

The Automotive Industry in the Slovak Republic: Recent Developments and Impact on Growth

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About the Series

The Commission on Growth and Development led by Nobel Laureate Mike Spence was established in April 2006 as a response to two insights. First, poverty cannot be reduced in isolation from economic growth—an observation that has been overlooked in the thinking and strategies of many practitioners. Second, there is growing awareness that knowledge about economic growth is much less definitive than commonly thought. Consequently, the Commission’s mandate is to “take stock of the state of theoretical and empirical knowledge on economic growth with a view to drawing implications for policy for the current and next generation of policy makers.”

To help explore the state of knowledge, the Commission invited leading academics and policy makers from developing and industrialized countries to explore and discuss economic issues it thought relevant for growth and development, including controversial ideas. Thematic papers assessed knowledge and highlighted ongoing debates in areas such as monetary and fiscal policies, climate change, and equity and growth. Additionally, 25 country case studies were commissioned to explore the dynamics of growth and change in the context of specific countries.

Working papers in this series were presented and reviewed at Commission workshops, which were held in 2007–08 in Washington, D.C., New York City, and New Haven, Connecticut. Each paper benefited from comments by workshop participants, including academics, policy makers, development practitioners, representatives of bilateral and multilateral institutions, and Commission members.

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The working paper series was produced under the general guidance of Mike Spence and Danny Leipziger, Chair and Vice Chair of the Commission, and the Commission’s Secretariat, which is based in the Poverty Reduction and Economic Management Network of the World Bank. Papers in this series represent the independent view of the authors.

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Abstract

This paper analyzes recent automotive investment in the Slovak Republic and shows how the development of the automotive industry has influenced growth in productivity and output in the broader economy. The study also discusses the motivations for automotive investment, with the country evolving from a relative laggard in reform implementation and foreign direct investment in the late 1990s to one of the region's top performers and one of the fastest-growing economies.

It is argued that strong reform implementation, together with continued and credible commitment to reforms, were both preconditions for attracting automotive investments and the key factors that enabled these investments to flourish. The reform efforts were made possible by strong political consensus on accelerating EU accession and boosting living standards. Taking into account the specificity of the industry, other aspects related to factor endowments have also played a role. Generous investment incentives appear to have played an important role in swaying foreign investors in selecting the Slovak Republic within the broader region of central Europe. Once investment in automotive production started, it contributed to additional investment by suppliers that has helped generate locally owned suppliers. These, in turn, are beginning to supply car producers in neighboring countries. All told, the full impact of the original automotive investment will be felt only over several years, but even in the early years it has been substantial. With output at the existing three producers set to reach capacity only by 2010, the impact is likely to be more substantial still.

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The Automotive Industry in the Slovak Republic: Recent Developments and Impact on Growth

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1. Introduction

This paper analyzes recent automotive investments in the Slovak Republic and analyzes how these developments have affected growth in productivity and output. The paper presents conclusions on the motivations of investing in the Slovak Republic.

To date, there have been three major foreign investments in the car industry in the Slovak Republic. Two of these started operations in 2003–04 and the third in 2006. The full impact of these investments will be felt only in the coming years, as output is planned to reach currently installed capacity only by 2010. Even today, though, the contribution of the automotive industry is large: it accounted for more than 40 percent of the increase in manufacturing employment during 2000–06 and for about one third of total Slovak exports in 2006.

The example of the Slovak Republic is worth studying because the country was regarded as a regional laggard in reform implementation and economic performance until 1997. Following the 1998 elections that brought a pro-reform government coalition to power, the country embarked on a path of economic reforms, with ambitious efforts in advancing privatization, corporate restructuring, and improvement of public service delivery. Building on these reforms the government advanced reforms of pensions and taxes, the labor code, social protection, and health care. All this took place together with a much-

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needed consolidation in public finances and the reduction in inflation to low levels. At the same time, the Slovak Republic advanced European integration and acceded to the European Union (EU) in 2004. The government is likely to succeed in its plan to join the eurozone in 2009, earlier than its immediate neighbors.

The report argues that strong implementation and commitment to reforms, together with favorable initial conditions, have played a crucial role in attracting automotive investments to the Slovak Republic and made it possible for the investments to flourish. Generous investment incentives clearly have helped sway investor's hands once a decision to invest regionally was made.

As background on the automotive investments in Central and Eastern Europe, Section 2 describes major developments since the early 1980s. Section 3 discusses Slovak reforms, industry-specific policies, and factor endowments. Section 4 assesses effects of the development of the automotive industry in the Slovak Republic on the domestic economy. Section 5 summarizes the key findings of the report.

2. Automotive Production in Central and Eastern Europe Since the Early 1990s

Developments before 1989

The countries of Central and Eastern Europe (CEE)² have a long history of production of motor vehicles. The former Czechoslovakia (now the Czech Republic and the Slovak Republic) had the strongest tradition in automobile production in the CEE, with Škoda, the largest and oldest car manufacturer in the region, dating back to the nineteenth century. Škoda was the first automobile manufacturer in the region to specialize in the design of cars (Werner 2003: 2). Other smaller producers of motor vehicles in Czechoslovakia included Tatra (heavy trucks), Trnavské automobilové závody (TAZ, making vans), and Bratislavské automobilové závody (BAZ) with Škoda-licensed models. The yearly output of the Czechoslovak car industry before 1989 was 193,000 units (Dobosiewicz 1992: 74), most of it produced in Škoda's plants in Mladá Boleslav, Kvasiny, and Vrchlabí. In 1989, Škoda exported 45,500 cars to Western Europe (Dobosiewicz 1992: 74).

As part of the industrial policy under the Council for Mutual Economic Assistance (CMEA), Hungary specialized 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 and was one of the largest bus manufacturing companies in Europe (Havas 2000: 98 and Automotive Industry Association of Hungary [MGSZ]). Two indigenous car-manufacturing

² In this report CEE stands for the Czech Republic, Hungary, Poland and the Slovak Republic.

companies (FSO and FSM) were established in Poland in the 1980s producing automobiles using Fiat licenses. Overall, the CEE countries produced 1 million cars in 1990 (Dobosiewicz 1992: 76). The exact products manufactured in each of the CEE countries differed, but factor endowments were similar with abundance of skilled labor. Production facilities, by contrast, were relatively obsolete.

Major Investments Since 1990

It was the industrial tradition in the automotive sector and other heavy industry sectors, skilled labor, and the growth potential of the emerging CEE markets that lured substantial investments into the manufacturing industry in the early 1990s. Foreign investment in the car industry accounted for a large share of the inflows of foreign direct investment (FDI) into CEE, with several large deals at the start of transition (Dörr and Kessel 1999: 9).

In 1991, Volkswagen (VW) acquired a stake in Škoda in a bidding contest of 24 foreign companies.³ VW proposed investing more than \$5 billion and planned to run Škoda as a separate brand within the VW group along with Audi, Seat, and VW (Legard 2005: 6–7; Dobosiewicz 1992: 74–75). VW acquired a 31 percent share in 1991 for \$416 million, rising to 70 percent in 1995 for an additional \$520 million (Legard 2005: 7) and full ownership in the late 1990s. The privatization of Škoda turned out to be one of the largest foreign investments in CEE in the early 1990s (Dobosiewicz 1992: 74). Škoda Auto employs 22,000 workers in the Czech Republic and produces more than half a million automobiles a year, almost 90 percent of which are exported.

Besides the Škoda investment, VW acquired an 80 percent stake in BAZ in the Slovak Republic also in 1991.⁴ Volkswagen won the contest and became a strategic partner of BAZ.⁵ According to the then Slovak Prime Minister Vladimír Mečiar, the GM/Opel offer obliged the government to pay subsidies for infrastructure building and training, while VW's did not. Mečiar stated that there were 10 important indicators, according to which the government was deciding: "GM was leading in two: the 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 1994–96, the factory eventually exceeded the original production expectations, producing 238,000 cars in 2006, and has

³ Renault's offer was also seriously considered by the Czech government in the final stages of the privatization 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.

⁴ Of the six companies interested in a joint venture with BAZ, three were selected for final consideration (Renault, GM/Opel, and VW) and talks were eventually started with GM/Opel and VW. Despite the initial good position of GM/Opel in the negotiations (the company was granted exclusive negotiating rights for six weeks), VW was ultimately selected as a partner.

⁵ Interview with Jozef Uhrík, the president of the Automotive Industry Association of the Slovak Republic and a former CEO of Volkswagen Slovakia, 14 March 2007.

become one of the most modern plants in the VW group (section 4). VW has invested €1.5 billion in the Bratislava plant thus far.⁶

VW has also invested in the Polish city of Poznan, where it first set up a joint venture with the Polish company Tarpan in 1993, becoming a full owner in 1996. 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).

Audi, another VW subsidiary, founded a factory in Gyor, Hungary in 1992 for the manufacturing of engines and invested €0.7 billion by 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 Suzuki of Japan. Suzuki's production commenced in 1992 and the company invested \$260 million in the country by 1997 (Havas 2000: 100–101). The plant capacity reached 230,000 cars in 2007 (the target for 2008 is 300,000), manufacturing Suzuki Swift, Ignis, and SX4 models, as well as the Fiat Sedici (SX4's sister model; Global Auto Index).

Besides VW, Fiat was another European car manufacturer that adopted a fast and ambitious strategy in CEE (Van Tulder and Ruigrok 1998: 13). By the end of 2000, Fiat invested more than \$2 billion in its two Polish facilities (10 percent 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,⁷ Daewoo struck the deal with Polish government in 1996 and offered to invest \$1.1 billion. After the parent company in the Republic of Korea came under financial pressure, the FSO was sold to the Ukrainian company Ukr-Avto in 2005, which has continued to produce Daewoo models and plans to produce Chevrolet licensed cars and export them to Ukraine.

⁶ Interview with Jozef Uhrík.

⁷ 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/Opel was another serious contender in the FSO negotiations (Van Tulder and Ruigrok 1998: 16).

Table 1: Major Car Manufacturing Investments in Central Europe

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

Source: Based on Deloitte (2006) and Global Auto Index.

Note: * planned.

GM was unsuccessful in acquiring BAZ in the Slovak Republic 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 assembly in 1998 and now only manufactures engines (Havas, 2000: 101-102).

All the greenfield investments in the automotive industry in the region after 2000 were in the Slovak Republic 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 annual capacity of 300,000 cars and Hyundai pledged to invest in a new factory also in the Czech Republic in 2006. PSA Peugeot Citroën and Kia

Motors have invested in the Slovak Republic, with each investment worth between €700 million to €1 billion. Section 4 analyzes these investments in greater detail. Table 1 summarizes all major automotive investments in CEE since 1989.

Motivations for Automotive Investments in CEE

The motivations of large car manufacturers to invest in CEE were driven by a combination of factors. These included cheap, productive and skilled labor (resource-seeking and efficiency-seeking according to Dunning 1993) and the opportunity to gain access to local markets in the region (market-seeking).⁸ Clear prospects for EU accession also held the promise of integration into the wider EU market (Sturgeon and Florida 1999, as cited in Radosevic and Rozeic 2005: 6). In addition, tariff-substituting motivations for car investors were particularly important in the case of Poland. Restrictive trade policies 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; Dunin-Wasowicz, Gorzynski, and Woodward 2002: 11).⁹

Investors have a strong tendency to invest in safer markets to reduce the potential of market failure stemming from asymmetric information. The presence of foreign investors and their successful operation thus served as a positive signal for other investors to invest in locations where foreign operations are already established in the same or similar industries (Charlton 2003: 10). This follow-the-leader pattern has evolved further in recent years, with investors preferring to invest in places that have already attracted suppliers and, overall, benefit from the externalities of the agglomeration.

The emergence of central Europe as a major car-manufacturing hub is compatible with global trends in the automotive industry. New manufacturing plants in CEE serving the EU market are evidence of the new “network-led” model of industry (firms producing within every large market). The need for just-in-time delivery, which characterizes vertically integrated production, made the Visegrad region (the Czech Republic, the Slovak Republic, Poland, and Hungary) even more attractive for automotive investment. Factories for car production in central Europe tend to use the most modern equipment and usually become the most advanced of their kind,¹⁰ which is very different from

⁸ As a result of the 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.

⁹ Import of EU-produced cars to Poland was protected with quotas for a relatively long time, until the year 2002, although quantitative restrictions on other manufacturing products in bilateral trade started to be phased out in 1992.

¹⁰ 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

the way factories in the region operated two decades ago—using old manufacturing equipment and production technologies.

3. Regulatory Policies and Factor Endowments in the Slovak Republic

This section examines the Slovak Republic's economic development since the start of transition in the early 1990s and identifies the factors that have contributed to stronger economic growth and helped improve its attractiveness for automotive investors.

Overview of Slovak Economic Development

Over the last several years, the Slovak Republic has emerged as one of the leading reformers and fastest-growing countries in Central and Eastern Europe. Achieving the Maastricht criteria seems within reach and should enable the Slovak Republic to join the eurozone as targeted by the government in 2009.

The transition to the current status of a strong reformer and a fast-growing country has not been easy. the Slovak Republic started transition with a very low level of foreign debt and with no previous experience in market reforms. Soon after the split of Czechoslovakia in 1993,¹¹ the Slovak economy experienced a deep transition recession. Growth resumed thereafter, thanks in part to orthodox macroeconomic policies (EIU 1998: 19) despite incomplete structural reforms. Inflation remained under 10 percent during 1994–98. The Slovak Republic reported the highest growth among the transition countries in 1996 and the country's success started to be dubbed "Mečiar's economic miracle." Although officially claiming transatlantic integration as its top priority, the Slovak government (consisting of Mečiar's HZDS, the nationalist SNS, and the leftist ZRS parties), had clear nationalist tendencies. Dissatisfaction with the development of democracy was voiced by foreign embassies as well as international organizations. After the Slovak Republic's lagging behind in the integration process became evident and the country was not invited to join NATO in 1997, Madeleine Albright called the Slovak Republic "a hole in the map of Europe."¹²

capabilities. Trnava will be a demonstration of PSA's know-how" (SME, Juraj Porubský "Slovenský závod PSA by mal byť ukážkový" [PSA's Slovak plant should be exemplary], January 29, 2003).

¹¹ The split of Czechoslovakia was caused by multiple factors. Political motivations of the Czech and Slovak leaders dominated the negotiations on the re-evaluation of the competences within the federation after 1989. The decision to split Czechoslovakia was made among political leaders. This decision was not based on a popular referendum—opinion polls were showing that the population tended to be slightly more pro-federal at the time of separation. The first elections in independent the Slovak Republic in 1994 were won by Mečiar's HZDS.

¹² "Slovakia: TASR Reports Albright, Kovac Remarks at Washington Lunch," Foreign Broadcast Information Service, January 29, 1998, as cited in Krause (2003).

From 1996 onwards, the situation started to gradually deteriorate economically as well. Fiscal expansion and widening external trade imbalances, resulting from a failure to improve the business environment, led to a sharp increase in indebtedness. Currency depreciation followed, with the koruna falling by 19 percent in October 1998 (Jurzyca et al. 1999: 200). Unemployment grew from 12.8 percent in 1996 to 15.6 percent in 1998, becoming a major social issue (EBRD 2000: 193).

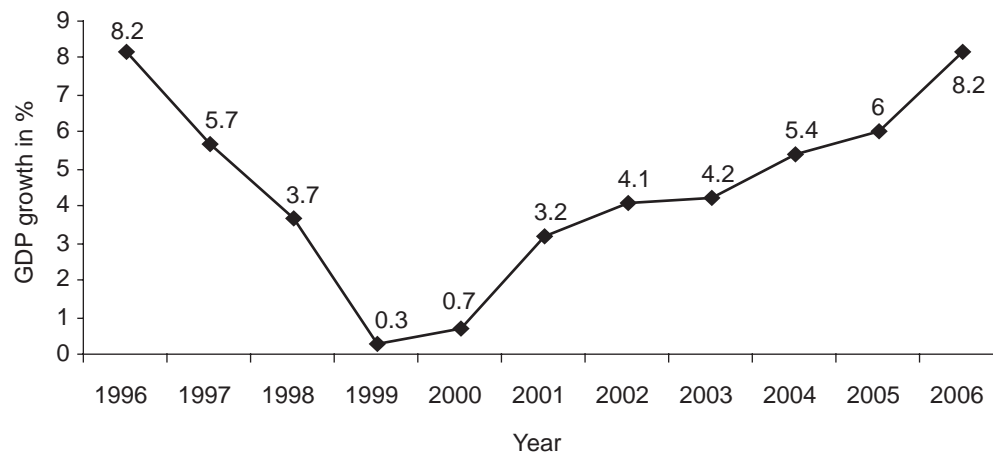
Economic difficulties reflected deep-rooted problems. First, the process of privatization in the Slovak Republic was viewed as corrupt. Under the guise of creating a national entrepreneurial business class capable of “sustaining Slovak independence,” foreign as well as domestic investors were discouraged from participating in privatization deals after 1994 to the benefit of vested interests (Appel and Gould 2000: 114; Vachudova 2005: 51–52). Second, insolvency became an oversized problem in the industrial sector despite, or rather because of, generous government subsidies.¹³ The poor performance of Slovak enterprises was accompanied by difficulties in the banking sector, dominated by ineffective state-owned banks (Beblavý 1998) and reflecting also the Russian and Asian financial crises (Jurzyca et al. 1999: 202–04; *The Slovak Spectator* 1998). Low transparency and rampant corruption were two key characteristics of the Slovak economy in 1998 (Jurzyca et al. 1999: 204).

The 1998 elections resulted in the demise of the Mečiar’s government. The elections were not necessarily indicative of a radical change in voters’ sentiments—HZDS still won the elections with 27 percent of the votes—but rather a reflection of a united anti-Mečiar movement. Also, Mečiar’s authoritarian style in policy making and the democratic deficit were perceived as more important by voters than the economic hardship in uniting the opposition. “Return to Europe” was quite symptomatically the main slogan of the new pro-Western (albeit ideologically hybrid) Dzurinda government.

Initially, the new government brought modest macroeconomic improvement. Real GDP growth, after slowing to 0.3 percent in 1999 from about 8 percent in 1996, picked up to 0.7 percent in 2000 (figure 1). The fiscal deficit rose to 12.3 percent in 2000 and external debt increased. Progress became more evident only towards the end of the first term of the Dzurinda government. Growth picked up to about 4 percent by 2002 and after several years of declining real wages, increasing unemployment, and debt, the trend was finally reversed in 2002.

¹³ In March 1999, Slovak enterprises accounted for 80 percent of the debt, out of which government had guaranteed 60 percent.

Figure 1: Real GDP Growth in the Slovak Republic (percent)



Source: Statistical office, SME.

The coalition was successful at implementing several key reforms, including banking sector restructuring, improvement of the general business environment, revamping state regulation of the financial sector, and restructuring and privatization of state-owned enterprises (Vachudova 2005: 201; EIU 2000: 32–33). Most important, trust in policy makers improved and fear was removed from Slovak political and public life.¹⁴ Several corruption affairs, nonetheless, tested the popularity of the Dzurinda coalition (Vachudova 2005: 202).

The reforms, which were put off during the first Dzurinda government (of the pension system, tax, labor law, social protection, and reorganization of health care), were tackled during his second term that started in 2002. The main reasons for Dzurinda's second term were related to overwhelming popular support for EU and NATO accession, with the government during his first term seen as having made critical progress. Moreover, the need to catch up with the Visegrad neighbors on the road to EU accession was an important factor. The second government was much more homogenous and had a stronger popular mandate for reform.

As part of social welfare reform, the government introduced a three-pillar pension system.¹⁵ The structure of social security contributions was changed significantly as part of a wider set of measures to tackle unemployment and liberalize the labor market.¹⁶ Corporate and personal income tax rates were set at a flat 19 percent, harmonized with a single VAT rate, helping boost the country's image as one of the world leading reformers.

¹⁴ Opinion polls from that time reveal that while in 1998 66 percent of population viewed crime and personal safety as a pressing problem, in 2001 this was significantly less—46 percent. Similarly, perception of crime and organized crime as a problem decreased from 36 percent in 1999 to 24 percent in 2001.

¹⁵ For more see for example Jurzyca and Goliáš 2005: 7–10.

¹⁶ For more see: Beblavý 2005: 4–7.

The government reform efforts paid off. The transition to a market economy was accelerated rapidly, underpinned by stable macroeconomic policies and much-improved business environment. Fiscal prudence, together with significant currency appreciation—in line with labor productivity—kept inflation low. After acceding to the EU in 2004, the Slovak Republic joined the European Exchange Rate (ERM II) with the ambition to join the eurozone in 2009, most likely before the other Visegrad countries.

The Dzurinda government focused less on communicating the long-term positive effect of the ambitious reforms and the likelihood that economic hardship some of the population experienced will be temporary. Even though social protest has not manifested through significant public unrest during the cabinet's tenure, the negative social impacts and public perception of Dzurinda's reforms¹⁷ helped the opposition parties led by SMER to win the June 2006 parliamentary elections. Following the elections, SMER's Robert Fico formed a new government with the nationalist SNS and HZDS. Despite the initial promises of the populist government, there has been a significant gap between the proposed systemic rolling back of reforms and the actual implementation. The government has opted for targeted revisions of some reforms, leaving the broad reforms little changed.¹⁸ The government has maintained euro adoption as one of its key priorities.

Political developments and reform implementation have had a profound impact on inflows of FDI. FDI inflows remained low even immediately after the 1998 elections (figure 2). Only in 2000 did inflows begin picking up.¹⁹

The Slovak Republic as a Destination for Automotive FDI: Factor Endowments and Policies

The Slovak Republic has become a key destination for automotive FDI in recent years. This section analyzes the factors and policies that contributed to the Slovak Republic's attractiveness for foreign investors. While it is recognized that investors take into account a number of factors in the decision-making process and analyze all aspects of the investment environment, there is evidence that some factors and policies were more prominent in locational decisions of strategic automotive investors.

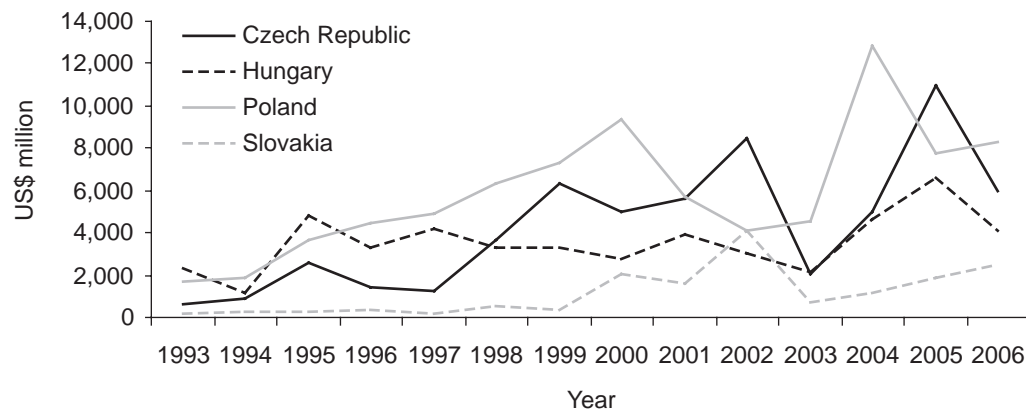
¹⁷ According to the Institute for Public Affairs (IVO) poll from April 2006 assessing popular perception of the policies of the Dzurinda government, only 11 percent of the population fully supported public administration reform, 12 percent tax reform, 7 percent pension and welfare reforms, and 3 percent health-care reform.

According to another poll from 2005 (IVO), only 11 percent of the people considered living standard of their family to have improved since the last elections in 2002.

¹⁸ Typical examples of such measures were the introduction of progressive reduction of the tax-exempt amount instead of abolishment of flat tax, paying out Christmas bonuses to pensioners, or lowering VAT for medicines.

¹⁹ Since 2000, the Slovak Republic 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.

Figure 2: CEE: Inflows of FDI inflows, 1993–2006 (US\$ million)



Source: EIU.

Still, identifying the key factors is complicated by discrepancies between stated and underlying reasons. We first briefly outline a general position of the Slovak governments towards the automotive sector. We then look at indicators comparing skills and costs of labor in the four CEE countries, rank the countries according to the state of infrastructure development, compare tax rates (and overall labor costs), and finally analyze the role of incentive policies in investors' locational decisions.

The analysis assumes that strategic investment decisions are made in several stages. In the first stage of the selection process, the company's top management selects a general region that fits within its objectives to invest; in the second stage the corporation short-lists two or three countries (or regions within a country) and negotiates specific terms and conditions of the investment; in the last stage, the final investment site is selected (see Oman 2000). We therefore suggest that investors in most cases first considered the four CEE countries as a general "cluster" and only then analyzed country-specific factors/endowments/policies. The analysis in this paper considers mainly this last step of the decision process—that is, why the Slovak Republic emerged as the regional leader in attracting automotive FDI.

Government Policy toward the Automotive Sector in the 1990s

The Slovak Republic's specialization in the automotive sector should not be seen as directly resulting from a targeted and coherent government approach from the very beginning. Production of VW in the Slovak Republic grew modestly in the first years of operation of the Bratislava plant. According to Jozef Uhrik, the then-CEO of the plant, the company's management focused on large investments into training and improvement of the quality of the workforce. The principal goal was to convince VW's headquarters to locate a more complex and sophisticated production in the Bratislava factory.²⁰

²⁰ Interview with Jozef Uhrik.

The government started to play an active role only with VW's announcement of its expansion of production. A network of suppliers subsequently expressed interest in investing in the Slovak Republic. In June 1997, Mečiar's cabinet established a position of the government's plenipotentiary for the development of the automotive sector in the Slovak Republic, whose task was to coordinate the activities of various state institutions. A year later, the government adopted a "Program for the Development of the Automotive Industry in Slovakia," which defined a general strategy and stipulated the goals and the measures to be implemented. At the same time, the cabinet approved a government decree no. 192/1998,²¹ on the basis of which VW was granted tax incentives (The company received €31.2 million in tax allowance in 1999.)

The rapid expansion of VW's operations attracted a number of large foreign suppliers, many of them (such as Johnson Controls and the Lear Corporation) located in the industrial park in Lozorno, which was also heavily subsidized by the government. The positive experience of VW had a demonstration effect on other car producers and appears to have played an important role in their locational decisions in subsequent years.

Labor and Human Capital

Skilled and abundant labor is commonly understood to be an important factor for attracting FDI in manufacturing. The Slovak Republic was heavily industrialized before transition, with major producers of steel (Vychodoslovenske zeleziarne Kosice, Zeleziarne Podbrezova), arms (Zbrojovka Martin), machinery (ZTS Martin, VSS Kosice), and automobiles (BAZ, TAZ). The legacy of this structure of the workforce and the educational system have been important factors in the success of production sites set up by foreign investors at the very early period of transition and thereafter. In addition to the generally high skill level, the infrequent occurrence of strikes and labor disputes has also been mentioned as a factor in assessing the Slovak labor force.

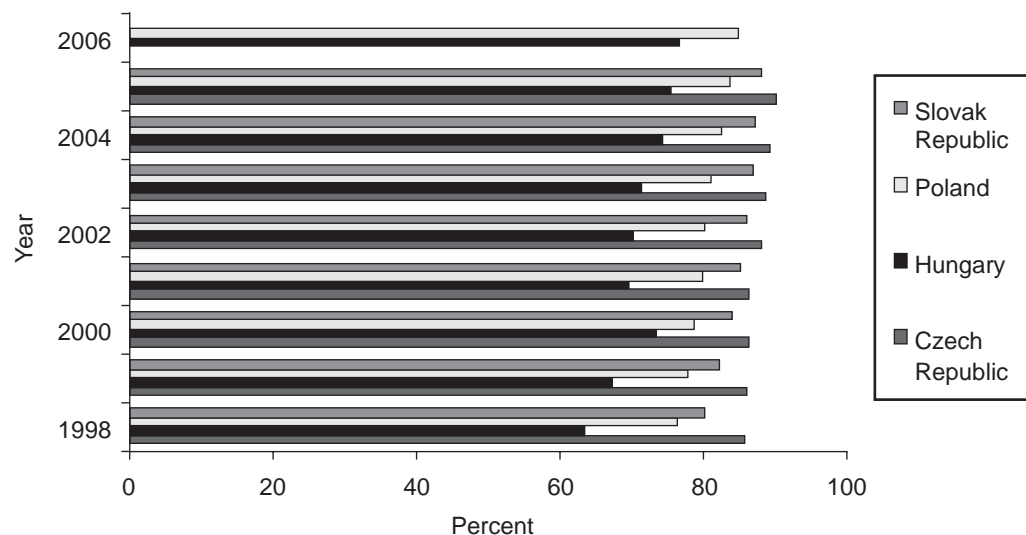
First, in terms of labor quality, figure 3 demonstrates that more than 80 percent of the working age population in 1998 had at least upper secondary education with the figure rising to over 87 percent in 2004. Within the EU, only the Czech Republic scores slightly higher.²² In terms of university education, however, the Slovak Republic lagged behind with only 12 percent of the population with a university degree in 2003. Although the figures in the region are roughly similar, this ratio represents only about half of the OECD average (table 5A in the Appendix; Kiss and Siskovic 2006). Regarding technical education, more than 23 percent of university students were enrolled in

²¹ See CEPA 2002.

²² The common communist history between the two countries of former Czechoslovakia can be clearly detected via the educational structure, although divergence was appearing as the transition progressed.

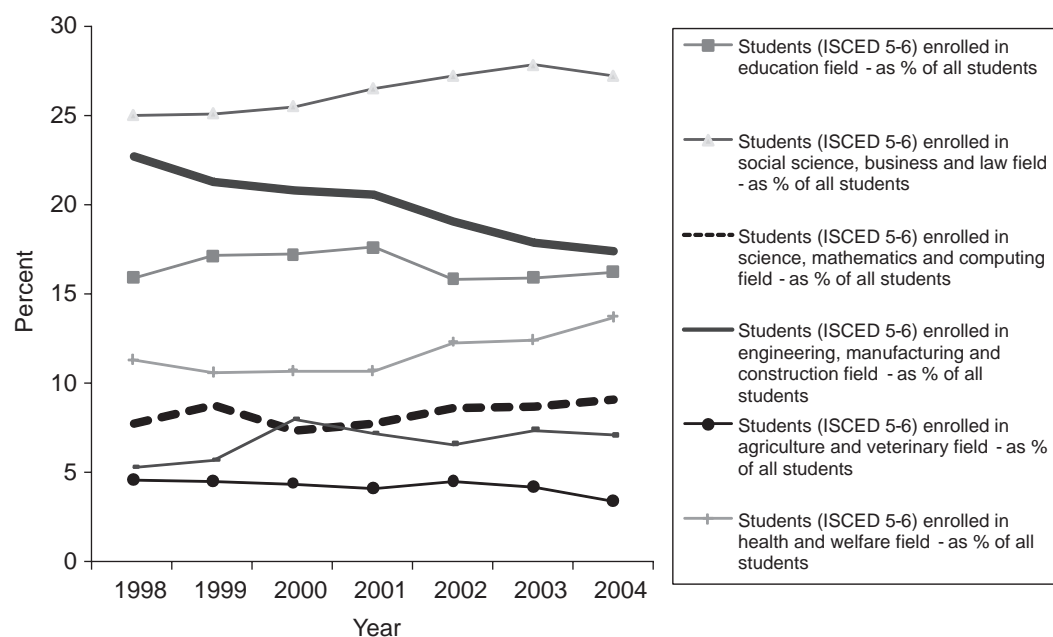
engineering, manufacturing, and construction fields in the late 1990s (figure 4), with comparable levels in the EU again only found in the Czech Republic.²³

Figure 3: Population Age 25–64 With At Least Upper Secondary Education (percent)



Source: Eurostat.

Figure 4: Field of Study (percent of total tertiary education, ISCED 5-6)

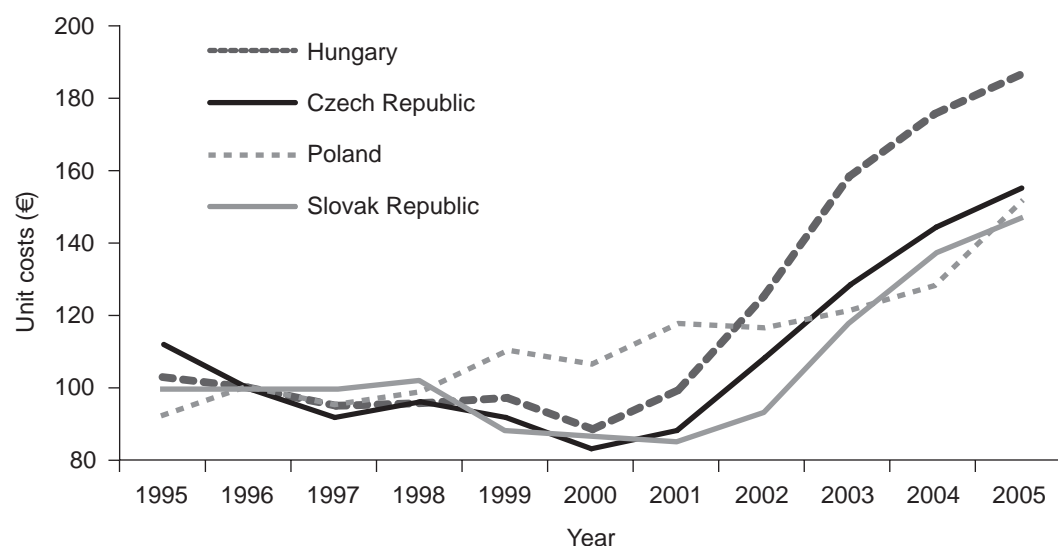


Source: Eurostat.

²³ 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, unit labor costs in the Slovak Republic have been rising at the slowest rate in the region. Even more, at the turn of the century when the major investment decisions were taken, unit labor costs in the Slovak Republic were falling and until 2003 remained the lowest among the Visegrad countries (figure 5). The minimal and average wage in the country was the lowest in the region (table 2).

Figure 5: Unit Labor Costs (1996=100)



Source: EIU.

Table 2: CEE Labor Costs, 2004

Labor issues	Czech Republic		Hungary		Poland		Slovak Republic	
	2004	2006	2004	2006	2004	2006	2004	2006
Minimum monthly wage (€)	212	280	209	230	180	223	152	181
Average gross monthly wage (US\$)/(national currencies)	694	CZK 20,211	724	HUF 171,239	503	zł 2464.66 (QIII)	467	SKK 18,817
Average hourly cost of labor (€, 2005)	5.78	6.56	5.72	6.57	4.92	5.78	4.23	4.59
Social security costs	Approx. 12.5% for employees and 35% for employers.		Approx. 13.5% for employees and 33.5% for employers.		Approx. 48% for employers.		Approx. 28.7% for employers (depending on the type of employment) and 12.4% for employees.	
Harmonized unemployment rate (%)	8.3	7.1	6.1	7.5	19.0	13.8	18.2	13.4

Source: Eurostat, Allen & Overy 2005, KPMG 2006.

Table 3. Strikes and Lockouts in CEE, 1994–2005

	Czech Republic	Hungary	Poland	Slovak Republic
Strikes and lockouts	7	77	1,574	9

Source: ILO.

Wage disparities between the CEE and the EU15 are substantial and likely to remain large for the years to come. At present, the production of a mid-size car is on average 23 percent cheaper in Eastern Europe than in Germany according to estimates by the German Institut für Automobilwirtschaft (Automobil Industrie).

Third, the tendency of the Slovak labor force to go on strike has been significantly lower than in the neighboring Poland or in Hungary (table 3), which might have also played a role in investors' decisions.

In sum, abundance of skilled labor has been a very important factor for the entry of car manufacturing investors. According to Jozef Uhrík, the ex-CEO of VW 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.²⁴ Moreover, according to Uhrík, the quality of VW's labor force and the complexity of its products might have persuaded the management of PSA to invest in the Slovak Republic, since the French top managers had visited the VW plant just days before the final decision to invest in the Slovak Republic.²⁵

Importantly, however, labor shortages have lately been reported in the country. In spite of the remaining relatively high unemployment (13.3 percent in 2006 according to the Labor Force Survey), the arrival of large investors to the Slovak Republic has uncovered shortage of adequately qualified labor in the country.²⁶ The long-term unemployed share a common characteristic: very low education levels (80 percent of all unemployed), meaning that they can hardly serve as a pool of labor for the incoming higher-end investments where job creation is skilled biased (Beblavy and Senaj 2006: 21–22). Moreover, also a significant number of persons without work experience have difficulties finding a job in the country (20 percent of the unemployed; in Beblavy and Senaj 2006: 22–23). Clearly, a skill mismatch due to the vast restructuring of the economies and a much less altered structure of labor pool and nearly unreformed educational system seems to be the current labor market problem in the country

²⁴ Interview with Jozef Uhrík.

²⁵ Interview with Jozef Uhrík.

²⁶ The Ministry of Labor has lately reported long-term lack of qualified labor force in the following sectors and industries: machinery (welders, metal workers), construction (builders, artisans, carpenters), transportation (international lorry drivers, intra-city transport drivers), light industries (sewers), and seasonal shortages in services (waiters, cooks). See Ministry of Labor (2006). Also see: "Firms face labor shortages even in 'hunger valleys.'" (Firmy zápasia s nedostatkom ľudí aj v hladových dolinách), 20.11.2006, www.sme.sk. Also see: Míra Sojková, "the Slovak Republic should be saved by foreigners" (Slovensko majú zachrániť cudzinci), 13.12.2006, www.hnonline.sk.

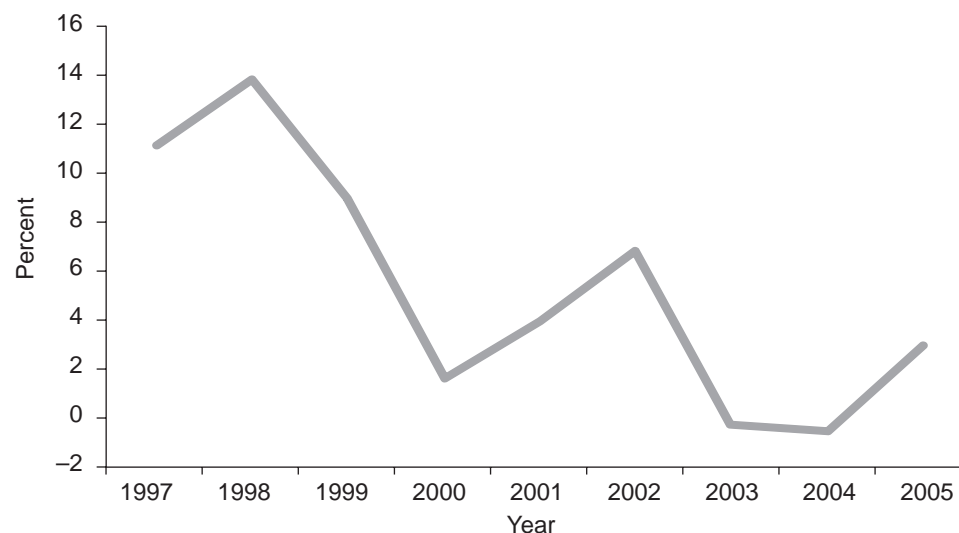
(Beblavy and Senaj 2006; Arratibel et al., 2006). This manifests not only the rapid growth of the manufacturing sector, but also adverse demographic trends and labor migration to the EU15 area, which became a widespread phenomenon after accession (World Bank 2007). At the same time, the Slovak labor force has been unwilling to migrate within the country (Paci et al. 2007).

Financial Intermediation

The cost of borrowing capital in the Slovak Republic has fallen over recent years, as in other transition countries. This has been reflected in the falling real lending rates (see figure 6). The level of financial intermediation increased. Credit to the private sector increased from around 24 percent of GDP in 2002 to 27 percent of GDP in 2006 (EBRD data),²⁷ and spreads between lending and deposit rates fell. These are signs of more stable financial system, sufficient degree of competition among commercial banks, and the development of the country.

Positive changes at the Slovak financial market have also been captured by the EBRD transition indicators. Reforms of the Slovak banking system led to the score of 3+ in 2002 (with scores ranging from 1 to 4 and 4 being a standard of an industrialized market economy; see figure 7). While in 2006, the result was higher and comparable with other countries in the region, the Slovak economy also has progressed in the development of nonbank financial institutions and securities market in 2002–06. However, here the score in 2006 was lower than for any other Visegrad country (see figure 7). Generally, the Slovak financial system is now in a healthy state and resilient to shocks (IMF 2007).

Figure 6: Real Lending Rates in the Slovak Republic, 1997–2005 (percent)

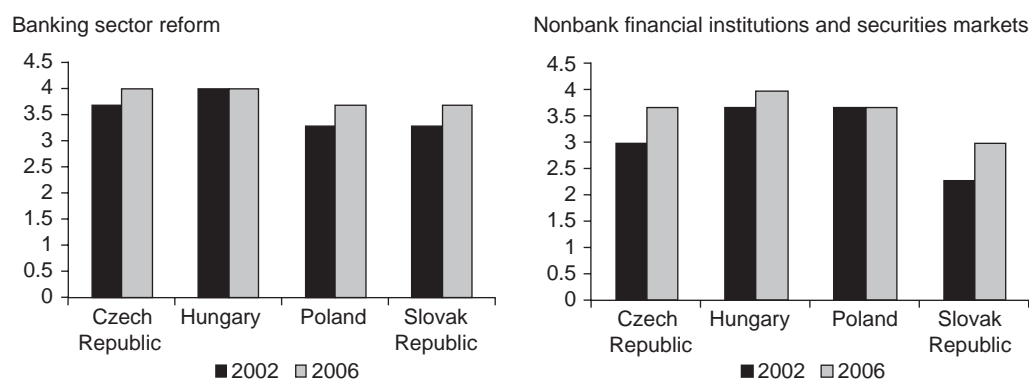


Source: National Bank of the Slovak Republic (nominal short-term rates) and OECD MEI (CPI inflation).

Note: Real lending rates were obtained as a difference between short-term nominal rates and CPI inflation.

²⁷ Credit to the private sector was even higher in 1997–2000. But this reflected the bad loans portfolio.

Figure 7: CEE: Indicators of Financial System Reforms, 2002 and 2006



Source: EBRD Transition Reports.

Note: indicators range from 1 to 4+, with 4+ representing standards of an industrialized market economy.

Table 4: CEE: Tax Rates (percent)

Taxation	Czech Republic	Hungary	Poland	Slovak Republic
Statutory corporate income tax	24	16	19	19
Effective corporate income tax rate	17.1	14.0	17.5	16.8
VAT (general rate)	19	20	22	19
Personal income tax rate	15–32	18–38	19–40	19

Source: Allen & Overy 2005.

Taxation

The Slovak Republic advanced tax reform in 2004 by introducing a flat personal and corporate income tax (CIT) rate, set at 19 percent, unified with the VAT rate.²⁸ With the exception of Hungary, differences among the Visegrad countries on the CIT rate are minor if the effective rate is considered (table 4). The general VAT rate is also broadly similar across the countries. Nonetheless, 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 eliminated 21 different types of taxation of direct income (Ministry of Finance 2005). The Slovak Republic's tax system has been assessed as motivating work and investment (see for example Moore 2005).

Investment Incentives

The above-reviewed evidence notwithstanding, there is strong evidence of "incentive-based competition" among the CEE countries for investments of "strategic" nature, particularly in the last five years. Investors were granted

²⁸ A lower VAT rate applicable only to medicines was introduced in November 2006.

subsidy packages and tax exemptions throughout the 1990s²⁹ (for example, VW Slovakia was granted tax breaks in 1998 on the basis of a government decree). Nevertheless, it is highly probable that an intense competition for strategic investments in the Visegrad region did not start until the turn of this century. This reflected the introduction of an investment incentive scheme by the Czech government in 1998 and the Slovak Republic's vigorous effort to catch up with its neighbors in attracting FDI.

With the EU accession, the CEE countries have had to comply with the EU rules on the provision of state aid. In general, state aid is prohibited by the European Commission (EC) as causing distortions to the single market. Nevertheless, exemptions can be granted to large investment projects, mostly when such projects significantly contribute to regional development and are based on Commission's cohesion policy.

The EU provides a multisectoral framework on regional aid for large investment projects, with an upper ceiling of the total amount of incentives that can be granted to foreign investor in the automotive industry. This level is 15 percent of the total value of investment and applies to the motor vehicle industry as defined by the EC (EC 1997). The EC has to approve the amount of investment incentives proposed by the member states for a strategic investor. The structure of investment incentives, however, is not defined or restricted by the EC, which gives the members flexibility and ample opportunities for competition. It is, however, 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-percent rule (a so-called "indirect" incentive), it has to qualify as a public good. It is also important to note that the nature of the investment agreement itself can be part of the bidding process as well, as the EU needs to approve only the amount, but not the details of the agreement.

In addition to the EC limits on state aid, every CEE country has its own rules for the provision of investment incentives.³⁰ It suffices to note that the general reasons for adopting national rules for the provision of investment incentives include 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 either politically or economically. The Slovak Republic was the last country to adopt an investment scheme in 2005 as a result of pressure following the generous treatment of KIA Motors (and Hankook Tire) a year earlier. According to the former advisor to the

²⁹ 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 percent customs preference over other vehicle importers. In sum, Suzuki Motor Corp. provided just 16.6 percent of the joint venture's start up capital" (Swain 1998: 10).

³⁰ For a comprehensive account of the EU limits on state aid as well as national rules for the provision of investment incentives, see Allen and Overy 2005.

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 both investors and government institutions, since an incentive scheme clearly defines expectations for the negotiating process with investors.³¹ In general, national incentive schemes in the CEE limit state aid offered to investors based on regional characteristics (for example, the unemployment rate) and type of industry (for example, manufacturing, R&D, technological centers, and others). Nevertheless, no matter how detailed an incentive scheme, the CEE states usually allow for special treatment of investors of “strategic importance,” which gives governments flexibility in negotiations with big investors.

All in all, the EU accession of the CEE states has not meant uniformity in incentive rules and the end of competition among the CEE countries based on investment incentives. Table 3A in the Appendix summarizes investment incentives granted to the four largest automotive investments in the region over the past 6 years.

Case Study: PSA Peugeot Citroen

The investments by PSA Peugeot Citroen and KIA Motors have been the largest greenfield investments in the Slovak automotive sector. This study focuses on the first and the next study on the latter investor. Both studies should help understand the complexity of TNC-host government relationships and shed light on the importance of specific factor endowments and policies used for attracting foreign investors.

Shortly after PSA Peugeot Citroen from France, together with Toyota from Japan, decided to invest in a joint manufacturing plant in Kolín, the Czech Republic, the PSA commenced negotiations about its investment in another operation in CEE. In October 2002, the company announced it had decided to invest €700 million in the region in a new factory for the production of small cars, because the region offered “many advantages in labor skills and labor costs.”³² 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 the Slovak Republic. Only Poland and the Slovak Republic were subsequently short-listed, since building two plants (TPCA and PSA) in one country—the Czech Republic—was considered too risky.³³

On January 15th 2003, the company officially selected the Slovak Republic 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 the country’s tradition in car manufacturing. The PSA stated that “the

³¹ Interview with Marek Jakoby, Advisor to the State Secretary of the Slovak Ministry of Finance, Bratislava, May 19, 2006.

³² MF Dnes, 30 October 2002.

³³ MF Dnes, 30 November 2002.

manufacturing facility will enable the group to get closer to the market, in which it is strengthening its position.”³⁴ The Slovak Investment and Trade Development Agency declared that “the Slovak Republic was not even a candidate half a year ago, but we managed to bring the project to a successful finish.”³⁵ The overall financial incentives granted to the French investor amounted to more than €160 million.

The investment was of crucial importance for the Slovak Republic and the planned factory was termed “the investment of the decade” by the Minister of Economy and “another Slovak locomotive” by prime minister Dzurinda.³⁶ 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 the Slovak Republic more.”³⁷

It is clear that the government was mindful of the need to attract foreign investment following the 1998 elections that brought to power a reformist coalition. Other factors also helped. 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. Secondly, there were indications that the other sites did not have adequate infrastructure. There were also indications that the plots were not well prepared for the investment. The Slovak Republic’s proposed site seemed to offer an advantageous geographic location and proper infrastructure. Overall, it is difficult to assess which factors were crucial in PSA’s locational decision because the process was highly confidential.

Case Study: KIA Motors

Expanding production to Europe was an obvious step in KIA’s expansion strategy, following buoyant growth in sales in Western Europe and substantial improvements in perceptions of quality of the brand.

As in the case of the PSA, all four Visegrad countries were initially considered for the KIA investment as well. In early September 2003, the head of KIA in Hungary, Tibor Királyi, declared that only the Czech Republic and Hungary were henceforth candidates for the investment. According to a statement by the Korean press agency Jonhap from early October, the Czech Republic was the main and favorite candidate. However, the company itself refused to comment.³⁸ At that stage, the Slovak Republic was no longer considered a credible candidate, according to a Ministry of Economy official.

³⁴ SME, 16 January 2003.

³⁵ SME, 15 January 2003.

³⁶ SME, 16 January 2003.

³⁷ SME, 16 January 2003.

³⁸ SME, 12 October 2003.

Nevertheless, Pavol Rusko, Minister of Economy, visited Korea and was reported to have made “a very attractive subsidy offer” to the KIA management and the Slovak Republic “got back in the game.”³⁹ Minister Rusko officially declared at a press conference on November 25 that the Slovak Republic and Poland had made it to the final round of the selection process.⁴⁰

Mixed reports, misinformation, and confusion were typical of the first stage of the selection process. According to 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 short list. A representative of Czechinvest commented on Hyundai’s decision: “We are sorry, but we had to refuse requests for above standard investment stimuli that are in conflict with Czech laws and EU directives.”⁴¹

Despite the fact that both Poland and the Slovak Republic had to comply with the 15 percent 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 the provision of an English-language education for employees’ children; hospital; support by the Technical University in Zilina specializing in transport; construction of a railway terminal; completion of the highway to Zilina and a reconstruction of the nearby airport in Dolný Hričov.⁴² The amount of investment incentives offered by the Slovak Republic was officially more than the 15 percent limit (more than €170 million) of the total sum to be invested by KIA. The limit, however, covers only direct state assistance. Additional resources were dedicated to the highway construction (reported at about €700 million), airport reconstruction and others. Further incentives included the promise to build housing for the Korean management not far from the KIA factory, and construct additional housing near Bratislava. The two housing facilities were estimated to have cost more than €40 million.⁴³ Tax breaks were not part of the offer and the investor had not asked for them.⁴⁴

In early March 2004 KIA decided to build its first European plant in the Slovak Republic. The reasons varied, but those most commonly mentioned include cheap and skilled labor, lack of labor actions (strikes), lower taxes, and commitment to develop infrastructure in the region.⁴⁵ Slovak government officials further stressed the Slovak Republic’s improving economic policies, successful reforms, and favorable business environment. According to the Slovak Minister of the Economy Rusko, the offer to Hyundai changed five times only in

³⁹ Interview with a former high Ministry official, who did not wish to disclose his identity, 30 March 2007.

⁴⁰ SME, 25 November 2003 and 25 November 2003.

⁴¹ Korzar, 03 May 2004.

⁴² SME, 14 December 2003.

⁴³ SME, 03 February 2006 and 30 May 2005.

⁴⁴ SME, 17 January 2004. Another commitment included the promise for incentives to subcontractors. This was not included in the investment agreement, however (SME 2006).

⁴⁵ SME, 03 March 2004 and TREND, 15 March 2004.

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 favorable conditions for the Slovak Republic, there would be a real threat that KIA would not come.⁴⁶ All in all, it was not only the lower taxes that attracted KIA to the country, but the government incentives package played an important, if not a key, part in the selection process. The mayor of Zilina, Jan Slota, stated shortly after KIA’s decision that “the Poles could not compete with our offer ... no investor could resist our offers.”⁴⁷

There was public criticism of the investment agreement between KIA Motors and the government because, as critics alleged, 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.⁴⁸ 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 aid or other assistance provided by the government of the Zilina.⁴⁹ Or as one analyst put it, the Slovak Republic’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). Clearly, as this case study indicates, investment incentives played a prominent role in attracting KIA to invest in the Slovak Republic.⁵⁰

Summary: An Assessment of the Slovak Republic’s FDI-Related Factors and Policies

The Slovak Republic has attracted a sizable share of automotive investment inflows in recent years. The key factors underpinning this outcome reflect include, first, favorable initial conditions, including the BAZ factory that operated in communist times and was acquired by VW in the early 1990s. The expansion of VW Slovakia and the high quality and complexity of its products prompted other car manufacturers to take notice. The existing supply network—if modest in the late 1990s—was also of great importance for investors that followed this century. The abundance of skilled labor employed in manufacturing was also a key precondition.

Second, the Slovak Republic underwent a significant change in economic policies after 1998, embarking on ambitious fiscal and structural reforms that created a world-class business environment. The Slovak Republic was branded a top reformer and one of the most investor-friendly countries in Central Europe.

⁴⁶ SME, 06 March 2004.

⁴⁷ *Trend*, 02 March 2004.

⁴⁸ *Trend* 2004.

⁴⁹ *Trend* 2004.

⁵⁰ Note, however, that personal political ambitions of Pavol Rusko played a very important role in the whole process. Some of field interviewees of the co-author of this study confirmed that it was Rusko’s ambitions and his failure to communicate with other ministers that contributed to the weaker position of the government in relation to the investor.

Last but by no means least, the Slovak Republic 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.

4. The Current Condition of the Automotive Sector in the Slovak Republic

The 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.⁵¹ The importance of the sector for the economy is not only underlined by the employment of more than 10 percent of the Slovak labor force in manufacturing, but more importantly by the high propensity for linkages with local suppliers. Moreover, it is projected that the industry will produce 800,000 cars a year by 2010, elevating the Slovak Republic as one of the world's leading car producers as measured on a per capita basis.

This chapter analyzes the current condition of the automotive sector in the Slovak Republic and outlines the most important characteristics such as geographic concentration, foreign ownership, production, export, profitability, linkages with local suppliers, and labor productivity. Perspectives for the automotive sector in the Slovak Republic and its future challenges are also outlined.

Geographic Concentration

The automotive industry in central Europe is concentrated in southern Poland, the eastern Czech Republic, the western Slovak Republic, and northern Hungary. Most of the production is located within a circle with a diameter of about 400 kilometers (figure 1A in the Appendix).

According to the Slovak Ministry of Economy, the automotive production in the Slovak Republic is concentrated in three regional clusters (see figure 8). The first and the strongest cluster is in the western part of the country, where both VW and the PSA factories are located. The second regional cluster is in the northern and central part of the country, centered on Kia Motors' plant. The third cluster is in east, with the Kechnec industrial park in Kosice housing several key suppliers, including Gertrag Ford transmissions and Molex.

⁵¹ Information given by Business and Innovation Center Bratislava.

Figure 8: The Slovak Republic: Geographical Concentration of Automotive Production



Source: Excerpted from Ministry of Economy 2005, p. 7.

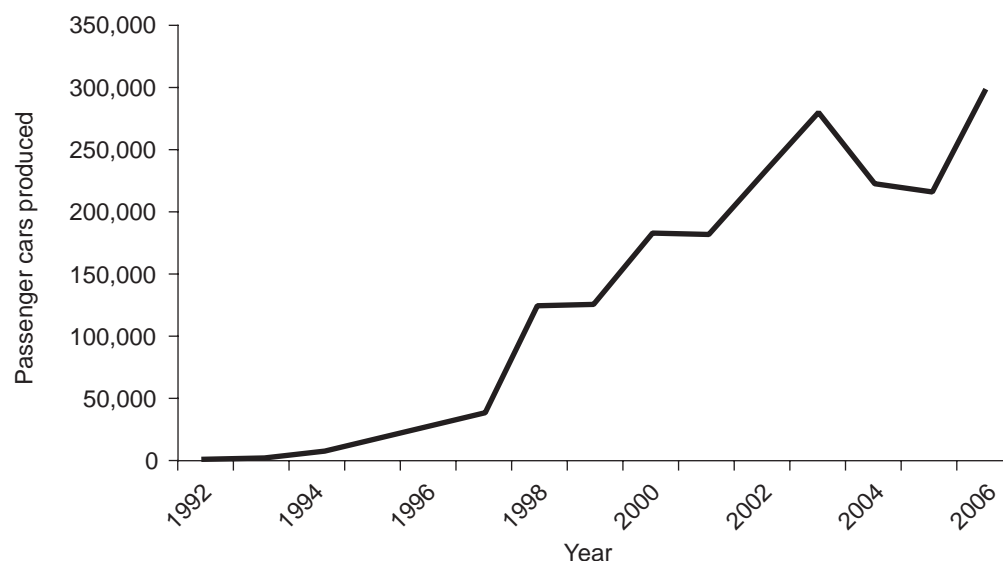
Production

The four Visegrad countries account for 12.2 percent of the total EU-27 production of passenger cars, or 2 million cars.⁵² the Slovak Republic's production amounted to 300,000 motor vehicles in 2006. With two of the three manufacturers starting producing only in 2006 (PSA in July 2006 and KIA in December 2006), these numbers are only part of the fuller picture. Production is set to rise substantially in the coming years, and reach capacity of about 800,000 by 2010.

Until 2006, car output reflected solely production at VW Slovakia (figure 9). 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 stimulated the rapid expansion of the company and in 2002 output exceeded 200,000 cars for the first time (see box 1 for an overview of the company). During 2003–05, the factory underwent substantial technological upgrades to meet the requirements necessary for starting the production of Audi Q7—hence the temporary decline of output. In 2006, the majority of the market still belonged to VW. KIA produced 5,014 passenger cars (KIA cee'd), PSA 51,719 (Peugeot 207s), and VW 238,647 cars (VW Touareg, Audi Q7, VW Polo).

⁵² Calculated on the basis of ACEA 2007: 19.

Figure 9: The Slovak Republic: Production of Passenger Cars, 1992–2006



Source: ZAP SR.

Box 1: Volkswagen Slovakia

VW was 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 Passat and only later moved to more complex all-wheel drive models (Golf Syncro). The skilled workforce and the positive experience with producing the Syncro models led to VW's decision to start production of the Touareg, the company's first ever sport-utility vehicle, in 2003. (The Bratislava plant also produces two other luxury SUVs from the VW group—the Audi Q7 and Porsche Cayenne.) According to Jozef Uhrik, former CEO of VW, VW Touareg is “a truly Slovak car,” since 60 percent of the value is added by suppliers located in the Slovak Republic.

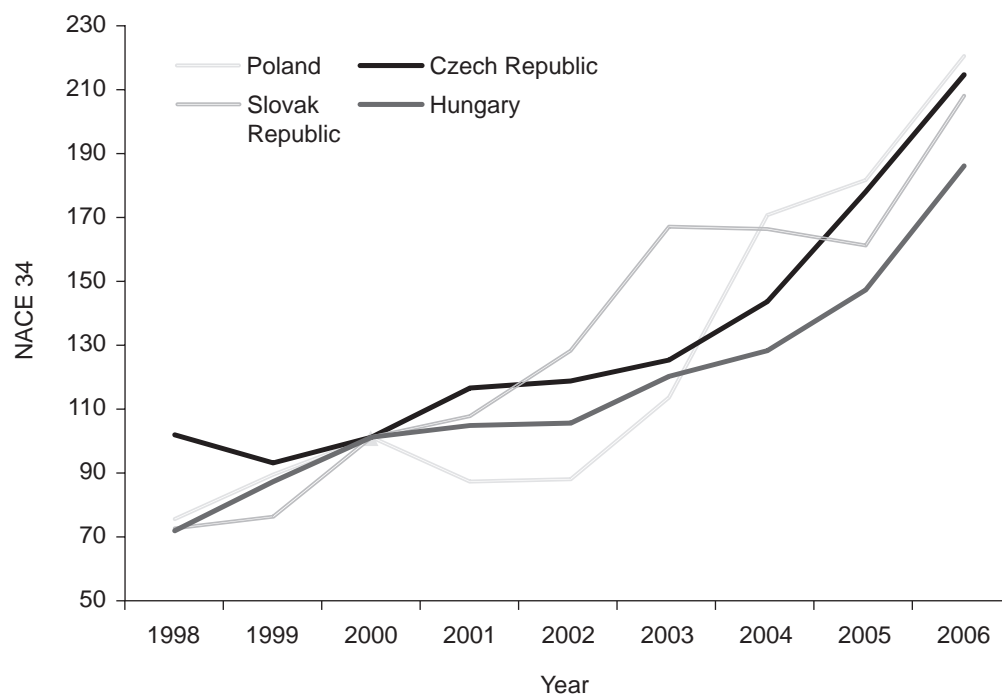
VW has another factory in Martin, the Slovak Republic, employing over 1,000 workers and specialized in the production of transmissions and transmission parts.

VW plans to invest €200 million in the Slovak Republic in 2008–09. Although a significant increase of the total number of produced cars in the factory in Bratislava is not planned after capacity is reached by 2010, Volkswagen Slovakia will increase the share of complex SUV models in its production in the following years.

Sources: Interview with Jozef Uhrik; VW press releases; *Trend* Jan 5, 2007, and *Trend* Top 200 2006.

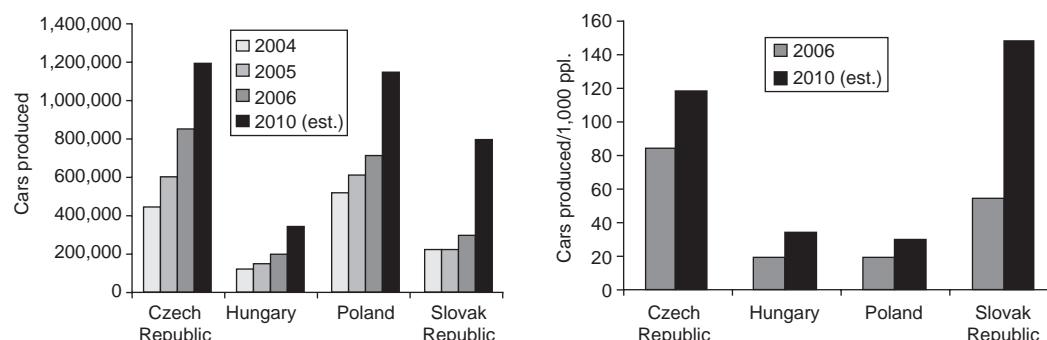
Among the Visegrad countries, the Czech Republic lead the production in the region with almost 850,000 cars produced in 2006, followed by Poland with 632,300, the Slovak Republic and Hungary (187,633) (see figure 10). On a per capita basis, the Slovak Republic will be the regional leader by 2010 when both PSA and KIA reach their full capacity (figure 11).

Figure 10: CEE: Automotive Production (NACE 34), 1998–2006



Source: Eurostat.

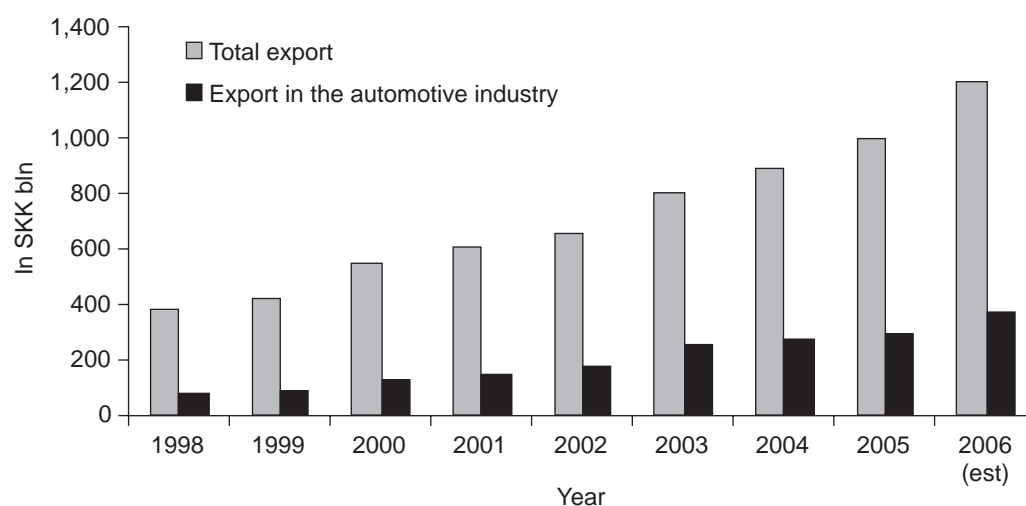
Figure 11: CEE: Current and Forecasted Production of Cars, 2004–10



Source: ACEA, ZAP, authors' estimates.

Nevertheless, when analyzing 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 also the case of the Slovak 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 than output of manufacturing of motor vehicles in the Slovak Republic in 1998–2005 (see figure 2A in the Appendix).

Exports Figure 12: The Slovak Republic: Manufacturing and Automobile Exports, 1998–2006



Source: ZAP SR.

Most of the passenger cars produced in the three Slovak car factories are exported. Car exports have risen faster than overall exports since 1998 (figure 12), with the share of car exports rising from 20 percent in 1998 to more than one third in 2006. VW is the leading exporter. The largest market for Slovak exports of motor vehicles and parts (SITC 78) is Germany (47 percent), followed by the United States (10 percent). The large U.S. share is explained by high sales of SUVs—VW Touareg and Audi Q7—on the American market (both manufactured exclusively in Bratislava). It is estimated that almost half of the production volume of the Audi Q7 targets the American market.

Regarding the share of export of motor vehicles (SITC 781) in total exports, the Slovak Republic is leading the Visegrad countries with approximately 12 percent in 2005, followed by the Czech Republic, Poland, and Hungary (figure 3A in the Appendix). The share of car exports in the Slovak Republic dropped by 6 percentage points between 2003 and 2005, thanks to the dynamic development of the other parts of the economy and retooling of the VW factory in Bratislava. Moreover, this decrease is likely to be reversed going forward as output is boosted to capacity by 2010. Hungary is the only Visegrad country with a declining share of car exports within total exports since 1999.

Profitability

VW Slovakia is the largest company in the country by consolidated revenues and the fourth by profitability.⁵³ The company's turnover increased by almost 30 percent in 2006 (to €5.2 billion) from 2005. VW's profit in 2005 was about €136 million.⁵⁴ In comparison, the turnover of Škoda Auto from the Czech Republic

⁵³ Data for 2005, *Trend Top 200 2006*.

⁵⁴ Data for 2006 profit not available.

amounted to €6.7 billion in 2006 and its profit was €383.2 billion (48 percent higher than in 2005.) TPCA's operation in Kolin has not yet recorded profit in its three years of existence (table 5).

Linkages with Local Suppliers

Production of parts for automotive vehicles has been growing faster than production of cars since 1998 (figure 13), reflecting, in part, growing exports to the neighboring countries. VW remains the preferred destination for suppliers, although the share of other manufacturers is picking up strongly (see figure 14). Available data suggests that the number of companies in the auto supply sector (NACE 343) increased from 18 in 1998 to 34 by 2001 and 49 by 2004 (Eurostat).

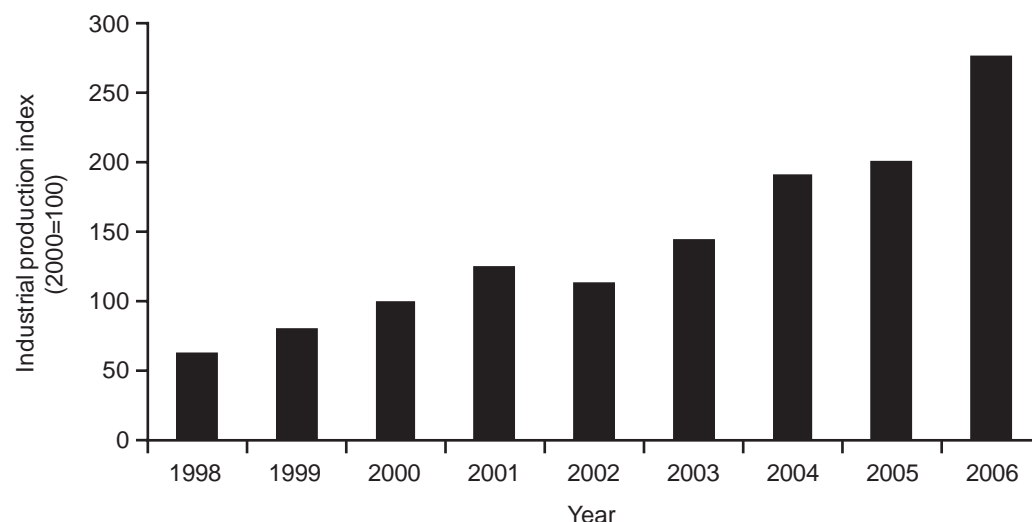
The industry is largely foreign-owned with traditional supply companies, including Johnson Controls, SAS Automotive, INA, and Lear Corporation in the lead. The first three of these are among the largest five engineering companies in the Slovak Republic.⁵⁵

Table 5: Sales, Profits, and Employment of Czech and Slovak Automotive Firms, 2006

Firms	Turnover (billion €)	Profit (million € after taxes)	Employees	Cars produced
VW Slovakia	5.2	N/A (135.7 in 2005)	9,200	238,647
Škoda Auto (Czech Rep.)	6.7	383.2	26,738	556,433
TPCA (Czech Rep.)	1.75	< 0	3,500	293,650

Source: Škoda Auto 2006 Annual Report + press releases.

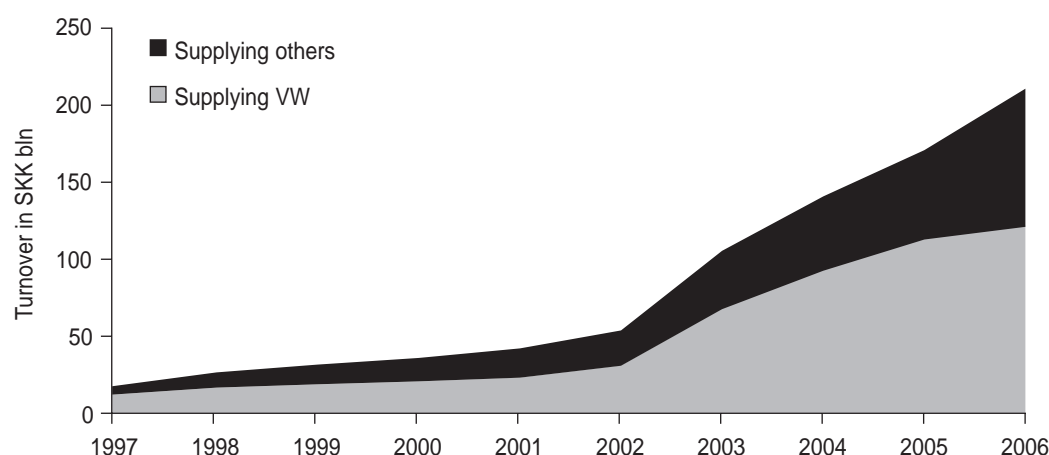
Figure 13: The Slovak Republic: Industrial Production for the Auto Parts Sector (NACE 343)



Source: Eurostat.

⁵⁵ *Trend* Top 200 2006 rankings.

Figure 14: The Slovak Republic: Turnover in the Auto Parts Sector, 1997–2006 (SKK billion)



Source: ZAP SR.

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.⁵⁶ (Table 4A in the Appendix lists top 25 engineering companies in the Slovak Republic.) This should be seen in perspective, however, as Matador was a much smaller supplier in 1998. Indeed, the presence of foreign-owned suppliers is having a spillover effect, and should help spur further domestic competition.

The degree of propensity for linkages also depends on the specific type of production. The more complex a vehicle and the more technologically advanced and capital intensive its production, the more likely it has been that it will be manufactured in one factory only. The latter makes it more likely that links to local or regional suppliers will be developed. For example, VW Slovakia produces all VW cars based on the 7L and 4L platforms (VW Touareg, Porsche Cayenne and Audi Q7). According to VW, 70 percent of all components for the Slovak plant are manufactured in the Slovak Republic. By contrast, the cheapest and the least complex of all models made in VW's Bratislava factory (the VW Polo) has an estimated local content of 20–30 percent. This reflects the fact that the Polo is also manufactured in Pamplona, Spain, with its own cluster of key suppliers.

The geographical proximity of KIA in Žilina and its sister factory Hyundai in Nošovice (Czech Republic), together with the production of models based on the same platform in both plants, will make it easier and more cost efficient to share suppliers and parts. Under the arrangement, KIA will supply engines to the Nošovice plant and Hyundai will manufacture gearboxes for both factories.⁵⁷ KIA in Žilina is the only plant Kia's parent has in Europe; Hyundai factory in Nošovice, meanwhile, will only be completed in 2009, hence the high propensity

⁵⁶ *Trend* Top 200 2006 rankings.

⁵⁷ *Trend*, 11 September 2006.

for linkages. Matador Automotive, the largest Slovak supplier of “first-tier” components, has already signed an important contract with KIA.⁵⁸ In contrast to the arrangements by KIA, the PSA plant will import engines and other important parts from France and the neighboring countries (including the Czech Republic).⁵⁹

Even though backward linkages are one of the most important sources of spillover for the host economy, measuring them is not easy. This paper finds that domestic market turnover for the sector (manufacture of transport equipment, NACE 34) is the most relevant proxy explaining growth of local suppliers’ market. Figure 15 indicates a sharp increase in turnover during 2000–06, reflecting the start of the production of VW Touareg in 2003 and the preparation of the PSA and the KIA investments.

Employment

According to the Slovak Automotive Industry Association (ZAR), the automotive industry accounts for about 10 percent of manufacturing employment in the country (see figure 5A in the Appendix for total employment in the sector). Data from the Statistical Office show a lower share of 6 percent, by contrast. Despite the discrepancy in these data, employment in the industry has been rising rapidly since at least since 2000.⁶⁰ During 2000–06, the automotive sector in the Slovak Republic accounted for nearly 40 percent of all new jobs generated in manufacturing.

Reflecting developments in production and investment, employment in the automotive sector has grown most rapidly in the Slovak Republic among the Visegrad countries (figure 15). According to Euler Hermes, new EU member states have recorded an increase of 90,000 jobs in the automotive industry for the past six years, while 117,000 jobs in the sector were lost among the EU15 since 2000. It is estimated that the Slovak automotive sector will employ as many as 100,000 people by 2010.

Labor Productivity

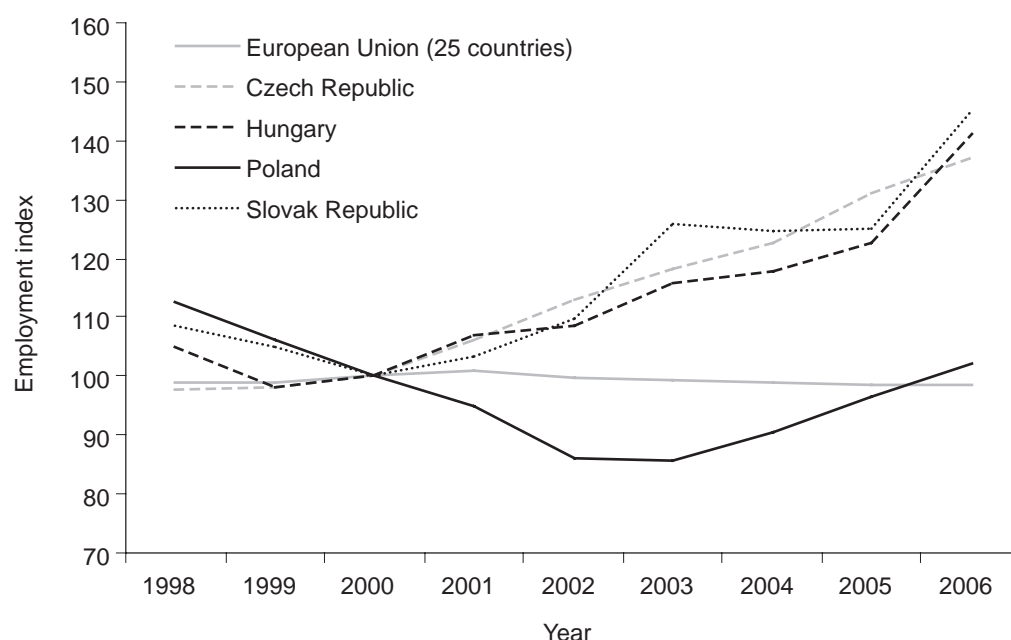
Productivity of labor in the automotive sector has been growing much faster than the manufacturing average (figure 16). There were more pronounced peaks in productivity growth in 1998 and 2003, resulting from the start of automobile production in VW Slovakia (see figure 9).

⁵⁸ *Trend*, 25 March 2006.

⁵⁹ *Trend*, 25 March 2006.

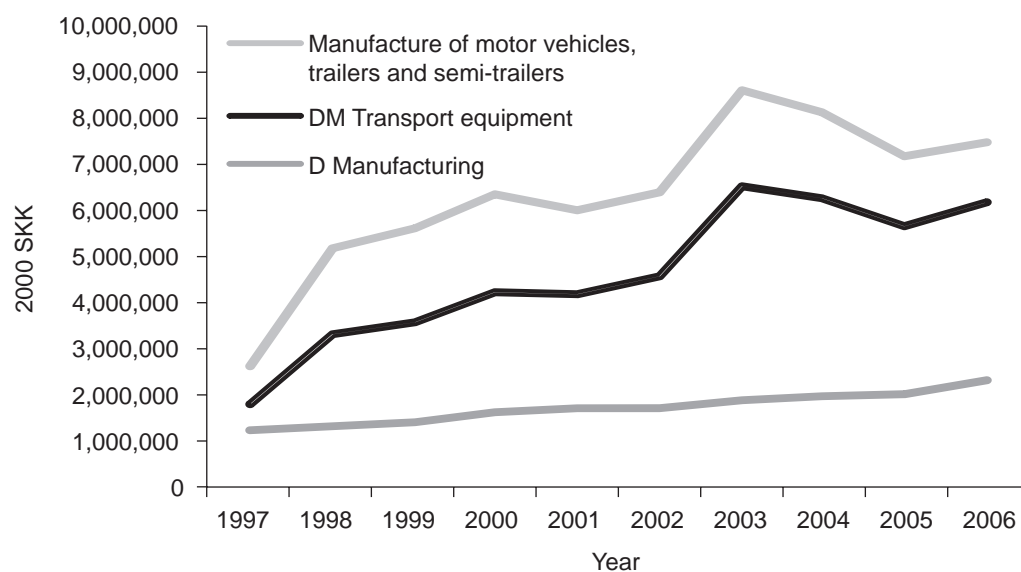
⁶⁰ Data from Slovak Statistical Office show even a constant growth of employment in the Automotive industry at least since 1997.

Figure 15 Employment Index (2000=100) in Automotive Industry, CEE and EU25, 1998–2006



Source: Eurostat.

Figure 16: Slovak Republic: Labor Productivity in the Automotive Industry and Manufacturing, 1997–2006



Source: Slovak Statistical Office, authors' calculations.

Note: Labor productivity is expressed as yearly turnover per person employed (in constant 2000 SKK).

A temporary decrease in productivity took place in 2005 when production in VW slowed down due to technology upgrading. Overall, the growth of productivity outpaced the growth of wages in the sector during 2000–06.

Moreover, with growth of labor productivity outpacing increases in average wages (figure 6A in the Appendix), there is little risk that wage increases will contribute to higher inflation.

Comparing productivity in different manufacturing plants is difficult. Table 6 summarizes important data for VW Slovakia and Škoda Auto. VW Slovakia produces more cars per employee. Nevertheless, while the final output of VW produces are, in general, more complex and expensive cars, preassembled components produced outside the factory are a larger part of total output than in Škoda Auto. The latter, therefore, utilizes more employees. Therefore any comparison between the two companies should be purely informative.

Perspectives and Challenges for the Future of the Automotive Industry in the Slovak Republic

The Slovak automotive industry is expected to grow in the near future. According to ZAP's estimates, the automotive sector will employ nearly 100,000 people and produce 800,000 cars by 2010. Nonetheless, there are two main challenges for the future of the automotive industry in the Slovak Republic.

Firstly, despite the skilled labor and still high unemployment (about 13 percent in 2006), the arrival of large investors to the Slovak Republic has uncovered shortage of adequately qualified labor in the country (SME 2006), especially in close vicinity of the factories.^{61, 62} The Slovak Ministry of Labor has reported long-term lack of qualified labor in a number of sectors and industries including machinery (welders, metal workers; Slovak Ministry of Labor 2006). In the car industry, the need for 40,000 additional workers will be dealt with by 'importing' labor from abroad and helping bring education to levels that would help serve the needs of the industry. For this reason, the car producers together with ZAP have commenced long-term cooperation with Slovak technical secondary schools and universities.

**Table 6: Comparison of Financial and Production Figures
between Czech Škoda Auto and Slovak Volkswagen in 2005**

Company	Turnover (€ billion)	Profit (€ million after taxes)	Employees	Cars produced	Cars/ employee	Turnover/ employee (€ thousands)
VW Slovakia	4.035	135.7	7,900	218,349	27.6	510.8
Škoda Auto	5.967	247.1	26,014	494,637	19	229.4

Source: Škoda Auto 2005 Annual Report and press releases.

⁶¹ SME, 20 November 2006.

⁶² Labor mobility has been rather limited in the Slovak Republic, even though there are large differences in wages and unemployment rates across the Slovak regions (Paci et al, 2007 for an overview).

Secondly, larger investments are needed in research and development in the automotive industry.⁶³ According to the ZAP, the establishment and development of R&D centers at technical universities and in the Slovak Academy of Sciences is vital for the increase in the Slovak Republic's competitiveness in the industry. Increased outlays on R&D should help boost growth in value added and help ensure strong and sustained output expansion even after the advantage of lower labor costs in the Slovak Republic disappear.

5. Summary and Conclusions

Over the last decade, the Slovak Republic has become more integrated into the global economy on the basis of ambitious and thorough economic reforms that helped attract large flows of FDI. The automotive industry has accounted for two out of every five jobs created in the country in recent years and has underpinned the surge in growth in output and exports. Recent investments in the automotive industry are yet to fully bear fruit; the three existing manufacturers will reach full capacity only by 2010, further strengthening the sector's significance for the country's economy. This section summarizes the evidence presented earlier.

The factors that underpinned the development of the automotive industry in the Slovak Republic are numerous, but key among them are the decisive economic reforms begun in 1999 and strengthened in 2002–05. The irreversibility of reforms has been all but guaranteed and the Slovak Republic is likely to be the first among the larger central European countries that will join the eurozone in 2009. Initial conditions, including the quality of the labor force, have also been important.

Improved prospects for EU accession at the turn of the century, together with decisive progress in aligning domestic legislation with the *acquis*, helped anchor investor expectations about economic policy and future developments. On the political front, reforms received impetus from the popular perception, likely correct, that the country would have been excluded from the 2004 accession wave without deep reforms. This was enough to unite the anti-Mečiar political opposition and attract voters. It also allowed Prime Minister Dzurinda to remain in office for two consecutive mandates as the population supported continuity in economic policy that made it possible for EU accession to take place in 2004. EU membership, moreover, brought about options that would not have been available otherwise in terms of accessing new markets and fostering stability. From the investor perspective, the tax reform that set a flat rate for PIT and CIT, harmonized with a single VAT rate, brought transparency and predictability and was perceived very well.

⁶³ Interview with Jozef Uhrik.

The structure and level of education of the labor force were important advantages. The Slovak Republic has very high share of population with secondary education, even by EU standards, and technical higher education was traditionally popular. This, coupled with the lowest costs of labor in the region and prospects of continued large wage differentials compared with the EU15, has also helped attract manufacturing FDI.

The Slovak Republic's favorable geographic location in the center of Europe was also a factor, given that transport costs matter hugely for the automotive industry. Production linkages with other CEE countries and EU15 countries also mattered.

Finally, when looking at the recent investment deals, the issue of investment incentives is worth considering. First, the fiscal incentives in the form of tax breaks offered to VW in 1998 helped trigger the expansion of the production and move it into the high-technology segment. This expansion of production helped attract car suppliers, resulting in a measurable agglomeration effect that ultimately helped attract other producers. All of this was possible although the government had not yet articulated its automotive policy in the 1990s. Second, to help attract the latest two big automotive investments (PSA of 2003 and Kia of 2004), the Slovak government offered generous incentives, even when compared with the last two big automotive projects located in the Czech Republic. Nonetheless, the attractive location offered in the Slovak Republic (for PSA) mattered. The deal with Kia, meanwhile, seemed to be largely motivated by the large amount of state aid and other incentives. Promises of significant investment into local infrastructure helped the project advance without violating EU limits on state aid.

The impact of the automotive industry on the Slovak economy has been substantial, helping boost growth in output, exports, and employment. The emergence of domestic car suppliers that have also begun supplying companies in the neighboring countries has been a welcome second-round effect, as has been the impact of stronger productivity growth than the average for the economy. Further, providing the education needed for the labor force of the twenty-first century, and creating the right incentives for more robust research and development activity, are becoming key priorities for the government and will have a positive effect on the broader economy in the years to come. Another challenge for the authorities will be how to help boost labor mobility domestically and deal with regional disparities in economic development. While good policies in these areas should help delay the likely labor shortages, such shortages are likely to emerge over the medium term. Dealing with such shortages within the expanded EU is a key challenge.

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Jozef Uhrík, 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 Slovak Trade with Non-Transition Countries, 1992–2004 (percent)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Slovak Republic	n.a.	39.5	44.9	45.6	49.4	54.2	62.0	62.0	64.0	62.0	63.5	66.1	62.6

Source: EBRD Transition Report 2000 (1993–98); EBRD Transition Report 2005 (1999–2004).

Table 2A: Share of Trade in Slovak GDP, 1992–2004 (percent)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Slovak Republic	117.0	93.2	91.6	94.7	100.9	104.6	110.9	105.3	114.8	140.4	127.3	135.7	138.6

Source: EBRD Transition Report 2000 (1993–98); EBRD Transition Report 2005 (1999–2004).

Table 3A: Investment Incentives in the Slovak Republic and the Czech Republic in Four Largest Greenfield Automotive Investments, 2002–06

Start date	Country of project	Investor	Amount per job (estimated, in US\$)
2002	Czech Republic	TPCA	37,000
2006	Czech Republic	Hyundai	48,000
2003	Slovak Republic	PSA Peugeot Citroën	50,000
2004	Slovak Republic	Kia Motors	86,000

Sources: Slovak Ministry of Finance; Czechinvest; authors' calculations.

Table 4A: The Biggest Companies of the Slovak Engineering Industry According to Consolidated Revenues in 2005

Rank	Automotive industry	Company	Net revenues 2005 (SKK thousands)	Change 2005/2004 (%)
1.	yes	Volkswagen Slovakia, a.s., Bratislava	154,802,791	-11.0
2.		Whirlpool Slovakia, s.r.o., Bratislava	11,851,037	-10.3
3.	yes	Johnson Controls International, s.r.o., Bratislava ¹	9,903,778	n.a.
4.	yes	SAS Automotive, s.r.o., Bratislava	7,998,928	-11.5
5.	yes	INA Skalica, s.r.o., Skalica	7,663,741	23.3
6.	yes	INA Kysuce, a.s., Kysucké Nové Mesto	5,922,898	38.9
7.		Embraco Slovakia, s.r.o., Spišská Nová Ves ²	5,500,000	n.a.
8.	yes	Lear Corporation Slovakia, s.r.o., Lozorno	4,179,352	-12.4
9.	yes	ZF Sachs Slovakia, a.s., Trnava	4,129,214	15.3
10.	yes	HBPO Slovakia, s.r.o., Lozorno	3,818,657	-6.7
11.		Slovenské energetické strojárne, a.s., Tlmače	3,654,607	-15.1
12.		Tatravagónka, a.s., Poprad	3,112,752	-13.2
13.	yes	Matador Automotive Vráble, a.s., Vráble	2,974,220	4.1
14.		Protherm Production, s.r.o., Skalica	2,841,107	11.3
15.	yes	Tower Automotive, a.s., Malacky	2,815,105	1.5
16.		Sauer-Danfoss, a.s., Považská Bystrica ³	2,571,768	15.5
17.		ŽOS Trnava, a.s., Trnava	2,444,688	-13.0
18.		Slovnaft montáže a opravy, a.s., Bratislava	2,349,508	21.2
19.	yes	RF, s.r.o., Malacky	2,137,118	19.4
20.		Danfoss Compressors, s.r.o., Zlaté Moravce	1,962,908	38.8
21.		Omnia, a.s., Bratislava	1,937,344	12.0
22.		PSL, a.s., Považská Bystrica ^{3, 4}	1,868,534	28.8
23.		Slovenské lodenice Komárno, a.s., Bratislava	1,597,168	12.1
24.	yes	Küster-automobilová technika, s.r.o., Vlkanová	1,427,770	24.4
25.		ZF Boge Elastmetall Slovakia, a.s., Trnava	1,218,027	-3.3

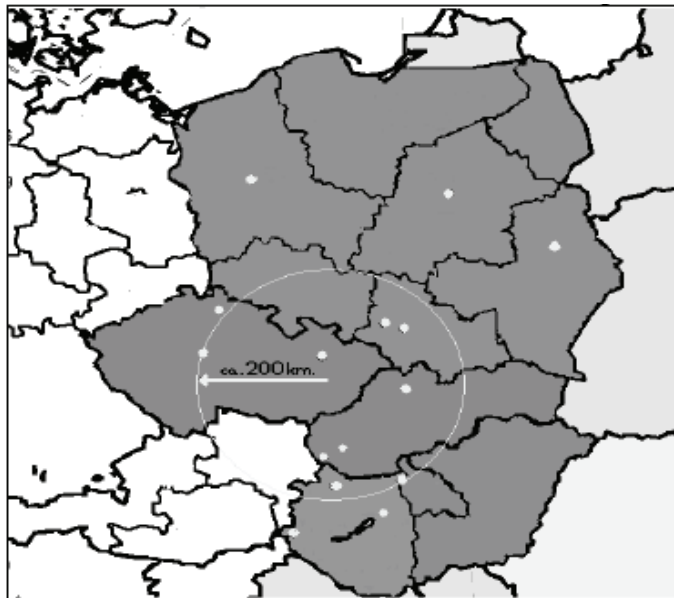
Source: Trend Top 200 2006.

Table 5A: CEE: Tertiary education for age group 25-64, 1995-2004

As a percentage of the population of the age group										
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Czech Republic	10.6	10.4	10.6	10.4	10.8	11	11.1	11.9	12	12.3
Hungary	..	13.4	12.2	13.2	13.5	14	14	14.2	15.4	16.7
Poland	9.9	..	10.2	10.9	11.3	11.4	11.9	12.6	14.2	15.7
Slovak Republic	11.1	11.5	10.5	10.3	10.1	10.4	10.9	11	11.8	12.4
OECD average	19.3	20.1	20.8	20.7	21.2	21.9	22.6	23.4	24.1	25.2

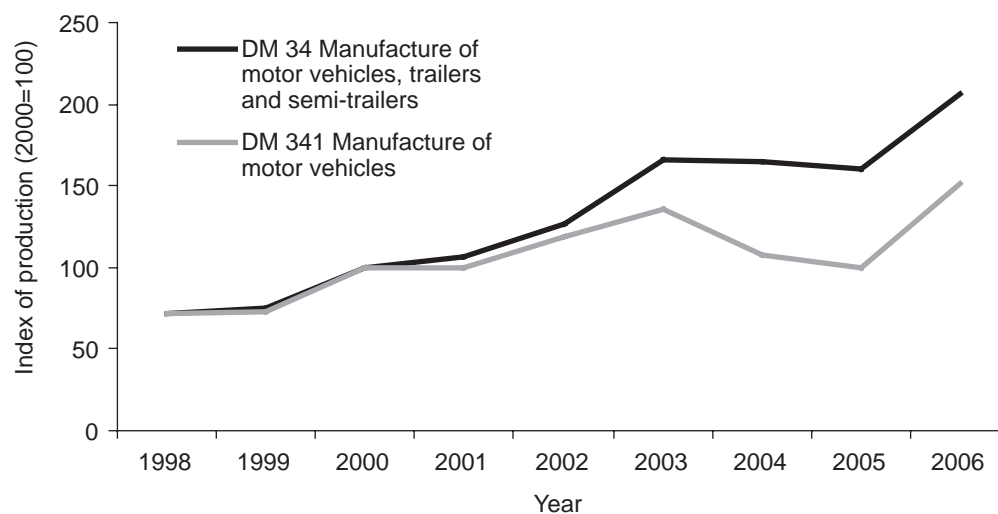
Source: OECD Factbook 2007.

Figure 1A: Automotive Cluster in Central Europe



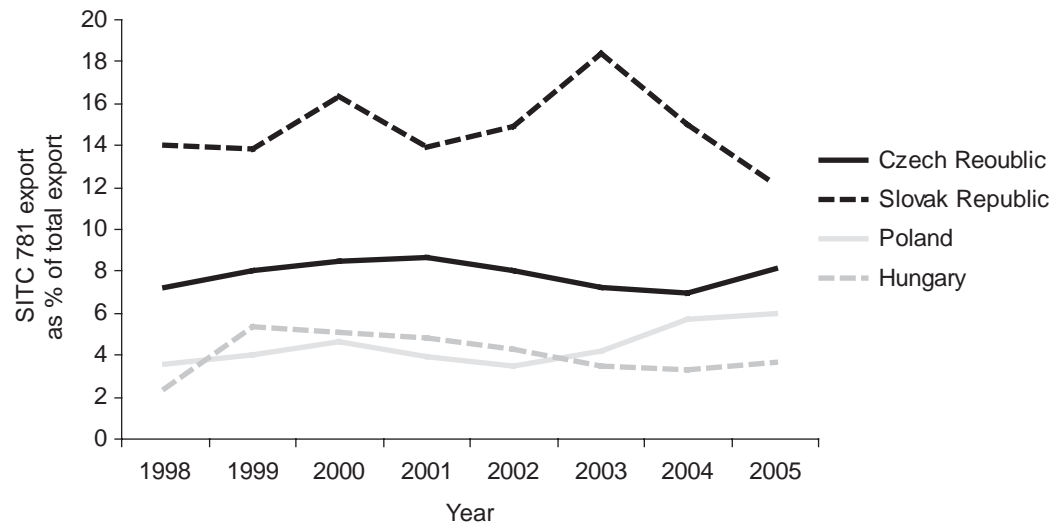
Source: IMF.

Figure 2A: Index of Production for NACE 34 and NACE 341, 1998–2006



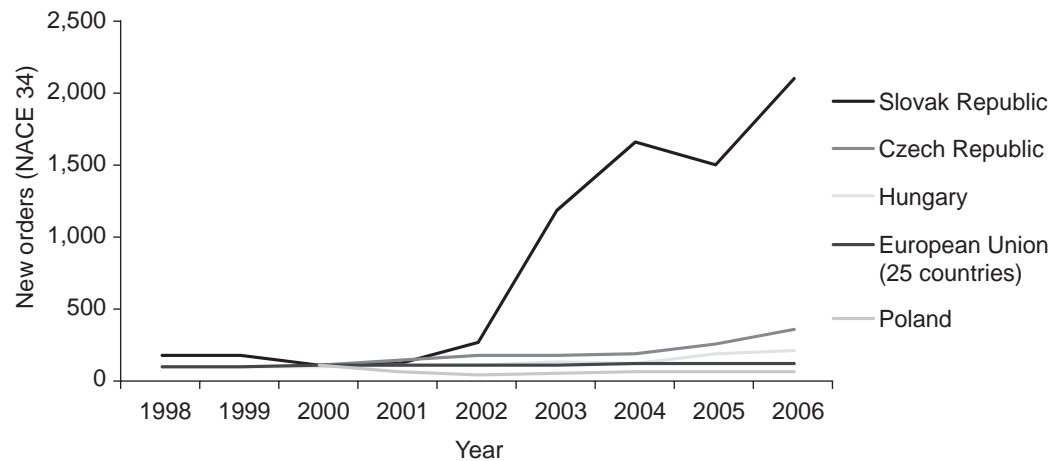
Source: Eurostat.

Figure 3A: CEE: Export of Motor Vehicles (SITC 781) (percent of total exports)



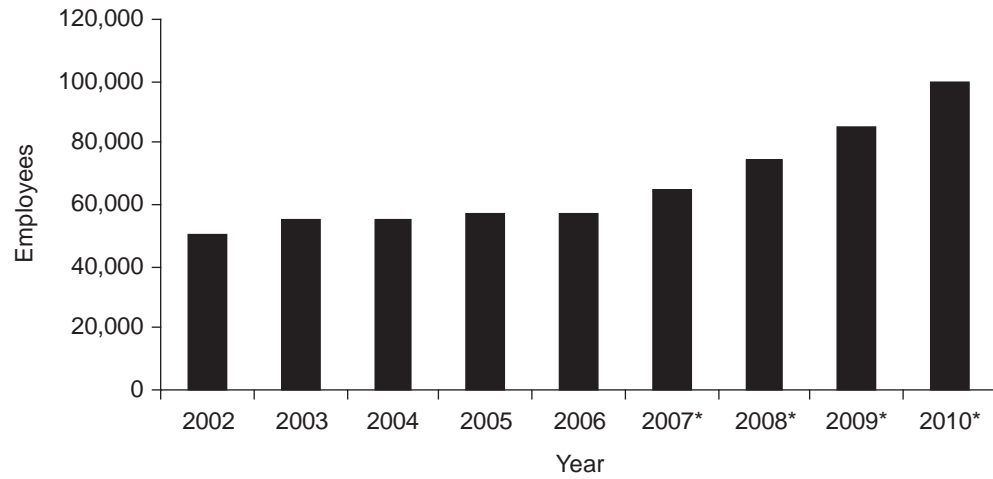
Source: COMTRADE, authors' calculations.

Figure 4A: New Orders NACE 34—Domestic Market, 1998–2006



Source: Eurostat.

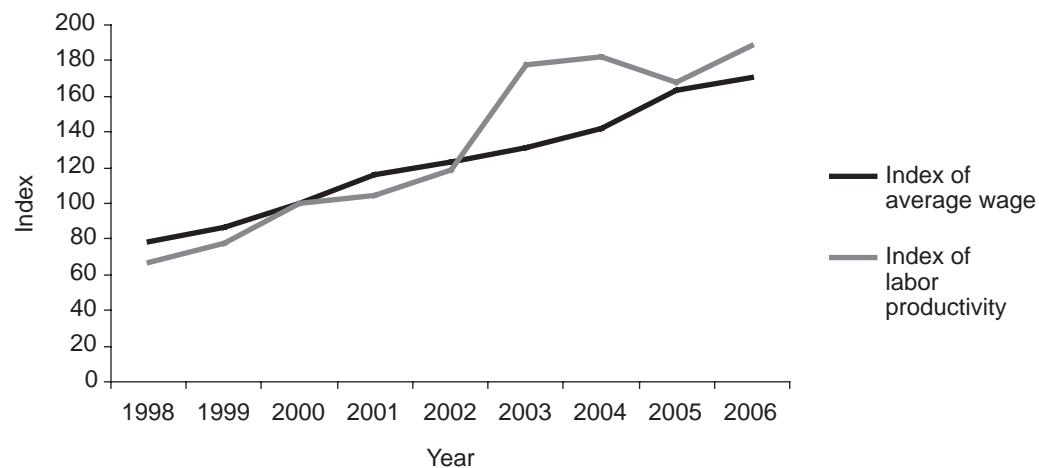
Figure 5A: The Slovak Republic: Current and Projected Employment in the Auto Industry, 2002–10



Source: ZAP SR

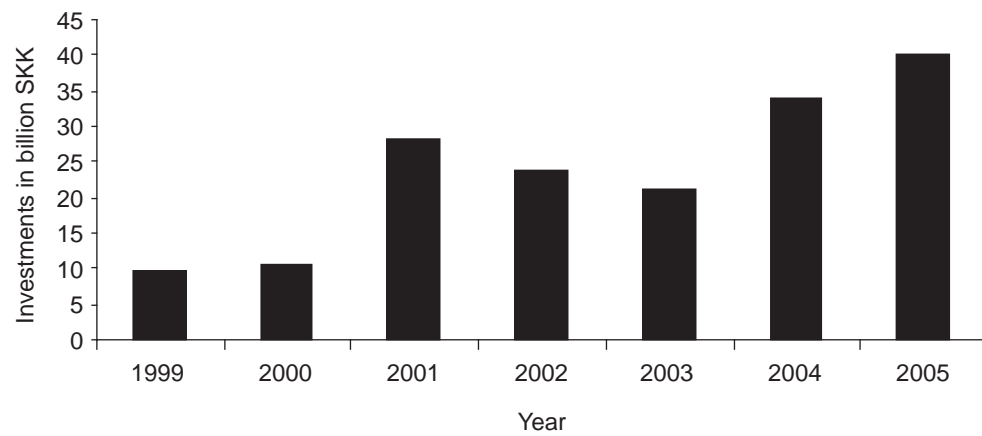
Note: * - projected by ZAP

Figure 6A: Indices of Labor Productivity and Average Wages in the Automotive Industry (NACE 34) in the Slovak Republic, 1998–2006



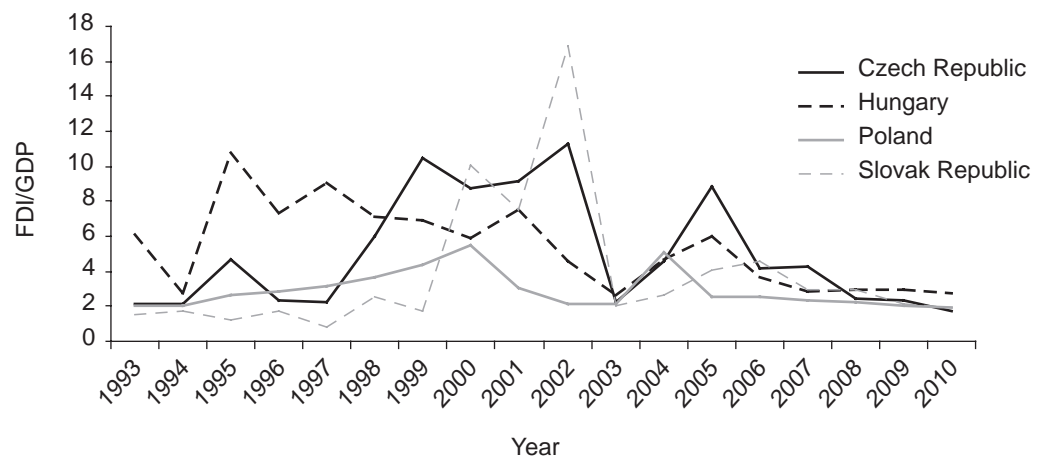
Source: Slovak Statistical Office, authors' calculations.

Figure 7A: Investment in the Total Automotive Industry in the Slovak Republic, 1999–2005



Source: ZAP SR.

Figure 8A: CEE: Foreign Direct Investment, 1993–2006 (percent of GDP)



Source: EIU.

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This paper analyzes recent automotive industry investment in the Slovak Republic and shows how the industry's development has encouraged productivity and output in the broader economy. Strong reform implementation and continued and credible reform commitment were preconditions for attracting automotive investments and the key factors that enabled these investments to flourish. The reform efforts were made possible by strong political consensus on accelerating EU accession and boosting living standards. In addition, generous investment incentives helped sway foreign investors in selecting the Slovak Republic within the broader region of central Europe. Investment in automotive production contributed to additional investment by suppliers that has helped generate locally owned suppliers. These companies, in turn, are beginning to supply car producers in neighboring countries. The full impact of the original automotive investment, already substantial, is likely to grow in the future.

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