry is estimated to go up to over 30%.

\(^{45}\) Data for 2005, Trend Top 200 2006
The biggest market for the Slovak exports of motor vehicles and parts thereof (SITC 78) is Germany (47%), followed by the United States (10%). The large US share on the total Slovak export of automobiles is explained by high sales of SUVs VW Touareg and Audi Q7 on the American market, which are made exclusively in Bratislava. It is estimated that almost half of the production volume of Audi Q7 is aimed for the American market.

With regards to the share of export of motor vehicles only (SITC 781) in total exports, Slovakia is leading the Visegrad countries with approximately 12% in 2005, followed by the Czech Republic, Poland and Hungary (see Figure 3A in the Appendix). The share of car exports in Slovakia dropped by 6 percentage points between 2003 and 2005, although in absolute trade value, car exports decreased only by USD 132 million. This decrease is, however, temporary and we can expect a significant growth in the upcoming years when KIA and PSA plants increase their levels of production. The only Visegrad state, whose share of car exports has been continuously declining from 1999 is Hungary.

4.5 Profitability

VW Slovakia is the biggest company in the country measured by consolidated revenues and ranked fourth in the list of Slovakia’s corporations with the highest profit. The company’s turnover increased by almost 30% in 2006 (EUR 5.2 billion) compared with the previous year. VW’s profit in 2005 was approximately EUR 135.7 million and turnover EUR 4.0 billion. In comparison, Czech Skoda Auto’s turnover for 2006 was EUR 6.7 billion and profit EUR 383.2 billion, which is a 48% increase compared with 2005. TPCA’s operation in Kolin has not yet recorded profit in 3 years of its existence.

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\[46\] Data for 2005, Trend Top 200 2006
\[47\] Data for 2006 profit not available
Table 6 - Sales, profits and employment of Czech and Slovak automotive firms in 2006

<table>
<thead>
<tr>
<th></th>
<th>Turnover (billion EUR)</th>
<th>Profit (million EUR after taxes)</th>
<th>Employees</th>
<th>Cars produced</th>
</tr>
</thead>
<tbody>
<tr>
<td>VW Slovakia</td>
<td>5.2</td>
<td>N/A (135.7 in 2005)</td>
<td>9,200</td>
<td>238,647</td>
</tr>
<tr>
<td>Skoda Auto (Czech Rep.)</td>
<td>6.7</td>
<td>383.2</td>
<td>26,738</td>
<td>556,433</td>
</tr>
<tr>
<td>TPCA (Czech Rep.)</td>
<td>1.75</td>
<td>&lt; 0</td>
<td>3,500</td>
<td>293,650</td>
</tr>
</tbody>
</table>

Source: Skoda Auto 2006 Annual Report + press releases

4.6 Linkages with local suppliers

The auto supply sector (NACE 343) in Slovakia has been continually growing – the industrial production index of the industry more than quadrupled since 1998 (see Figure 11). The production of parts for automotive vehicles has been in fact growing faster than the production of cars.\(^{48}\) This suggests that big automotive investments in car factories have been indeed creating important spillover effects in Slovakia. However, it should be noted that the vast majority of suppliers still sells their production to one factory only – the WV (see Figure 12).

The industry is largely foreign-owned with traditional supply corporations like Johnson Controls, SAS Automotive, INA and Lear Corporation taking the lead. The first of these three supplying companies are listed in the top 5 of the biggest engineering companies in Slovakia (TREND 2006).\(^{49}\) Even though domestically-owned suppliers play an important role in the Slovak automotive industry, only Matador Automotive ranks among the biggest engineering companies in the country according to consolidated revenues (13\(^{th}\) TREND 2006).\(^{50}\) Table 4A in the Appendix lists top 25 engineering companies in Slovakia.

Figure 11 – Industrial production index for the auto parts sector (NACE 343) in Slovakia

Source: Eurostat

\(^{48}\) To see this, one can compare numbers from Figures 7 and 11.
\(^{49}\) Trend Top 200 2006 rankings
\(^{50}\) Trend Top 200 2006 rankings
The degree of propensity for linkages also depends on the specific type of production. The more complex a vehicle model is, the more technologically and capital intensive its production and more likely that it will be manufactured in one factory only. And manufacturing a specific model in one factory increases linkage propensity to local or regional suppliers since it is cost-efficient to have suppliers in a reasonable proximity to the factory. For instance Volkswagen Slovakia produces all cars from the VW Group, which are based on platform 7L and 4L – VW Touareg, Porsche Cayenne and Audi Q7. 60% of VW Touareg and Audi Q7 models is made in Slovakia. On the other hand, another model made in VW’s Bratislava factory – VW Polo – has an estimated local content of 20-30%. The main reason being the fact that the Polo is also manufactured in Pamplona, Spain, so part of the suppliers is located in the proximity of the Spanish plant.

The geographical proximity of KIA in Zilina and its sister factory Hyundai in Nosovice (Czech Republic) and same-platform models produced in the two plants will make supplier-sharing and inter-factory supplies cost-efficient. Under the arrangement, KIA will supply engines to the Nosovice plant and Hyundai will manufacture gearboxes for both factories (TREND 2006). KIA in Zilina is Korean company’s only manufacturing plant in Europe and Hyundai factory in Nosovice will only be finished in 2009, hence propensity for linkages in a close proximity of the Slovak factory is great. Matador Automotive, the largest Slovak supplier of ‘first-tier’ components, has already signed an important contract with KIA (TREND 2006).

As opposed to the KIA factory, PSA plant will import engines and other important parts from France and the neighbouring countries, particularly from the Czech Republic, where TPCA (joint production of Toyota and PSA) factory has been operating for 3 years (TREND 2006). Therefore it is reasonable to assume that propensity for linkages is higher in the case of KIA.

Even though backward linkages are one of the most important sources of spillovers for the host economy, measuring them is an uneasy task. We have found the index of turnover for the domestic market in the sector (manufacture of transport equipment - NACE 34) the most relevant proxy of the growth of local suppliers’ market for two

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51 Trend, 11 September 2006
52 Trend, 25 March 2006
53 Trend, 25 March 2006
reasons. First, the index indicates industry market activity in value by measuring the totals invoiced by the observation unit during the specific period and what matters in determining domestic/non-domestic market is the first destination of the product based on the change of ownership. Second, it is plausible to assume that the index roughly reflects the growth of domestic suppliers’ market since sales of motor vehicles on the domestic market is growing at a very low rate.

Figure 13 – Index of turnover NACE 34 – domestic market

Source: Eurostat

Figure 13 indicates a sharp increase in the index of turnover in the period between 2000 and 2006 – the figure increased by a factor of 7 over 6 years. The immense growth can be explained by start of the production of VW Touareg in 2003 and preparation of PSA and KIA investments and commencement of manufacturing in these plants in 2006. Temporary decrease in growth in 2005 was most likely caused by decrease in output of the VW factory due to technology upgrading for the production of Audi Q7 model.

The index of new orders in the auto industry (NACE 34) in the domestic market is almost identical with the index of turnover (Figure 4A in the Appendix). For less recent data, we can use turnover from industrial activities in the auto supply sector (NACE 343) and see that this indicator increased by a factor of 8 from 2000 to 2004 (Figure 13 compares rise in turnover from industrial activities in NACE 34 and NACE 343).

Table 14 – Turnover from industrial activities in the automotive sector (NACE 34) and auto supply sector (NACE 343) in Slovakia

54 The destination is determined by the residency of the third party that purchased the goods and services. The domestic market is defined as third parties resident in the same national territory as the observation unit. See Eurostat.
At the present stage of the research, we also do not possess up-to-date statistics on the number of enterprises in the automotive or auto supply sectors. Nevertheless, the available data (until 2004) show that the number of companies in the auto supply sector (NACE 343) increased by 270% from 1998 to 2004 (see Table 7).

Table 7 – Number of enterprises in manufacturing parts of motor vehicles (NACE 343)

<table>
<thead>
<tr>
<th>Year</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18</td>
<td>19</td>
<td>25</td>
<td>34</td>
<td>35</td>
<td>39</td>
<td>49</td>
</tr>
</tbody>
</table>

All the presented data indicate that the sector of automobile manufacturing had a profound impact on the linkages with local suppliers, and probably, important multiplier effects on promoting local economic activity.

### 4.7 Employment

According to the data of the Slovak Automotive Industry Association (ZAP SR) on the total employment in the whole automotive sector, approximately 10% of the whole manufacturing workforce is employed in the automotive industry (see Figure 5A in the Appendix for total employment in the sector). However, data from the Statistical Office show rather a lower share of 6%. Nevertheless, it is worth to note that the automotive employment in Slovakia have been on the clear upward path at least since 2000. The sector has been very important in generating new workplaces. During 2000-2006, the automotive sector in Slovakia generated nearly 40% of all new jobs in manufacturing.

Figure 14 - Employment index (2000=100) in automotive industry CEECs and EU25, 1998-2006

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55 Data from Slovak Statistical Office show even a constant growth of employment in the Automotive industry at least since 1997.
Figure 14 shows the development of employment in manufacturing of transport equipment in the Visegrad region and indicates that rise in employment in the automotive sector in Slovakia was the most rapid in Slovakia, followed by Hungary and the Czech Republic. According to the study of Euler Hermes, new EU member states have recorded an increase of 90,000 jobs in the automotive industry for the past 6 years, while 117,000 jobs in the sector were lost in the EU-15 since 2000. Research by PricewaterhouseCoopers moreover concludes that about USD 6 billion worth of automotive production will be invested in the CEE region over the next 5 years. It is estimated that the Slovak automotive sector will employ as much as 100,000 people by 2010.

4.8 Labour productivity

As Figure 15 below shows, productivity of labour in the automotive sector has been growing much faster than the manufacturing average. The most apparent increases in labour productivity (1998 and 2003) correspond with the massive growth of automobile production in VW Slovakia in these years (see Figure 7 in Section 4.3). A temporary decrease in productivity took place in 2005 when production in VW slowed down due to technology upgrading. Overall, during 2000-2006 the growth of productivity outpaced the growth of wages in the sector. Moreover, the comparison of the growth of labour productivity and growth of average wage (see Figure 6A in the Appendix) shows that there is little probability of the growth of wages within the industry to fuel inflation. On the contrary, the growth of productivity seem to create conditions for sustainable growth in the whole Slovak economy.

Figure 15 – Labour productivity in the automotive industry and in manufacturing in Slovakia, 1997-2006

Source: Slovak Statistical Office, authors’ calculations

Note: labour productivity is expressed as yearly turnover per person employed (in constant 2000 SKK).
Comparing productivity in different manufacturing plants is very problematic. The table below summarizes important data for VW Slovakia and Skoda Auto. VW Slovakia produces more cars per employee and it is on average more productive. Nevertheless, while VW produces generally more complex and expensive cars in its plant, Skoda Auto manufactures ‘more of the car’ in the factory, and hence needs more employees. Therefore any comparison between the two companies should be purely informative.

Table 8 – Comparison of financial and production figures between Czech Skoda Auto and Slovak Volkswagen in 2005

<table>
<thead>
<tr>
<th></th>
<th>Turnover (billion EUR)</th>
<th>Profit (million EUR after taxes)</th>
<th>Employees</th>
<th>Cars produced</th>
<th>Cars/employee</th>
<th>Turnover/employee (EUR thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VW Slovakia</td>
<td>4.035</td>
<td>135.7</td>
<td>7,900</td>
<td>218,349</td>
<td>27.6</td>
<td>510.8</td>
</tr>
<tr>
<td>Skoda Auto</td>
<td>5.967</td>
<td>247.1</td>
<td>26,014</td>
<td>494,637</td>
<td>19</td>
<td>229.4</td>
</tr>
</tbody>
</table>

Source: Skoda Auto 2005 Annual Report + press releases

4.9 Perspectives and challenges for the future of automotive industry in Slovakia

The Slovak automotive industry is expected to grow in the future years. According to estimates of the Slovak Automotive Industry Association (ZAP), the automotive sector will employ about 95,000 people and produce 800,000 cars by 2010. There are two main challenges for the future of the automotive industry in Slovakia.

Firstly, in spite of the skilled labour and remaining high unemployment (about 280,000 Slovaks are still unemployed), the arrival of large investors to Slovakia has uncovered shortage of adequately qualified labour in the country (SME 2006), especially in close vicinity of the factories. Slovak Ministry of Labour has reported long-term lack of qualified labour force in a number of sectors and industries including machinery (welders, metal workers; Slovak Ministry of Labour 2006). All three car manufacturers in Slovakia has encountered problems with lack of available qualified labour. The need for 40,000 more workers in the automotive industry will be dealt with by ‘importing’ labour from abroad and improved education, which would cater more to the needs of automotive industry. For this reason, the car producers together with ZAP have commenced long-term cooperation with Slovak technical secondary schools as well as universities.

Secondly, heavy investments are needed in research and development of technology and production systems in the automotive industry. According to ZAP, the establishment and development of R&D centers at technical universities as well as the Slovak Academy of Sciences is vital for the increase in Slovakia’s competitiveness in the industry. Increased share of R&D means that higher value added is ‘produced’ in the country. It dramatically increases the chances of sustained growth of production once Slovakia’s advantage in labour costs disappears.

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56 SME, 20 November 2006
57 Interview with Jozef Uhrik
5. Summary and conclusions

Over the last decade, Slovakia became more integrated with the global economy, progressed with a set of much needed reforms and attracted large flows of foreign investment. Significant part of this investment went into manufacturing industries, with automotive production emerging as domestic manufacturing cluster. At present, production of motor vehicles and their parts constitute important part of total manufacturing production, has been responsible for the creation of new jobs and for the strong surge in overall Slovakian overseas sales. Moreover, as a result of new investment, the automotive sector is soon expected to expand more, further increasing its significance for the domestic economy. This section gathers together earlier presented evidence on the possible motives of automotive investment in Slovakia and on the effects for the whole economy.

5.1 Factors decisive for the development of the automotive industry in Slovakia

There has been a set of factors that contributed to the development of the automotive cluster in Slovakia in recent years. The majority of these factors, however, relate to domestic reforms that started in 1999, and especially to those of 2002-2005. The reforms made Slovakia change from a relatively backward country when regional economic development is considered to the most successful reformer in the region. Now (early 2007) Slovakia’s macroeconomic fundamentals are sound and prospects are bright. Inflation has converged to low rates and public deficits are lower and are expected to be falling faster than in any other Visegrad country. Probably, Slovakia will enter the euro zone in 2009 (it does not seem possible for any of the other Visegrad economies before 2011-2012), which will further decrease transaction costs and reduce investment risk. There are low chances that the country can ‘step back’ and stop its further development, and EU membership seem to secure the convergence with the ‘old’ European Union at least for some years ahead.

When looking back at the factors that attracted foreign investment in Slovakia in the past, the perspective of EU membership seemed to be also an important factor. This perspective anchored domestic reforms, reduced uncertainty and hence – indirectly – motivated also inflows of FDI.

Looking from the investor’s perspective, the fundamental reform of the tax system, modelled after Estonian one, was of particular value. The system not only was made simple and predicable – it also does not seem to threaten public finances and thus delay the adoption of the euro.

Structure and education of Slovakian labour force was an additional advantage. Slovakia has very high share of population with secondary education, even by the EU standards. Moreover, technical education has been traditionally very popular in the country. This, coupled with the lowest costs of labour in the region and prospects of wage differentials vis-a-vis the reach EU countries staying significant for the years to come, have attracted manufacturing FDI.

It is also worth to mention that favourable economic environment for the development of the automotive production in Slovakia have been supported by the country’s geographical
location. Automotive production is the industry where transport costs matter. And Slovakia lies very close to Western European markers with their good infrastructure, existing production facilities which can be integrated in the production chains (like the VW’s for example), and high-income consumers.

Moreover, the development of Slovakian road infrastructure does not seem to differ significantly neither from the Czech nor from the Hungarian ones. It is also comparable with that of the southern Poland, which has been a location of automotive firms in the country.

Also, the costs of new capital as measured by real interest rates seem to be similar in all four countries. However, this last cost (lower interest rates) can be strictly attributable to the adherence to reforms and allowing more competition in the domestic financial intermediation.

Finally, when looking at the recent investment deals, the issue of investment incentives is worth considering. When analysing last two big automotive investments in the Slovak Republic (PSA of 2003 and Kia of 2004), the following picture emerges. The amounts of state aid offered to investors were generous, even when compared with the last two big automotive projects located in the Czech Republic. However, it seems that in the case of PSA, it was rather an attractive location that motivated investment in Slovakia (vis-a-vis Poland). On the contrary, the deal with Kia seemed to be done by offering high amount of state aid both in the direct and indirect form. This last move (promising heavy investment in local infrastructure) allowed to overcome the EU limits on state aid.

5.2 Performance and effects for Slovak economy

The structure of the automotive investment in Slovakia is such that at the moment there are three producers of final products (cars). The branch is foreign-owned and sales 99% of its produce abroad. The market of producers of car parts is more diversified. However, there are also important large foreign producers of car parts.

As was shown in the text, production of cars and car parts in Slovakia expanded dynamically since mid-1990s. Already by 2007, the sector accounts for 18% of Slovak manufacturing production and employs 6% of the manufacturing labour. In 2006 the share of automotive industry in total exports is estimated to be over 30%.

Production of cars alone expanded by over 7 times since pre-reform Meciar times (1997) and almost doubled its output during the last six years. The production of car parts developed even faster – it almost tripled during the same period of 2000-2006. The number of companies producing car parts in Slovakia went up to 50 in 2004, and guessing by the growth of turnover, increased further until 2006. These numbers, together with information gathered from the car producing plants suggest that there exist positive spillovers from investment in car plants.

The automotive industry uses labour in a much more productive way than other manufacturing branches. The interesting aspect of the growth of productivity connected with large investments is that this growth of productivity is connected with strongly growing employment. For example, up to 2003 the opposite trend of growing labour productivity in the automotive industry connected with decreasing employment has been taking place in the neighbouring Poland. The production process in the Slovak
automotive industry seem moreover efficient, since the growth of productivity in recent years has been higher than the growth of wages. It is possible that the personnel employed there is already more skilled than on average in the Slovak manufacturing sector. Thus, it can be expected that the mobility of workers should assure additional positive spillover effects connected with transferring managerial knowledge once moving to take on another job.

Much higher than on average productivity growth in the automotive industry in recent years suggests that the contribution to the whole Slovak growth has been important. The future challenge lies in making labour productivity growth sustainable. This is connected with the country’s efforts to provide adequate education and should also be connected with the proper incentives to accumulate R&D.

However, up to now the expansion can be attributable mainly due to the sales of one producer – Volkswagen. The structure of suppliers also reflects still dominant position of Volkswagen as a local buyer of intermediates. The new investments of PSA and Kia should soon bring more diversity to the market. If the investors’ plans will materialise, in 2009 Slovakian plants should produce nearly three times more cars than now. This is to say that the contribution of the sector to the development of the economy will also be soon even more significant and that the expansion will happen at a faster rate than in recent years.
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TREND (Slovak) www.etrend.sk

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Automotive Industry Association of Czech Republic – SAP web site: www.autosap.cz

Automotive Industry Association of Germany – VDA web site: www.vda.de

Automotive Industry Association of Hungary – MGSZ web site: www.gepjarmuipar.hu

Automotive Industry Association of Slovakia - ZAP web site: www.zapsr.sk

FDI Magazine web site: www.fdimagazine.com

Global Auto Index web site: www.globalautoindex.com

The European Automobile Manufacturers Association web site: www.acea.be

Interviews:

Jozef Uhrik, president of the Automotive Industry Association of the Slovak Republic (ZAP SR) and former CEO of Volkswagen Slovakia, 04 March 2007

Ondrej Socuvka, former Economic Advisor to Prime Minister Mikulas Dzurinda, 04 April 2007

A former high-ranking official at the Ministry of Economy, who did not wish to disclose his identity, 05 April 2007
APPENDIX

Table 1A - Share of Slovakian trade with non-transition countries (in %), 1992-2004

<table>
<thead>
<tr>
<th></th>
<th>'92</th>
<th>'93</th>
<th>'94</th>
<th>'95</th>
<th>'96</th>
<th>'97</th>
<th>'98</th>
<th>'99</th>
<th>'00</th>
<th>'01</th>
<th>'02</th>
<th>'03</th>
<th>'04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slovakia</td>
<td>n.a.</td>
<td>39.5</td>
<td>44.9</td>
<td>45.6</td>
<td>49.4</td>
<td>54.2</td>
<td>62.0</td>
<td>62.0</td>
<td>64.0</td>
<td>62.0</td>
<td>63.5</td>
<td>66.1</td>
<td>62.6</td>
</tr>
</tbody>
</table>


Table 2A - Share of trade in Slovakian GDP (in %), 1992-2004

<table>
<thead>
<tr>
<th></th>
<th>'92</th>
<th>'93</th>
<th>'94</th>
<th>'95</th>
<th>'96</th>
<th>'97</th>
<th>'98</th>
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<th>'00</th>
<th>'01</th>
<th>'02</th>
<th>'03</th>
<th>'04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slovakia</td>
<td>117.0</td>
<td>93.2</td>
<td>91.6</td>
<td>94.7</td>
<td>100.9</td>
<td>104.6</td>
<td>110.9</td>
<td>105.3</td>
<td>114.8</td>
<td>140.4</td>
<td>127.3</td>
<td>135.7</td>
<td>138.6</td>
</tr>
</tbody>
</table>


Table 3A – Investment incentives in Slovakia and the Czech Republic in four largest greenfield automotive investments, 2002-2006

<table>
<thead>
<tr>
<th>Start date</th>
<th>Country of project</th>
<th>Investor</th>
<th>Amount per job (estimated, in $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>Czech Republic</td>
<td>TPCA</td>
<td>37,000</td>
</tr>
<tr>
<td>2006</td>
<td>Czech Republic</td>
<td>Hyundai</td>
<td>48,000</td>
</tr>
<tr>
<td>2003</td>
<td>Slovakia</td>
<td>PSA Peugeot Citroën</td>
<td>50,000</td>
</tr>
<tr>
<td>2004</td>
<td>Slovakia</td>
<td>Kia Motors</td>
<td>86,000</td>
</tr>
</tbody>
</table>

Sources: Slovak Ministry of Finance; Czechinvest; authors’ calculations.
Table 4A – The biggest companies of the Slovak engineering industry according to consolidated revenues in 2005

<table>
<thead>
<tr>
<th>Rank</th>
<th>Automotive industry</th>
<th>Company</th>
<th>Net revenues 2005 (SKK thousands)</th>
<th>Change 2005/2004 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>yes</td>
<td>Volkswagen Slovakia, a.s., Bratislava</td>
<td>154 802 791</td>
<td>-11,0</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td>Whirlpool Slovakia, s.r.o., Bratislava</td>
<td>11 851 037</td>
<td>-10,3</td>
</tr>
<tr>
<td>3.</td>
<td>yes</td>
<td>Johnson Controls International, s.r.o., Bratislava</td>
<td>9 903 778</td>
<td>n</td>
</tr>
<tr>
<td>4.</td>
<td>yes</td>
<td>SAS Automotive, s.r.o., Bratislava</td>
<td>7 998 928</td>
<td>-11,5</td>
</tr>
<tr>
<td>5.</td>
<td>yes</td>
<td>INA Skalica, s.r.o., Skalica</td>
<td>7 663 741</td>
<td>23,3</td>
</tr>
<tr>
<td>6.</td>
<td>yes</td>
<td>INA Kysuce, a.s., Kysucké Nové Mesto</td>
<td>5 922 898</td>
<td>38,9</td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td>Embraco Slovakia, s.r.o., Spišská Nová Ves2</td>
<td>5 500 000</td>
<td>n</td>
</tr>
<tr>
<td>8.</td>
<td>yes</td>
<td>Lear Corporation Slovakia, s.r.o., Lozorno</td>
<td>4 179 352</td>
<td>-12,4</td>
</tr>
<tr>
<td>9.</td>
<td>yes</td>
<td>ZF Sachs Slovakia, a.s., Trnava</td>
<td>4 129 214</td>
<td>15,3</td>
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<td>10.</td>
<td>yes</td>
<td>HBPO Slovakia, s.r.o., Lozorno</td>
<td>3 818 657</td>
<td>-6,7</td>
</tr>
<tr>
<td>11.</td>
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<td>Slovenské energetické strojárne, a.s., Tlmače</td>
<td>3 654 607</td>
<td>-15,1</td>
</tr>
<tr>
<td>12.</td>
<td></td>
<td>Tatravagónka, a.s., Poprad</td>
<td>3 112 752</td>
<td>-13,2</td>
</tr>
<tr>
<td>13.</td>
<td>yes</td>
<td>Matador Automotive Vráble, a.s., Vráble</td>
<td>2 974 220</td>
<td>4,1</td>
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<tr>
<td>14.</td>
<td></td>
<td>Protherm Production, s.r.o., Skalica</td>
<td>2 841 107</td>
<td>11,3</td>
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<td>15.</td>
<td>yes</td>
<td>Tower Automotive, a.s., Malacky</td>
<td>2 815 105</td>
<td>1,5</td>
</tr>
<tr>
<td>16.</td>
<td></td>
<td>Sauer-Danfoss, a.s., Považská Bystrica3</td>
<td>2 571 768</td>
<td>15,5</td>
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<tr>
<td>17.</td>
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<td>ŽOS Trnava, a.s., Trnava</td>
<td>2 444 688</td>
<td>-13,0</td>
</tr>
<tr>
<td>18.</td>
<td></td>
<td>Slovnaft montáže a opravy, a.s., Bratislava</td>
<td>2 349 508</td>
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<td>19.</td>
<td>yes</td>
<td>RF, s.r.o., Malacky</td>
<td>2 137 118</td>
<td>19,4</td>
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<tr>
<td>20.</td>
<td></td>
<td>Danfoss Compressors, s.r.o., Zlaté Moravce</td>
<td>1 962 908</td>
<td>38,8</td>
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<tr>
<td>21.</td>
<td></td>
<td>Omnia, a.s., Bratislava</td>
<td>1 937 344</td>
<td>12,0</td>
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<td>22.</td>
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<td>PSL, a.s., Považská Bystrica3, 4</td>
<td>1 868 534</td>
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<td>23.</td>
<td></td>
<td>Slovenské iodenice Komárno, a.s., Bratislava</td>
<td>1 597 168</td>
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<td>24.</td>
<td>yes</td>
<td>Küster-automobilová technika, s.r.o., Vlkanoť</td>
<td>1 427 770</td>
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<td>25.</td>
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<td>ZF Boge Elastmetall Slovakia, a.s., Trnava</td>
<td>1 218 027</td>
<td>-3,3</td>
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</table>

Source: Trend Top 200 2006
### Table 5A – Tertiary education for age group 25-64 in CEECs, 1995-2004

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<td>10.6</td>
<td>10.4</td>
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<td>11.1</td>
<td>11.9</td>
<td>12</td>
<td>12.3</td>
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<td>12.2</td>
<td>13.2</td>
<td>13.5</td>
<td>14</td>
<td>14</td>
<td>14.2</td>
<td>15.4</td>
<td>16.7</td>
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<tr>
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<td>10.2</td>
<td>10.9</td>
<td>11.3</td>
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<td>12.6</td>
<td>14.2</td>
<td>15.7</td>
<td></td>
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<tr>
<td>Slovak Republic</td>
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<td>11.5</td>
<td>10.5</td>
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<td>10.1</td>
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<td>OECD average</td>
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<td>23.4</td>
<td>24.1</td>
<td>25.2</td>
</tr>
</tbody>
</table>

Source: OECD Factbook 2007

### Figure 1A – Automotive Cluster in Central Europe

![Automotive Cluster in Central Europe](image)

Source: IMF

### Figure 2A – Index of production for NACE 34 and NACE 341, 1998-2006

![Index of production for NACE 34 and NACE 341](image)

Source: Eurostat
Figure 3A – Export of motor vehicles (SITC 781) from CEECs as % of total export, 1998-2005

Source: COMTRADE, authors’ calculations

Figure 4A - New orders NACE 34 - domestic market, 1998-2006

Source: Eurostat

Figure 5A – Current and projected employment in the Slovak auto industry, 2002-2010

Source: ZAP SR
Note: * - projected by ZAP
Figure 6A – Indices of labour productivity and average wages in the automotive industry (NACE 34) in Slovakia, 1998-2006

Source: Slovak Statistical Office, authors’ calculations

Figure 7A – Investment in the total automotive industry in Slovakia, 1999-2005

Source: ZAP SR

Figure 8A – Foreign direct investment in CEECs as a percentage of gross domestic product, 1993-2006

Source: EIU