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The Expected Effects of the EU Accession on the Machinery Sector in the Slovak Republic

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1. Introduction

The study explores the sector-specific consequences of the EU accession of Slovakia on country's machinery and equipment sector¹ in 2004 and beyond. It does not focus on the formal trade barriers in this industry sector, because they were removed almost entirely in accordance with the Europe agreement at the end of 2002. Instead, we primarily discuss two other expected steps in the integration process: (i) accession to the internal market, and (ii) free movement of labour. Our approach is based on an analysis of available industrial and trade statistics, backed by a synthesis of recent empirical research undertaken by other Slovak and foreign authors. It is supplemented with an EU-context assessment of existing government policies focused mainly on the motor vehicles industry, the most important branch of the sector.

¹ "Machinery and equipment (M&E)" is reported under the NACE 29-35 two-digit classification (NACE 29: Machinery, excluding electrical, NACE 30-33: Electrical and Optical Equipment, and NACE 34-35: Transport Equipment). The adoption by authors of this wider analytical definition is primarily motivated by two considerations: first, it is consistent with what is called "engineering industry" in existing Slovakia's government policy documents, and second, as such it best corresponds to the three selection criteria set for this comparative V4 project.

2. Sectoral growth-related effects

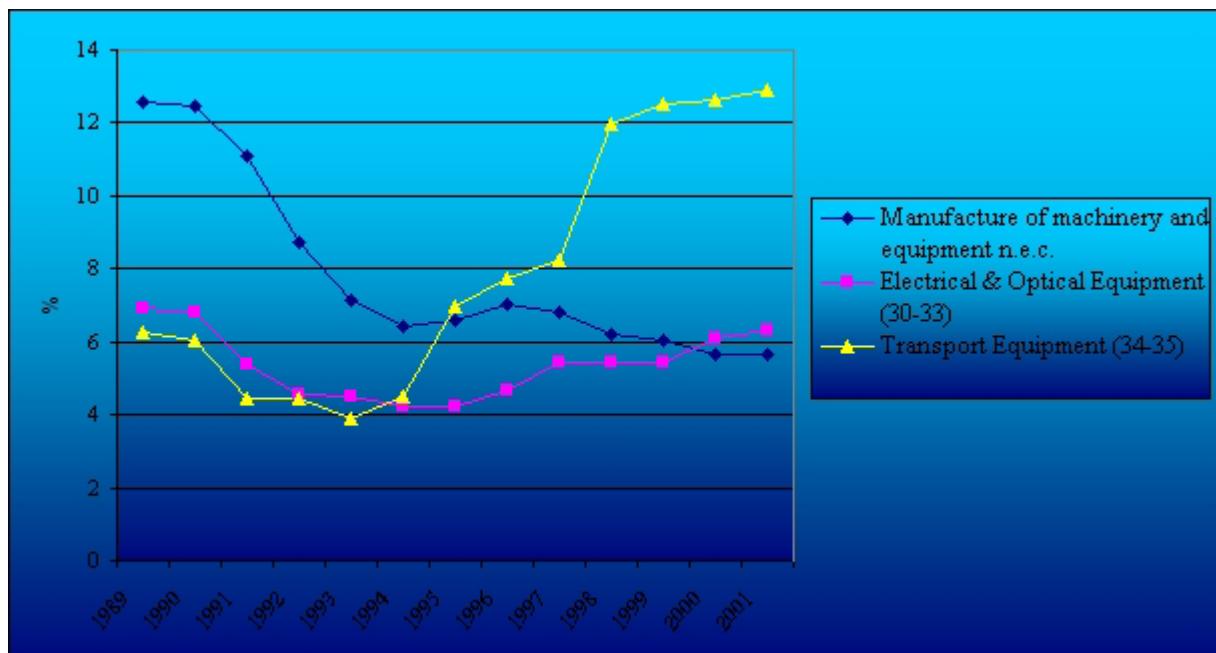
Slovakia as well as other candidate countries has inherited a huge industrial sector from the period of central planning with its pronounced bias towards heavy industry. Hence in 1990, manufacturing value added accounted for about 35% of GDP. Due to considerable structural distortions and production inefficiencies, the high degree of industrialisation initially turned out to be a drawback rather than an advantage. It implied among other problems, also the underdevelopment of other sectors, especially of services.

The whole M&E sector in Slovakia accounts for about 25% of both equally total industry's gross output and gross value-added, with the transport equipment now producing about 50% of that output. Since the beginning of the 1990s, there is a stable declining trend in the share of machinery n. e. c. (NACE 29) on industrial gross output and employment, matched by an ever increasing share of transport equipment (NACE 34-35) (for visual information of key sector performance indicators, see figures below) This trend is strongly determined by the exceptional performance of Volkswagen Slovakia (present in the country since 1991), and we can reasonably expect that it will continue to do so, regardless of Slovakia's membership in the EU.

Sector output

Figure 2.1 clearly shows the historical development of production of M&E industries since 1989. First, there is clearly a characteristic decline of gross output in manufacture and equipment n. e. c. Second since 1993 there is a continuous increase of the share of transport equipment, and a relatively stable production levels reported by electrical & optical equipment.

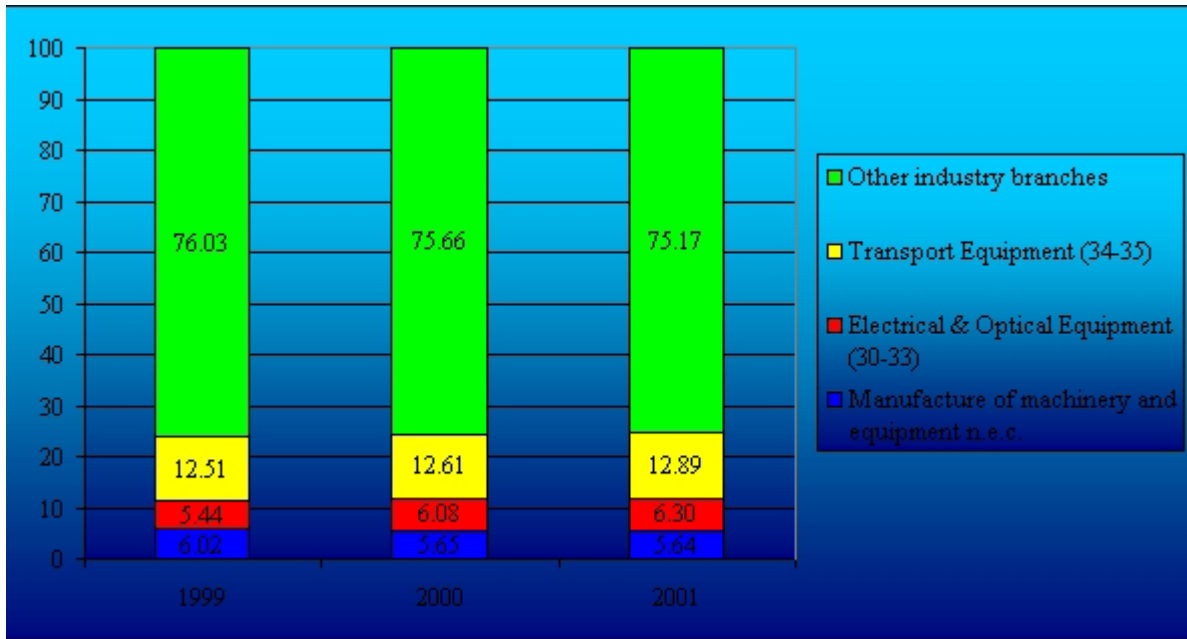
Figure 2.1 Share of M&E in Total Industry



Source: Statistical Office of the Slovak Republic

A closer look at the most recent industry statistics shows moderate growth rates in both transport equipment and electrical & optical equipment (see Figure 2.2).

Figure 2.2. Gross Output of M&E relative to Total Industry



Source: Yearbook of Industry, 2002, Statistical Office of the Slovak Republic

Sector employment

Based on the WIIW2 study, manufacturing employment underwent even more dramatic changes during the last decade. As a rule, employment declined faster than output. In detail losses among the V4 countries in manufacturing employment amounted to 35% in Poland (about 675 thousand persons), 40% in the Czech Republic (450 thousand), Hungary (364 thousand) and 47% in Slovakia (218 thousand). These changes reflect the general labour market developments during the 1990s such as declining overall employment, shifts from industry to service sector and, last but not least, the emergence of open unemployment. Employment adjustments occurred with a certain time lag after output, due to delayed lay-offs and hardly any expansion of manufacturing jobs thereafter. In fact, in the second half of the 1990s, only Hungary could modestly increase manufacturing employment. A certain upward trend can be detected for 2001 in the Czech Republic as well in Slovakia (see Table 2.1).

Table 2.1 Total manufacturing employment in V4

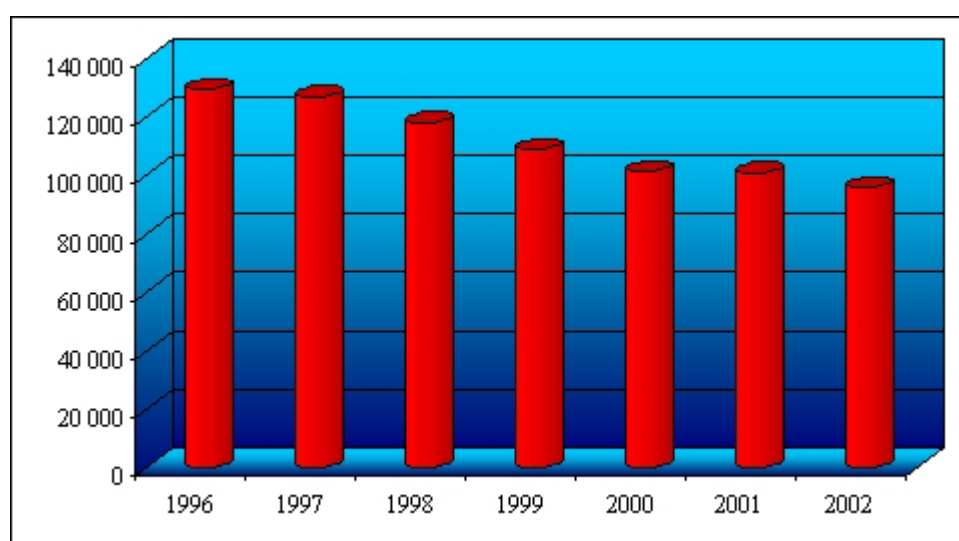
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Czech Republic												
Annual changes in %	-8.1	-10.7	-13.2	-7.0	-5.0	-2.4	-3.4	-2.4	-1.4	-6.0	-1.5	1.2
Index 1990=100	100	89.3	77.5	72.1	68.5	66.8	64.6	63.0	62.1	58.4	57.5	58.2
Hungary												
Annual changes in %	-4.6	-9.9	-14.5	-12.9	-9.1	-4.0	-2.9	0.7	3.4	1.2	1.4	n.a.
Index 1990=100	100	90.1	77.0	67.1	61.0	58.5	56.8	57.2	59.2	59.9	60.7	n.a.
Poland												
Annual changes in %	-9.4	-11.4	-13.1	-2.4	-0.3	4.3	-0.2	0.7	-0.7	-6.8	-5.5	-5.2
Index 1990=100	100	88,6	77,0	75,2	75,0	78,2	78,0	78,6	78,0	72,7	68,7	65,1
Slovak Republic												
Annual changes in %		-15.0	-12.6	-10.4	-5.1	1.0	-1.1	-3.7	-5.3	-5.9	-3.0	1.1
Index 1990=100	100	85.0	74.3	66.6	63.2	63.8	63.1	60.8	57.5	54.1	52.5	53.1

Source: WIIW, 2002

In terms of employment, the V4 countries specialization of manufacturing is somewhat less pronounced and about the same level as in the EU. A more detailed comparison shows that e.g. manufacture of machinery and equipment (DK) as well electrical & optical equipment (DL) belongs to the largest employers.

Looking at the situation in Slovakia, the over-employment is still an important factor influencing the performance of the machinery branch, with sharp employment loss in the period 1996-2002 - about 35.3%, i.e. 33,761 jobs (see Figure 2.3).

Figure 2.3. Employment in Mechanical Engineering (1996-2002)

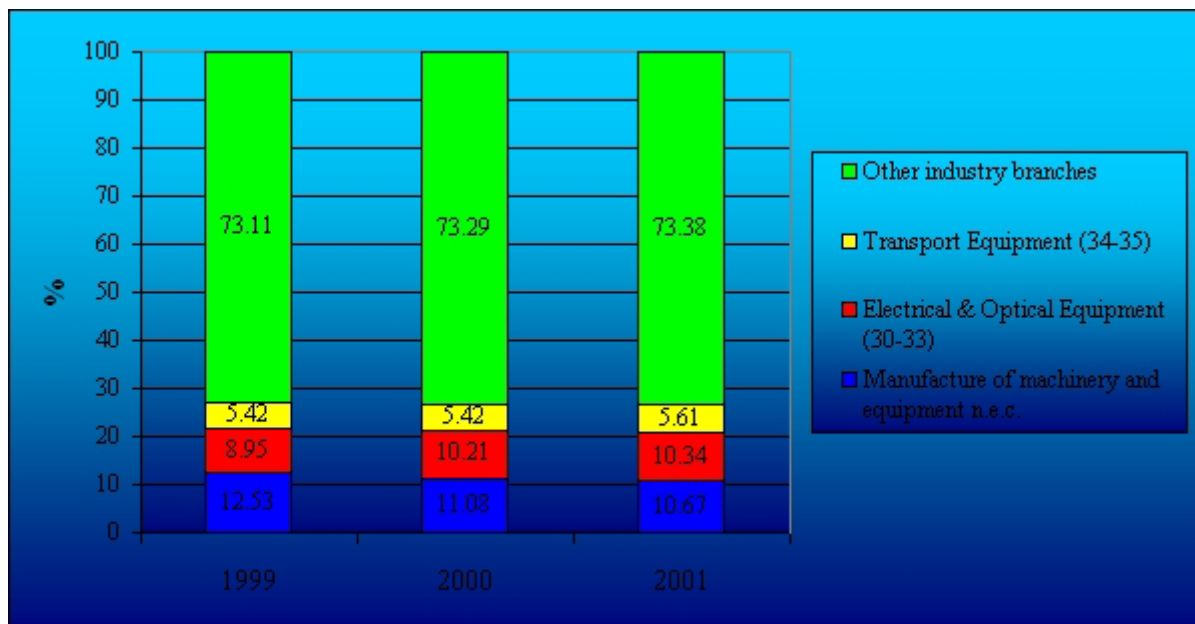


Source: Hospodarske Noviny Daily, May 27, 200

The most recent statistics documents a further employment decline in the manufacture of machinery and equipment. In case of electrical & optical equipment as well by transport equipment (DM) we registered a moderate increase of employment (see Figure 2.4). According to transport equipment, there is potential for

further growth of employment in connection with entry of PSA Peugeot Citroen (PSA) to Slovakia (see section 6).

Figure 2.4. Employment in M&E relative to Total Industry

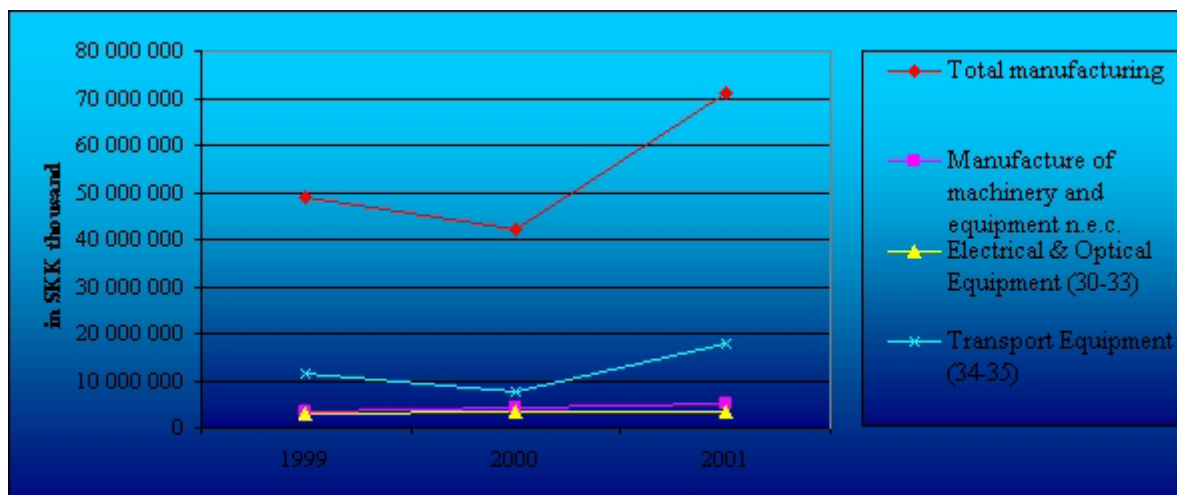


Source: Yearbook of Industry, 2002, Statistical Office of the Slovak Republic

Investment

Most of the M&E sector in Slovakia has been long time characterised as under-capitalised. The sector was missing capital that brings new technologies, creates jobs and generates tax revenues. During the 1990s, the motor vehicles industry has been determining the investment profile of the sector, as is demonstrated by Figure 2.5.

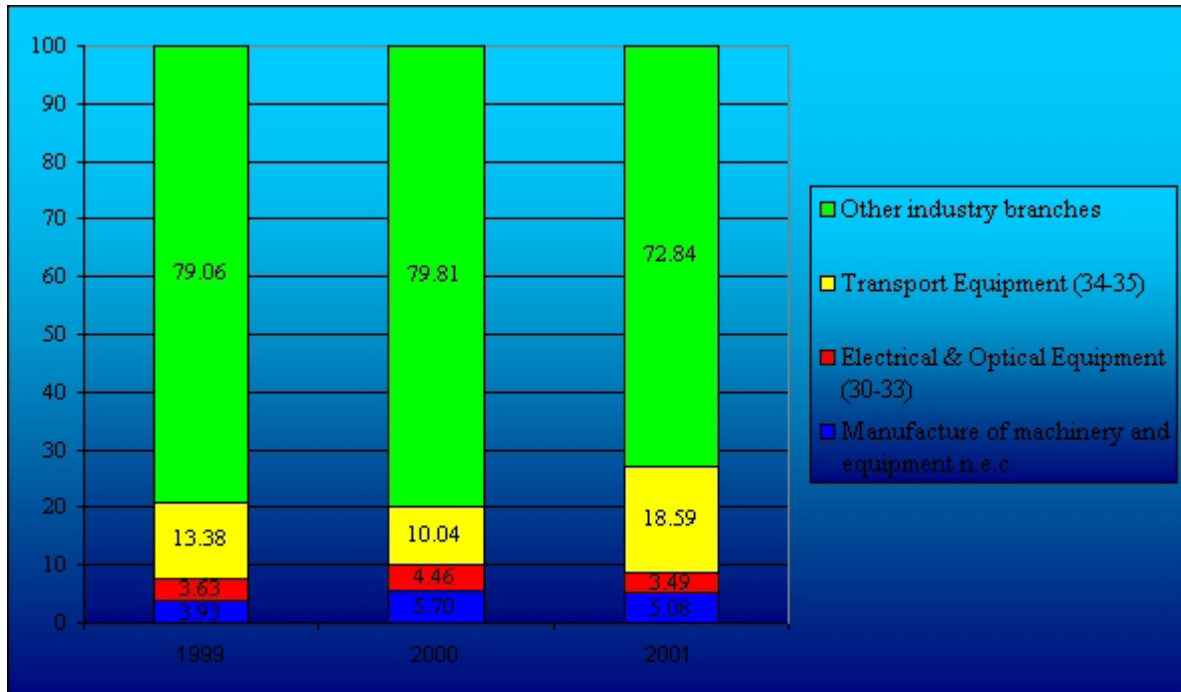
Figure 2.5 Total Gross Fixed Investment in M&E



Source: Yearbook of Industry, 2002, Statistical Office of the Slovak Republic

The share of investment to transport equipment gradually increased, from 13.38 % in 1999 to 18.59 % in 2001 (Figure 2.6).

Figure 2.6. Share of Investment in M&E on Total Industry



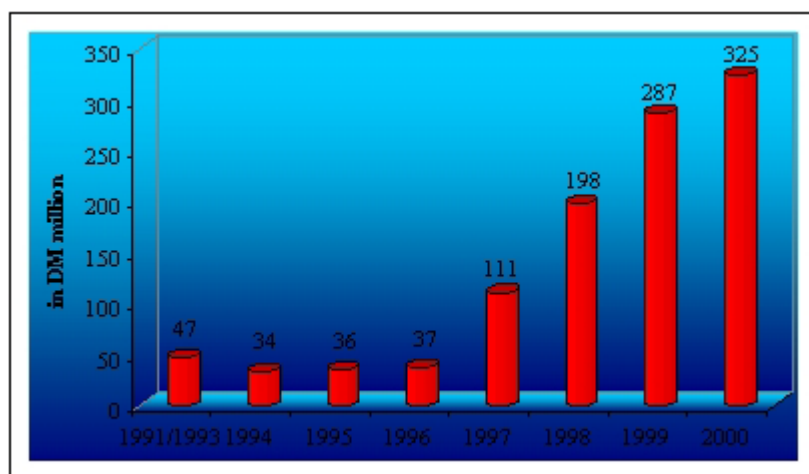
Source: Yearbook of Industry, 2002, Statistical Office of the Slovak Republic

In fact, total gross fixed investment to total manufacturing during the recent period was determined by investment activity in transport equipment.

The investment to manufacture of machinery and equipment moderate increased. The decline of investment to electrical & optical equipment was mainly caused by market exit of non-profitable enterprises. Transport equipment industry is responsible for the most of the new investment projects, including the new VW-led industrial parks near Bratislava (e.g. automotive industry park Záhorie) and most recent investment of PSA in Trnava, where is also a strong co-financing from the Slovak government under the Programme of the Development of the Automotive Industry in Slovakia, approved in 1999.

The investment of VW in Bratislava, since the entry of VW to Slovakia, reported gradual increase from DM 47 million in 1991 to DM 325 million in 2000 (see Figure 2.7).

Figure 2.7 Investment of VW in Bratislava



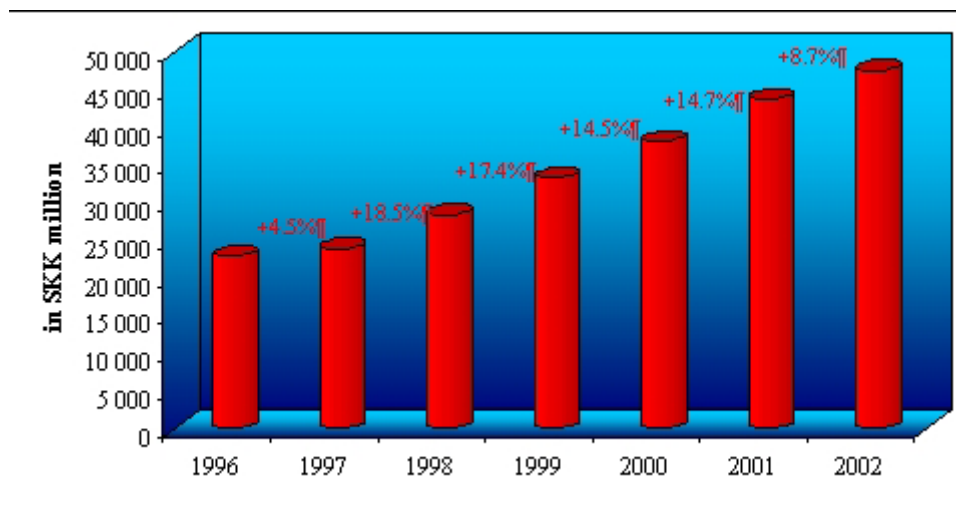
Source: SME Daily, January 15, 2003

Sector value-added

Looking at the manufacturing value added among V4 countries, hence in 1990 accounted for around 40% of GDP in Poland, for about 35% of GDP in Slovakia, but less than 30% of GDP in the Czech Republic, and for around 20% of GDP in Hungary. Industry initially suffered over-proportionally from the 'transformational recession' (WIIW 2002).

The growth of gross value added (GVA) in Slovakia in the mechanical engineering is shown by figure 2.8. It increased from about SKK 23.0 billion in 1996 to SKK 47.7 billion in 2002, by gradual annual growth. One possible explanation for this moderate growth was the high share of foreign component sub-supplies, e.g. by transport equipment.

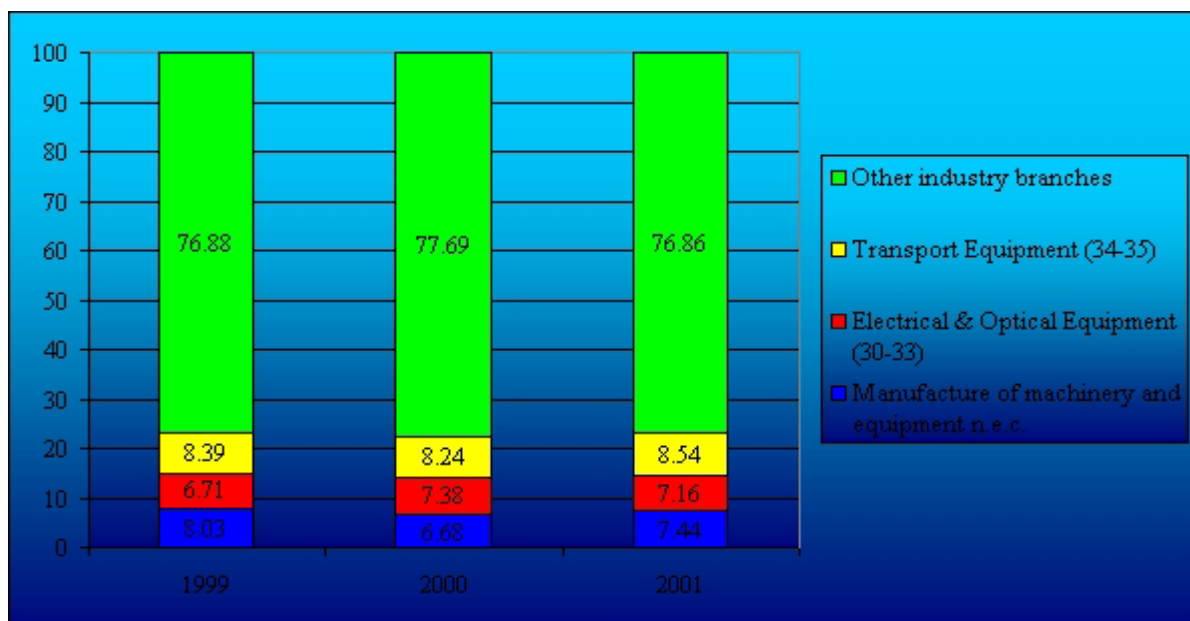
Figure 2.8. Value-Added in Mechanical Engineering (1996-2002)



Source: Hospodarske Noviny Daily, May 27, 2003

Data for 1999 to 2001 show the relatively stable level of GVA over time and across all the three sub-branches of M&E (see Figure 2.9).

Figure 2.9 Value-Added in M&E of Total Industry (1999-2001)



Source: Yearbook of Industry, 2002, Statistical Office of the Slovak Republic

Labour productivity

Labour productivity is considered a good indicator for the relative 'efficiency' of production. Based on recent WIIW comparative study, which uses Austria as a benchmark, we can observe differences in productivity levels across M&E industries relative to average manufacturing. The major source of differences in labour productivity across industries, are differences in the capital- and know-how intensity of the different industries, as demonstrated by the high labour productivity of the electrical & optical equipment and transport equipment.

Looking at the differences among V4 countries, we can observe the highest labour productivity of the machinery and equipment in the Czech Republic, by electrical & optical equipment in Hungary and by transport equipment in Slovakia (see Table 2.1).

Table 2.1 Labour productivity in M&E industry, year 2001

	Czech Republic	Hungary	Poland	Slovak Republic
D Manufacturing total=100				
DK Machinery and equipment n. e. c.	80.1	45.7	65.9	48.5
DL Electrical & optical equipment	129.3	206.5	114.9	67.7
DM Transport equipment	153.6	279.9	138.3	313.6

Source: WIIW, 2002

The intensive growth of car final production from VW Slovakia also fenced off on the high labour productivity in transport equipment.

Looking at the productivity changes in 1995-2001 across M&E industries in V4 countries, the most obvious 'productivity winner'³ was the electrical & optical equipment, over-performing in Hungary as well in the Czech Republic, followed by transport equipment, dominating in the Slovak Republic as well in Hungary. As to the machinery and equipment, in all V4 countries belongs to 'productivity losers' (see Table 2.2).

Table 2.2 Relative productivity gains, winner and loser branches 1995-2001

		(Average annual change in %)			
		Czech Republic	Hungary	Poland	Slovak Republic
D	Manufacturing total	7.7	14.3	9.4	8.2
DK	Machinery and equipment n. e. c.	5.2	-6.2	2.0	1.0
DL	Electrical & optical equipment	12.7	19.5	5.2	1.7
DM	Transport equipment	4.7	15.8	6.4	21.9

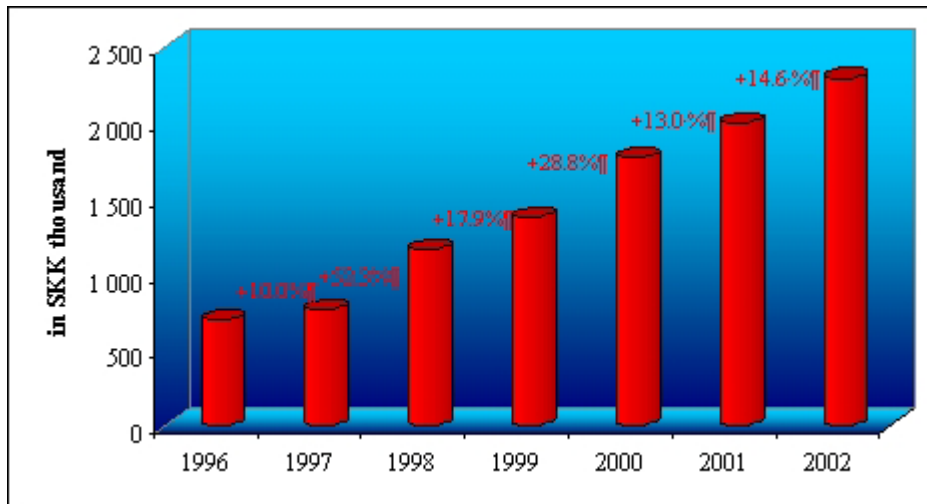
Source: WIIW, 2002

In terms of labour productivity growth in Slovakia during the period 1996-2002 in mechanical engineering increased from SKK 0.698 million in 1996 to SKK 2.296 million in 2002, by remarkable annual growth (see

³ According to WIIW (2002), an industry may be termed a 'productivity winner' if it performs better than average, i.e. if productivity of this industry grows faster than total manufacturing. 'Productivity loser' defined an industry if productivity growth stays below average for the period under consideration.

Figure 2.10). This remarkable growth is reflected from the rapid growth of final manufacture of VW Slovakia.

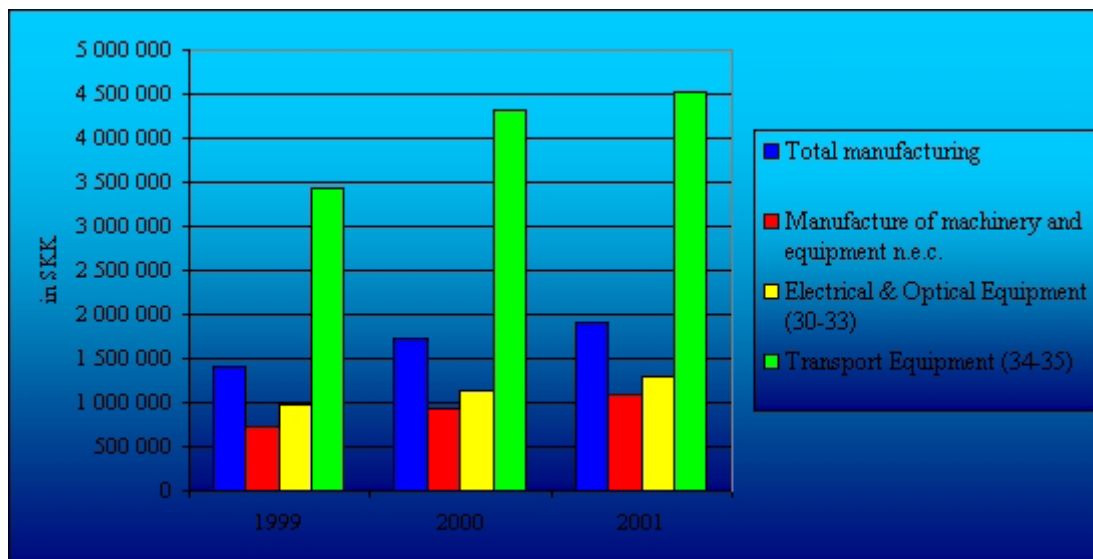
Figure 2.10 Labour Productivity per Employee in Mechanical Engineering (1996-2002)



Source: Hospodarske Noviny Daily, May 27, 2003

By observing the M&E labour productivity in Slovakia, we can see clearly rapid growth in transport equipment. During the period 1999-2001 the labour productivity in this sub-branch increased by 32%, clearly exceeding the level of growth in total manufacturing (see Figure 2.11).

Figure 2.11 M&E Labour Productivity



Source: Yearbook of Industry 2002, Statistical Office of the Slovak Republic

Summary

Section 2 examines sector growth-related effects on the M&E sector measured by sector output, sector employment, investment, sectoral value-added and labour productivity. M&E sector in Slovakia mostly recovered from the severe output fall that had taken place during the transformational recession. Overall, there is remarkable continuous increase of the share of transport equipment and this sector should further benefit from PSA entry.

In terms of employment, a more detailed analysis shows that M&E industry belongs to the largest employers in V4 countries. Looking at the situation in Slovakia, the over-employment is still an important factor influencing the performance of the machinery branch. According to transport equipment, there is potential for further growth of employment. This sectoral employment will grow by the further increase of new VW suppliers as well in connection with announced PSA entry to Slovakia.

The investment to M&E industry gradually increased, particularly to transport equipment. Important role by attracting of new investors plays governmental support.

M&E gross value added in Slovakia moderately grew, that is interpreted by still high share of foreign component sub-supplies, e.g. by transport equipment.

Differences in the capital- and know-how intensity of the different industries are demonstrated by the high labour productivity of the electrical & optical equipment and transport equipment. We can observe the highest labour productivity in transport equipment in comparison with other V4 countries, as the result of intensive growth of car final production from VW Slovakia during the 1990s.

There are certain adjustments required from the market participants after the EU accession, e.g. new marketing approaches, investments to the sales support, further growth of labour productivity, decreasing of energy absorption, innovation of production portfolio, the growth of labour force value thereby increase of purchasing power.

Strengths and weaknesses resulted from M&E sector growth-related effects in Slovakia

Strengths

Increasing share of gross output on total industry

Absolute growth of Value-Added

High labour productivity, in particular in automotive industry

Weaknesses

Possible vulnerability of Slovak economy in relationship to global recession in automotive industry

Idle capacity of machinery sector, e.g. lack of brown-field investment to existing industrial areas

Slow renewal of SMEs and crafts

3. Effects on foreign trade

Slovak economy is strongly dependent on foreign trade with the European Union. Geographically, exports to the EU as a share of total exports account currently for about 60%, compared to only around 40% in 1996. The share of imports to the EU in total imports amounts to approximately 50%. These shares reflect a high degree of trade integration with the EU, given that the overall openness of the Slovak economy - defined as the sum of imports and exports as a percentage of the GDP - is very high and amounts to around 110%.

M&E is Slovakia's largest export commodity group (about 39% of total exports in 2001), accounting for about 50% of all Slovak exports to the EU. The sector accounts for 55% of all Slovak exports to Germany, equally 50% of all Slovak exports to Italy and France, and 33% of all Slovak exports to Austria. M&E accounts for 16% of all Slovak exports to the Czech Republic, 24% of all Slovak exports to Hungary, and 16% of all Slovak exports to Poland (18% of all Slovak exports to CEFTA). Geographically, about 77% of M&E exports is directed to the EU (of which to Germany - 50%, Italy - 15%, Austria - 9%, and France - 7%), and about 14% to CEFTA countries (of which 51% to the Czech Republic, 24% to Hungary, and 18% to Poland).

M&E is also Slovakia's largest import commodity group (about 38% of total imports in 2001), accounting for about 50% of all Slovak imports from the EU. The sector accounts for 59% of all Slovak imports from Germany, 50% of all Slovak imports from France, 36% of all Slovak imports from Italy, and 28% of all Slovak imports from Austria. M&E accounts for 31% of all Slovak imports from the Czech Republic, 25% of all Slovak imports from Hungary, and 19% of all Slovak imports from Poland (29% of all Slovak imports from CEFTA).

Geographically, about 66% of M&E is imported from the EU (of which 59% from Germany, 9% from Italy, 8% from France, and 5% from Austria) and about 17% from CEFTA countries (of which 70% from the Czech Republic, 10% from Hungary, and 9% from Poland).

Two aspects of inter-industry trade are further analysed: trade performance and trade specialisation.

Expected Trade Performance

When assessing the potential impact of EU accession on Slovakia's export performance, we rely on estimations by Fidrmuc Jarko (1999). Based on structural gravity equations, he simulates the development of Slovak trade with six major trading partners and investors from the EU (Austria, Germany, France, Italy, the United Kingdom, and the Netherlands) and three Central European neighbours (the Czech Republic, Hungary, and Poland). These countries together currently account for almost 80 percent of total Slovak exports, with the six EU countries (EU6) accounting for more than 90 percent of Slovak exports to the EU. Originally, simulations were performed for three different scenarios: Of course, we are now primarily interested in the enlargement scenario.

Exports to the EU6 reached about 26 percent average annual growth in mid-1990s. With the EU membership, Slovakia's aggregate export performance is estimated to grow at 15 % p.a. between 1997 and 2010. Simulations of trade flows by commodity groups between the Slovak Republic and the EU show significant sectoral variation (see Tables 3.1 and 3.2). Growth of M&E exports is estimated to be the lowest of all

4 The upper time horizon for the simulations was chosen as 2010, since by that time the trade adjustments, which will follow the accession into the EU, will have completed. All estimates are average annual growth rates between 1997 and 2010, meaning that there is no need to explicitly specify the accession date and transition periods. Nevertheless, the growth assumptions employed are consistent with accession between 2003 to 2005. A primary focus is on the long-run effects rather than short-run dynamics, which are strongly influenced by business cycle phenomena, and thus cannot be predicted let us say seven years in advance (see Fidrmuc Jarko, 1999, for detailed methodological discussion).

commodity groups - about 10 percent per year between 1997 and 2010, even though this sector recorded the highest growth rates in the second half of the 1990s.

Table 3.1 Projections of Slovak Exports to EU6 (average growth p.a., %)

SITC Groups	Description	Realised 1995-1996	No enlargement 1997-2010	Enlargement 1997-2010	Exclusion 1997-2010
SITC 0-8	Total exports	25.79	9.24	15.26	9.24
SITC 5-8	Industrial products	19.45	8.83	16.73	8.83
SITC 0	Agricultural products	-4.93	22.39	34.77	22.39
SITC 2	Raw materials	10.61	14.42	17.14	14.42
SITC 5	Chemicals	6.83	9.13	14.76	9.13
SITC 6	Intermediate products	3.28	10.91	18.93	10.91
SITC 7	Machinery	55.79	0.72	9.95	0.72
SITC 8	Consumer products	17.10	10.28	20.42	10.28

Source: reproduced from Fidirnuc Jarko (1999)

We find that the econometric projections relatively well simulated the actual Slovak exports (not reported here⁵) to the selected EU countries for intermediate products (SITC 6) and consumer products (SITC 8), while the actual Slovak exports of chemicals (SITC 5) and M&E (SITC 7) are significantly above the predicted levels. In case of M&E, these departures from trade projections can be explained by trade bias due to foreign direct investment (in the M&E sector it is mainly the determining role of Bratislava - see figures in section 6).

Table 3.2. Projections of Slovak Exports to EU6 and CEE3 (average growth p.a., %)

SITC Groups	Description	Realised 1995-1996	No Enlargement 1997-2010	Enlargement 1997-2010	Exclusion 1997-2010
SITC 0-8	Total exports	15.60	5.98	10.88	5.48
SITC 5-8	Industrial products	8.70	5.93	12.39	5.55
SITC 0	Agricultural products	-5.84	15.42	24.83	12.33
SITC 2	Raw materials	1.89	10.30	12.73	10.20
SITC 5	Chemicals	4.69	3.28	8.14	2.91
SITC 6	Intermediate products	-2.14	7.78	13.95	7.23
SITC 7	Machinery	27.81	-0.71	6.97	-1.03
SITC 8	Consumer products	12.45	8.05	16.86	7.64

Source: reproduced from Fidirnuc Jarko (1999)

The trade relations between the Czech Republic and the Slovak Republic, promoted through their customs union, continue to be intensive despite the decreasing volumes. Although the customs union arrangements

⁵ The latest detailed trade statistics is available for the year of 2001 (published by the Slovak Statistical Office in October, 2002).

indeed copy the regional trade integration of the EU, the common commercial policy rules of Brussels do not provide temporary exception for maintaining such preferential trade relations after the accession of the two candidate countries. In general, Slovakia's trade with its former federal counter-part will face the most significant changes within the region (see Table 3.3).

Table 3.3 Projections of Slovak Exports to the Czech Republic (average growth p.a., %)

SITC Groups	Description	Realised	No enlargement	Enlargement	Exclusion
		1995-1996	1997-2010	1997-2010	1997-2010
SITC 0-8	Total exports	4.61	-0.96	-0.96	-6.07
SITC 5-8	Industrial products	-3.98	-2.69	-2.69	-6.14
SITC 0	Agricultural products	-10.66	11.03	11.03	-7.27
SITC 2	Raw materials	-6.98	4.29	4.29	-1.64
SITC 5	Chemicals	1.42	-5.73	-5.73	-11.52
SITC 6	Intermediate products	-10.88	-2.08	-2.08	-5.14
SITC 7	Machinery	0.20	-6.64	-6.64	-8.81
SITC 8	Consumer products	2.67	-0.19	-0.19	-3.80

Source: reproduced from Fidrmuc Jarko (1999)

As far as the Slovak exports to neighbouring Hungary are concerned, these are likely to increase by cca 6% per year. Slovakia's exports would behave quite similarly when trading with Poland is simulated - 10% annual growth rate could be expected (see Tables 3.4 and 3.5). Regarding the sector-specific effects, M&E exports to Hungary and Poland could equally increase by about 6 percent p.a., while M&E exports to the Czech Republic are predicted to face a decline by almost 7 percent p.a. We find that for M&E the econometric projections relatively well simulate the actual Slovak exports to each of the three V4 countries (for the period up to 2001).

Table 3.4 Projections of Slovak Exports to Hungary (average growth p.a., %)

SITC Groups	Description	Realised	No enlargement	Enlargement	Exclusion
		1995-1996	1997-2010	1997-2010	1997-2010
SITC 0-8	Total exports	5.01	2.97	6.10	3.97
SITC 5-8	Industrial products	1.56	6.59	7.16	6.36
SITC 0	Agricultural products	2.72	10.31	26.85	12.43
SITC 2	Raw materials	-4.56	-0.92	2.42	2.40
SITC 5	Chemicals	4.52	2.79	8.97	4.82
SITC 6	Intermediate products	-1.82	7.72	4.90	5.93
SITC 7	Machinery	10.57	3.66	6.37	3.29
SITC 8	Consumer products	-4.18	13.23	13.91	12.23

Source: reproduced from Fidrmuc Jarko (1999)

Table 3.5. Projections of Slovak Exports to Poland (average growth p.a., %)

SITC Groups	Description	Realised 1995-1996	No enlargement 1997-2010	Enlargement 1997-2010	Exclusion 1997-2010
SITC 0-8	Total exports	50.17	6.94	10.18	7.98
SITC 5-8	Industrial products	34.27	7.54	8.11	7.30
SITC 0	Agricultural products	68.52	8.24	24.47	10.33
SITC 2	Raw materials	36.45	13.26	17.08	17.05
SITC 5	Chemicals	15.53	-1.34	4.59	0.61
SITC 6	Intermediate products	36.45	11.98	9.04	10.11
SITC 7	Machinery	62.84	3.49	6.21	3.12
SITC 8	Consumer products	41.29	7.21	7.86	6.27

Source: reproduced from *Fidrmuc Jarko (1999)*

Trade Specialisation

A striking feature of trade patterns in transition economies has been their persistent specialisation in heavy energy-intensive industries and low-skilled segments of the manufacturing sector, in spite of a rather well-educated labour force with lower cost of labour relative to their western counterparts. In order to document this fact, Boeri and Martins (2000) computed the following revealed comparative advantage (RCA) indicator proposed by Neven (1995):

$$RCA_i = \left(\frac{X_i}{\sum X_k} - \frac{M_i}{\sum M_k} \right) \cdot 100$$

where X_i and M_i are, respectively, the exports and imports of product i . This indicator is bounded between 100 and (-100). The lower and upper limit of the index can be attained only in the (theoretical) case when there is a complete trade specialisation and there are only two goods. Under real world circumstances, the value of the index rarely exceed 10 (in modules). The higher the value of the index, the stronger trade specialisation⁶.

They selected according to this criterion the top-7 and the bottom-7 RCAs for manufacturing products⁷, for all countries for which data were available (Table 3.6). The top-seven products account for 27 to 40 per cent of exports, whilst the bottom-seven for 25 to 30 per cent of imports. Thus, the table covers a significant portion of the trade turnover.

⁶ The RCA index can be interpreted as a "normalised" trade balance (i.e. given that the sum of the RCA indicator across sectors is equal to zero, the comparative advantages are in this way measured under the theoretical condition of a balanced trade). The value of this indicator is also related to the intensity of intra-industry trade. The stronger two-way trade, the lower specialisation, the closer to zero the index (see OECD, 1996).

⁷ As can be seen from Table 3.7, the value of the RCA index decreases (in modules) rather quickly, hence there is no loss of information in confining the list to the top-seven and bottom-seven products. More detailed results are, in any event, available from the authors upon request.

Table 3.6 Manufactured product specialisation in V4 (1995)

SITC	Comparative advantages	RCA's (1)	Export share (in %)	SITC	Comparative disadvantages	RCA's (1)	Import share (in %)
CZECH REPUBLIC							
67	Iron and steel	4.78	9.4	75	Office machines and automatic data proc. mach.	-3.79	4.4
66	Non metallic mineral manufactures, n.e.s.	3.88	5.7	76	Telecommunication and sound recording apparatus	-2.70	3.0
69	Manufactures of metal, n.e.s.	2.96	6.0	74	Other industrial machinery and parts	-2.59	6.5
65	Textile yarn and related products	2.77	4.8	77	Electrical machinery, apparatus and appliances	-2.32	6.0
78	Road vehicles	1.72	8.3	72	Specialised machinery	-2.23	6.3
51	Organic chemicals	1.68	3.4	54	Medicinal and pharmaceutical products	-1.94	3.0
63	Cork and wood manufactures (exc. furniture)	1.14	1.6	87	Professional and scientific instruments	-1.81	2.5
		18.93	39.2			-17.38	31.7
HUNGARY							
84	Articles of apparel & clothing accessories	5.61	8.04	65	Textile yarn and related products	-3.47	5.73
77	Electrical machinery, apparatus, appliances	2.61	9.72	75	Office machines and automatic data proc. mach.	-2.20	2.75
57	Plastics in primary forms	2.11	3.81	74	Other industrial machinery and parts	-2.11	5.05
85	Footwear	1.11	2.10	64	Paper and paper manufactures	-2.10	3.31
82	Furniture and parts thereof	0.81	1.77	79	Other transport equipment	-1.25	1.45
63	Cork and wood manufactures (exc.furniture)	0.72	1.08	72	Specialised machinery	-1.21	3.33
42	Fixed vegetable oils and fats, crude, ref., frac.	0.40	0.60	89	Miscellaneous manufactured articles, n.e.s.	-1.19	3.24
		13.37	27.1			-13.53	25.0
POLAND							
84	Articles of apparel and clothing accessories	8.93	10.04	65	Textile yarn,fabrics,made-upart.,related products	-5.18	7.45
82	Furniture and parts thereof	5.30	5.82	74	General industrial machinery & equip., and parts	-4.02	6.06
68	Non-ferrous metals	4.71	5.98	75	Office machines & automatic data proc. equip.	-2.77	2.91
79	Other transport equipment	4.42	4.66	72	Machinery specialized for particular industries	-2.35	4.48
67	Iron and steel	2.44	5.60	54	Medicinal and pharmaceutical products	-2.18	3.16
69	Manufactures of metal,n.e.s.	2.24	4.95	76	Telecommunications & sound recording apparatus	-1.79	2.53
63	Cork and wood manufactures (excl.furniture)	2.19	2.62	58	Artif.resins,plastic mat.,cellulose esters/ethers	-1.56	1.82
		30.23	39.7			-19.85	28.4
SLOVAK REPUBLIC							
67	Iron and steel	12.5	17.2	75	Office machines & automatic data proc. equip.	-3.2	3.4
66	Non-metallic mineral manufactures,n.e.s.	2.7	4.3	72	Machinery specialised for particular industries	-2.9	4.8
62	Rubber manufactures,n.e.s.	2.5	3.1	74	General industrial machinery & equip.,and parts	-1.9	4.9
65	Textile yarn,fabrics,made-upart, rel. prod.	2.0	4.3	54	Medicinal and pharmaceutical products	-1.3	3.1
84	Articles of apparel and clothing accessories	2.0	3.0	77	Electrical machinery,apparatus & appliances n.e.s.	-1.1	4.7
64	Paper,paperboard,artic.of paper,paper-pulp	1.7	3.9	76	Telecommunications & sound recording apparatus	-1.1	2.0
82	Furniture and parts thereof	1.7	2.1	78	Road vehicles (incl. Air cushion vehicles	-1.0	5.3
		25.0	37.9			-12.5	28.3

Notes: For all countries the sectors correspond to the ISIC rev 3, except Poland where ISIC rev 2 was used.

(1) The RCA indicator corresponds to $(Xi/\Sigma Xk - Mi/\Sigma Mk) \cdot 100$, see text.

Source: reproduced from Boeri and Martins (2000) based on OECD trade Statistics and national sources.

By mid-1995, most transition countries were still characterised by a persistent specialisation on homogeneous goods produced by heavy industries. The main revealed comparative advantages are in heavy industries and intermediate products such as iron and steel (ISIC 67), non-metallic mineral manufactures (ISIC 66, e.g. glass), metal products (ISIC 69), textile yarns (ISIC 65) or base chemicals (e.g. ISIC 51). The only final consumption product represented among the top-7 RCA's is road vehicles (ISIC 78). All these industries were the core of the former industrial structure. In Slovakia, the bias towards heavy industries was even more marked with the iron and steel sector having an RCA above 10 and accounting, by itself, for 17 per cent of total exports. The situation started to change in the second half of the 1990s, with transport equipment taking over the position of the most competitive industry in Slovakia (see Table 3.7).

Table 3.7 Most significant FDI industries by output or sales (1996, %)

Czech Republic			Hungary		
	(1)	(2)		(1)	(2)
DM Transport equipment	55.0	28.0	DF Coke, Petroleum	99.2	15.6
DI Non-metallic minerals	45.6	11.0	DK Transport equipment	84.1	10.2
DH Rubber, plastic	43.8	5.9	DA Food, beverages, tobacco	51.1	20.9
DL Electrical & optical equip.	30.7	8.7	DL Electrical & optical equip.	65.1	12.7
DN Manufacturing n. e. c.	28.2	4.2	DG Chemicals	78.7	11.8
DA Food, beverages, tobacco	24.7	18.8	DE Paper, publishing	71.6	7.2
D Total manufacturing	22.6	76.6	D Total manufacturing	61.4	78.4

Slovenia			Slovak Republic		
	(1)	(2)		(1)	(2)
DM Transport equipment	82.3	40.3	DM Transport equipment	61.4	26.3
DK Machinery, equipment n. e. c.	21.3	9.7	DL Electrical & optical equipment	37.0	9.5
DL Electrical & optical equipment	20.1	9.5	DE Paper, printing, publ.	25.6	7.9
DE Pulp, paper, printing	19.8	8.5	DB Textile and textile products	18.9	3.3
DG Chemicals	17.4	9.0	DK Machinery, equipment n. e. c.	17.2	6.8
DH Rubber, plastic	15.9	3.8	DA Food, beverages, tobacco	16.5	12.2
D Total manufacturing	21.1	80.8	D Total manufacturing	21.6	66.0

Notes:

(1) FDI's share in total output or sales of the industry (penetration)

(2) Share of industry in total manufacturing FDI output/sale (specialization)

NACE codes: DA = Food, beverage, tobacco; DB-DE = Textiles, clothing, leather, shoes, wood, paper; DF-DJ = Chemicals, construction material, metals; DK-DN = Engineering or M&E (i.e. electrical machinery, transport equipment, machinery n. e. c.

Source: Hunya (1998).

4. Effects on foreign direct investment

Van Aarle and Skuratowicz (2000) found that aggregate foreign trade and FDI between the EU15 and CEEC10 are substitutes as predicted by theory, and more importantly, that both in the case of exports and imports it is FDI that unambiguously cause these trade flows, rather than the other way round. At the sector level, this is true mainly for the scale-intensive industries where low labour costs play a significant role and the share of unskilled workers is relatively high, including beyond labour-intensive apparel also some of the key branches of M&E industry, namely electrical machinery, measuring instruments, motor vehicles and other transport equipment⁸. However, Moreover, according to Boeri and Brücker (2000:72), the high share of market-seeking FDI is a clear indication, that FDI in the CEECs complements rather than substitute trade: FDI flows from the EU to CEECs induce an increase of both exports and imports of the CEECs to/from the EU.

Bevan and Estrin (2000) found that FDI inflows to CEE are motivated by several factors: low unit labour costs, large market size, the credit rating of the FDI recipient county, and economic geography (i.e. geographical proximity is associated with increased FDI). They also found that FDI flows from Germany to any of the V4 host countries are significantly larger than would be expected on the basis of labour costs, market size, proximity and credit ratings alone. Even controlling for the "neighbourhood effect", Germany, the key export market and migration destination for Slovakia and other first-wave EU candidates, was found to send a disproportionately large amount of FDI to CEE). The rather low number of employees per unit of FDI in motor vehicles indicates that the exploitation of wage differentials is not the primary motive for inward investment in these industry branches. With the labour intensity of German FDI in CEE motor vehicles and electrical machinery⁹ being very similar to other host countries, the expansion to the East by German investors is thought to be strongly motivated not only by "proximity to Europe" of a host V4 country, but more importantly by strategic considerations of locating the manufacturing production closer to the large mass markets of China and India.

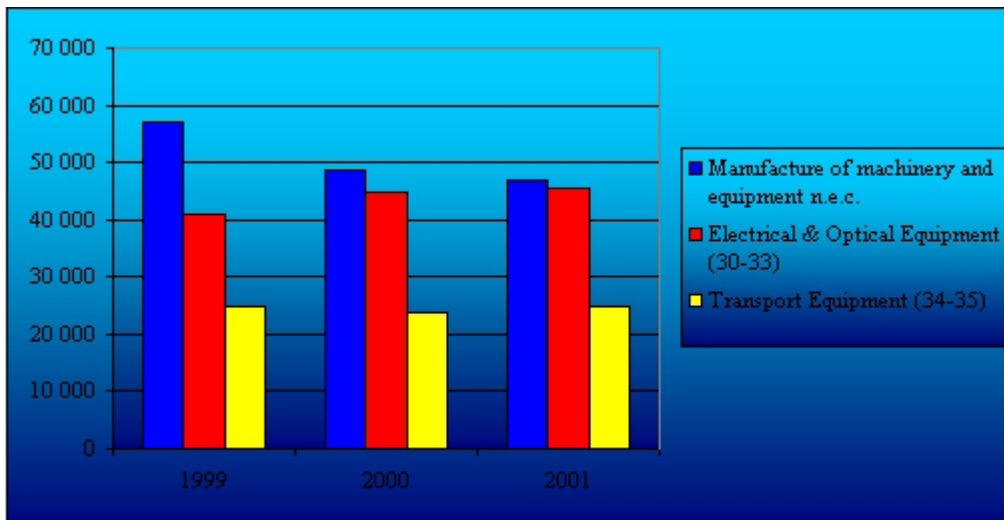
The new conception of tax reform in Slovakia will not take into account tax privileges for local as well foreign investors, neither tax holidays. This investment stimulus will be cancelled after EU accession (Hospodarske Noviny, April 29, 2003).

⁹ These are industries with the highest penetration and specialisation rates in the 1990s (see Table 4.1)

5. Labour market aspects

Looking at the latest employment figures in M&E industries, we observe a decrease especially in the manufacture of machinery and equipment. On the other hand the employment in electrical & optical equipment gradually increased and in transport equipment maintain stable levels (see Figure 5.1).

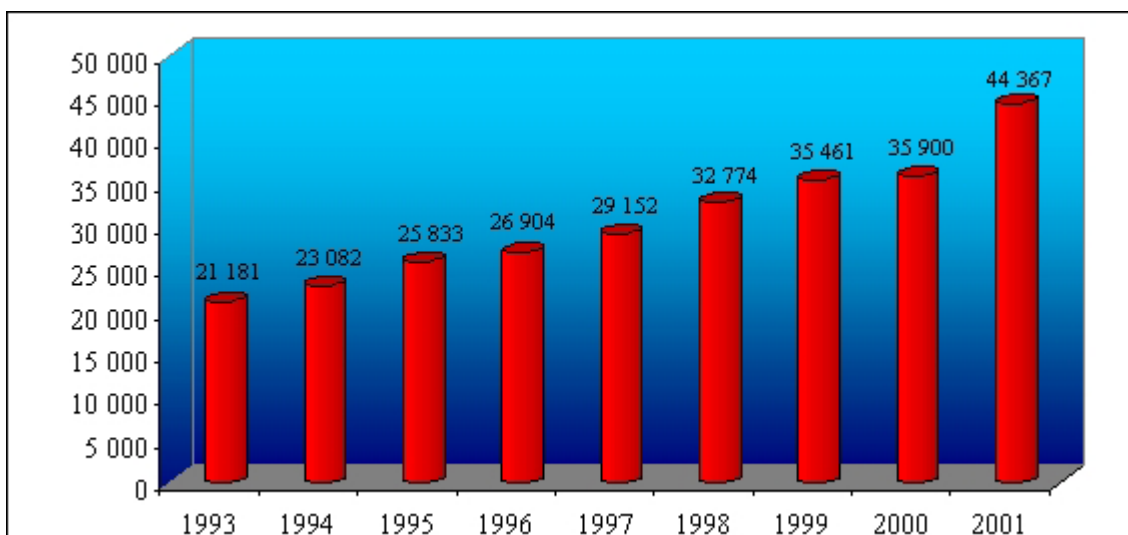
Figure 5.1 Employment in M&E Industries



Source: Yearbook of Industry 2002, Statistical Office of the Slovak Republic

Looking at the employment in the automotive industry in Slovakia during the period 1993-2001 we can observe gradual increasing trend. The number of employees doubled from about 21.2 thousand to 44.4 thousand (see Figure 5.2).

Figure 5.2 Employment in the automotive industry in Slovakia



Source: Automotive Industry Association of the Slovak Republic, <http://www.zapr.sk/>

M&E wages

According to WIIW study, in 2001 the average wage level in manufacturing among V4 countries compared to the Austrian wage level¹⁰, reached the highest rate in Poland with 19.9% and Czech Republic with 16.0%, while wages in Hungary with 13.3% and Slovakia with 12.2% were comparatively low. Regarding the individual M&E industries, wage differentials are substantial. In Poland, for instance, wages in machinery and equipment and in electrical & optical equipment were the highest among the V4 countries. But in transport equipment the 'high-wage' countries were Hungary as well Slovak Republic (see Table 5.2).

Slovakia, with €317, has the lowest average wage within the V4 countries (Hospodarske Noviny, February 26, 2003). From this point of view seems to be the very attractive location for foreign investors.

Table 5.2 Monthly gross wages in M&E industry

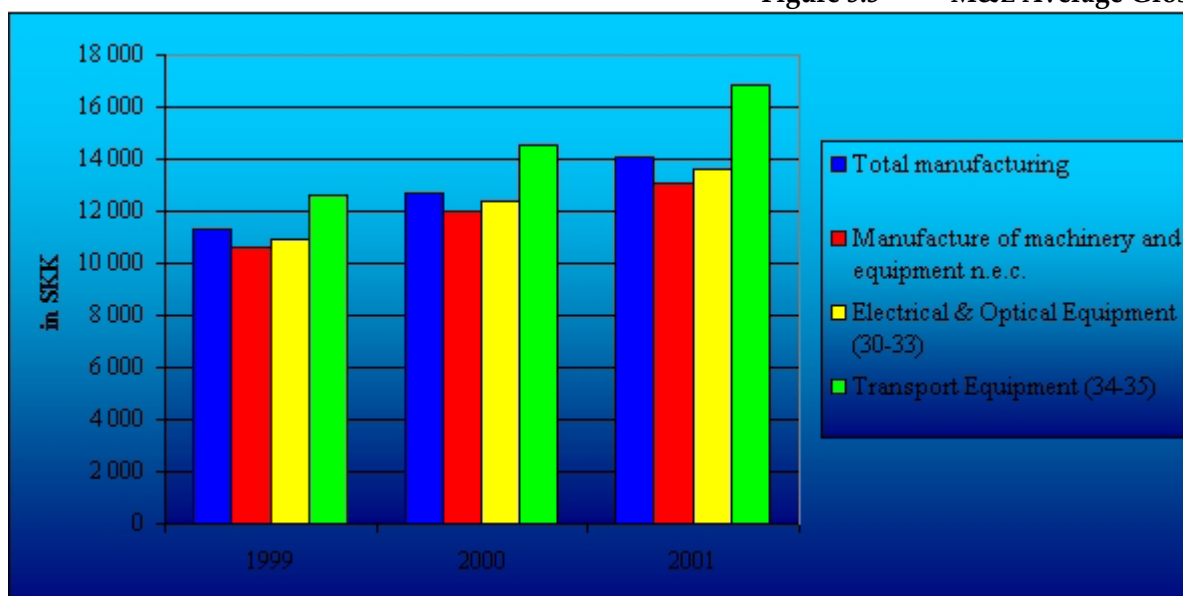
(Year 2001; growth rates 1995-2001 in %)

	Czech Republic	Hungary	Poland	Slovak Republic
Austria 2000=100	16.0	13.3	19.9	12.2
D Manufacturing total (2001)=100				
DK Machinery and equipment n. e. c.	105.1	101.0	107.8	97.6
DL Electrical & optical equipment	99.3	108.5	121.3	93.2
DM Transport equipment	120.9	130.5	119.4	127.7

Source: WIIW, 2002

By the detailed look at the average monthly wages in Slovakia, we can observe increase in all of the M&E industry branches. The highest growth was recorded by transport equipment. On the other hand the growth of electrical & optical equipment, as well of machinery and equipment was under the level of total manufacturing average (see Figure 5.3). A remarkable was the increase in manufacture of motor vehicles by 63% (1998-2001).

Figure 5.3 M&E Average Gross Wages



Source:

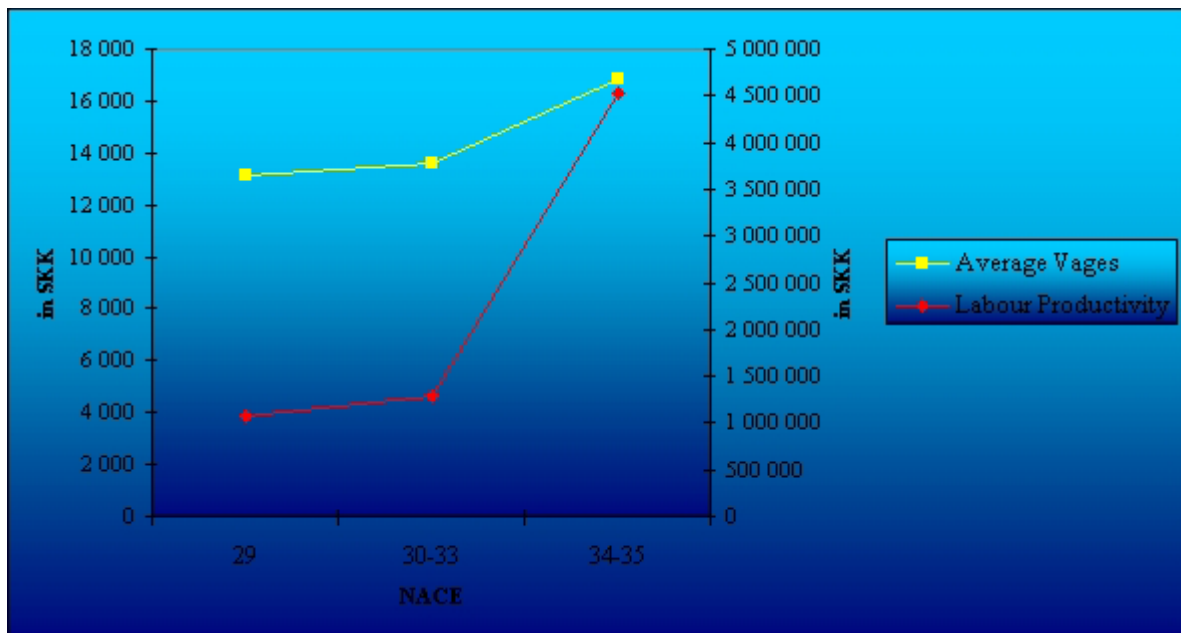
Yearbook of Industry, 2002, Statistical Office of the Slovak Republic

¹⁰ Austrian wages are probably somewhat higher than the EU average. But because of delayed data for several European countries and problems of consistency especially at the level of individual industries, Austria is used as a reference country.

Evolution of M&E labour productivity and average wages

Looking at the comparison between average wage and labour productivity M&E branches we can notice their close relationship during the period 1999-2001. The lowest average wages were reported in manufacture of machinery and equipment (NACE 29), while the highest in transport equipment (NACE 33-34). The situation is also reflected labour productivity figures (only data for 2001 is reported here in Figure 5.4).

Figure 5.4 Labour Productivity and Average Gross Wages in 2001



Source: Yearbook of Industry 2002, Statistical Office of the Slovak Republic

Labour costs

Unit labour costs (ULCs), measure the combined effect of wages and productivity on international (cost) competitiveness. Based on WIIW study, Table 5.3a and 5.3b give two sets of ULCs estimates of the V4 countries in percentage of the *Austrian* level. One is based on productivity measured at purchasing power parities for the whole GDP (PPP96 for GDP) and the other on PPPs for gross fixed capital formation (PPPCAP96). The latter measure of productivity and thus the (higher) ULCs given in Table 5.3b are probably closer to reality, as elaborated in more detail in mentioned study and will thus be preferred also in our analysis.

Table 5.3a International comparison of ULCs in M&E industry

(Year 2001, PPP96 for GDP, Austria 2000=100)

		Czech Republic	Hungary	Poland	Slovak Republic
D	Manufacturing total	36.1	19.9	39.8	22.8
DK	Machinery and equipment n. e. c.	33.8	31.4	46.5	32.7
DL	Electrical & optical equipment	30.5	11.5	46.2	34.4
DM	Transport equipment	40.4	13.2	48.9	13.2

Source: WIIW, 2002

ULCs estimates show significantly lower ULCs for total manufacturing in the V4 countries, indicating a considerable competitive (cost) advantage compared to the EU on average. The lowest ULCs can be observed in Hungary and the Slovak Republic, due to comparatively high labour productivity, while the Czech Republic and Poland are characterized by relatively high wages and high productivity. ULCs are extremely low and thus (cost) competitiveness seems to be particularly high in the following countries/ M&E industries:

Slovakia is the most (cost) competitive producer in transport equipment. Hungary seems extremely cost-competitive in electrical and optical equipment as well in transport equipment (see Table 5.3b).

ULCs are extremely high and thus (cost) competitiveness seems to be relatively low in the following countries/ M&E industries:

Poland is by far the most expensive producer among the V4 countries in machinery and equipment, in electrical & optical equipment as well in transport equipment. Czech Republic has very high ULCs in transport equipment, Slovakia in electrical & optical equipment.

Table 5.3b International comparison of ULCs in M&E industry

(Year 2001, PPPCAP96, Austria 2000=100)

		Czech Republic	Hungary	Poland	Slovak Republic
D	Manufacturing total	54.4	32.0	53.6	35.5
DK	Machinery and equipment n. e. c.	51.0	50.4	62.5	51.0
DL	Electrical & optical equipment	45.9	18.5	62.2	53.7
DM	Transport equipment	61.0	21.2	65.8	20.6

Source: WIIW, 2002

The different size of ULCs of M&E industry in percentage of total manufacturing in 2001 is given in Table 5.4.

Table 5.4 ULCs in M&E industry, year 2001

		Czech Republic	Hungary	Poland	Slovak Republic
D	Manufacturing total=100				
DK	Machinery and equipment n. e. c.	131.2	221.0	163.6	201.1
DL	Electrical & optical equipment	76.8	52.6	105.6	137.7
DM	Transport equipment	78.7	46.6	86.3	40.7

Source: WIIW, 2002

Over the period 1995-2001, unit labour costs (adjusted for EUR exchange rate)¹¹ increased in nearly all V4 countries. The only exception is Hungary, where ULCs in manufacturing declined at an average annual rate of 7.8%. For comparison ULCs (EUR) in the EU on average increased by 1.4% annually during that period. According the differences between ULC changes in M&E industry, as expected, the industries that provide evidence for better competitive performance than average (showing a negative sign in Table 5.5) are typically the 'productivity winners', i.e. the technologically more sophisticated industries such as electrical & optical equipment and transport equipment. Examples for an outstanding performance in (cost) competitiveness are electrical & optical equipment in Hungary and Czech Republic and transport equipment in the Slovak Republic. Industries signalling a weaker competitive performance than average in most CCs in 1995-2001 are mainly the 'productivity losers'.

Table 5.5 Relative changes in unit labour costs, 1995-2001

(Average annual change in % for total manufacturing (D) and relative gains DK to DM, in percentage points)

		Czech Republic	Hungary	Poland	Slovak Republic
D	Manufacturing total	3.3	-7.8	3.0	1.5
DK	Machinery and equipment n. e. c.	-4.4	5.8	-1.0	-0.8
DL	Electrical & optical equipment	-10.8	-13.1	-3.5	-2.2
DM	Transport equipment	-2.6	-9.4	-4.8	-14.4

Source: WIIW, 2002

There is some specificity in the levels of labour costs in Slovakia. In 2000, average labour costs in manufacturing per hour worked were lowest between the V4 countries, €3.05. The level of labour costs in manufacturing examined in term of monthly costs per full time is also in Slovakia the lowest one with €428 (Eurostat, 2002).

Expected labour migration

Low labour costs in the post-socialist countries is one of the most important factors attracting investment from labour-intensive industries thus threatening jobs and wage levels in the West. At a time of high and persistent unemployment in the EU, the economic integration with the CEECs adds to the frictions in the labour market and in the social welfare systems. These frictions are intensified by CEE workers searching for higher paid jobs in some of the EU member states. Labour market consequences (loss of employment in some sectors/regions) and the corresponding fears in the population have led to restrictive migration and labour market policies in some EU countries.

¹¹ ULC (EUR) = (wages (NCU) / exchange rate (NCU / EUR)) / labour productivity (NCU).

A sensible impact analysis has to respect the complex interdependencies governing migration (of labour and capital) and trade in today's global economy. The issue of CEE-EU labour migration can only be understood properly, when it is viewed in the light of current patterns of trade between the EU and V4 (intra-industry vis-à-vis inter-industry), and a determining role of multinationals (MNCs). The intra-industry trade in particular is "mediated" mainly through MNCs which are increasingly becoming a "vehicle" for this interdependent flows of trade, labour and capital. MNEs create global production networks that allow qualified labour and investment capital to move from one international location to the other avoiding the cost of leaving the (national) system (Straubhaar, 2001).

A highly interesting finding of Van Aarle and Skuratowicz (2000) is that FDI from the EU15 to CEEC10 (including Slovakia) has a negative impact on employment at the origin as well as the destination of the investment flow. In contrast, increased trade in the form of net exports has a very positive effect on domestic employment and little impact in the EU. Model simulations are needed to show what the overall effect would be, although according to economic theory the lifting of barriers to trade and capital movements would ultimately benefit all trade partners.

In as far as there is a complementary relationship between capital transfers and labour migration flows, FDI and labour mobility are simply necessary in order to exploit the efficiency advantages of an integrated internal market area (Akkoyunlu, 2000). In this case, however, it is primarily a question of the migration of highly qualified specialists or much demanded seasonal labour, and not of the mass migration of unskilled workers. A statistical analysis performed Jurcova (2002) shows that the Slovakia-EU labour migration flows are fairly limited in size and frequency, with seasonal and project-tied fixed-contract workers dominating.

We conclude that it is then more appropriate to talk about the East-West migration as being a solution rather than a problem. What might indeed cause a real problem is too much Slovak emigration rather than too much Slovak immigration to the EU, as the former may undermine human capital formation in the domestic labour market.

Summary

Section 5 includes indicators analysis of international competitiveness, in particular wage rates, labour productivity levels and unit labour costs. V4 countries reported still much lower wages as in the EU, but productivity is significantly below EU levels as well. Unit labour costs (ULCs), measuring the combined effect of both, are also typically below EU levels. ULCs are extremely low and competitiveness therefore particularly high, for instance, in the electrical & optical equipment industry and in the transport equipment industry. Sectoral disparities of ULC changes were caused by different growth rates of labour productivity mainly. Industries where productivity rose faster than in total manufacturing ('productivity winners'), showed also a better ULC performance than average. Prominent examples are the technologically more sophisticated industries such as electrical & optical equipment and transport equipment.

The machinery & equipment industry assumes are usually less important than in the present EU member states. As an employer the industry belongs to the top sectors especially in Slovakia and the Czech Republic. Between 1995 and 2001, the employment has been reduced drastically in several countries. Overall, the industry's productivity gains were quite strong and more pronounced than in total manufacturing in most countries ('productivity winners'). In absolute terms, unit labour costs fell in the Czech Republic, and Hungary but moderately increased in Poland and Slovakia.

The electrical & optical sector is an emerging leader in Hungary with 18.4% of manufacturing employment there, but a major industry also in the Czech Republic and Slovakia. It is still less important than in the present EU member states (with the only exception of Hungary). Between 1995 and 2001, the labour productivity has been improving very fast by impressive double-digit annual rates. Thus, this industry was a major 'productivity winner' in all V4 countries, showing their declining ULCs.

The transport equipment industry has become a major player in total manufacturing of all V4 countries and has relatively high employment shares in particular in the Czech Republic. Between 1995 and 2001, the labour productivity has been growing very fast by impressive rates, e.g. in Hungary and Slovakia. Thus, this industry was a major 'productivity winner' in most V4 countries, showing declining ULCs, in particular in Hungary and Slovakia.

Strengths and weaknesses resulted from labour market aspects of M&E sector in Slovakia

Strengths

- The lowest level of labour costs among V4 countries
- The lowest average wage within the V4 countries
- Energy and rental costs are among the lowest from V4 countries

Weaknesses

- Possible loss of advanced location for FDI after increase of wages, energy liberalisation etc.

After EU accession of Slovakia, there is generally expecting the growth of wages. On the other hand it must be connected with appropriate growth of labour productivity. The growth of wages will likely be overtaken by the 'brain drain'. From this point of view important role will play the further wage-increase as motivation for qualitative labour forces to stay in the home country.

6. Effects on market structure and competition

Since the middle of 1990s we observe a new trend in investor strategy, especially among large multinationals. This trend we call the incremental take-over of ownership of joint ventures. In several examples in Slovakia, MNCs have steadily increased their equity share in joint ventures (including the biggest investor in manufacturing, VW). There are a number of reasons for this: (1) the global strategy of the MNC, (2) conflicts between the Slovak parent and foreign investors over joint venture strategy and over the control of key services (joint ventures are usually situated in the former plants of Slovak parents companies), (3) the inability or unwillingness of the Slovak parent to match investment funds required to maintain existing shares of ownership, and financial problems in the Slovak parent company requiring the sale of its shares in the joint venture.

Engineering industry plays a strategic role in the overall restructuring and an increasing global production networking of the Slovak industry, with the government priority having been given to the automotive industry since the beginning of 1990s.

Structure of M&E industry

Looking at the structure of M&E industry during the period 1999-2001, a decrease in the number of enterprises can be observed in manufacture of machinery and equipment as well as in electrical & optical equipment. Transport equipment reports similar figures over time (see Table 6.1).

Table 6.1. Number of enterprises in M&E industries

Division of economic activity (NACE)	1999	2000	2001
Industry in total	2 216	2 144	2 091
Manufacture of machinery and equipment n. e. c.	261	248	237
Manufacture of office machinery and computers	10	8	9
Manufacture of electrical machinery and apparel	99	99	94
Manufacture of radio, television and communication	36	36	31
Manufacture of medical, precision and optical instruments	40	39	37
Electrical & Optical Equipment (30-33)	185	182	171
Manufacture of motor vehicles, trailers and semi-trailers prod.	40	39	41
Manufacture of other transport equipment	21	21	21
Transport Equipment (34-35)	61	60	62

Source: Yearbook of Industry, 2002, Statistical Office of the Slovak Republic

Looking at the key market players in the Slovak automotive industry, we now focus on the final producers (car assemblies), local suppliers (car components), and distribution (in particular, passenger car importers).

Car Assembly: Volkswagen Slovakia

This company is both the biggest foreign investor and exporter in Slovakia, steadily improving its performance, unexpected originally even by the biggest optimists. Car production, currently anchored by

VW's industrial complex outside Bratislava, has been steadily increasing its production over its 12-year history, while in 1992, 10 to 15 cars were produced daily, in 2001 it was more than 600 cars daily and the plans are to raise daily production to more than 1,000 cars (Pravda Daily, February 13, 2002).

Since 1999, VW Bratislava factory is 100% daughter owned by Volkswagen Germany. VW group invested together with Siemens¹² in the construction of a factory producing automotive electronics equipment in Nitra (western Slovakia). A further expansion of the factory in Bratislava and a new manufacturing unit for gears in Martin (northern Slovakia) was realised. The decision of VW AG to raise its capital in Slovakia was supported by the fact that the factory in Bratislava is one of the most successful foreign investments of Volkswagen. Thus, the new Slovak government decided to support the investments of VW in the creation of new manufacturing entities in Martin and Nitra with SKK 200 millions and non-financial (not-specified) support.

In terms of the key performance indicators like production, exports, profits, employment¹³ and investments, VW Slovakia clearly determines the competitive position of the Slovak engineering sector (see also section 2).

The year 2000 is for Slovak car assembly historical especially for the start of production of deluxe terrain cars Volkswagen Touareg and Porsche Cayenne that will be wholly produced in Bratislava. The production of deluxe cars will bring the higher value added, a new subcontractors as well new labour places. The German concern has also under consideration to start the assembly of Seat Ibiza. Up to now to Bratislava was moving only production of VW Polo that was produced in Pamplona. The management of the concern's guiding principles lies in the optimal use of capacities in each of the given operations and in meeting the needs of each of the markets. If the market offers ample prospects for a particular model then the production is introduced not in a single facility but at several places, which truly affords the optimal utilisation of the available capacity.

In 2002 VW Slovakia produced 225,442 cars that is increase against 2001 at about 24.1%. In production of gears, company reported annual decrease of 8.8%. On the other hand the increase of 8.6%, recorded by production of components for gears. In 2003, VW Slovakia will increase ca production annual by 10% production in Bratislava assembly. The growth of production should ensure by the production of VW Touareg. The production of this new type use on 58% components produced in Slovakia. That is basically higher share as by up to now produced cars (Hospodarske Noviny, March 13, 2003). The production programme is relatively broad and thanks to flexibility, VW has introduced a new model practically every year. Daily technical capacity of production in VW Slovakia is 1,800 to 1,900 cars. The further growth will depend on capacity of components suppliers for automotive industry (TREND, October 17, 2002).

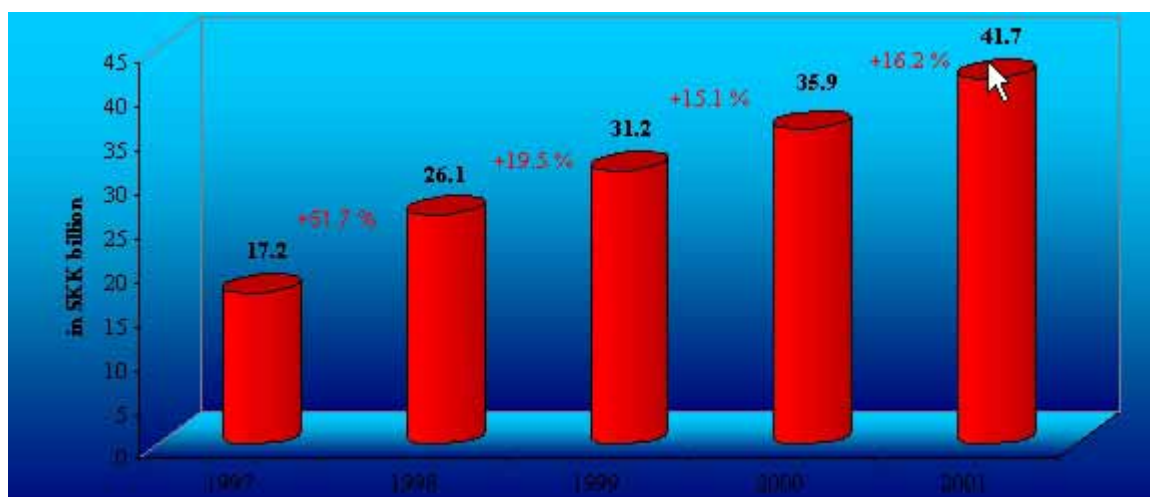
Car components

Consolidation in this sector is driven by desire to move up the value chain by suppliers and demands by manufacturers for single source supply on a global basis. Suppliers are forced to continue searching for additional added value or cost reductions. The production of components represented substantial part of Slovak industry. During the period 1997-2001, the supplies of components for automotive industry in Slovakia gradually increased from SKK 17.2 billion to SKK 41.7 billion (see Figure 6.2).

¹² joint-venture called VW Electronic Systems

¹³ In 2001, VW Slovakia in Bratislava directly employed 7 500 people (Pravda Daily, February 13, 2002).

Figure 6.2. Local supplies of components for global automotive industry



Source: Automotive Industry Association of the Slovak Republic, <http://www.zapr.sk/>

Looking more in detail at the variety of Slovak components supplies, the number of components producers reported 120 those major customers represented VW, Skoda, as well as other global car producers, e.g. Ford, Audi, Seat, Porsche, Toyota etc. (see Table 6.3).

Table 6.3 Slovak components supplies for global automotive industry in 2001

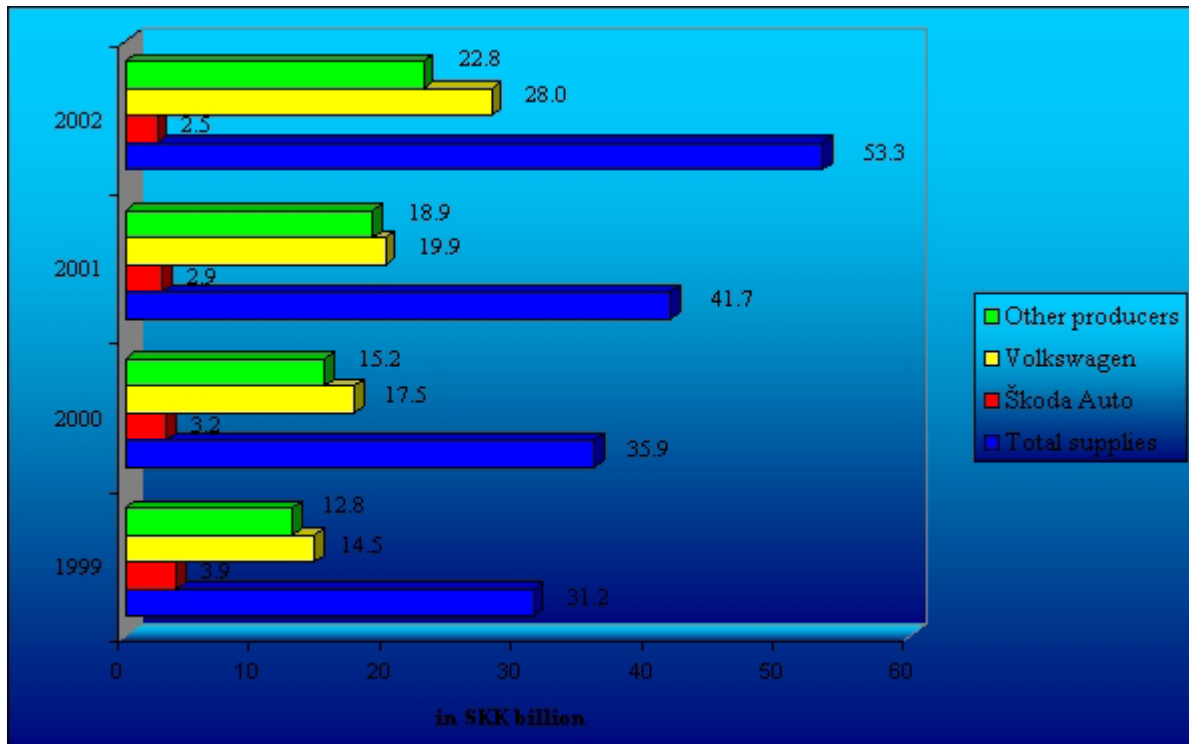
Components	Supplies for	Turnover in SKK million
Plastics, insulated materials	VW, Škoda, Tatra, Karosa, Ford	387.4
Forging, castings, tin-plates, pipes	Škoda, AutoVAZ, Dacia, Fiat	3 478.9
Cables, lights, switches	VW, Škoda, Ford, Porsche, Audi, Mercedes	13 002.7
Seats, driving wheels, handbrakes	VW, Škoda, Ford, Audi	7 008.3
Tools, gears, JUS, appliances	VW, Škoda, Audi	73.5
Matrices, machining, anodic design	VW, Škoda, Tatra, Daewoo, GM, Citroën	1 346.4
Axles, gears, clutches, brakes	VW, Škoda, Peugeot, Tatra, Volvo, Karosa	12 179.2
Gum, pneumatics, gum-metal products	VW, Škoda, Audi, Ford, Seat	1 486.0
Moulded segments, springs	VW, Škoda, Mercedes	1 353.3
Bowdens, filters, driving mirrors	VW, Škoda, GM, Volvo, Audi	1 098.6
Other	Škoda, Tatra, Daewoo, Renault, Ford	311.4
Total		41 725.7

Source: Automotive Industry Association of the Slovak Republic, www.zapr.sk

In production of components for automotive industry during the period 1999-2002, an increase of total supplies from SKK 31.2 billion to SKK 53.3 billion was recorded. The markedly growth was registered also by Volkswagen from SKK 14.5 billion to SKK 28.0 billion (see Figure 6.4). Recently more as 40% of turnover

in automotive industry represents the producers of components, the rest generated VW Slovakia (SME Daily, February 25, 2003).

Figure 6.4 Slovak production of components for global automotive industry



Source: *Hospodarske Noviny Daily*, February 26, 2003

There are more as 60 partners in Slovakia that are producing car components for VW assembly in Bratislava. In addition the new models of VW attracted new subcontractors that on the basis of concrete order from production are assembling subcomponents and delivering them directly to production cycle. Such a firms are settling in the industrial parks close to Bratislava, e.g. Delphi, Lear Corporation etc. (TREND, October 17, 2002).

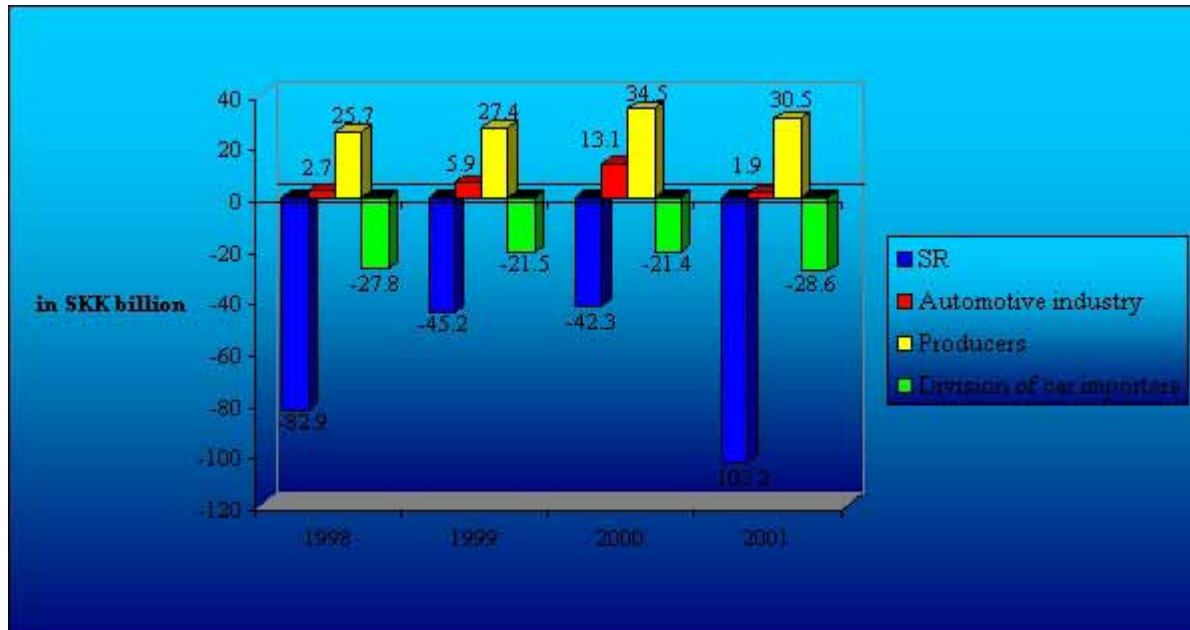
VW has recently announced plans to begin car assembly in Ukraine. This decision is an integral part of VW intention to expand in Central and Eastern Europe, not only sales but also in the production section. This constitutes an enormous opportunity for Slovak subcontractors and for VW Slovakia, being the most eastern production locality of the concern in Europe (The Slovak Spectator, April 4, 2003).

Even before ground has been broken on PSA Peugeot Citroen's planned car plant in Trnava, European and North American automotive suppliers are scouting locations across western Slovakia as the country's auto industry continues to blossom. Some 30 Peugeot suppliers have already inquired about setting up shop in his town, around 45 kilometres from Trnava and around 85 kilometres from Volkswagen's plant outside Bratislava. The US auto-part manufacturers Visteon and Magna, both of which are exploring investment possibilities in central Europe. Visteon is the largest supplier for Peugeot worldwide. If Peugeot is going to grow, Visteon is going to branch out as well. The company has already announced plans to build a facility in a V4 country within the next two years. Delphi and Johnson Controls both of which already supply Volkswagen and are looking to expand their Slovak operations (The Slovak Spectator, April 28, 2003).

Car distribution

The automotive industry positive influenced the negative balance of foreign trade in Slovakia. This negative development confirmed the number in 2001 (SKK -103.2 billion): the final producers (SKK 30.5 billion) and car importers (SKK -28.6 billion) (see Figure 6.5). In 2002 the automotive industry reached the trade balance surplus of SKK 26.0 billion (SME Daily, February 25, 2003).

Figure 6.5 Balance of foreign trade: Slovak automotive industry



Source: Automotive Industry Association of the Slovak Republic, <http://www.zapr.sk/>

Looking at the best selling car brand names in 2002, the largest share of the Slovak market was taken by Skoda¹⁴ with 57.19%, followed by VW (9.53%), Renault (9.36%) and Peugeot with 6.64% (see Table 6.6).

¹⁴ The joint venture of Skoda Mlada Boleslav (the Czech Republic) and Volkswagen.

Table 6.6 Slovak passenger car market (rankings and market share by sales)

Car Brand	2000		2001		2002	
	Rank	Market Share (%)	Rank	Market Share (%)	Rank	Market Share (%)
SKODA	1.	57.19	1.	52.77	1.	44.22
RENAULT	4.	4.0	2.	10.13	3.	9.36
VW	3.	5.72	3.	6.13	2.	9.53
OPEL	5.	3.81	4.	4.59	6.	3.81
DAEWO	2.	7.83	5.	3.59	10.	2.3
PEUGEOT	6.	3.06	6.	3.41	4.	6.64
FIAT	7.	2.94	7.	2.86	7.	3.16
CITROEN			8.	2.63	5.	4.33
SEAT	8.	2.76	9.	2.39	8.	3.12
TOYOTA	9.	2.07	10.	2.36	9.	2.62
MAZDA	10.	1.56				

Source: Automotive Industry Association of the Slovak Republic, <http://www.zapr.sk/>

The number of sold cars in Slovakia has not too changed, during the last 3 years. In Slovakia was sold from 65 thousand to 71 thousand cars. But there is wholly change in structure of sold cars. The sale of low-class decreased and sale of deluxe – terrain, vans and cars of higher class increased. From total number of sold cars, tenth are deluxe. Six years ago, it was just 1%. For this reason increased the price of average cars during 3 years from SKK 505 thousand to SKK 656 thousand. Slovakia exceeded the GDP boundary of 4,000 \$ per capita, and this is generally accepted as limit for xanhxstart of more intensive automobilisation (Hospodarske Noviny, May 12, 2003).

Increasing market competition: Entry of PSA-Citroen to Slovakia

As manufacturing recession hangs over the automotive industry, there are important decisions from side of global car producers to be made at each stage of value chain.

The automotive sector in Slovakia received a huge boost with the January 2003 announcement of plans by French auto giant PSA Peugeot Citroen (PSA) to build a new car factory near the western Slovak town of Trnava. Both industrial and foreign trade structure of M&E in Slovakia will in the medium-term most certainly be challenged by the recent decision of the second largest European car-maker PSA-Peugeot to locate its second CEE factory in Slovakia (Trnava factory is planned to start production in 2006), with this investment being comparable in certain respects to that of VW.

The new PSA plant in Trnava, which will concentrate on the final stage of car production, is bound to influence the development of automobile production in Slovakia. It will afford an opportunity for current Slovak subcontractors to boost their range of offers for other global producers. It will open up possibilities to rationalise production, which in the final analysis will affect all concerned, i.e. those making the final products, as well as those producing components and those engaged in assembling cars. But at the end of the day the price will always be dependent on the situation on the market (The Slovak Spectator, April 28, 2003).

The entry to Slovak automotive industry will markedly increase the competition in the sector. According to Jean-Martin Folz, chairman of PSA, the choice of Trnava is connected with a strategic effort to enhance the production in the CEE, and was not primarily motivated by cheap local labour force (SME Daily, February 5, 2003). The main reasons for choosing Trnava location were declared to be its highly favourable geographical location, excellent road and rail connections, skilled labour force, and the proximity to strategic markets. They are not planning to produce their deluxe cars, where the margins are high but volumes are low (see also Frankfurter Allgemeine Zeitung, September 10, 2002). According to the strategic plan, since 2006 they will start producing about 300,000 cars a year (Peugeot 106 or Citroen C3), creating about 3,500 new jobs in the assembly, and investing up to €700 million (SME Daily, January 16, 2003).

It would have been more advantageous for VW and the Slovak economy as a whole if this PSA project had been realised a little further east from the western Slovak region. However, it is the investors' sole discretion where they want to develop their production activities. VW in Slovakia must come to terms with this and act accordingly. At any rate another car-making facility, which is not far from VW plant will mean that the workforce in this region will be able to choose between two big employers. This means that VW have to take a closer look at ways of increasing labour productivity and the optimisation of procedures. By the time PSA begins operations, VW will already be at a stabilised stage. The presence of PSA in Slovakia will mean for VW that they are faced with competition. In this respect, however, Volkswagen Slovakia experienced a long period of "training", not only within VW, but also in the context of the global car industry (The Slovak Spectator, April 4, 2003).

Substantial positive effects of this French large-scale green-field FDI project are expected for the overall Slovak economy. The production of cars is clearly becoming the most important growth segment in Slovak industry. With recent production parameters, Slovakia is ranked 10th among the world's biggest car producers, in 2001 produced 34 cars per 1,000 inhabitants (SME Daily, April 8, 2002).

In general, V4 countries are very active in attracting manufacturing FDI. There have even been cases where a strategic investor was lured by the offer of trade protection. This raises the interesting question of whether there can be a trade-off between trade and competition policies. A recent study carried out for the European Commission concluded that there are few situations in which there could be a genuine trade-off. Only if privatisation or de-monopolisation is slow, leaving extremely concentrated industries, may trade policies serve to open up the domestic market to competition. This however is not the case of any of the sub-branches of M&E sector in Slovakia, where there are almost 500 enterprises operating today.

However, given the dominant position of VW in the Slovak automotive industry, a future potential impact might to a certain extent be determined by the case of the so-called "Volkswagen-law", according to which the state of Lower Saxony can hold up 20% of shares in the Wolfsburg car-maker. According to the European Commission, which is now considering formal legal action at the European Court of Justice, this 40-year old national legislation protects the giant company from takeovers, thus hindering the free flow of capital in an enlarged EU.

Indirect EU integration effects can be expected in the energy-intensive industries, given the further liberalisation of the enlarged energy market (in January 2003). Many domestic producers, who have long time relied on the market advantage based on low energy prices in Slovakia, may find it hard to adjust to the competitive pressures of the internal market.

Summary

Section 6 summarized effects on market structure and competition. There are major benefits evident by key market players in the Slovak automotive industry, as the final producers, local suppliers and distribution.

M&E industry plays a strategic role in the overall restructuring and an increasing global production networking of the Slovak industry. Since the beginning of 1990s the government priority having been given to the automotive industry.

The role of automotive industry in Slovakia will rise with announced entering of PSA. The EU accession will be connected with the possibility for Slovak car producers and suppliers to operate on the wider territory but also the access to the free market inside the EU will bring the expected effects. In case of regulatory framework, the EU accession will bring the unification of legislative and technical standards as well as dismantle of tariff barriers. It will also bring more transparency to doing business in Slovakia, will decrease costs for car producers and suppliers.

The further development of Slovak automotive industry will depend on two dominant global tendencies. First it is recession. It forced investors to enhanced safety but also brings positives to regions that are able to offer cheaper way, how to overcome the recession. The automotive producers are forced to look for reserves in decreasing of costs and to strengthen market position and competitiveness. One of the possibilities, how to fulfil these objectives, is just the move of production to regions with lower production costs. From this point of view, it could be advantage for Slovakia. Also advanced is existing developed network of local suppliers for VW. Automotive industry is formed also by globalisation that forced on suppliers to enable the production of components for wider market. The car producers forced on quality, speed and capacity of supplies. To this pressure, small local producers are not able to withstand.

Strengths and weaknesses of automotive industry in Slovakia

Strengths

High export share of automotive industry on total export

Strategic location with possible expansion to markets in Russia and Ukraine

Multiplicative effect of automotive industry increased share of local suppliers and decreased import dependence

Development of affiliated sectors

Qualitative and qualified labour forces

Formation of new industry sector proceeded with refuse processing and recycling of automotive industry products

State support in the area of legislation and stimulus economic measures

Weaknesses

Possible dependence on global recession in automotive industry

Under-developed infrastructure outside the Western Slovakia

Recently high exacting character of import

Reserves in R&D

The automotive industry in Slovakia will play key role after EU accession. In this sector are major FDI. Final car producers will attract new local as well foreign suppliers. Despite these positive effects it is necessary to develop other machinery branches. There is also doubt that Slovakia will lag behind in using of EU structural funds for machinery industry.

7. Sector-specific regulatory aspects

Within the "free movement of goods" acquis, no progress can be reported in the sectors covered by "old approach directives", i.e. where harmonization with the EU is accomplished by means of detailed directives. This is especially the case of motor vehicles, where Council Directive 70/156/EEC on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers and Amendment 92/53/EEC has to be fully transposed and implemented (it covers more than 300 products - vehicles plus accessories).

Regarding the "new approach" harmonization (to be accomplished by means of indications of essential minimum requirements), most of the directives have now been transposed to Slovak legal system. Amendments were made to existing government ordinances, related to machinery (Directive 98/37/EC), various electronic equipment, etc. Work remains to be done with regards to pressure equipment (Directive 97/23/EC) and pressure vessels (Directives 87/404/EEC and 90/488/EC).

In the anti-trust area, Slovak Parliament adopted in June 2002 an Act on Group Exemption from the Ban on Agreement restricting Competition. Further alignment will need to be achieved through gradual implementation of the recent Commission regulation (EC) No 1400/2002 of 31 July 2002 on the application of Article 81(3) of the Treaty to categories of vertical agreements and concerted practices in the motor vehicle sector (which entered into force on October 1, 2002).

8. Recommendations for short-term policy measures

Increasing trade and FDI flows between the EU and CEEC are the most visible signs and of increasing economic integration between both parts of Europe. Based on our analysis, key priority for Slovakia should continue to be in the area of trade and FDI promotion policy. Following CEE experiences should be taken into account:

- Private investors search for profitable investment locations. They do not normally discriminate against countries or regions. But they want to calculate the future return on investments and diminish investment risks.
- A basic level of economic and political stability, a liberal attitude towards foreign investment, and guaranteed property rights are the prerequisites for attracting FDI.
- Efficient institutions, a simplification of government regulations, a stable fiscal regime can lower the compliance costs for foreign investors. In general, low taxes benefit all businesses.
- Special FDI incentives are not really necessary. Subsidies can usually not compensate for high transactions costs and cause market distortions. Selective incentives are mostly counter-productive, destroy competition and credibility.
- Some incentives for key investments (in compliance with the EU competition rules) may become necessary to receive important growth poles in the international competition of locations. Relatively poorer countries do not have the budgetary means to support investment, but they may be in a position to sell public assets cheaply.
- Local acceptance of foreign firms as well as local incentives (local taxes, industrial parks, research base, living conditions etc.) matter a lot for the choice of specific locations. The quality of business locations can be improved based on standard international know-how.
- EU accession is the best FDI promotion policy instrument: becoming part of the internal market will shift trade and FDI activities to this region. Some reorganization of MNCs may also take place with more intensive production integration of the new members and also some rationalization of locations. Domestic market oriented affiliates will become more internationalized.

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