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Volume 3

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**Low-quality Trap or  
Quality Upgrading**

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**Structural  
Characteristics of  
Agriculture and the  
Food Industry**

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**Structural Change:  
a Comparison of  
Three Manufacturing  
Sectors**



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## Contents Volumes 1 to 3 (Overview)

### Volume 1

**Structural change, convergence and specialization in the EU accession countries**  
**Introduction to the wiiw Structural Report 2003**

*by Michael Landesmann*

Chapter 1

**Industrial development in the accession countries**

*by Peter Havlik and Waltraut Urban*

Chapter 2

**Structural patterns of East-West European integration:  
strong and weak Gerschenkron effects**

*by Michael Landesmann and Robert Stehrer*

### Volume 2

Chapter 3

**Labour market trends in the CEECs**

*by Hermine Vidovic*

Chapter 4

**Structural development of manufacturing FDI in the more advanced CEECs**

*by Gábor Hunya*

Chapter 5

**Technological activity in Eastern Europe at the turn of the century**

*by Mark Knell*

Chapter 6

**Developments in regional GDP and regional unemployment**

*by Roman Römisch*

### Volume 3

Chapter 7

**Low-quality trap or quality upgrading – evidence for CEECs**

*by Uwe Dulleck, Neil Foster, Robert Stehrer and Julia Wörz*

Chapter 8

**The European Union's new members in Central Europe:  
structural characteristics of agriculture and the food industry**

*by Doris Hanzl-Weiss, Zdenek Lukas and Josef Pöschl*

Chapter 9

**Structural change in transition countries:  
a comparison of three manufacturing sectors**

*by Doris Hanzl-Weiss*

## Contents Volume 3

### Chapter 7

#### **Low-quality trap or quality upgrading – evidence for CEECs**

*by Uwe Dulleck, Neil Foster, Robert Stehrer and Julia Wörz*

Abstract.....	1
1 Introduction.....	1
2 Hypotheses .....	2
2.1 Industry specialization patterns .....	2
2.2 Specialization patterns within industries .....	3
2.3 Quality upgrading in quality segments of industries .....	3
2.4 Summary.....	4
3 Data and methodology.....	4
3.1 Data .....	5
3.2 Methodology of the calculation of relative unit values .....	5
4 Descriptive analysis .....	6
4.1 Specialization patterns.....	7
4.2 Quality specialization within industries.....	9
4.3 Quality specialization within segments .....	12
5 Econometric analysis.....	13
5.1 Quality upgrading within industries.....	13
5.2 Quality upgrading within segments.....	17
6 Conclusions.....	20
References .....	22
Appendix.....	23

### Chapter 8

#### **The European Union's new members in Central Europe: structural characteristics of agriculture and the food industry**

*by Doris Hanzl-Weiss, Zdenek Lukas and Josef Pöschl*

Abstract.....	24
Introduction .....	24
1 Agriculture: present state and likely impact of EU accession.....	25
1.1 The state of affairs after a decade of reforms.....	25
Basic facts .....	25
Conditions in individual countries.....	26
Low degree of subsidization maintainable thanks to favourable exchange rates .....	28
Notorious deficits in agro-food trade in spite of surpluses in the subdivisions of agro-trade .....	30
Convergence with the EU as achieved so far.....	31

1.2	The new challenge: achieving success within the enlarged Union.....	31
	Points of relevance in the Copenhagen Agreement .....	31
	CAP reform – a new Commission initiative.....	32
	Decoupling .....	32
	Degression .....	33
	More support for rural development.....	33
	The proposal as a whole .....	33
1.3	Prospects for CEE farmers.....	34
	Direct payments in 2005.....	34
	Foreseeable budgetary constraints.....	35
	Agricultural terms of trade.....	36
	Barriers to output expansion .....	37
	Shifts in the balance of trade .....	38
1.4	Agriculture: conclusions .....	38
2	Food processing: present state and likely impact of EU accession .....	39
	Position and development trends of the food processing industry.....	39
	International cost competitiveness .....	42
	Trade competitiveness and structure (in trade with the EU) .....	44
	Foreign direct investment in food processing .....	51
	Food processing: conclusions .....	52
3	Consequences for the agro-food sector as a whole .....	55
	References .....	57
	Appendix.....	60

## Chapter 9

### **Structural change in transition countries: a comparison of three manufacturing sectors**

*by Doris Hanzl-Weiss*

	Abstract.....	64
	Introduction .....	64
1	The three sectors in comparison .....	65
2	SECTOR PROFILE: The leather and leather products sector in the CEECs .....	68
	Minor position of the leather and leather products sector in the past and today .....	69
	Dramatic drop in the production of leather and leather products .....	70
	Minor role as an employer – large employment cuts.....	72
	Productivity and labour costs.....	72
	Trade with the EU-15.....	75
	Increasing export specialization on footwear, diversifying import structure .....	76
	Price/quality gap indicator mixed but improving over time .....	78
	Favourable position on the European market.....	79
	Foreign direct investment .....	79
	Prospects .....	80

3	SECTOR PROFILE: The chemical sector in the CEECs.....	81
	Declining importance of the sector in manufacturing production .....	82
	Weak growth pattern of the chemical sector.....	83
	Minor role in employment.....	85
	Productivity and labour costs.....	86
	Trade with the EU-15.....	88
	Export structure concentrated on basic chemicals, imports diversified.....	89
	Relatively large and persistent export price gaps.....	92
	Weak and declining position on the EU market .....	93
	Foreign direct investment .....	93
	Prospects .....	94
4	SECTOR PROFILE: The metals sector in the CEECs .....	95
	Major importance in production – specialization in the Slovak Republic .....	96
	Stagnation of the metals sector.....	97
	Major role in employment .....	99
	Productivity and unit labour costs.....	100
	Trade with the EU-15.....	101
	Exports concentrated on 'basic metals', imports evenly distributed .....	103
	Price/quality gap indicator.....	107
	Prominent position on the EU market .....	107
	Foreign direct investment .....	108
	Prospects .....	109
5	Summary.....	110
	References .....	112
	Contributors .....	113

## List of Tables, Figures and Maps, Volume 3

### Chapter 7

Table 1a	Specialization patterns .....	7
Table 1b	Changes in specialization patterns .....	8
Table 2a	Specialization in quality segments within industry groups .....	10
Table 2b	Changes in specialization in quality segments within industry groups .....	11
Table 3a	Unit values and UVR using weights of 1995 .....	12
Table 3b	Changes in unit values and UVRs using weights from 1995.....	13
Table 4	Specialization within industries .....	15
Table 5	Specialization within selected low- and high-tech industries .....	16
Table 6	Specialization within quality segments .....	18
Table 7	Specialization within quality segments in low- and high-tech industries .....	19
Table A1	List of industries .....	23
Table A2	List of countries.....	23
Figure 1	Three dimensions of quality upgrading.....	4

### Chapter 8

Table 1	Development of subsidization (PSE) in the CEECs and in the EU, share of subsidies in gross revenues of agriculture, in %.....	29
Table 2	Food products, beverages and tobacco: Overview of production and employment, 2001.....	40
Table 3	Food products, beverages and tobacco: Wages, productivity and unit labour costs in 2001 .....	43
Table 4	Food products, beverages and tobacco: Average annual growth rates, 1995-2001, in % .....	43
Table 5	Food products, beverages and tobacco: Exports to the EU-15, EUR million .....	45
Table 6	Export structure of the food products, beverages and tobacco sector, 2001.....	48
Table 7	Import structure of the food products, beverages and tobacco sector, 2001 .....	48
Table 8	Food products, beverages and tobacco: Selected indicators on foreign direct investment (FDI) .....	52
Table 9	Accession countries: Trade in agro products and processed food with EU-15 .....	55
Table A1	Main indicators 2001 .....	60
Table A2	Accession countries: Trade of agro products and processed food with EU-15 .....	61
Table A3	Accession countries: Trade of agro products and processed food with EU-15 .....	62
Table A4	Accession countries: Trade of agro products and processed food with EU-15 .....	63
Figure 1	Share of agriculture in CEECs' GDP, in %.....	25
Figure 2	Share of agriculture and fishing in CEECs' total employment .....	26
Figure 3	Agricultural terms of trade 1990 = 100.....	36
Figure 4	Development trends compared to total manufacturing Average annual growth rates, 1995-2001, in % .....	42
Figure 5	Food products, beverages and tobacco: Market shares in extra- plus intra-EU-15 imports, in %.....	46

Figure 6	Food products, beverages and tobacco: Revealed comparative advantage in trade with the EU-15, 1995-2001.....	49
Figure 7	Food products, beverages and tobacco: Revealed comparative advantage in trade with the EU-15, 2001 .....	50
Figure 8	Food products, beverages and tobacco RCA improvements in trade with the EU, average 2000-2001 over 1995-1996.....	51
Map 1	Food, beverages and tobacco (DA), regional development cluster, FDI per employee in EUR and trade competitiveness.....	53

## Chapter 9

Table 1	Production shares of individual industries in total manufacturing (at current prices), 2000, in % .....	66
Table 2	Leather and leather products: Overview of production and employment, 2000 .....	69
Table 3	Production shares of selected light industries (DB, DC, DD) in total manufacturing (at current prices), 2000, in % .....	69
Table 4	Leather and leather products: Production growth (at constant prices 1996).....	71
Table 5	Leather and leather products: Employment shares, in % Manufacturing = 100 .....	72
Table 6	Leather and leather products: Average annual growth rates, 1993-2000 in %.....	74
Table 7	Detailed export and import structure with the EU-15 of the leather and leather products sector, 2000 .....	77
Table 8	Leather and leather products: Price/quality gap indicator for CEEC exports to the EU .....	78
Table 9	Leather and leather products: CEECs' exports to the EU-15 in EUR million, market shares in %.....	79
Table 10	Chemicals, chemical products and man-made fibres: Overview of production and employment, 2000 .....	82
Table 11	Production shares of selected industries (DF, DG and DH) in total manufacturing (at current prices), 2000, in % .....	83
Table 12	Chemicals, chemical products and man-made fibres: Production growth (at constant prices 1996).....	84
Table 13	Chemicals, chemical products and man-made fibres: Employment shares, in % (manufacturing = 100).....	85
Table 14	Chemicals, chemical products and man-made fibres: Average annual growth rates, 1993-2000, in % .....	87
Table 15	Detailed export structure of the chemical sector, trade with the EU-15, 2000, in % .....	90
Table 16	Detailed import structure of the chemical sector, trade with the EU-15, 2000, in % .....	90
Table 17	Chemicals, chemical products and man-made fibres: Price/quality gap indicator for CEECs' exports to the EU .....	91
Table 18	Chemicals, chemical products and man-made fibres: CEECs' exports to the EU-15 in EUR million, market shares in %.....	93
Table 19	Basic metals and fabricated metal products: Overview of production and employment, 2000 .....	96
Table 20	Production shares of selected industries (DI, DJ and DK) in total manufacturing (at current prices), 2000, in % .....	97
Table 21	Basic metals and fabricated metal products: Production growth (at constant prices 1996).....	98

Table 22	Basic metals and fabricated metal products: Employment shares, in % (manufacturing = 100 .....	99
Table 23	Basic metals and fabricated metal products: Average annual growth rates, 1993-2000, in % .....	101
Table 24	Detailed export structure of the metals sector, 2000, in % .....	104
Table 25	Detailed import structure of the metals sector, 2000, in % .....	105
Table 26	Basic metals and fabricated metal products: Price/quality gap indicator for CEEC exports to the EU .....	106
Table 27	Basic metals and fabricated metal products: CEECs' exports to the EU-15 in EUR million, market shares in %.....	108
Figure 1	Winners and losers of transition, 1993-2000: Annual average growth rates in production compared to total manufacturing, in percentage points.....	67
Figure 2	Leather and leather products: Industrial production index (at constant prices 1996, national currency), 1989 = 100 .....	71
Figure 3	Leather and leather products: Unit labour costs (EUR), Austria 1999 = 100 .....	74
Figure 4	Leather and leather products: Export to EU, 1995 = 100 .....	76
Figure 5	Leather and leather products: Foreign penetration of the sector.....	80
Figure 6	Chemicals, chemical products and man-made fibres: Industrial production index (at constant prices 1996, national currency), 1989 = 100 .....	85
Figure 7	Chemicals, chemical products and man-made fibres: Unit labour costs (EUR), Austria 1999 = 100 .....	87
Figure 8	Chemicals, chemical products and man-made fibres: Export to EU, 1995 = 100.....	89
Figure 9	Chemicals, chemical products and man-made fibres: Foreign penetration of the sector .....	94
Figure 10	Basic metals and fabricated metal products: Industrial production index (at constant prices 1996, national currency), 1989 = 100 .....	99
Figure 11	Basic metals and fabricated metal products: Unit labour costs (EUR), Austria 1999 = 100 .....	100
Figure 12	Basic metals and fabricated metal products: Export to EU, 1995 = 100.....	103
Figure 13	Basic metals and fabricated metal products: Foreign penetration of individual industries in 1999 .....	109

## Low-quality trap or quality upgrading – evidence for CEECs

### **Abstract**

*The patterns of trade integration of Central and Eastern European countries in an enlarged EU are already well researched. A number of studies point towards an upgrading of the quality of CEEC exports compared over time and industries. In this paper we go a step further and look at quality upgrading within industries, which can be assessed empirically by partitioning industries into distinct quality segments. We discuss two different types of quality upgrading inside these segments and present evidence for ten Central and Eastern European countries and thirteen manufacturing industries. We first give a descriptive overview for a subset of industries (selected low-tech and high-tech sectors) with regard to the different types of quality upgrading, distinguishing between three subgroups (CEE-5, Baltics and Southeastern Europe). Second, we show econometrically that the patterns described in the descriptive part also hold more generally. For this we use panel data analysis to scrutinize the findings in the descriptive section.*

### **1 Introduction**

Trade specialization patterns of CEECs often show initial specialization in low-tech and low-skill industries which is decreasing over time, in some cases even rapidly so (see Havlik, 2001; Stehrer, Landesmann and Burgstaller, 2000; Wörz, 2003). All these studies rely on a comparison of trade flows in individual industries disregarding quality differentials inside industries. Thus, it might be conceivable that CEECs, while catching up in terms of their export industries, do not manage to catch up in terms of the quality of the goods produced. This would lead to specialization in low-quality goods inside industries.

Dulleck (2002) argues in a 2-country 2-qualities framework that countries may be trapped in the production of low-quality goods due to economies of scale in the production of high-quality goods, international trade policies, external economies due to quality uncertainty (labelling, imaging) or external economies due to demand effects. Because of a first mover advantage, Western European countries may serve the whole market (West and East) with high-quality goods. The latter point shows (based on an idea in Murphy et al., 1989), however, that the transition countries can only be successful in high-quality industries if a critical number of sectors are entering the high-quality sectors (segments) simultaneously; i.e. a 'big push' is needed to escape the low-quality trap.

On the other hand, there is evidence that at least some of the transition countries show quality upgrading of their products (i.e. increasing the unit value of exports; see for

example Landesmann and Stehrer, 2002; Aturupane, Djankov and Hoekman, 1999). Here quality measured as unit value ratios of exports by industries means that transition countries can sell their products at higher prices. Still, this does not rule out that these countries may sell only in the lower-quality segments of each industry as proposed by the model described above.

In this paper, we examine whether there is evidence of a low-quality trap in CEECs, and in particular, whether such countries may end up specializing in the production and export of goods that are of lower quality than those produced in the EU countries. We depart from the emphasis that is prevalent in the literature looking at movements across industries and examine whether a low-quality trap exists within industries. The way we do this is to construct three different segments for each of fourteen industries representing low-, medium-, and high-quality goods within an industry. The segments are constructed using the unit values of the European Union's output as a measure of the quality of different goods. Using these segments we examine whether countries have moved both across segments, but also whether there has been any movement within a segment that would suggest evidence of a low-quality trap.

The paper is organised as follows. In section 2 we discuss our hypothesis and introduce the notions of 'quality' used in the empirical part of the paper. Section 3 introduces the methodological issues and describes the data sources. In section 4 we present a descriptive overview of the ongoing dynamics of trade patterns with respect to the hypothesis given in section 2. This is done for two subsets of industries only (i.e. low- and high-tech industries). Section 5 then shows the results of our econometric investigation of two of the hypothesis given in section 2. Section 6 concludes.

## **2 Hypotheses**

As discussed in the introduction the notion of 'quality upgrading' or 'quality traps' may be misleading due to different concepts or measurement issues. In this section we discuss the notions of 'quality' we use below in our investigations.

From the data we have available, we look at changes across industries, movements across segments within an industry, and movements within each segment. As such, there are at least three possible definitions of 'quality upgrading'.

### **2.1 Industry specialization patterns**

Firstly, one may think of specialization patterns in general. This notion of 'quality' is very broad as it compares products from different industries to each other. However, as the

measure of quality will be the 'unit value ratios' (export price per kilogram) goods in different industries can be regarded as being of different quality on the assumption that the unit value of goods subsumed in lower-tech industries is lower. The argument can be based on either a Heckscher-Ohlin model or a Ricardian model. From the assumption that CEECs are relatively scarce in skilled labour and that higher-tech industries are skill-intensive, specialization in low-tech industries would follow. In a Ricardian model the productivity gap (under the assumption of equalized wage rates across industries) would have to be relatively larger in the higher-tech sectors. Patterns of trade specialization in the beginning of the transition period more or less followed this pattern for most countries. However there is ample evidence that CEECs do not follow this pattern of specialization over time either because their skill endowments are similar to those of Western European countries (e.g. most of the CEECs had a good technical education in the past) or because productivity gaps are closed much faster in more technology-intensive industries (see e.g. Landesmann and Stehrer, 2002, for a discussion of recent developments).

## **2.2 Specialization patterns within industries**

Secondly, a low-quality trap in exports can be seen as specialization in the low-quality segment of each or most industries (or important industries). In this case products which are similar (as belonging to one industry) are compared. This means that products or exports inside each industry can be ranked according to their quality. Dividing each industry into segments (as is done below) then a low-quality trap would imply that CEECs specialize in the segment with the lowest quality (segment 1 below). This means that a country may be able to specialize in production and exports of high-tech sectors but within these only in the lower-quality segments. If one assumes that equal products get the same price in EU markets, this implies that our notion of a low-quality trap is equivalent to a relatively higher share of exports being in the low-quality segment of an industry. The measure of this notion of 'quality' will thus be based mainly on an export composition argument.

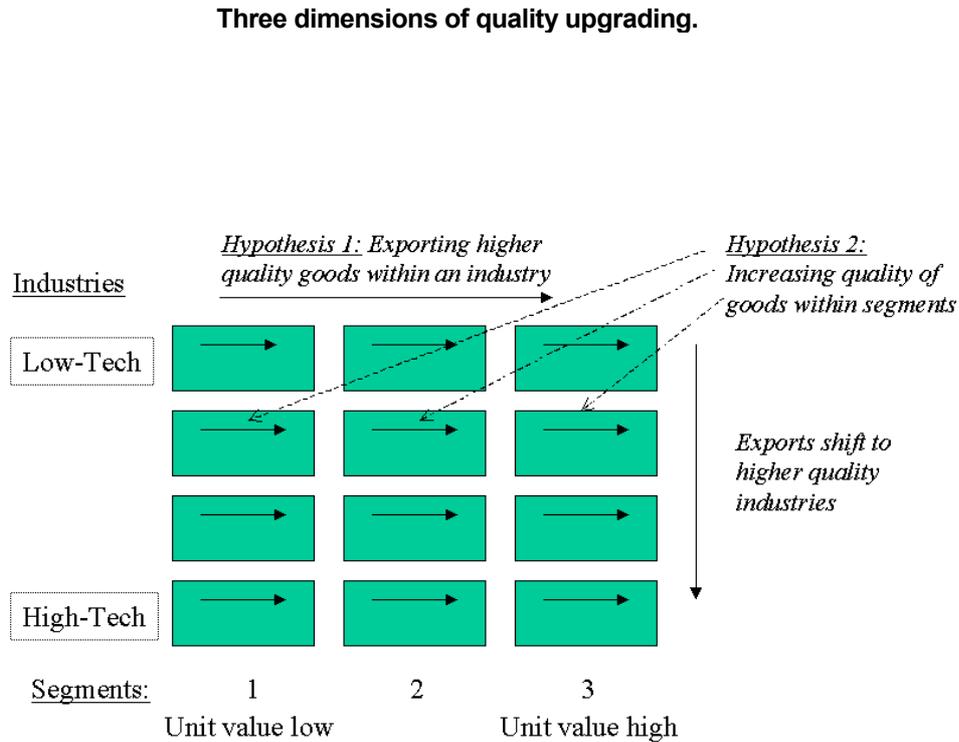
## **2.3 Quality upgrading in quality segments of industries**

Finally, quality upgrading can be defined as a movement towards producing 'higher quality' of products within segments. This argument is also based on a compositional argument, but it can be used additionally for testing if quality upgrading is relatively faster in the lower-quality or higher-quality segments. It means that even if at the industry level one may observe quality upgrading the country (industry) may do so only in the low-quality segment (which would also point towards a low-quality trap).

## 2.4 Summary

Thus, we have three definitions of quality upgrading. In the paper we give some descriptive statistics using these definitions in section 4. In the econometric part (section 5), we mainly refer to the second and third one as for the first (trade patterns by industry) there exists already a large literature.<sup>1</sup> The three notions of upgrading are summarized in figure 1.

Figure 1



## 3 Data and methodology

In the empirical study below we use export specialization patterns of CEECs versus the EU markets to assess the above-stated hypotheses and their specific individual relevance for CEECs. For this we use trade data at the very detailed level from which we calculate the relevant data for the respective industries and segments within these industries. In this section we overview the classifications and calculations of the relevant data.

<sup>1</sup> Additionally, by abandoning the assumption that equal goods (by definition of export statistics) get the same price quality upgrading within one segment means that CEEC exporters can sell their products at higher prices over time. Of course, the same notion of quality may be given in the industry case as well. It turns out, however, that this is not relevant (as we use 8-digit data) and is additionally controlled for in the econometric analysis.

### 3.1 Data

The data set used is the COMEXT trade database which provides trade data at the 8-digit CN level for EU imports and exports. The period analysed is from 1995 to 2000. Starting with 1995 has the advantage that the Central and Eastern European countries have already started trade integration with the EU and have already surpassed the transformational recession. Further, from 1995 onwards data for EU-15 are available which thus includes important trading partners (especially Austria) for the CEECs. The database consists of about 10000 products in each year. One of the problems is that the number of products and the products covered changes from year to year. To cope with this problem we decided to cover only products which are consistently in the database over the whole period. This reduced the number of products to about 8000 per year.

### 3.2 Methodology of the calculation of relative unit values

In the calculation of relative unit values of traded products we use the Comext trade database at the most detailed 8-digit level. Denoting the value of exports to the EU of commodity  $i$  by country  $c$  in year  $t$  by  $v_{it}^c$  and the quantity (measured in tons) by  $x_{it}^c$ , the export unit value is defined as

$$UV_{it}^c = v_{it}^c / x_{it}^c \quad (1)$$

The unit values of country  $c$ 's exports to the EU are then compared to the unit values of total EU imports (from the world, including intra-EU trade) by calculating the logs of the unit value ratios

$$UVR_{it}^c = \ln (UV_{it}^c / UV_{it}^{EU}) \quad (2)$$

where  $UV_{it}^{EU}$  denotes the unit value of total EU imports for a particular commodity  $i$  in year  $t$ . Taking the logarithm of  $(UV_{it}^c / UV_{it}^{EU})$  ensures a symmetric aggregation across products for ratios larger and smaller than 1 (see below). In logs, the ratio is thus greater (smaller) than zero if the export unit value of country  $c$  is greater (smaller) than the unit value of total EU imports.

We shall not present information at the very detailed (8-digit) product level but aggregate the unit value ratios to the level of industries. Within industries we further distinguish between three quality segments. The CN 8-digit level can be classified according to the NACE rev. 1, 2-digit (DA-DN) classification which comprises 14 industries. We used 13 of these in the analysis, excluding the oil industry which is very unequally represented in individual CEECs. Within each of these 13 industries we distinguish between 3 quality segments. These segments are calculated in the following way: First, we calculated the

unit value ratios using the averages of EU imports for the years 1995 to 2000 and ranked them within each industry. Then we calculated the cumulative sum of the value of EU imports (ranked by the unit value ratios) within industries. Finally, we classified the products of the lower third of the cumulated import value as segment I (low-quality segment), the second third as segment II (medium quality segment) and the upper third as segment III (high-quality segment).

Further, we constructed a weighted sum of the unit value ratios  $r_{it}^c$  across the products belonging to a particular industry and quality segment  $j_q$  where  $j$  denotes the industry and  $q = 1,2,3$  the segment; we shall denote the set of products in a particular industry and quality segment by  $I(j_q)$ . The weight used for a particular commodity  $i$  in  $I(j_q)$  is the share of its export value in the industry's and segment's exports of country  $c$ . Denoting the set of commodities  $i$  belonging to an aggregate  $j$  by  $i \in I(j_q)$  the weights are calculated as

$$w_{it}^c = v_{it}^c / \sum_{i \in I(j_q)} v_{it}^c \quad (3)$$

The unit value ratio for a particular aggregate  $j$  is then

$$UVR_{jt}^c = \sum_{i \in I(j_q)} UVR_{it}^c w_{it}^c \quad (4)$$

This measure can be interpreted analogously to the unit value ratios for a particular commodity as mentioned above. Similarly we use in the descriptive part the unit value of exports defined by

$$UV_{jt}^c = \sum_{i \in I(j_q)} UV_{it}^c w_{it}^c \quad (5)$$

#### 4 Descriptive analysis

For a descriptive overview we present information on the following two variables: market shares in EU markets and unit value ratios. This is done according to the three hypotheses stated above. In this part of the paper we present the data for a subset of typically low-tech industries: food products, beverages and tobacco (DA), textiles and textile products (DB), and leather and leather products (DC), as well as a subset of typically high-tech industries: machinery and equipment (DK), electrical and optical equipment (DL), and transport equipment (DM). Data are presented for three country groups, CEEC-5 (Czech Republic, Hungary, Poland, Slovakia, Slovenia), EEC-2 (Bulgaria, Romania) and BAL (Estonia, Latvia, Lithuania), and for two years, 1995 and 2000, respectively.

## 4.1 Specialization patterns

We first discuss specialization patterns across the two types of industries. Table 1a gives data for the export structure of the three groups of CEECs defined by the share of the industry group's exports relative to total exports for a particular group of countries, the market shares in total EU-15 imports, the unit value of exports and the unit value ratio, which was discussed above. Table 1b presents the growth rates of the respective variables.

Table 1a

<b>Specialization patterns</b>						
<b>Export structure of CEECs</b>						
	<b>CEEC-5</b>		<b>EEC-2</b>		<b>BAL</b>	
	<b>1995</b>	<b>2000</b>	<b>1995</b>	<b>2000</b>	<b>1995</b>	<b>2000</b>
<b>Low-tech</b>	24.59	15.98	43.11	47.83	43.51	37.08
<b>High-tech</b>	27.13	37.32	8.18	10.61	4.92	10.14
<b>Shares in EU-15 imports</b>						
	<b>CEEC-5</b>		<b>EEC-2</b>		<b>BAL</b>	
	<b>1995</b>	<b>2000</b>	<b>1995</b>	<b>2000</b>	<b>1995</b>	<b>2000</b>
<b>Low-tech</b>	3.27	3.45	0.81	1.49	0.28	0.50
<b>High-tech</b>	1.96	3.12	0.08	0.13	0.02	0.05
<b>Total</b>	2.73	3.66	0.39	0.53	0.13	0.23
<b>Unit value</b>						
	<b>CEEC-5</b>		<b>EEC-2</b>		<b>BAL</b>	
	<b>1995</b>	<b>2000</b>	<b>1995</b>	<b>2000</b>	<b>1995</b>	<b>2000</b>
<b>Low-tech</b>	19.38	18.10	15.53	18.34	13.64	17.29
<b>High-tech</b>	12.05	18.83	11.54	12.02	10.81	16.45
<b>Unit value ratios</b>						
	<b>CEEC-5</b>		<b>EEC-2</b>		<b>BAL</b>	
	<b>1995</b>	<b>2000</b>	<b>1995</b>	<b>2000</b>	<b>1995</b>	<b>2000</b>
<b>Low-tech</b>	-0.03	0.05	-0.29	-0.15	-0.23	-0.02
<b>High-tech</b>	-0.35	-0.17	-0.74	-0.35	-0.38	-0.19

Let us discuss these in turn. First one can see that the group CEEC-5 in 1995 exported about one quarter of their total exports in either the low-tech or the high-tech industries. But this has changed dramatically over time: In 2000 the low-tech industries had only a share of about 16% whereas the high-tech industries increased to more than 37%. Thus, this group of countries has clearly specialized in the higher-tech industries. A similar but less pronounced pattern can be found for the Baltic states which started with more than 40% in the low-tech sectors and only about 8% in the higher-tech sectors. Similar to the group CEEC-5 the shares for low-tech industries were decreasing and increasing for high-tech

industries. Although there is restructuring towards higher-tech industries, these countries remain specialized in lower-tech industries. This is also the case for EEC-2, which however shows specialization towards lower-tech goods although the export shares are also increasing in the higher-tech industries (as the shares of the other industries – mainly resource-intensive ones – are decreasing). These patterns are also reflected in the market shares in total EU-15 imports. Additionally one can see that all country groups have increased their market shares in all industry groups with higher growth rates in the higher-tech industries (with exception of the EEC-2). Further one can see that the bulk of CEEC exports are from the group CEEC-5.

Table 1b

<b>Changes in specialization patterns</b>			
<b>Total value of EU-15 imports from CEEC</b>			
	<b>CEEC-5</b>	<b>EEC-2</b>	<b>BAL</b>
	<b>1995-2000</b>	<b>1995-2000</b>	<b>1995-2000</b>
<b>Low-tech</b>	-0.07	0.02	-0.03
<b>High-tech</b>	0.08	0.06	0.10
<b>Shares in EU-15 imports</b>			
	<b>CEEC-5</b>	<b>EEC-2</b>	<b>BAL</b>
	<b>1995-2000</b>	<b>1995-2000</b>	<b>1995-2000</b>
<b>Low-tech</b>	0.01	0.17	0.09
<b>High-tech</b>	0.12	0.11	0.13
<b>Total</b>	0.07	0.07	0.08
<b>Unit value</b>			
	<b>CEEC-5</b>	<b>EEC-2</b>	<b>BAL</b>
	<b>1995-2000</b>	<b>1995-2000</b>	<b>1995-2000</b>
<b>Low-tech</b>	-0.01	0.04	0.04
<b>High-tech</b>	0.11	0.01	0.07
<b>Unit value ratios<sup>1)</sup></b>			
	<b>CEEC-5</b>	<b>EEC-2</b>	<b>BAL</b>
	<b>1995-2000</b>	<b>1995-2000</b>	<b>1995-2000</b>
<b>Low-tech</b>	0.08	0.14	0.21
<b>High-tech</b>	0.18	0.38	0.18

Note: 1) Difference between 1995 and 2000.

In terms of unit values there has been major upgrading especially in high-tech sectors for CEEC-5 and BAL. There is a remarkable similarity of this measure in 2000 across country groups, the only exception being the group EEC-2 in the high-tech industries. Similar patterns can be found in the unit value ratios where similar patterns and movements over time can be observed.

## 4.2 Quality specialization within industries

Next we examine the quality segments within sectors as discussed above. Table 2a presents the same variables as in Tables 1 but with industries divided into three quality segments.

With respect to the export structure, the share of the low-quality segment (segment 1) is much higher in the high-tech industries (about 70%) as compared to this share in the low-tech sector (between 15% and 33%) for all three country groups. In the latter set of industries, the majority of exports are from segment 3 (high quality) with shares ranging from 40% to 60%. Although there have been some changes over time the general structure remains stable. But there is a remarkable difference between the three country groups. The group of CEEC-5 lost shares in the high-quality segment of the lower-tech industries, but gained shares in the medium- and high-quality segments in the higher-tech sectors. This pattern is reversed for the two other groups.

On the other hand, all country groups gained considerably greater market shares in EU-15 total imports in the low and medium quality segments in both types of industries. The exception here are Bulgaria and Romania which gained relatively greater market shares in the higher-quality segments of the lower-tech industries.

The unit value of exports increased in most cases. Exceptions are decreases in the low-tech industries for CEEC-5 (in quality segments 1 and 3) and in the higher-tech industries for EEC-2 (segment 1) and BAL (segment 2). The increases in the high-quality segment of the high-tech sectors for CEEC-5 and BAL are remarkable. It has to be mentioned, however, that the unit values of EU-15 total imports increased from 81 in 1995 to 150 in 2000. These patterns are of course also reflected in the developments of the unit value ratios.

Table 2a

## Specialization in quality segments within industry groups

		Export structure					
		CEEC-5		EEC-2		BAL	
		1995	2000	1995	2000	1995	2000
Low-tech		100.00	100.00	100.00	100.00	100.00	100.00
	1	28.63	33.28	15.32	11.61	26.84	25.35
	2	26.85	27.40	31.33	29.91	29.53	30.07
	3	44.52	39.32	53.35	58.48	43.63	44.59
High-tech		100.00	100.00	100.00	100.00	100.00	100.00
	1	70.51	67.59	62.39	67.32	71.23	75.09
	2	18.97	20.66	26.30	23.92	20.36	16.90
	3	10.51	11.75	11.32	8.76	8.41	8.01
		Shares in EU-15 imports					
		CEEC-5		EEC-2		BAL	
		1995	2000	1995	2000	1995	2000
Low-tech		3.27	3.45	0.81	1.49	0.28	0.50
	1	2.74	3.57	0.36	0.54	0.82	1.54
	2	2.78	2.87	0.81	1.35	0.24	0.38
	3	4.25	3.89	1.27	2.50	0.24	0.43
High-tech		1.96	3.12	0.08	0.13	0.02	0.05
	1	3.96	6.57	0.15	0.27	0.05	0.16
	2	1.44	2.63	0.09	0.13	0.05	0.16
	3	0.52	0.84	0.02	0.03	0.01	0.02
		Unit value					
		CEEC-5		EEC-2		BAL	
		1995	2000	1995	2000	1995	2000
Low-tech		19.38	18.10	15.53	18.34	13.64	17.29
	1	8.31	7.41	6.32	8.34	5.62	7.72
	2	15.13	17.15	12.16	15.52	12.74	18.59
	3	29.05	27.81	20.16	21.78	19.18	21.85
High-tech		12.05	18.83	11.54	12.02	10.81	16.45
	1	5.57	8.36	6.20	5.74	3.58	11.05
	2	15.55	20.63	9.34	16.38	35.65	24.89
	3	49.22	75.92	46.08	48.34	11.91	49.27
		Unit value ratios					
		CEEC-5		EEC-2		BAL	
		1995	2000	1995	2000	1995	2000
Low-tech	1	-0.06	-0.04	-0.27	-0.11	-0.21	0.06
	2	0.02	0.14	-0.20	0.00	-0.14	0.13
	3	-0.03	0.06	-0.37	-0.24	-0.30	-0.16
High-tech	1	-0.36	-0.21	-0.62	-0.29	-0.58	-0.07
	2	-0.48	-0.33	-0.94	-0.79	-0.63	-0.69
	3	-0.55	-0.32	-0.81	-0.94	-0.86	-0.44

Table 2b

### Changes in specialization in quality segments within industry groups

		Export structure		
		CEEC-5 1995-2000	EEC-2 1995-2000	BAL 1995-2000
<b>Low-tech</b>	1	0.03	-0.05	-0.01
	2	0.00	-0.01	0.00
	3	-0.02	0.02	0.00
<b>High-tech</b>	1	-0.01	0.02	0.01
	2	0.02	-0.02	-0.03
	3	0.02	-0.05	-0.01
		Shares in EU-15 imports		
		CEEC-5 1995-2000	EEC-2 1995-2000	BAL 1995-2000
<b>Low-tech</b>		0.01	0.17	0.16
	1	0.06	0.10	0.18
	2	0.01	0.14	0.12
<b>High-tech</b>	3	-0.02	0.19	0.16
		0.12	0.11	0.41
	1	0.13	0.16	0.47
	2	0.17	0.09	0.48
	3	0.12	0.01	0.26
			Unit value	
		CEEC-5 1995-2000	EEC-2 1995-2000	BAL 1995-2000
<b>Low-tech</b>		-0.01	0.04	0.05
	1	-0.02	0.06	0.08
	2	0.03	0.06	0.09
<b>High-tech</b>	3	-0.01	0.02	0.03
		0.11	0.01	0.10
	1	0.10	-0.01	0.42
	2	0.07	0.15	-0.06
	3	0.11	0.01	0.63
			Unit value ratios <sup>1)</sup>	
		CEEC-5 1995-2000	EEC-2 1995-2000	BAL 1995-2000
<b>Low-tech</b>	1	0.02	0.16	0.27
	2	0.12	0.20	0.28
	3	0.09	0.13	0.14
<b>High-tech</b>	1	0.15	0.33	0.51
	2	0.15	0.15	-0.05
	3	0.23	-0.12	0.41

Note: 1) Difference between 1995 and 2000.

### 4.3 Quality specialization within segments

One may ask if these changes in unit values and unit value ratios within the segments are due to changes in the composition (which corresponds to hypothesis 3 above) or to changes in selling prices. Table 3 presents the data for unit values and unit value ratios using the weights for 1995. One can see that the values are more constant over time than in Table 2. This is also true for the high-quality segment in the higher-tech sectors in which the group CEEC-5 and BAL showed large increases in the unit value. From this it can be concluded that although price increases in this segment have played a role, the shifts towards higher quality within the segments (i.e. the composition) have been more important.

Table 3a

#### Unit values and UVR using weights of 1995

		Unit value (1995 weights)					
		CEEC-5		EEC-2		BAL	
		1995	2000	1995	2000	1995	2000
<b>Low-tech</b>							
	1	8.31	8.13	6.32	7.15	5.62	6.45
	2	15.13	16.44	12.16	11.94	12.74	15.14
	3	29.05	29.60	20.16	21.74	19.18	21.29
<b>High-tech</b>							
	1	5.57	6.40	6.20	4.29	3.58	4.40
	2	15.55	16.29	9.34	8.32	35.65	13.12
	3	49.22	58.69	46.08	45.41	11.91	14.81
		Unit value ratios (1995 weights)					
		CEEC-5		EEC-2		BAL	
		1995	2000	1995	2000	1995	2000
<b>Low-tech</b>							
	1	-0.06	-0.03	-0.27	-0.10	-0.21	0.06
	2	0.02	0.10	-0.20	-0.08	-0.14	0.07
	3	-0.03	0.06	-0.37	-0.23	-0.30	-0.14
<b>High-tech</b>							
	1	-0.36	-0.23	-0.62	-0.43	-0.58	-0.32
	2	-0.48	-0.38	-0.94	-0.82	-0.63	-0.54
	3	-0.55	-0.41	-0.81	-0.76	-0.86	-0.49

Table 3b

### Changes in unit values and UVRs using weights from 1995

		Unit value (1995 weights)		
		CEEC-5	EEC-2	BAL
		1995-2000	1995-2000	1995-2000
<b>Low-tech</b>				
	1	0.00	0.03	0.03
	2	0.02	0.00	0.04
	3	0.00	0.02	0.02
<b>High-tech</b>				
	1	0.03	-0.06	0.05
	2	0.01	-0.02	-0.13
	3	0.04	0.00	0.05
		Unit value ratios (1995 weights) <sup>1)</sup>		
		CEEC-5	EEC-2	BAL
		1995-2000	1995-2000	1995-2000
<b>Low-tech</b>				
	1	0.04	0.17	0.27
	2	0.07	0.12	0.21
	3	0.10	0.13	0.17
<b>High-tech</b>				
	1	0.12	0.19	0.26
	2	0.10	0.12	0.10
	3	0.14	0.05	0.37

Note: 1) Difference between 1995 and 2000.

## 5 Econometric analysis

### 5.1 Quality upgrading within industries

The first question we want to answer is whether countries have shifted exports to the EU within an industry towards higher-quality segments. If we find evidence that the share of exports out of total industry exports have increased in the higher-quality segments, then we can argue that the respective country has increased its quality of exports within that industry. Alternatively, if the share of exports has increased in the low-quality segment, it would appear that the country has shifted production towards the low end of the market and specialized in low-quality goods.

To test this hypothesis we regress the change in each segment's export share (in total exports of an industry, between 1995 and 2000) on its initial value and on segment dummies for the second and third segments. The initial segment share is included as a

catch-up term; a negative coefficient implies that segments with initially relatively low shares are increasing and vice versa.<sup>2</sup> A positive and significant coefficient on the export share of e.g. the segment 3 dummy implies that the share of exports of this segment has increased over time at the expense of one or both of the other segments. Such a positive and significant coefficient on segment 3 implies that there has been a shift towards high-quality production within industries. We also include the change in the unit value ratio in the regression in order to test whether improvements in quality within segments (i.e. compositional changes within segments) during the period have been important in explaining the performance of the different segments.

The model is estimated using a fixed effects model for each country group. Rather than having a time-series and a cross-country element to the data, we have an industry and a country dimension. We define industries as individuals and estimate a one-way error component model, splitting the error term into an industry specific part and a purely random term. This seemed appropriate given that we already grouped countries into relatively homogeneous groups. Thus, fixed effects are more likely to arrive from individual industry characteristics rather than from country characteristics.<sup>3</sup> The results are presented in the first three columns of Table 4.<sup>4</sup>

As one can see the catch up term is significant for all country groups. The dummies for segment 2 and 3 are (positively) significant for the group CEEC-5 and EEC-2 indicating that these countries are exporting successfully in the upper quality segments. The change in the unit value ratios is only significantly positive for CEEC-5, which means that quality improvements within segments have also been important. In other words, there is no evidence of this sort of low-quality trap for CEEC-5. Likewise, EEC-2 show some evidence of restructuring exports towards higher-quality segments inside industries. The segment dummies are not significant for the Baltic countries. This also explains the higher catch-up term for this group. For this group, a low-quality trap can neither be rejected nor said to be present based on these first results.

One potential criticism of these results is that the change in the value share of segment 3 may be due to the impact of changing prices. If prices of the goods produced in segment 3 have risen faster than in other segments, then we would expect that the value of exports in segment 3 would have increased relative to the other segments. To cope with this criticism, we repeat the results using the export share of the segments in quantity terms (tonnes)

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<sup>2</sup> As we saw in Table 4.2.a, this would imply that segment 3 shares are decreasing in the low-tech sectors and increasing in the high-tech sectors.

<sup>3</sup> This choice is well confirmed by the data. We first estimated a two-way error component model using a LSDV estimator. Industry dummies were often highly significant, country dummies only occasionally so.

<sup>4</sup> Results from the random effects estimator are qualitatively similar.

Table 4

## Specialization within industries

	Values			Tons		
	CEEC-5	EEC-2	BAL	CEEC-5	EEC-2	BAL
<b>dsegshaval</b>						
<b>segshaval95</b>	-0.2372 *** <i>0.000</i>	-0.1190 *** <i>0.000</i>	-0.4991 *** <i>0.000</i>	-0.1534 * <i>0.061</i>	-0.0441 <i>0.415</i>	-0.5709 *** <i>0.000</i>
<b>duvr</b>	0.0916 ** <i>0.012</i>	0.0046 <i>0.303</i>	0.0170 <i>0.633</i>	-0.0271 <i>0.904</i>	-0.0169 <i>0.538</i>	-0.0594 * <i>0.063</i>
<b>DSeg2</b>	0.5794 *** <i>0.000</i>	0.0553 * <i>0.096</i>	-0.0887 <i>0.108</i>	-0.0311 <i>0.116</i>	0.0255 <i>0.466</i>	-0.3551 *** <i>0.000</i>
<b>DSeg3</b>	0.0364 ** <i>0.036</i>	0.0826 *** <i>0.006</i>	-0.0782 <i>0.154</i>	-0.0590 ** <i>0.030</i>	0.0254 <i>0.518</i>	-0.3761 *** <i>0.000</i>
<b>const.</b>	0.0391 ** <i>0.048</i>	-0.0069 *** <i>0.000</i>	0.2179 *** <i>0.000</i>	0.0837 <i>0.860</i>	-0.0002 <i>0.996</i>	0.4483 *** <i>0.000</i>
<b>R2-within</b>	0.36	0.22	0.31	0.21	0.11	0.27
<b>R2-overall</b>	0.36	0.22	0.31	0.21	0.11	0.27
<b>obs.</b>	195	78	117	195	78	117
<b>groups</b>	13	13	13	13	13	13

rather than the segment shares in terms of values. This is once again regressed on the initial segment share relative to the EU share (in terms of tonnes), segment dummies and the change in the unit value ratio. Interestingly enough, the results are quite different when using tonnes instead of values and the estimations have less explanatory power. Given the descriptive evidence from section four, the negative catch-up term still indicates above average increases in high-quality segments. However, it is significant only for CEEC-5 and BAL, while not for EEC-2. Further, for the group of CEEC-5, exports in the high-quality segment rose significantly slower than in both other segments. While in value terms, catching up was significantly faster in both, the high and medium quality segments, this finding points towards the possibility that price increases are caused by other factors than purely technical improvements. For instance, there may have been an initial adverse labelling effect (of low quality associated with 'made in Eastern Europe' regardless of the physical quality) that has successfully been removed for this group of most advanced CEECs. Whereas a car manufactured in the Czech Republic in 1995 may already have been of a certain level of quality, this was perceived less so than in 2000, therefore lowering its market value. Thus, Czech cars are now able to attain higher prices on the EU market than five years ago because of an improved image. Consequently, changes in unit values (and unit value ratios) reflect a notion of quality that is defined by consumer tastes as well as physical characteristics. In that sense, the quality of CEEC-5 exports has increased greatly inside different industries. Quality improvements have also been observed for the group of EEC-2, yet no such indication is given for the Baltic states.

The negative dummy for the second and third segment in the Baltic states (using tonnes) on the other hand indicates relatively weaker increases in higher-quality exports compared to low-quality export shares. Thus we conclude that specialization inside industries has increasingly been towards the low-quality segment. Together with the significantly negative coefficient on the change in unit value ratio, we take this as evidence for the second definition of a low-quality trap for those countries.

Although our definition of a low-quality trap does not make a distinction between producing low quality in different industries, it might seem appropriate to discuss developments in certain groups of industries separately. In the following, we repeat our calculations for different types of industries separately. As in the previous section, we split industries into low-tech, more labour-intensive and medium- to high-tech, more capital-intensive ones. In the regressions we use the same explanatory variables as above. EEC-2 and BAL have been treated as one group due to the small number of observations. Thus, we present the results for two different groups: the more advanced CEEC-5 countries and all others.

Table 5

### Specialization within selected low- and high-tech industries

	Low-tech				High-tech			
	Values		Tons		Values		Tons	
	CEEC-5	Other	CEEC-5	Other	CEEC-5	Other	CEEC-5	Other
<b>dsegshaval</b>								
<b>segshaval95</b>	-0.1502 ** <i>0.047</i>	-0.3913 *** <i>0.000</i>	-0.2047 *** <i>0.008</i>	-0.3448 ** <i>0.022</i>	-0.3615 *** <i>0.001</i>	-0.6637 *** <i>0.000</i>	-0.0725 <i>0.497</i>	-0.5068 *** <i>0.000</i>
<b>duvr</b>	0.0074 <i>0.906</i>	-0.0557 <i>0.504</i>	-0.1758 ** <i>0.016</i>	-0.0393 <i>0.749</i>	0.1106 <i>0.133</i>	0.0256 <i>0.428</i>	0.0219 <i>0.609</i>	-0.0160 <i>0.431</i>
<b>DSeg2</b>	-0.0008 <i>0.972</i>	0.0923 ** <i>0.026</i>	-0.0999 ** <i>0.021</i>	-0.0987 <i>0.187</i>	-0.0183 <i>0.772</i>	-0.2429 *** <i>0.002</i>	0.0418 <i>0.600</i>	-0.3341 *** <i>0.000</i>
<b>DSeg3</b>	-0.0215 <i>0.379</i>	0.0853 ** <i>0.045</i>	-0.1196 *** <i>0.009</i>	-0.0956 <i>0.246</i>	-0.0490 <i>0.455</i>	-0.2697 *** <i>0.001</i>	0.0334 <i>0.694</i>	-0.3979 *** <i>0.000</i>
<b>const.</b>	0.0571 ** <i>0.049</i>	0.0780 * <i>0.083</i>	0.1516 *** <i>0.004</i>	0.1845 * <i>0.056</i>	0.1205 * <i>0.098</i>	0.3874 *** <i>0.000</i>	-0.0036 <i>0.969</i>	0.4159 *** <i>0.000</i>
<b>R2-within</b>	0.15	0.35	0.36	0.14	0.45	0.53	0.35	0.45
<b>R2-overall</b>	0.15	0.35	0.34	0.14	0.45	0.53	0.35	0.45
<b>obs.</b>	45	45	45	45	45	45	45	45
<b>groups</b>	3	3	3	3	3	3	3	3

We find again a significant convergence term which is nearly always higher for the high-tech industries, implying faster convergence in those industries. The dummies for the different quality segments are pronouncedly different between low- and high-tech industries for both country groups. There is convergence in the sense that initially relatively high shares are decreasing and vice versa. From Table 2 this implies decreasing shares in

the high-quality segment of low-tech industries and increasing shares in the high-quality segment of high-tech industries. The significantly negative segment dummies for CEEC-5 (when using tons only) confirm this development. However, no significant effects from different quality segments were observed for this group of countries in the high-tech industries. This surprising (and disappointing) result can be explained by the fact that especially developments in the high-tech industries have been quite diverse for these five countries. Slovenia and Poland showed little movements in export shares for different reasons: Slovenia was initially exporting relatively high shares in these industries and Poland changed its export structure stepwise away from low-tech to medium-tech industries. Hungary and Czech Republic experienced greater shifts towards high-tech industries, thus showing more variation across industries. Finally, Slovakia changed its export structure towards high-tech industries only recently and not until 2000. Thus, there was little movement as such for this country over the observation period.

In contrast to the group of CEEC-5, all other Eastern European countries (Bulgaria, Romania and the Baltics) showed stronger increases in the high-quality segment of the low-tech industries, while in the high-tech industries increases in the low-quality segment were strongest. The result is more or less confirmed when using tonnes instead of values. Thus, the second definition of a low-quality trap again seems to apply for this set of countries in high-tech industries. Although according to our definition, there is no evidence of a low-quality trap at least in the subset of low-tech industries, it is still worrying that we find such evidence for the high-tech industries, given that developments in the latter industries will be more crucial for a country's long-run economic growth potential.

## **5.2 Quality upgrading within segments**

The second notion of a low-quality trap that we examine is to test whether within the different segments, there has been a movement towards the lower end of the segment or towards the higher end of the segment. It is possible that although countries have moved their production (or exports to the EU) towards the higher-quality segments, that within the segments they are concentrating on the lower-quality goods. Similarly, even if there hasn't been a move towards the higher-quality segments, it may be that countries have shifted towards the low end of the segments. Each of these could be thought of in some sense as a low-quality trap, and so in this section we examine whether this has taken place in our sample of countries.

To test this hypothesis we regressed the change in the UVR (our measure of quality) between 1995 and 2000 for each segment on the initial UVR. This is analogous to the empirical growth literature on the catch-up hypothesis. A negative coefficient on the initial UVR indicates that the (average) quality of the segments has increased more in the segments that were initially further behind. In this sense, we can argue that there has been

a movement from a low level to a higher level of quality over time, and as such there is no evidence of a low-quality trap within the segments. To account for differences across segments, we interacted the initial UVR with segment dummies for the second and third segments.

Once again, the model is estimated using panel data techniques and assuming fixed, industry specific effects. The results are reported in Table 6 for all three country groups.

Table 6

**Specialization within quality segments**

<b>duvr</b>	<b>CEEC-5</b>	<b>EEC-2</b>	<b>BAL</b>
<b>uvr95</b>	-0.4408 *** <i>0.000</i>	-0.4197 * <i>0.074</i>	-0.4520 ** <i>0.028</i>
<b>Dmshaval</b>	6.2921 ** <i>0.022</i>	3.4274 <i>0.742</i>	9.1911 <i>0.420</i>
<b>int2</b>	0.1216 <i>0.332</i>	-0.7057 ** <i>0.016</i>	-0.6624 ** <i>0.011</i>
<b>int3</b>	0.0350 <i>0.766</i>	-0.1158 <i>0.667</i>	-0.5296 ** <i>0.031</i>
<b>DSeg2</b>	0.0318 <i>0.383</i>	-0.4014 *** <i>0.007</i>	-0.2485 * <i>0.058</i>
<b>DSeg3</b>	0.0030 <i>0.936</i>	-0.1831 <i>0.224</i>	-0.2053 * <i>0.078</i>
<b>cons</b>	-0.0214 <i>0.448</i>	-0.0111 <i>0.912</i>	0.0501 <i>0.557</i>
<b>R2-within</b>	0.29	0.40	0.49
<b>R2-overall</b>	0.26	0.37	0.45
<b>obs</b>	195	78	116
<b>groups</b>	13	13	13

The negative and significant coefficient that appears on the initial unit value ratio suggests that there has in general been catching-up within the segments. Those segments that initially had the lowest unit values relative to the EU have increased their unit value ratios faster than segments by country groups that were closer to the EU in terms of their unit value ratios. The coefficients on the change in the import share to the EU is positive and significant for the CEEC-5. This implies that higher market shares are associated with higher quality.

Segment dummies are negative and significant for EEC-2 in segment 2 and BAL in segments 2 and 3. For the interaction terms between segment dummies and the initial unit value ratios we find again a negative significant coefficient for EEC-2 in segment 2 and for BAL in segments 2 and 3. This implies that catching-up has been faster in these segments

for the respective country groups. In other words, there is no indication of a low-quality trap for these countries, now referring to our third definition. While CEEC-5 show catching-up at roughly equal pace in all quality segments inside industries, the remaining CEECs show catching-up in higher-quality segments also at low rates as indicated by the negative dummy coefficients. These are at the same time those product segments where the initial quality gap to the EU-15 has been highest and considerably higher than in CEEC-5. Thus, UVRs in 2000 remain below those of CEEC-5, however there is convergence in all segments.

Once again, we can also consider developments in qualitatively different industries. The results, again for two equally large country groups are reported below in Tables 7.

Table 7

**Specialization within quality segments in low- and high-tech industries**

	Low-tech		High-tech	
	CEEC-5	Other	CEEC-5	Other
<b>duvr</b>				
<b>uvr95</b>	-0.3740 <i>0.130</i>	-0.3013 <i>0.196</i>	-0.4543 ** <i>0.048</i>	-0.2842 <i>0.443</i>
<b>Dmshaval</b>	11.7140 <i>0.177</i>	-5.6460 <i>0.286</i>	15.4439 ** <i>0.019</i>	15.0864 <i>0.912</i>
<b>int2</b>	0.1825 <i>0.600</i>	-0.2378 <i>0.562</i>	-0.2483 <i>0.350</i>	-1.4576 *** <i>0.004</i>
<b>int3</b>	0.1608 <i>0.647</i>	-0.5151 * <i>0.079</i>	-0.0124 <i>0.959</i>	-0.7214 <i>0.106</i>
<b>DSeg2</b>	0.1440 ** <i>0.016</i>	-0.0594 <i>0.526</i>	-0.1686 <i>0.134</i>	-0.9642 *** <i>0.009</i>
<b>DSeg3</b>	0.1325 ** <i>0.035</i>	-0.2293 *** <i>0.007</i>	-0.0006 <i>0.996</i>	-0.5478 * <i>0.097</i>
<b>cons</b>	-0.0386 <i>0.343</i>	0.1246 ** <i>0.017</i>	-0.0786 <i>0.442</i>	0.0820 <i>0.763</i>
<b>R2-within</b>	0.29	0.41	0.61	0.60
<b>R2-overall</b>	0.18	0.42	0.56	0.57
<b>obs</b>	45	45	45	44
<b>groups</b>	3	3	3	3

For CEEC-5, we find catching-up in the high-tech industries which is equally strong in all three quality segments. The positive coefficient for the change in EU import shares suggests that positive learning effects are present. Although catching-up cannot be seen in the low-tech industries, relative export unit values increase faster in the upper quality segments, rejecting the idea of a low-quality trap. For the remaining CEECs, some catching-up in the high-quality segment of labour-intensive, less technology-intensive industries is observed. However, the negative segment dummy also reveals that this

convergence inside the high-quality segment is at the same time accompanied by a low level of growth (in terms of quality improvements) in this segment for the low-tech industries. Likewise, EEC-2 and BAL are catching up inside the medium quality segment of capital-intensive, high-tech industries, again at a depressed level of growth in UVRs compared to other segments. Thus, some indication of a low-quality trap according to our second definition exists in these countries.

## **6 Conclusions**

This paper addressed the question whether CEECs are locked in exporting low quality to the EU market which would correspond to their image over the communist and early post-communist period. We presented empirical evidence on whether they were successfully upgrading their exports in terms of quality in the second half of the nineties or not. We referred to the lock-in scenario as a low-quality trap and used various refinements of this term. The first definition of escaping a low-quality trap referred to shifts in export structure from low- to high-tech industries. The second notion identified shifts inside industries from low- to high-quality segments as upgrading and therefore no evidence of such a trap. Finally, we looked at quality improvements inside distinct segments within industries. We presented descriptive evidence on all three notions of quality improvements/low-quality traps. This was followed by econometric tests for the latter two definitions. We used changes in unit values and unit value ratios as an indication of quality upgrading.

As a first result, an important distinction between CEEC-5 (Czech Republic, Slovakia, Hungary, Poland and Slovenia) and the five other countries (Bulgaria, Romania and the Baltic States) could be observed. Whereas the former group appeared to be successful in substantial quality upgrading of their export structure according to all three definitions, the latter group did so only in terms of the first and third definition. The notion of a low-quality trap defined as low-end specialization within industries could not be ruled out for these countries.

The descriptive results were strongly in favour of substantial quality upgrading for CEEC-5 and a low-quality trap for the remaining countries. However, the econometric results revealed a slightly different pattern. While the indication of low-quality within industry exports from Bulgaria, Romania and the Baltic states was more or less confirmed – i.e. quality improvement in the high-quality segments were significantly lower than in low-quality segments – significant quality upgrading (though at a low level) could be discerned inside the upper quality segments.

A significant faster quality upgrading across and within segments was observed for CEEC-5. Together with the descriptive evidence on those five countries we conclude that

quality upgrading has taken place in this subgroup. Thus, we can clearly reject any kind of low-quality trap for these countries.

It has to be mentioned that the use of unit values as a measure of quality imply a concept of quality which comprises physical and technical properties as well as consumer tastes and thus incorporates image and labelling effects as quality improvements. Comparing our results based on values to those based on quantities (i.e. tonnes) we find another distinction between the group of Baltic and South Eastern European countries on the one hand and CEEC-5 on the other hand. Whereas the former experienced corresponding shifts in values and quantities, the latter showed increases in value terms that were often not accompanied by increases in exported quantities (or even in contrast to those). Our results suggested that CEEC-5 faced quality improvements associated with other factors than simply improvements in technical properties, i.e. positive labelling effects or changes in their perceived image. This kind of improvements in quality as perceived by Western European consumers have not been experienced by either the South Eastern European countries or the Baltic states.

Already by 1995, CEEC-5 exports were of considerably higher quality than those of other Eastern European countries. Given further quality upgrading in this group of countries, as confirmed by the findings in this paper, lack of quality will not pose an obstacle to CEEC-5 exports into the EU. This implies positive long-term prospects for CEEC-5 trade flows with the EU. However, quality seems to be a concern in the case of Bulgaria, Romania and the Baltic states. These countries show some evidence of entering a low-quality trap according to our second definition, especially so in high-tech industries. Despite showing convergence (in terms of exported quality) inside high-quality segments, increases in relative unit values are slower in those segments. Together with their initial huge quality gaps in these segments, this implies some restructuring towards lower quality inside industries.

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## Appendix

Table A1

### List of industries

<b>NACE code</b>	<b>Description</b>	<b>Group</b>
DA	Food products; beverages and tobacco	Low-tech
DB	Textiles and textile products	Low-tech
DC	Leather and leather products	Low-tech
DD	Wood and wood products	
DE	Pulp, paper & paper products; publishing & printing	
DF	Coke, refined petroleum products & nuclear fuel	
DG	Chemicals, chemical products and man-made fibres	
DH	Rubber and plastic products	
DI	Other non-metallic mineral products	
DJ	Basic metals and fabricated metal products	
DK	Machinery and equipment n.e.c.	High-tech
DL	Electrical and optical equipment	High-tech
DM	Transport equipment	High-tech
DN	Manufacturing n.e.c.	

Table A2

### List of countries

<b>Code</b>	<b>Country Name</b>	<b>Group</b>
61	Czech Republic	CEEC-5
64	Hungary	CEEC-5
60	Poland	CEEC-5
63	Slovak Republic	CEEC-5
91	Slovenia	CEEC-5
66	Romania	EEC-2
68	Bulgaria	EEC-2
53	Estonia	BAL
54	Latvia	BAL
55	Lithuania	BAL

## The European Union's new members in Central Europe: structural characteristics of agriculture and the food industry

### Abstract

*In the ten Central and East European countries discussed in this chapter<sup>5</sup>, agriculture accounts for about 5% to over 40% of total employment. The food industry, too, is an important employer in the region, with a two-digit share in the manufacturing sector's total employment in nine of the ten countries. The so-called agro-food sector (agriculture plus the food industry) is an important part of the region's economy. The CEECs' by far most important trading partner is the EU, also with respect to agro-food trade. In their trade with the EU, the CEEC-10 spent a total of EUR 1.9 billion on imports of unprocessed agricultural products in 2001, whereas the yields from exports totalled EUR 2.0 billion. As regards trade of processed food with the EU, CEE imports amounted to EUR 4.7 billion compared to exports of merely EUR 3.3 billion.*

*EU accession constitutes a major challenge to both agriculture and the food industry, as it implies the integration of the EU's common agricultural policy as well as new standards for food processing. At least in the short and medium term, CEE producers will profit from relatively low input prices, including labour and land; nevertheless, not all of them will be able to invest the amounts required for meeting EU standards and overcoming technological backwardness. Foreign direct investment is likely to intensify in CEE food processing and possibly also agriculture.*

### Introduction

This chapter provides a comprehensive picture of the 'agro-food industry' – defined as agriculture and food processing – in the ten Central and East European countries (CEE-10). Section 1 analyses the CEE agricultural sector in its current state including structural adjustments during the transition since 1990. The following issues will be covered: the changing share of agriculture in GDP, major structural changes in the transition period 1990 to 2001, starting conditions for accession in terms of property rights, production, employment, trade, subsidies and prices, and competitiveness. Section 2 examines the food processing industry in the region. It deals with the size of the food industry in terms of production and employment, specialization patterns compared to the European Union (EU), development trends in the more recent transition period, factors of cost competitiveness and the key features regarding trade with the EU. At the end of Sections 1 and 2, the likely impact of accession to the EU on agriculture and on food

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<sup>5</sup> Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia (CEE-10).

processing will be investigated. Section 3 describes the consequences for the agro-food sector as a whole.

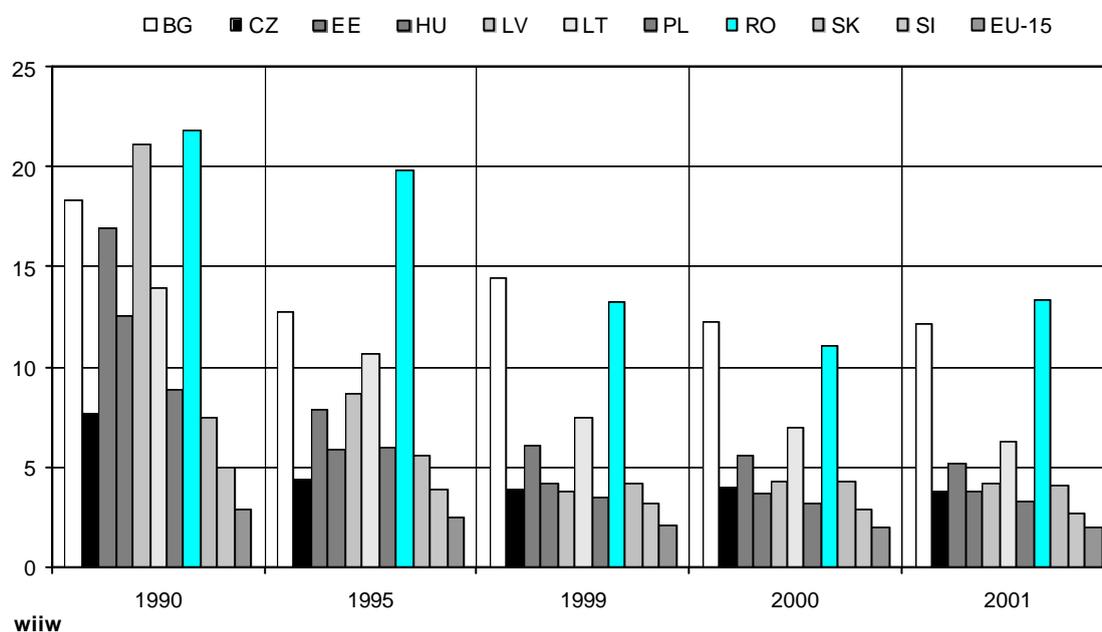
## 1 Agriculture: present state and likely impact of EU accession

### 1.1 The state of affairs after a decade of reforms

#### Basic facts

In the Central and East European countries (CEECs)<sup>6</sup> the share of agriculture in the Gross Domestic Product (GDP) has been diminishing in the course of transition, but is in most cases still above the European Union's average. The share of agriculture in total labour force, too, fell dramatically in most countries. Romania was an exception in this respect: here, agriculture has remained an important segment of the economy and its share in total employment is high compared to other CEECs; it even rose in the years of deep economic crisis, 1997 to 1999. Also Bulgaria, Latvia, Lithuania and Poland are countries with high shares of agriculture in total employment. In these countries, agriculture serves as a 'refuge' for people who do not find a job outside agriculture. The sector's labour productivity is correspondingly low. Persons who otherwise would be unemployed engage in agricultural activity, frequently on a subsistence level. This fact lowers the countries' overall rate of unemployment, which nevertheless tends to be high.

Figure 1 Share of agriculture in CEECs' GDP, in %

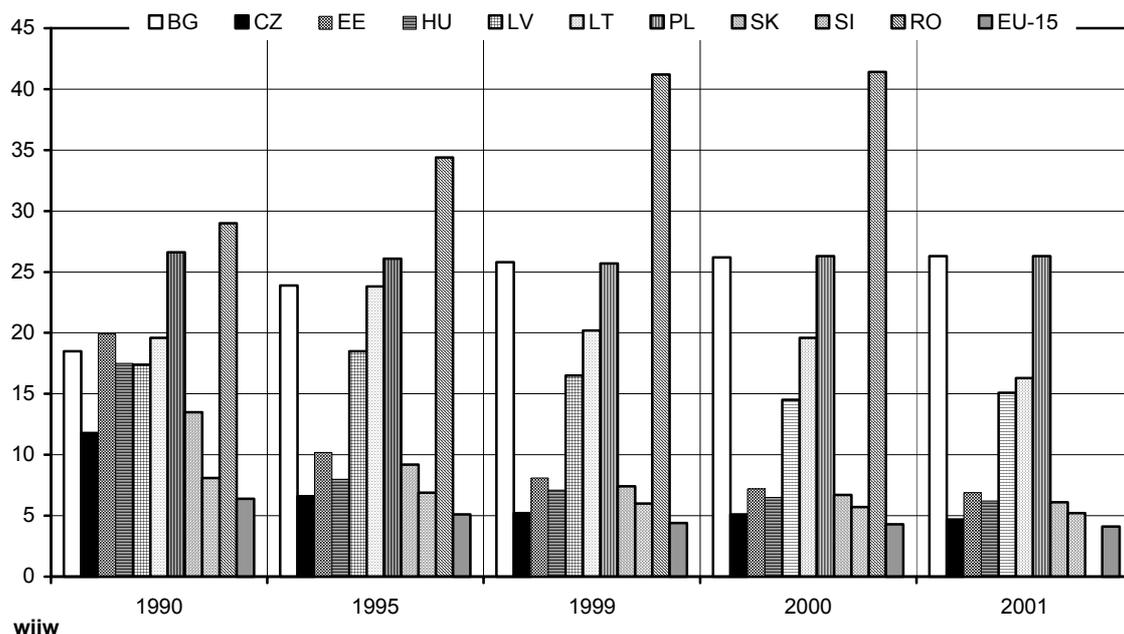


Source: National statistics, wiiw Database.

<sup>6</sup> The CEECs here refer to the Baltic states (Estonia, Latvia, Lithuania), Bulgaria, the Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia.

Figure 2

### Share of agriculture and fishing in CEECs' total employment



Source: National statistics, wiiw Database.

### Conditions in individual countries

With respect to agriculture, we can divide the countries investigated into two groups. In the first group – Poland and Slovenia – family farming was maintained as the dominant form of agricultural activity also in the period of central planning.<sup>7</sup> As a consequence, no considerable systemic change was required during the transition to a market economy. In the second group – the Baltic states, Bulgaria, the Czech Republic, Hungary, Romania and Slovakia – the communist governments had marginalized family farming and, on the threshold of transition, big state-owned enterprises or cooperatives cultivated the land. In this latter group of countries, farming was quasi industrialized: a situation considered by many experts in East and West as advantageous due to (potential or realized) economies of scale. In the Czech Republic, Hungary, parts of Poland and Slovakia the reforms led to the following result:

- continuation of large-scale farming combined with
- restitution of farmland to former owners.

That was a big achievement, which is not self-evident, as illustrated by the examples of Bulgaria and Romania where privatization has resulted in extreme fragmentation of land cultivation. In the Baltic countries, privatization was more complicated and time-consuming because of difficulties in identifying landowners.

<sup>7</sup> In Poland, this was the outcome of the farmers' fierce opposition against collectivization.

The large majority of landowners in the Czech Republic, Hungary and Slovakia are living and working in urban areas and leasing their land – in most cases a few hectares only – out to the farms that have cultivated that land already for decades. These landowners do not have much of a choice and the room for negotiating the leasing rate is tight, if there is any. The farms – organized as joint stock companies, limited liability companies or cooperatives – have good chances of being profitable in more favourable locations, but are frequently loss-making in others. In Hungary, good locations are prevailing, so that loss-making farms are less of a problem. In less favourable Czech and Slovak regions, farms frequently continued operating after 1989 without fully meeting their payment obligations, including those vis-à-vis the landowners. In both countries, the government did not succeed in enforcing deadlines for the farms' settlement of claims of former members of cooperatives. Many of these farms are heavily indebted; on the other hand, they have also accumulated claims especially vis-à-vis wholesale traders and food processors who did not pay what they bought. Especially in less favourable areas the farms still use predominantly buildings and machinery from the pre-transition era. The profits that they would need for investment into new equipments and plants are not available to them, which disqualifies them also as borrowers from commercial banks. Borrowing is even difficult for profitable farms, as the banks do not accept farmland as a collateral. A market for farmland in the sense of ownership transactions is in most regions practically nonexistent, so the banks can hardly assess which price a piece of farmland would achieve in an auction. The farms, which are the obvious candidates for purchases of farmland, have no funds to realize such purchases. In the vicinity of urban areas and other agglomerations there is demand for farmland, backed by the hope that sooner or later it will be rededicated to construction purposes. The situation is also different in the vicinity of borders with EU countries. There, EU citizens have already got hold of farmland; the corresponding deals circumvented the existing restrictions concerning landownership by foreigners.

Thus, the contrast is striking. In one group of countries – the Czech Republic, Hungary and Slovakia – we can observe a dominance of farms that have the ideal size for the use of agro-industrial technologies; however, in less favourable areas they do not have the funds required for upgrading their technical equipment nor are they the owners of the land that they are cultivating. Many of these farms are heavily indebted. In a second group of countries – Poland and Slovenia – the traditional type of Central European small farm, cultivated by the owner family, is dominating. In Poland, part of these family farms work on a subsistence level, the technologies they use are obsolete. Much less so in Slovenia: in most of the farmer families, at least one person has a job outside farming, and often part of that person's income co-finances the purchase of new farm equipment. Slovenia's budgetary situation is sound; the government can afford making small-scale family farming viable through direct payments to farmers, credit subsidization, price regulation and export subsidies. The electorate backs or tolerates this policy; the degree of subsidization is as high or even higher than in the EU. Slovenia is the only CEE country where a market for

farmland had developed, so that market pricing has been established; its level is not far below the EU-15 average. In Poland, the members of farmer families have much less opportunities to find jobs outside agriculture, and the government is not in a position to provide the same extent of support as in Slovenia: the per capita income is much lower, the budgetary situation is worse and the share of agriculture in total employment is much higher. In Bulgaria and Romania, most of the farmland was returned to its original owners by restitution. These owners started cultivating their land with inadequate technical equipment and with an agricultural infrastructure that does not meet the requirements of small-scale farming.

Today, over 90% of the CEECs' agricultural land is in private hands. In the majority of these countries ownership transactions have rather an episodic character, they comprise a very small fraction of total farmland. In these rare cases, the price of farmland was about one tenth of a comparable unit in the EU. This situation makes it of course interesting for EU citizens to buy land in CEECs. That would cause a move towards price convergence, implying high gains for those foreigners who are fast in stepping in. For the urban owners of farmland, selling their property to foreigners would become an attractive option. For the Czech, Hungarian and Slovak type of farms, the land leasing costs could multiply, at least in some regions. Polish family farmers would see the value of their property rising. The impact of rising prices for land – agricultural as well as other – would not be limited to farmers, but touch the economic interests of other groups as well. That is why legislative barriers prevent non-citizens from acquiring land. To avoid land market-induced disturbances upon joining the EU, in the accession negotiations CEECs insisted on postponing full land market liberalization, up to twelve years. It is expected that after a certain number of years of EU membership, the gap between the general price level of the CEECs and the EU-15 will have diminished; this could come about through CEE inflation rates being higher than those in the EU-15, nominal appreciation of CEE currencies, or a combination of both. In parallel, the market for farmland will develop and lead to farmland prices not far below EU-15 levels.

### **Low degree of subsidization maintainable thanks to favourable exchange rates**

In the first years of transition the CEE governments, led by the spirit of economic liberalism, reduced the subsidization of agriculture drastically – with the exception of Slovenia. For agriculture, this meant a shock. The farms could not afford purchasing the same amount of inputs as before: chemicals such as herbicides and pesticides, fodder concentrates, gasoline, seeds, machinery and so on. Part of their production, if not all, became unprofitable. As a result, the sector's output declined dramatically, and has not fully recovered until the present day. Output of many farm products is still below its pre-transition level. When negotiating the conditions for EU accession, the CEECs requested the pre-transition output levels to be accepted as the norm for setting their future

production quotas, but the EU insisted on quotas based on the output averages of the most recent years.

At present the farmers in the CEECs, except for Slovenia, pay input prices that are on average significantly lower than in the EU-15. This is because the CEE exchange rates make the overall price level in these countries much lower than in the EU-15. Due to this logic, in most cases the output prices, the so-called 'farm gate prices', are also lower, although in general the gap vis-à-vis the EU-15 is smaller than in the case of input prices. CEE farm gate prices are, as a result of the established exchange rate levels, not much above world market prices. This is an advantage compared to Slovenia or the EU: if the farmers produce more of an output than the domestic market absorbs, the country can export the surplus without much subsidization, as the gap between farm gate and world market price determines the subsidy required per unit of output.<sup>8</sup> However, during the past few years, in the Czech Republic, Hungary, Poland and Slovakia a tendency towards nominal appreciation became visible. The degree of export subsidization grew correspondingly. A frequently used measure of subsidization is the Producer Support Estimate (PSE). It relates the sector's realized revenue to that which the sector would have

Table 1

**Development of subsidization (PSE)\* in the CEECs and in the EU**

Share of subsidies in gross revenues of agriculture, in %

	1992	1997	1998	1999	2000	2001 <sup>1)</sup>
Bulgaria	-45	-10	2	-2	1	3
Estonia	-89	6	20	6	7	13
Latvia	-101	4	18	19	14	15
Lithuania	-124	4	16	16	6	11
Poland	1	12	22	19	7	10
Rumania	8	3	30	20	19	24
Slovakia	30	11	31	25	23	11
Slovenia	32	32	42	49	39	40
Czech R.	32	6	23	24	16	17
Hungary	18	6	19	23	20	12
EU	38	32	36	39	34	35
OECD	35	28	33	35	32	31

*Comment: \*) Producer Support Estimate: Direct and indirect subsidization of agriculture, net of tax, as a share in the farmers' gross revenues. Contrary to the former PSE concept, the newer one, as used from 1998 on, does not include indirect subsidization in terms of financing of research, development and marketing.*

*Note: 1) Preliminary.*

*Source: OECD (2002f).*

<sup>8</sup> The counterpart of export subsidies are tariffs high enough to raise the price of imported farm products to the level of the domestic farm gate price. Alternatively, the government may maintain import quotas and other non-tariff barriers.

achieved at world market prices. In the case of farm gate prices below world market levels, PSE turns out negative, which may be interpreted as subsidies from the country's agriculture to the rest of the domestic economy and the rest of the world. PSE figures for CEECs point to a relatively low degree of subsidization of agriculture, mirroring the relatively small gap between their farm gate prices and world market prices.

### **Notorious deficits in agro-food trade in spite of surpluses in the subdivisions of agro-trade**

At the beginning of the 1990s, CEE agriculture lost its traditional export markets: exports to the Former Soviet Union countries collapsed, and so did the trade among the CEECs. The individual countries started redirecting their agro-food exports (i.e. exports of agricultural output plus processed food) towards the EU. At the same time, the CEECs signed association agreements with the EU as a first preparatory step towards future membership. These agreements initiated a step-wise liberalization especially of trade in industrial output, much less in farm products. In the following years, the agro-food trade balances vis-à-vis the EU deteriorated rapidly due to a strong deficit in the trade with processed food. Today, among the countries discussed here, Hungary is the only one to enjoy a surplus in agro-food trade with the EU-15.

The region as a whole records a persistent deficit in agro-food trade vis-à-vis the EU-15. Between 1995 and 2001, agro-food exports to the EU-15 covered between 73% and 91% of imports. This was the net outcome of surpluses in the trade with unprocessed agricultural output which were more than offset by deficits in the trade with processed food (see Tables A2 to A4 in the appendix). The differences between the individual countries were, however, considerable. Most remarkably, Poland's balance in food trade with the EU improved strongly after 1995 and was balanced in 2000 and 2001, whereas after 1995 agro-food exports covered only between one half and two thirds of agro-food imports. Like Poland, also the Czech Republic and Slovenia recorded a deficit in agro-food trade. However, in their case also the exports of processed food lagged far behind imports, with coverage ratios below one half and one quarter respectively. Other countries with a high deficit in the trade with processed food were Estonia, Latvia, Romania and Slovakia.

For the region as a whole, trade in crops was responsible for the deficit in agro-food trade with the EU-15; trade in animal products, forest and fishery output was in surplus. Hungary alone recorded a permanent surplus in all these subdivisions of agro-food trade.

## **Convergence with the EU as achieved so far**

In recent years, the CEECs have started assimilating the principles and instruments of the EU's Common Agricultural Policy (GAP). The CEECs have restructured subsidies in favour of direct payments to farmers. At the same time, they have also started subsidizing bank loans to farmers and exempting some inputs from taxation. A mutual reduction of tariffs and export subsidies were steps towards the liberalization of trade between the CEECs and the EU.

An essential problem for CEE farmers – as well as for food processors and agro-food traders – are EU quality standards and phytosanitary, veterinary, animal welfare and environmental EU rules. The CEE governments have started adopting these standards and rules; however, only after massive investment will farms, food processing factories and those operating in transport services, storage and distribution be able to comply with these standards and rules. At present, some of these standards and rules represent trade barriers that hamper CEE exports to the EU.

## **1.2 The new challenge: achieving success within the enlarged Union**

### **Points of relevance in the Copenhagen Agreement**

The CEEC-5 together with the three Baltic states, Cyprus and Malta are on track to become EU members in May 2004, as agreed at the Copenhagen summit of December 2002. For CEE agriculture, the Copenhagen summit brought first of all the following results:

1. The new member states will take over the system of regulating the supply of certain products through quotas. Quotas will be based on production results of the most recent three years that were available at the Copenhagen summit.
2. Farmers in the new member states will be entitled to receive direct payments. These payments will reach their final level only in 2013; in 2005, the second year of membership, EU payments will start, but reach only 25% of the full amount. In the following years this percentage will rise gradually. The new member countries will have the right to add direct payments out of their national budgets. The EU accepted also a reshuffling of EU funds: up to 2006 the governments are free to increase direct payments through the use of part of the funds originally earmarked for rural development, and Poland also got a go-ahead for shifts from structural funds to direct payments. However, even if the CEECs used all these facilities of reshuffling and topping up out of national sources, direct payments would amount, compared to the projected final level, to only 55% in 2005 and to 60% in 2006. After the phasing-out of the transitory period, i.e. in 2013, direct payments per hectare or person employed in agriculture in the new member states will be lower than in the EU-15; the amount of direct payments is related to production indicators of the pre-accession period, which are relatively low. In Copenhagen, the negotiators agreed on the totals to be allotted to

the individual countries out of the CAP direct payment fund. The distribution of the total among farmers will be the task of national and regional authorities.

3. Immediately upon accession, the new member countries will have free access to the EU markets for the output of agriculture and the food industry – on condition that they meet the EU quality standards and observe the phytosanitary, veterinary, animal welfare and environmental EU rules.
4. Rapid development of rural areas is a priority target. The related funds should help to develop a better infrastructure and new employment opportunities outside agriculture. They will offer early retirement schemes for farmers, improve environmental protection, finance programmes for easier abolishment of farming on a subsistence level and schemes for forestation of agricultural land.

### **CAP reform – a new Commission initiative**

On 22 January 2003, the European Commission presented a package of proposals for a reform of the CAP. The package also designs the financial framework for agricultural expenditures up to 2013. The plan is a modified version of a proposal from July 2002. The declared fundamental aims of both versions are sustainability of agriculture and stronger market orientation. The Commission wants to achieve the latter through a further shift from product to producer support<sup>9</sup>, which in EU terminology is a reshuffling within the 'first pillar' of the CAP.

The second key element of the proposal is a strengthening of rural development, the so-called 'second pillar'. The Commission wants to reduce the funds for market price support as well as for direct payments and to use the gains from these cuts for a topping-up of the rural development funds.

### **Decoupling**

Starting from 2006/2007, the producer support should be based on the amount of aid that the individual farmer has received in the past. Thus in the future it should not be linked to current production and be bundled into a single annual transfer. This is labelled 'decoupling' by the Commission. This decoupling is the most important ingredient of the reform package. The idea is that in the future the farmers or farm managers should make their product decisions without considering whether or not a product line is subsidized. This should mean more market orientation. The decoupled single payment would simplify the farmers' aid application form. It would also reduce the administration of controls.

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<sup>9</sup> For example, the proposal foresees a final 5% cut of the intervention price for cereals coupled with compensating higher direct payments for cereal farmers.

Nevertheless, control requirements would remain: The Commission wants to link such payments to compliance with environmental, food safety, animal welfare, health and occupational safety standards, as well as the requirement to keep all farmland in good condition ('cross-compliance').

### **Degression**

The Commission proposes a 'dynamic modulation' of direct payments: a gradual reduction so that farms who at present receive more than EUR 50,000 would receive 19% less in 2012. For farms receiving between EUR 5,001 and 50,000, the cut should be 12.5%, whereas for those who so far received Euro 5000 or less, the Commission wants to freeze the amount of payments. This size-specific approach is called 'degression' by the Commission.<sup>10</sup>

For the new EU member countries the Commission proposed an exemption from degression, valid for the period of incomplete phasing-in of the direct payment scheme.

### **More support for rural development**

Part of the cut of funds for the 'first pillar' should, so the proposal, serve as support of rural development ('second pillar'). The Commission is eager to stress that the farmers themselves would also profit from rural development programmes, directly or indirectly. Some of the money for rural development should help farmers to cope with new investment requirements in the context of EU production standards, animal welfare and quality promotion. The main beneficiaries of the rural development funds should be less-favoured regions. The funds should strengthen the multifunctional character of agriculture. The farmers should, so to speak, give up some of the income from EU sources in favour of their rural neighbourhood. Another part of the cuts in first pillar funds should finance new reforms not yet specified.

### **The proposal as a whole**

On the whole, the new CAP reform proposal is to set a ceiling to 'first pillar' funds – expenditures on market regulation and direct payments in an enlarged EU. In the forthcoming Doha Round of WTO negotiations, the decoupling scheme should make the EU position less troublesome as it would not cause much market distortion.

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<sup>10</sup> Currently, 20% of all farms absorb 80% of the CAP funds.

The Commission's proposal triggered fierce discussion about its presumable outcome. Some comments guess that at least some farmers would minimize their farming activities and content themselves with keeping their farmland in a condition just enough to remain qualified as recipients of direct payments. Especially owners of small farms in less-favoured areas, so the fear of some commentators, may stop their farming activity, move to urban areas, take up jobs there and enjoy the direct payments from the EU. In this latter case, the payments would conform badly to the Commission's target of keeping rural areas populated. Another guess is that strongly market-oriented farmers may respond with a radical shift from previously subsidized output to new products, which could cause major disturbances on markets for cereals, meat and milk. Others doubt whether the envisaged system would substantially improve the allocation of resources, as it would be far from being a free market system: many elements of the previous system would remain, such as production quotas, guarantee prices and stable transfer incomes.

Most probably, the proposal will experience significant modifications as the views differ considerably between the member countries and the different groups involved.

For CEE farmers, the proposal implies a petrification of the gap to direct payments paid to EU-15 farmers.

The reallocation of funds from subsidization of agriculture to rural development programmes may make sense, but is also problematic. It may be a substitute for increases in structural funds, and there is no guarantee that the rural development funds will fulfil what they promise. A number of pressure groups will try to get hold of that money on its way from Brussels to local bureaucracies. The CEECs' experience with this type of EU funds is not the best. The pre-accession aid programme SAPARD required an enormous administrative effort, such as the implementation of national agencies. This was a time-consuming process, as was the Commission's accreditation procedure. Thereafter, the submission of projects could start, but the requirements of project preparation were so massive that they were discouraging. Up to now, only a small number of projects has been approved. Thus only part of the SAPARD money will reach its target, after years of delay.

### **1.3 Prospects for CEE farmers**

#### **Direct payments in 2005**

Compared to the GDP of the EU-15 or to the entire EU budget, in 2005 the direct payments out of the CAP funds to farmers in the new member states will be of a negligible size. In 2005, the first year of direct payments flows to farmers in the new member countries, total flows will amount to about 3% of the Union's entire agricultural budget for the EU-15 and, in other words, to roughly 0.01% of the GDP of the EU-15. In terms of the

new members' GDP, it will amount to about 0.25%. In the new member countries, in 2005, the average person working in agriculture will receive from CAP funds an amount of direct payments per year that is more or less close to the gross wage earned in one month by the average industrial worker in the country considered. This also roughly holds true for the EU-15. Given their limited dimension, it is surprising that direct payments to farmers were one of the most controversial issues in the final accession negotiations. The low initial rate provoked fierce protests, much more than the probably everlasting east-west asymmetry concerning the final size of direct payments per hectare.

In the new Central and East European member countries, in 2005, direct payments per hectare of total used agricultural area will average about EUR 30 as compared to about EUR 130 in the current EU states. This figure of EUR 30 is a weighted average; just as in the present EU member states, the differences between the individual countries are large. However, compared to the EU-15 countries, the purchasing power of 1 euro is much higher in the new Central East European member countries, and this will still be the case in 2005. Taking that into account, the direct payments per hectare of total used agricultural area will make up close to 50% of the EU figure.

A crop-producing farm with a size of 1000 ha – in the Czech Republic and Slovakia there are many farms of that size – will receive direct payments ranging between EUR 30,000 and 40,000 in 2005: an amount to be regarded as a very modest contribution to the purchase of new machinery. On the other hand, a 10 hectare-sized crop producer – farms of this smaller size are found predominantly in Poland and Slovenia – will only receive about EUR 300. In their present form, direct payments will accelerate rather than slow down structural cleansing, i.e. the elimination of small units. In this way, they will hardly contribute to the solution of some problems of rural areas in the new EU member states – such as high unemployment and depopulation. It is the rural development fund that is aimed at avoiding such tendencies.

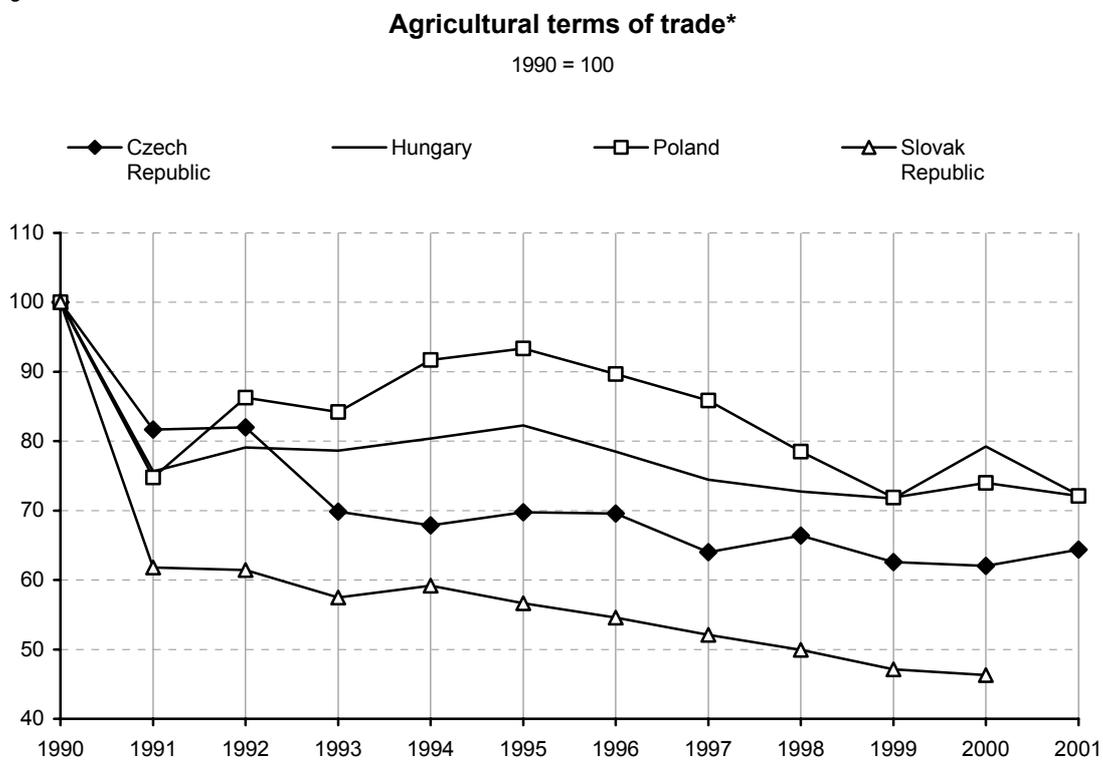
### **Foreseeable budgetary constraints**

In the first years of membership, the CEE governments will face increasing difficulties concerning their budgets. This is not true for Slovenia, where the budget has always been balanced and an agricultural policy similar to the EU's CAP is already in place. In the other CEECs, the budget deficit, if measured by EU methodology, was between 4% (Poland) and 9% (Hungary) in 2002. Many of the EU payments entering the country will require co-financing from the government. The farmers' organizations will urge the governments to top up direct payments as much as was conceded by the EU. However, the governments will not be in a position to do so – as they will have to start observing the stability criteria as defined in the Maastricht treaty.

## Agricultural terms of trade

For farm products, EU enlargement will remove trade barriers between the new member states and the EU. The Common Agricultural Policy implies guarantee prices for the most important agricultural mass products such as grain, rice, sugar and milk. To prevent the actual market prices from falling below the guaranteed level, the CAP authorities intervene with purchases, build up stocks and subsidize exports. In some cases, the guarantee prices will be higher than the CEECs' pre-accession farm gate prices. However, quantity restrictions – quotas and the like – will discourage CEE farms from increasing their output. The quota system makes sure that agricultural surpluses will not explode after enlargement.

Figure 3



\*) Agricultural output prices deflated by agricultural input prices.

Source: wiiw Database incorporating national statistics.

For a limited period, CEE farmers will profit from price increases for some types of output and from initially unchanged low prices for most of their inputs. It is, however, not likely that this situation will last for long. Starting from a very low level, input prices have been rising faster than output prices already in recent years, so the farmers' terms of trade have worsened. This process will most probably speed up. Most of the inputs are tradable, so further convergence of their prices to EU-15 levels is likely. The supply of cheap, robust, but technologically obsolete machinery is dwindling, as the producers of such machinery either shut down or are taken over by foreign investors. In the end, the CEE farmers will be

confronted with EU price levels both on the output and the input side – and farms characterized by technological backwardness will be in serious trouble. The subsidies, both from EU and from national sources, will not be enough to ensure technological upgrading, notwithstanding the fact that for a transitory period the restriction on funding out of national sources will be less strict.<sup>11</sup>

As mentioned above, in euro terms the CEE prices for domestically produced inputs are relatively low. In particular, prices for land devoted to agricultural production, for labour and for domestically produced materials are far below EU levels. After EU enlargement, prices for different types of domestically produced output and input will rise. On the input side, this will be the case especially for land, labour and some goods and services. Further, particularly livestock producers in the new member states will have to cope with additional costs stemming from stricter EU sanitary and animal welfare regulations. Step by step new proportions between input and output prices will be established, and this may result in reduced profitability of farms that are not capable of accomplishing the required technological upgrading.

### **Barriers to output expansion**

By insisting on the production quotas being based on the past few years' yields, the EU Commission wanted to prevent future CEE output from surpassing recent levels. Technically, a potential for output increases is there. Should the EU eliminate its schemes of output restrictions at some future point of time, this potential could start to play a role. However, such a scenario is not likely. Furthermore, the complete fulfilment of EU quality standards and phytosanitary, veterinary and environmental EU rules in the new member states will confront farmers – in the same way as food processors, transporters and distributors – with massive investment requirements.

Within the Copenhagen agreement, the chapter related to agriculture reflects the Commission's interest in freezing the size of agricultural production in the new EU member states, in order to prevent them from massively enlarging their surpluses in agro-food trade with the EU-15. In the next few years, the average income in the new member countries will rise, and so will food consumption. The domestic absorption of agricultural products could rise correspondingly. Ultimately, the region's agro-food imports from the EU-15 may surpass exports. This would remove part of the stress from the budget of the CAP.

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<sup>11</sup> The EU rules restrict the use of national sources to a few purposes such as special ecological support programmes.

## **Shifts in the balance of trade**

After EU accession, the CEECs' agricultural trade balance will change. The direction and extent of change will differ from country to country. The redirection of trade flows will follow from the removal of the last tariff barriers between the EU-15 and the new member countries as well as between the individual new member countries. At the same time, the EU trade agreements and the EU tariff scheme vis-à-vis third countries will become relevant also for the new members. Depending on the type of products or product groups, for some of the new member countries tariffs vis-à-vis non-EU countries will increase, for others they will decrease. All these tariff modifications will impact the trade in agricultural products.

### **1.4 Agriculture: conclusions**

As many family farms will be forced to leave the market upon the introduction of strict EU standards and rules, they will probably decline in number. Large farms, cultivating leased land, will face rising labour- and land-related costs. In order to survive, high technological standards will become a decisive issue. However, lack of funds – from own or external sources – will limit enterprise modernization. Compliance with EU standards will call for investment on a massive scale. Not all the large farms will be able to cope with the problem. In regions where other conditions are also favourable, high-quality farmland is likely to attract foreign investors even before the market has been fully liberalized.

If farms offer some comparative advantages, attractive to foreigners, foreign companies will buy them up. The decisive issues here are favourable production conditions, location close to the EU-15 borders and large-scale farms, which have an optimal size for economies of scale. Small family farms, owning and cultivating their own land, are more resistant to FDI. Besides, foreign investors are hardly interested in small plots of a few hectares.

Vis-à-vis the EU-15 the accession countries record a trade surplus in farm products. At the same time, rising incomes among the non-agricultural population will boost the demand for processed food and thus the demand for farm products. As a result, the trade surplus with farm products will diminish and may even turn into deficit in the longer run. Moreover, for some of the most important farm products, production quotas will restrict output expansion.

Assessing long-term prospects of CEE agriculture is a difficult task: In January 2003 the EU Commission presented a package of reforms of the Common Agricultural Policy. Discussions will be long and fierce, and the ultimate outcome is hard to predict. The forthcoming new rounds of WTO negotiations are likely to have an impact on the CAP

reform; they will probably strengthen the opponents of the existing CAP system. Therefore, the degree to which the present system will survive is an open question.

## **2 Food processing: present state and likely impact of EU accession**

The food processing industry produces a wide range of products such as pig meat, frozen fruit and vegetables, margarine, cheese and yoghurt, pet foods, bread, sugar, confectionary, wine & beer and even cigarettes. Procuring raw materials from the agricultural sector, the food processing industry is heavily dependent on output, quality and price of these supplies. In the CEECs, the food processing industry is hence restrained by unfavourable conditions in its upstream-sector; improving productivity and quality in agriculture thus also helps to foster the development of the food processing industry.

According to the NACE rev. 1 classification system (Statistical classification of economic activities in the European Community), the 'food products; beverages and tobacco sector' (in the following called 'food-processing industry') includes the 'food products and beverages' and 'tobacco' industries.<sup>12</sup> The subsequent quantitative analysis is based on the wiiw Industrial Database – Central and Eastern Europe (IDB-CEE), on national statistics and on the Eurostat COMEXT Database (EU foreign trade statistics).

### **Position and development trends of the food processing industry**

The food processing industry plays a significant role in the economies of the CEECs: in the year 2001, it featured a total production volume of EUR 57.7 billion, calculated at exchange rates, and a workforce of about 1.1 million persons in the CEEC-10. Compared to the EU-15, the size of the CEECs' food processing industry is however relatively small: it accounts for 8.5% of EU-15 production only, but for 31% of total EU employment (see Table 2). Simply comparing the levels of production and employment between the CEECs and the EU reveals a significantly lower output per employee in the CEECs: with about EUR 51,000 per worker in 2001, CEECs' labour productivity (converted at current exchange rates) in the food processing industry is about 28% of the EU level, indicating room for further productivity improvements in the future (employment losses).

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<sup>12</sup> In detail, the 'food and beverages industry' (division 15 in the NACE rev. 1 classification system) includes 'production, processing and preserving of meat and meat products' (group 15.1), 'processing and preserving of fish and fish products' (15.2), 'processing and preserving of fruit and vegetables' (15.3), 'manufacture of vegetable and animal oils and fats' (15.4), 'manufacture of dairy products; manufacture of ice cream' (15.5), 'manufacture of grain mill products, starches and starch products' (15.6), 'manufacture of prepared animal feeds' (15.7), 'manufacture of other food products' (15.8), and 'manufacture of beverages' (15.9). – The 'tobacco industry' (division 16 in the NACE rev. 1 classification system) includes only the 'manufacture of tobacco products'.

Among the CEECs, Poland is by far the largest producer of food products in terms of current production in 2001 (EUR 29 billion), followed by Hungary (EUR 7.2 billion), the Czech Republic (EUR 6.8 billion) and Romania (EUR 6 billion). As for employment, Poland again takes the lead among the CEECs, followed by Romania, Hungary and the Czech Republic. In Poland, about 452,000 persons were employed in the food processing industry in 2001, in Romania 159,000 and in Hungary and the Czech Republic about 120,000 each. The sectoral labour productivity was highest in Slovenia (about EUR 88,000 per worker).

Table 2

**Food products, beverages and tobacco:  
Overview of production and employment, 2001**

	Production <sup>1)</sup>			Employment		Productivity <sup>1)</sup>
	EUR mn	% of GDP	% of manuf. production	ths. persons	% of manuf.	EUR ths.
Bulgaria	1860.4	12.3	22.1	94.9	17.6	19.6
Czech Republic	6827.3	10.8	14.0	120.1	11.2	56.8
Estonia <sup>2)</sup>	624.4	11.2	21.5	20.0	17.2	31.2
Hungary	7214.4	12.5	16.2	120.2	16.0	60.0
Latvia	981.8	11.6	30.1	35.6	24.2	27.6
Lithuania <sup>2)</sup>	1338.8	11.0	23.6	54.7	23.3	24.5
Poland	29023.3	14.2	24.9	451.9	19.2	64.2
Romania <sup>3)</sup>	5987.2	13.5	22.1	159.0	10.5	37.7
Slovak Republic	2057.7	9.0	13.0	45.4	11.8	45.3
Slovenia	1778.7	8.5	13.7	20.3	8.9	87.6
<b>CEEC-10</b>	<b>57694.0</b>	.	<b>20.1</b> <sup>4)</sup>	<b>1122.1</b>	<b>16.0</b> <sup>4)</sup>	<b>51.4</b>
<b>EU-15</b> <sup>2)</sup>	<b>677137.5</b>	.	<b>15.8</b> <sup>4)</sup>	<b>3628.8</b>	<b>14.4</b> <sup>4)</sup>	<b>186.6</b>
<b>CEEC-10 in % of EU-15</b>	<b>8.5</b>	.	.	<b>30.9</b>	.	<b>27.6</b>

Notes: 1) Gross production and GDP at current prices and current exchange rates. - 2) 2000. - 3) Production share 2000. - 4) Unweighted average.

Source: wiiw Industrial Database, Eurostat SBS.

The food processing industry is the largest manufacturing sector in Central and Eastern Europe in terms of production and is also one of the major employers, typically more important than in the present EU member states. In 2001, the food industry accounted for 30% of manufacturing production in Latvia, for 25% to 22% in Poland, Lithuania, Bulgaria, Romania and Estonia, and was only slightly smaller in the other countries (16% in Hungary, 14% in the Czech Republic and Slovenia and 13% in Slovakia). This compares to an EU average of 15.8%. The food processing industry ranked first in total manufacturing in most countries, but was challenged by transport equipment and basic metals & fabricated metal products in the Czech Republic and Slovakia, and by the

electrical & optical equipment sector in Hungary. Due to its relatively high capital intensity, the position of food processing in employment is smaller and shares ranged between 9% in Slovenia and 24% in Latvia in 2001. Again, shares were mostly higher than in the EU countries on average. The food processing industry belongs to the top three manufacturing employers in the Baltic states, Bulgaria, Hungary and Poland. Other important employers are the textiles & textile products industry, basic metals & fabricated metal products as well as mechanical engineering, in the Baltic states also wood & wood products. In terms of GDP, food processing is the most important industry in Poland (14%), Romania (13.5%), Hungary (12.5%) and Bulgaria (12.3%).

During the more recent phase of transition, i.e. between 1995 and 2001, the food processing industry was growing only slowly: average annual growth rates reached merely between 1% in Hungary and 2% in Slovenia and Latvia. Positive exceptions were Romania (4.3%) and Poland (5%), whereas negative examples were Bulgaria, Estonia and Lithuania where production even declined. Compared to total manufacturing, the food processing industry was hence less successful and it turned into what we may call a 'loser' of this period, the only exception being Romania and also partly Slovenia (see Figure 4). Employment in the food processing industry declined in all countries, most strongly in Bulgaria (annual average decrease of -5%), Estonia (-6%) and Romania (-6.4% per annum). However, employment cuts were less pronounced than in manufacturing on average.

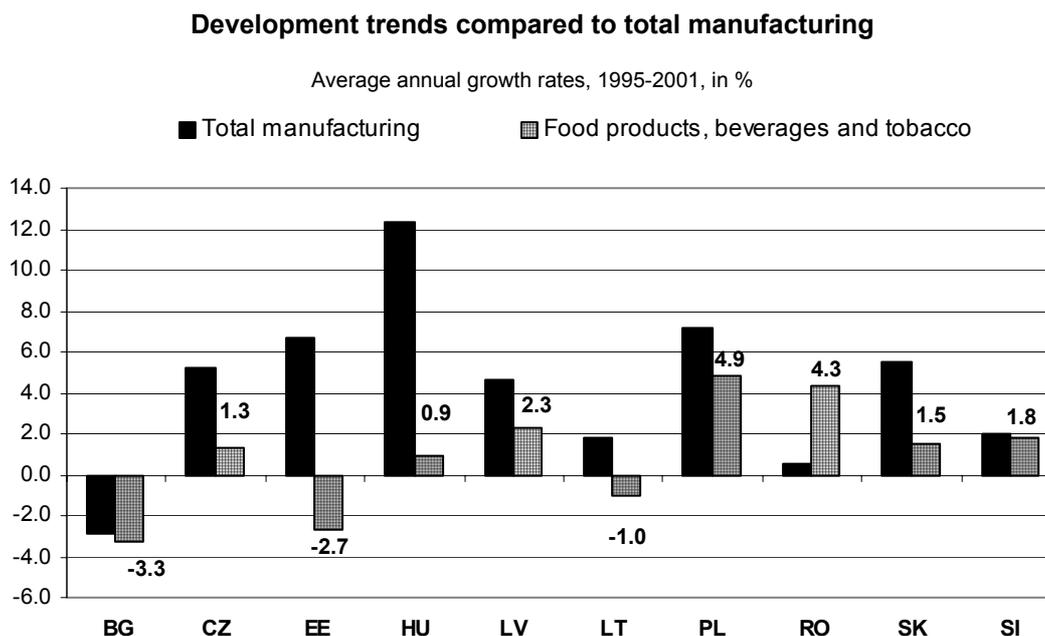
From an overall perspective, this weak performance was due to several factors. First of all, when the years of the transformational recession were over, industrial structures began to differentiate and specialization in other sectors, such as transport equipment, emerged. On the supply side, agriculture has still not recovered and is struggling with problems (see Section 1). In addition, several factors restrained growth on the demand side as well: slow growth of exports to the EU and the Russian crisis in 1998 on the external side and strong import competition on the domestic market.

Available 2002 data for some countries<sup>13</sup> suggest the following trends: the reduction of jobs in the food processing industry continued in 2002, except in Romania. The growth rates of production differed: growth was negative in Slovenia but reached 3% in Poland, 3.5% in the Czech Republic, 5% in Slovakia and 12% in Romania. However, growth rates are still below the manufacturing average in most countries, again with the exception of Romania.

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<sup>13</sup> The Czech Republic, Poland, Romania, Slovakia and Slovenia.

Figure 4



Source: wiiw Industrial Database, national statistics.

### International cost competitiveness

In the CEECs, factors of international cost competitiveness in the food processing industry, including wages, productivity and resulting unit labour costs (ULCs), were and are generally lower than in Western countries, for which we have used Austria as a reference point. In absolute terms, calculated at exchange rates, monthly gross wages in food processing ranged between EUR 121 in Bulgaria and EUR 1004 in Slovenia in 2001. While Bulgaria and Romania, considered as 'low-wage' countries, reached only 6% of the Austrian wage level in food processing in that year, Slovenia can be termed a 'high-wage' country, reaching about 46%. In between, CEECs' wages hovered between 10% and 22% of the Austrian wage level (EUR 2186). Labour productivity (defined as gross output per employed person) in the food processing industry is also considerably below Austrian levels, with Bulgaria reaching just 25-40% of the Austrian level, Slovenia 66-74%.<sup>14</sup> In fact, the lowest levels were observed for Bulgaria and the Baltic states, whereas the other CEECs including Romania did relatively better. Overall, unit labour costs (ULCs), defined

<sup>14</sup> Generally, cross-country comparisons of productivity are hampered by the conversion of national output data to a common currency. The use of current exchange rates is not appropriate for this purpose, especially for CEECs, due to their undervalued currencies and often strongly fluctuating exchange rates. Hence we may use purchasing power parities (PPPs) comparing prices for different 'baskets' of goods. Thus, in Table 2 we first use PPPs for the whole gross domestic product (PPP99 for GDP) and then PPPs for gross fixed capital formation. The latter estimates for productivity are lower, because prices of investment goods are relatively higher (presumably due to imports) in the CEECs and seem to be closer to reality. See Hanzl-Weiss and Urban (2002), p. 14.

Table 3

**Food products, beverages and tobacco:  
Wages, productivity and unit labour costs in 2001**

	Monthly gross wages		Productivity		Unit labour costs <sup>1)</sup>	
	in EUR	Austria = 100	Austria = 100		Austria = 100	
			PPP99 for GDP	PPP99 for fixed capital formation	PPP99 for GDP (lower range)	PPP99 for fixed capital formation (upper range)
Bulgaria	121.3	5.5	37.8	25.2	14.7	22.0
Czech Republic	392.6	18.0	75.9	55.0	23.7	32.7
Estonia <sup>2)</sup>	306.0	14.0	37.5	22.9	37.3	61.1
Hungary	387.8	17.7	61.9	43.4	28.6	40.9
Latvia	273.7	12.5	30.2	19.2	41.5	65.3
Lithuania <sup>2)</sup>	228.4	10.4	32.0	19.0	32.6	54.9
Poland	480.0	22.0	55.9	43.6	39.3	50.3
Romania	131.1	6.0	59.1	43.9	10.1	13.7
Slovak Republic	297.8	13.6	62.4	38.3	21.8	35.6
Slovenia	1003.8	45.9	73.9	65.6	56.0	63.1

Notes: 1) Defined as wages in EUR divided by productivity (measured as output at constant prices 1999 converted with EUR-based purchasing power parities 1999 (PPPs) divided by employees); gross wages used for calculation. - 2) 2000.

Source: wiiw Industrial Database.

Table 4

**Food products, beverages and tobacco:  
Average annual growth rates, 1995-2001, in %**

	Output	Employment	Productivity	Productivity relative to total manuf. <sup>3)</sup>	Wage rates (EUR basis)	Unit Labour Costs (EUR basis)
Bulgaria	-3.3	-5.3	2.2	-1.3	7.8	5.5
Czech Republic	1.3	-2.0	3.3	-4.4	10.8	7.2
Estonia <sup>1)</sup>	-2.7	-5.9	3.4	-6.6	8.9	5.3
Hungary	0.9	-3.8	4.9	-7.6	6.3	1.3
Latvia	2.3	-0.6	3.0	-3.6	9.8	6.6
Lithuania <sup>2)</sup>	-1.0	-1.2	0.2	-6.8	15.9	15.7
Poland	4.9	-0.5	5.4	-3.8	12.4	6.6
Romania	4.3	-6.4	11.5	3.9	5.0	-5.8
Slovak Republic	1.5	-1.9	3.5	-4.7	9.1	5.4
Slovenia	1.8	-0.7	2.5	-1.7	6.6	4.0

Notes: 1) 1995-2000, wages and unit labour costs: 1996-2000. - 2) 1995-2000. - 3) Productivity of food industry minus productivity of total manufacturing.

Source: wiiw Industrial Database.

as labour costs per unit output, in food processing ranged between 15% and 22% of the Austrian level in Bulgaria, and between 56% and 63% in Slovenia, thus providing that industry with a quite substantial competitive edge concerning production costs. In

Romania, ULCs were even lower, at only 10-14% of the Austrian level, whereas in Estonia and Latvia ULCs were particularly high, surpassing even the level of Slovenia in the case of Latvia (see Table 3).

Looking at development trends between 1995 and 2001, wages in the food processing sector rose throughout the region: annual average growth rates were highest in the Czech Republic (11%), Poland (12%) and Lithuania (16%), and lowest in Romania (5%). In all countries, productivity increased as well, but less than wages; thus, unit labour costs increased and cost competitiveness deteriorated. The Romanian food processing industry represents an exception to this pattern: it showed strong productivity growth accompanied by a sharp drop in employment, with declining unit labour costs and hence strong improvements in cost competitiveness.

### **Trade competitiveness and structure (in trade with the EU)**

The EU is the dominant trading partner of the Central and East European countries today: after the collapse of the CMEA market, CEE trade became heavily oriented towards the EU markets.<sup>15</sup> However, in the food processing industry the share of trade with the EU is considerably smaller, owing to various factors, such as still existing trade restrictions on both sides (exports and imports) including also non-tariff-barriers, the importance of intra-regional CEE trade especially with neighbouring countries, also due to the domestic market orientation of foreign investors as compared to other sectors such as the automotive industry, etc. In 2000, the EU-15 accounted for only 20% to 49% of CEE food & beverages exports in the region.<sup>16</sup> On the import side, the share of imports coming from the EU ranged between 37% and 57% and was hence larger than the respective export shares. This might be the result of higher quality imports from the EU, better marketing including advertising and brand names and also better distribution networks.

Between 1995 and 2001, CEE food exports to the EU-15 increased by about 80% in current euro terms, reaching a volume of about EUR 3.3 billion in 2001 (see Table 5). Growth was significantly below that of overall manufacturing exports, which reached 160% in that period, due to strong export growth in other sectors such as transport equipment and electrical & optical equipment. CEE imports of food products increased as well (by 45%), but less than exports, and reached about EUR 4.7 billion in 2001. Again, growth was less pronounced than in total manufacturing with 137%. Since 1995, the trade balance in food processing with the EU has traditionally been negative, but the deficit dropped to EUR 1.3 billion in 2001 from a peak of EUR 1.7 billion in 1998.

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<sup>15</sup> In 2000, as much as 46% to 75% of manufacturing exports were going to the EU, and 59% to 71% of manufacturing imports were coming from the EU.

<sup>16</sup> The share of exports going to the EU was smallest in Slovakia and Slovenia (20% and 26% respectively), between 30% and 40% in most other countries, and largest in Hungary and Poland (45%) and Romania (49%).

Table 5

**Food products, beverages and tobacco:  
Exports to the EU-15, EUR million**

	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2001/95</b> growth in %
Bulgaria	149	169	187	192	177	137	185	23.7
Czech Republic	171	177	189	192	214	299	378	121.3
Estonia	22	33	49	48	52	67	82	268.7
Hungary	619	704	686	667	722	752	882	42.4
Latvia	21	20	28	30	35	36	56	158.5
Lithuania	62	68	77	78	78	119	167	170.9
Poland	685	703	820	857	945	1079	1318	92.5
Romania	57	60	68	60	69	83	109	89.2
Slovakia	30	37	56	51	44	48	81	168.7
Slovenia	54	65	66	73	78	70	80	47.8
<b>CEEC-10</b>	<b>1872</b>	<b>2036</b>	<b>2225</b>	<b>2249</b>	<b>2414</b>	<b>2691</b>	<b>3338</b>	<b>78.3</b>
<b>CEEC-10 total manufacturing</b>	<b>40954</b>	<b>43878</b>	<b>53129</b>	<b>63932</b>	<b>72015</b>	<b>92968</b>	<b>105990</b>	<b>158.8</b>

**Imports from the EU-15, EUR million**

	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2001/95</b> growth in %
Bulgaria	192	121	124	179	147	172	222	15.7
Czech Republic	558	598	589	658	661	683	929	66.6
Estonia	158	203	250	247	189	202	257	62.6
Hungary	355	305	388	360	321	372	535	50.6
Latvia	172	186	180	197	152	162	237	37.7
Lithuania	145	187	264	259	200	162	228	57.6
Poland	953	900	1119	1217	1048	1048	1322	38.6
Romania	260	266	202	311	174	200	339	30.2
Slovakia	151	155	180	191	168	181	258	70.9
Slovenia	289	286	300	303	315	303	349	20.6
<b>CEEC-10</b>	<b>3233</b>	<b>3207</b>	<b>3596</b>	<b>3922</b>	<b>3375</b>	<b>3485</b>	<b>4675</b>	<b>44.6</b>
<b>CEEC-10 total manufacturing</b>	<b>49388</b>	<b>58611</b>	<b>71498</b>	<b>81968</b>	<b>85756</b>	<b>105093</b>	<b>116854</b>	<b>136.6</b>

**Trade balance with the EU-15, EUR million**

	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
Bulgaria	-43	48	63	13	30	-35	-37
Czech Republic	-387	-421	-400	-466	-447	-384	-551
Estonia	-136	-170	-201	-199	-136	-134	-175
Hungary	264	399	298	307	400	380	347
Latvia	-151	-165	-152	-167	-117	-126	-181
Lithuania	-83	-119	-187	-180	-123	-42	-61
Poland	-269	-197	-300	-359	-103	31	-3
Romania	-203	-206	-134	-251	-105	-116	-230
Slovakia	-121	-118	-124	-140	-124	-133	-177
Slovenia	-235	-221	-234	-229	-236	-233	-269
<b>CEEC-10</b>	<b>-1361</b>	<b>-1171</b>	<b>-1371</b>	<b>-1673</b>	<b>-961</b>	<b>-794</b>	<b>-1338</b>
<b>CEEC-10 total manufacturing</b>	<b>-8434</b>	<b>-14733</b>	<b>-18369</b>	<b>-18035</b>	<b>-13742</b>	<b>-12125</b>	<b>-10864</b>

Source: Eurostat COMEXT Database, wiiw calculations.

For individual countries, the main trends in food processing trade with the EU are:

- export growth was strongest in the case of the small exporting countries such as Estonia, Lithuania, Slovakia and Latvia; the only exception was the Czech Republic;
- import growth was relatively more pronounced in the countries with strong export growth (except Latvia);
- all CEECs showed a sectoral trade deficit, except Hungary and Bulgaria in 1996-1999 and Poland in 2000. The deficit was highest and increasing for the Czech Republic, reaching EUR 550 million in 2001, but mostly below EUR 200 million in the other countries.

Overall, food processing trade between Central and Eastern Europe and the EU shows the following characteristics:

- *little increase in market shares*

On the EU market, CEEC-10 food processing exports to the EU had a market share of about 1.7% in 1995, which increased slightly to 2.1% in 2001 (all shares including intra- and extra-EU trade, see Figure 5). Compared to the EU market shares of total manufacturing (3.2% in 1995 and 5% in 2001), food processing shares were notably smaller, pointing to the industry's relatively minor role on the EU market and reflecting the various factors restricting trade mentioned above. In 2001, the most important food processing exporters to the EU were Poland and Hungary, providing 0.6% and 0.8% respectively of all EU food imports. Czech food exports reached about 0.2%, Bulgarian and

Figure 5



Source: Eurostat COMEXT Database, wiiw calculations.

Lithuanian about 0.1% each, all other countries had even smaller market shares. Relatively spoken, between 1995 and 2001, market shares grew most dynamically in the case of Poland (from 0.6% to 0.8%), the increase for other countries was rather negligible.

– *small share of food processing in total manufacturing trade*

Within total manufacturing exports to the EU, the food processing industry plays a minor role today, mainly due to its domestic orientation as well as due to the importance of other export destinations. In 2001, export shares were smallest in Slovakia, Romania and Slovenia, accounting for only 1% of total manufacturing exports in these countries, and largest in Poland, Bulgaria and Lithuania with 5% to 7%. During 1995 to 2001, export shares declined significantly in Hungary and Bulgaria, to a lesser extent also in Poland, where the food & beverages sector held a traditionally dominant position. In Hungary, export structures shifted to electrical & optical equipment and transport equipment (accounting for 63% of total manufacturing exports in 2001!), while in Bulgaria textiles & textile products became the major exporting sector besides basic metals & fabricated metal products. In the other CEECs, exports shares also declined, except in Estonia and Latvia.

Within total manufacturing imports from the EU, the food processing industry also accounts for a relatively small share, which is however larger than the respective export shares. In 2001, import shares ranged from 2.6% in Hungary to 6% in Bulgaria; only in the Baltic countries were they somewhat larger (Estonia: 8.8%, Latvia: 10.3%, Lithuania: 7.3%).<sup>17</sup> Between 1995 and 2001, import growth of food processing products was smaller than that of total manufacturing, thus shares declined in all countries.

– *distinct export specialization patterns*

At a more detailed 3-digit NACE level, in 2001, food processing exports of all CEECs consisted largely of meat & meat products (30%), fruit & vegetables (24%) and other food products (11%), but also of dairy products (9.5%) and beverages (8%). On the other hand, tobacco exports to the EU were practically non-existent, those of grain mill products, starches & starch products were very small (less than 1%, see Table 6). However, very strong country variations and hence specialization patterns do exist in food processing exports of the region: Bulgaria, Hungary, Romania and Slovenia show a large share of meat & meat products exports (accounting for 57% and 53%, respectively, of total food processing exports of Hungary and Slovenia). Estonia has large shares in fish & fish products exports, as well as in dairy products exports; Latvia in dairy products, Lithuania in

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<sup>17</sup> Northern as well as smaller economies usually produce a smaller range of differentiated products and hence have more imports.

Table 6

**Export structure of the food products, beverages and tobacco sector, 2001**

	BG	CZ	EE	HU	LV	LT	PL	RO	SK	SI	CEEC-10	EU extra- EU imports	EU intra-EU imports
15.1 Production, processing and preserving of meat and meat products	31.4	16.9	7.0	56.8	12.6	8.5	20.5	34.5	11.9	52.5	30.2	14.6	17.4
15.2 Processing and preserving of fish and fish products	0.0	0.2	32.1	0.1	19.4	15.5	13.8	1.4	0.0	3.0	7.5	26.4	5.8
15.3 Processing and preserving of fruit and vegetables	22.9	6.5	2.5	18.9	3.8	8.0	39.8	25.2	2.8	3.2	24.2	11.8	8.6
15.4 Manufacture of vegetable and animal oils and fats	1.2	6.9	4.0	0.4	3.2	1.7	2.6	9.2	9.0	0.2	2.7	15.7	5.1
15.5 Manufacture of dairy products	2.1	12.9	48.2	4.6	50.6	26.3	6.2	4.5	25.0	7.1	9.5	3.1	14.5
15.6 Manufacture of grain mill products, starches and starch products	1.2	0.2	0.0	1.6	1.5	0.0	0.3	0.1	5.6	3.4	0.9	1.9	4.5
15.7 Manufacture of prepared animal feeds	8.7	1.1	0.5	5.5	0.1	35.6	2.8	0.5	7.1	7.0	5.3	3.8	4.5
15.8 Manufacture of other food products	7.8	26.3	3.7	6.0	6.2	4.1	12.6	4.0	13.1	11.0	11.1	13.0	20.8
15.9 Manufacture of beverages	24.7	29.0	2.0	6.1	2.6	0.2	1.4	20.0	22.3	12.6	8.4	9.0	13.1
16 Manufacture of tobacco products	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	3.0	0.0	0.1	0.6	5.8
<b>DA Food products, beverages and tobacco</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>						
in EUR million	<b>184.9</b>	<b>378.3</b>	<b>81.6</b>	<b>881.9</b>	<b>55.6</b>	<b>166.9</b>	<b>1318.4</b>	<b>108.7</b>	<b>81.4</b>	<b>80.1</b>	<b>3337.7</b>	<b>42119.1</b>	<b>113794.8</b>

Source: Eurostat COMEXT Database, wiiw calculations.

Table 7

**Import structure of the food products, beverages and tobacco sector, 2001**

	BG	CZ	EE	HU	LV	LT	PL	RO	SK	SI	CEEC-10
15.1 Production, processing and preserving of meat and meat products	17.1	8.6	12.0	19.6	8.2	12.7	7.6	34.3	17.2	10.2	12.8
15.2 Processing and preserving of fish and fish products	5.5	3.4	4.2	3.8	4.5	8.9	5.5	5.7	3.6	4.9	4.8
15.3 Processing and preserving of fruit and vegetables	6.9	5.6	4.4	6.7	3.4	3.5	5.5	3.9	4.4	8.2	5.5
15.4 Manufacture of vegetable and animal oils and fats	8.1	15.8	10.1	9.3	9.8	16.7	26.1	6.1	16.1	7.0	15.7
15.5 Manufacture of dairy products	4.5	3.4	1.9	4.0	1.6	2.2	2.2	2.6	2.1	3.0	2.8
15.6 Manufacture of grain mill products, starches and starch products	2.2	2.8	4.1	3.7	2.9	2.1	3.9	2.2	6.1	5.8	3.6
15.7 Manufacture of prepared animal feeds	4.5	8.4	5.3	12.3	7.0	7.5	6.0	3.9	13.3	6.1	7.5
15.8 Manufacture of other food products	31.3	34.1	34.6	32.3	33.8	37.0	36.7	27.8	29.3	37.3	34.2
15.9 Manufacture of beverages	9.0	10.4	19.2	5.6	19.5	8.0	5.8	6.2	6.5	8.9	8.7
16 Manufacture of tobacco products	10.8	7.5	4.1	2.5	9.3	1.6	0.7	7.4	1.4	8.5	4.5
<b>DA Food products, beverages and tobacco</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>						
in EUR million	<b>222.2</b>	<b>929.4</b>	<b>256.9</b>	<b>534.5</b>	<b>236.8</b>	<b>228.2</b>	<b>1321.9</b>	<b>338.5</b>	<b>257.9</b>	<b>348.8</b>	<b>4675.2</b>

Source: Eurostat COMEXT Database, wiiw calculations.

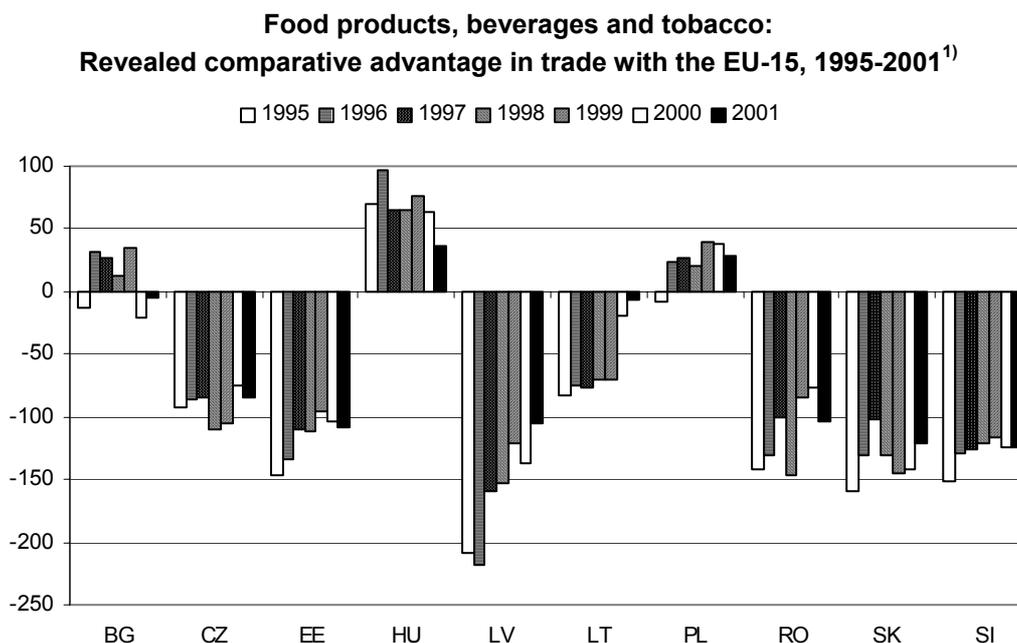
prepared animal feeds. Poland's exports are strongly concentrated on fruit & vegetables. In the Czech Republic and Slovakia, the export structure is less concentrated and has no strong export peaks (i.e. shares above 30%, see Table 6).

On the import side, CEEC-10 food processing imports in 2001 comprised other food products (34%), vegetable & animal oils & fats (16%), meat & meat products (13%), and beverages (9%). Across the region, the import structure was quite uniform (see Table 7).

– comparative advantage for Bulgaria, Hungary and Poland

'Revealed comparative advantages' (RCAs)<sup>18</sup> are frequently used as an indicator of trade competitiveness. The RCAs in Figure 6 show that only three countries had a comparative advantage in the food processing industry: Bulgaria (between 1996 and 1999), Hungary and Poland. In all other countries, the food processing industry showed a comparative *dis*-advantage. However, between 1995 and 2001, most CEECs recorded substantial RCA improvements, in particular Latvia, Lithuania and Romania, pointing to an increase in trade competitiveness across the region. Only in Bulgaria and Hungary did RCA values decline during this period, reflecting a declining trade competitiveness there.

Figure 6



Note: 1) Defined as  $RCA_i = \ln [(x_i / m_i) / (x_{tot} / m_{tot})] * 100$ .

Source: Eurostat COMEXT Database, wiiw calculations.

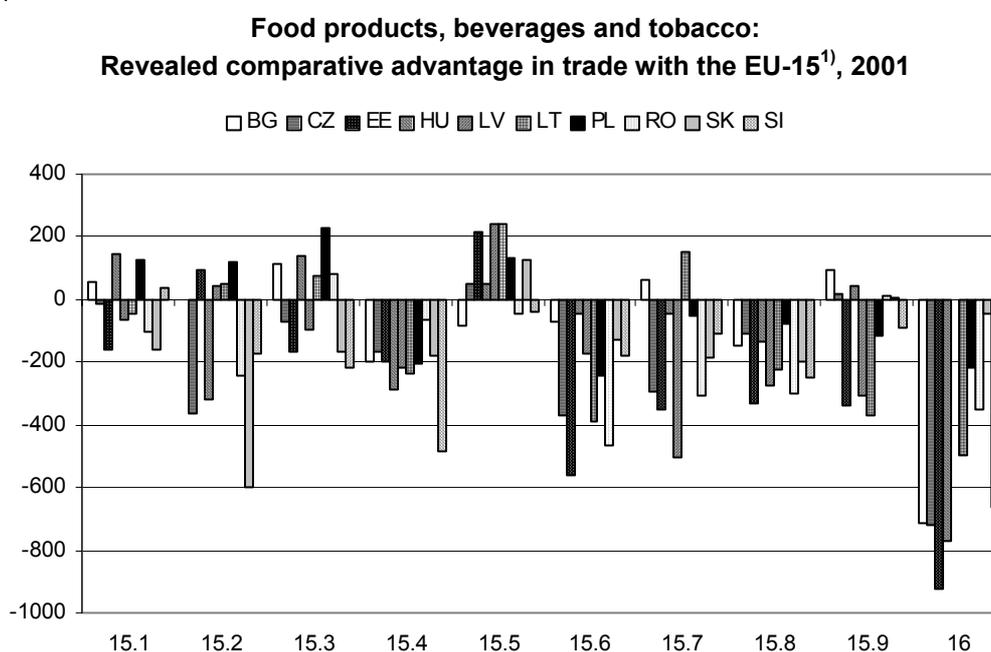
<sup>18</sup> RCAs compare the relative share of exports *x* and imports *m* of a particular industry with the share of the country's total manufacturing exports *x* and imports *m*. We use here the following definition of revealed comparative advantage:

$$RCA_i = \ln [(x_i / m_i) / (x_{tot} / m_{tot})] * 100.$$

A positive RCA<sub>i</sub> reveals a comparative advantage of industry *i*, a negative RCA<sub>i</sub> a comparative disadvantage.

Looking at the 3-digit NACE level as shown in Figure 7, negative RCA values were due to a typically large comparative disadvantage in tobacco products in all countries (16), as well as smaller disadvantages in vegetable & animal oils & fats (15.4), grain mill products, starches & starch products (15.6) and other food products (15.8) in all countries. On the other hand, several positive exceptions did exist in the food processing industry too: a small comparative advantage was recorded in dairy products (15.5), by several countries; in meat & meat products (15.1, by Bulgaria, Hungary, Poland and Slovenia); in fish & fish products (15.2, typically by the Baltic countries and Poland); in fruit & vegetables (15.3, by Bulgaria, Hungary, Lithuania, Poland and Romania) and also in beverages (15.9, by Bulgaria, the Czech Republic, Hungary, Romania and Slovakia).

Figure 7



15.1: Production, processing and preserving of meat and meat products; 15.2: Processing and preserving of fish and fish products;; 15.3: Processing and preserving of fruit and vegetables; 15.4: Manufacture of vegetable and animal oils and fats; 5.5: Manufacture of dairy products; 15.6: Manufacture of grain mill products, starches and starch products; 15.7: Manufacture of prepared animal feeds; 15.8: Manufacture of other food products; 15.9: Manufacture of beverages; 16: Manufacture of tobacco products

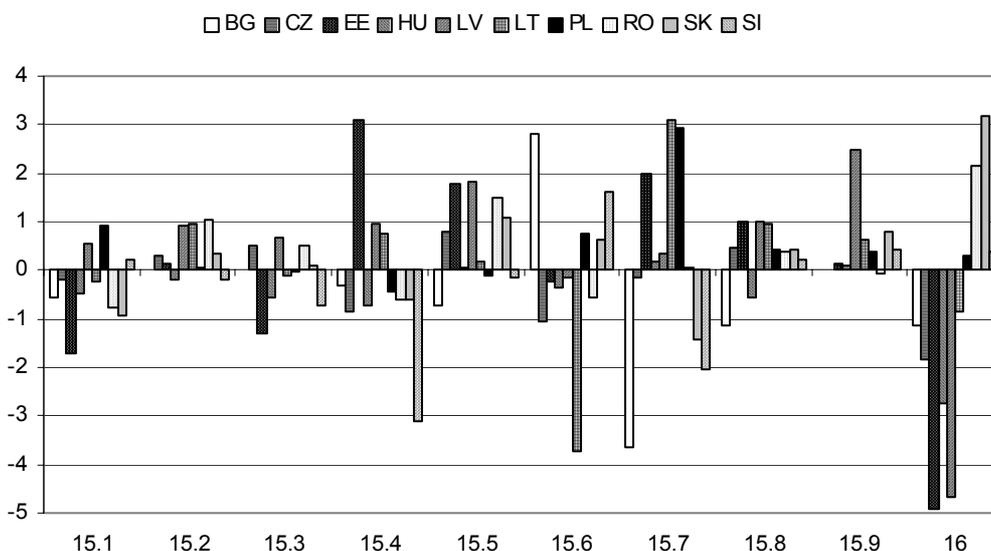
Notes: 1) Defined as  $RCA_i = \ln [(x_i / m_i) / (x_{tot} / m_{tot})] * 100$ .

Source: Eurostat COMEXT Database, wiiw calculations.

In the period 1995 to 2001, RCAs were improving generally, with the most successful branches in many countries being fish & fish products (15.2), dairy products (15.5), prepared animal feeds (15.7), other food products (15.8) as well as beverages (15.9), pointing to an improvement of trade competitiveness in these areas and hence to positive future prospects (see Figure 8). Conversely, in many countries the following branches showed a deterioration in RCA values: meat & meat products (15.1), vegetable & animal oils & fats (15.4), grain mill products, starches & starch products (15.6) and tobacco products (16).

Figure 8

**Food products, beverages and tobacco**  
**RCA improvements in trade with the EU, average 2000-2001 over 1995-1996**



15.1: Production, processing and preserving of meat and meat products; 15.2: Processing and preserving of fish and fish products;; 15.3: Processing and preserving of fruit and vegetables; 15.4: Manufacture of vegetable and animal oils and fats; 5.5: Manufacture of dairy products; 15.6: Manufacture of grain mill products, starches and starch products; 15.7: Manufacture of prepared animal feeds; 15.8: Manufacture of other food products; 15.9: Manufacture of beverages; 16: Manufacture of tobacco products

Source: Eurostat COMEXT Database, wiiw calculations.

### Foreign direct investment in food processing

The food processing industry, occupying an important position in the CEECs' economies, has been a prominent target of foreign direct investment, especially in the early years of transition. Compared to its production share, it attracted an over-proportionate share of inward FDI stock in many countries (except in Slovenia). In 2001, these shares amounted to 13% in the Czech Republic and Slovakia, 20-30% in Hungary, Estonia, Latvia and Poland, and even 40% in Lithuania (only 5% in Slovenia; no data are available for Bulgaria and Romania; see Table 8). Over the years, however, these shares have slightly declined, with other sectors of the economy becoming more attractive (e.g. motor vehicles, electrical & optical equipment).

Foreign investors were mainly attracted by entering domestic markets, but also by other motives such as the circumvention of import tariffs or building up world-wide networks. Export orientation did not play a decisive role, except e.g. in the Czech beer industry. Foreign investors mostly preferred companies with advanced technology, a monopolistic position, relatively good organizational features and favourable location, e.g. in the production of vegetable oil, sugar, confectionery, distilling, beer and tobacco. The tobacco industry is usually foreign-owned, as only big international companies can cope with the

brand names and promotion costs of this industry. They often hold monopoly positions, with high profit rates. Main foreign investors in the region include Coca-Cola, Pepsi-Cola, Danone, Nestle, Unilever and Philip Morris. Overall, foreign investors have had a strong impact on the restructuring and modernization process of the food processing industry, on the change in the range and quality of food products, on marketing and packaging, and on technological standards.<sup>19</sup>

Table 8

**Food products, beverages and tobacco:  
Selected indicators on foreign direct investment (FDI)**

	Inward FDI stock		Current production		
	in EUR million		in % of total manufacturing		in % of total manuf.
	1998	2001	1998	2001	2001
Czech Republic	874.1	1120.1 <sup>1)</sup>	15.6	12.6 <sup>1)</sup>	14.1 <sup>1)</sup>
Estonia	140.8	137.8 <sup>1)</sup>	27.4	22.5 <sup>1)</sup>	21.5 <sup>1)</sup>
Hungary	902.5	1052.2	25.4	21.4	16.2
Latvia	60.5	116.2	34.5	27.5	30.1
Lithuania	162.8	289.5 <sup>1)</sup>	36.3	40.1 <sup>1)</sup>	23.6 <sup>1)</sup>
Poland	3823.2	6247.2	28.0	25.2	24.9
Slovak Republic	213.7	324.3	24.0	13.8	13.0
Slovenia	91.1	67.9	7.3	5.2	13.7

Note: 1) 2000.

Source: wiiw FDI Database, national statistics.

### Food processing: conclusions

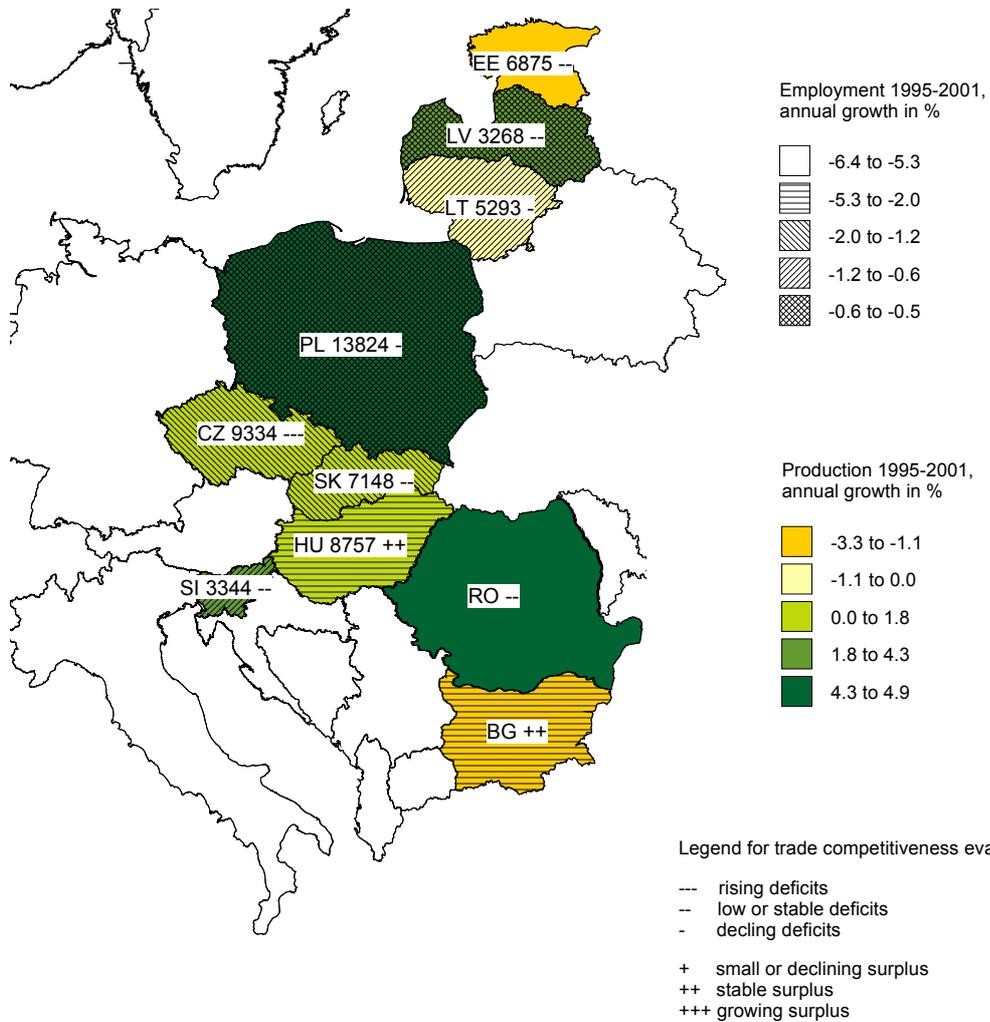
The key economic indicators for the food processing industry in the region are summarized in Map 1. Today, the food processing industry holds an important position in the CEE economies in terms of production, employment and FDI, but not in terms of exports to the EU. In the region, it has an above-average position in Bulgaria, Hungary, Poland, Romania and the Baltic states. As for accession to the EU, the food processing industry seems to be relatively well positioned in Bulgaria, Hungary and Poland, thanks to its comparative advantage in trade with the EU-15. This in turn is based largely on a comparative advantage in the following branches: fruit & vegetables in Bulgaria, meat & meat products and fruit & vegetables in Hungary, and meat & meat products, fish & fish products, fruit & vegetables and dairy products in Poland. In 1995-2001, the food processing industry generally showed a relatively weak performance: production, productivity and exports to the EU grew only slowly, much less than manufacturing on average. There were only two exceptions: Poland, which showed higher growth of production and considerable gains on the EU market, and Romania, which did well on the domestic market and recorded strong productivity growth.

<sup>19</sup> Kiss (1997), p.12.

**Food, beverages and tobacco (DA)**

**Regional development clusters, FDI per employee in EUR and trade competitiveness**

	BG	CZ	EE	HU	LV	LT	PL	RO	SK	SI
Share in output in %, 2001	22.1	14.0	21.5	16.2	30.1	23.6	24.9	22.1	13.0	13.7
Share in employment in %, 2001	17.6	11.2	17.2	16.0	24.2	23.3	19.2	10.5	11.8	8.9
Productivity change in %, 1995-2001	2.2	3.3	3.4	4.9	3.0	0.2	5.4	11.5	3.5	2.5
ULC, change in %, 1995-2001	5.5	7.2	5.3	1.3	6.6	15.7	6.6	-5.8	5.4	4.0
EU-share in total exports in %, 2000	38.8	33.6	31.5	45.4	34.5	34.7	44.5	49.1	19.6	25.7
Share in total manufacturing exports to the EU in %, 2001	5.6	1.6	3.0	3.7	3.6	6.7	5.3	1.2	1.0	1.3
RCA change, 1995-2001	-0.22	0.10	0.34	-0.33	0.92	0.65	0.26	0.47	0.14	0.16
Export price gap in %, av. 2000/2001	-5.6	-20.1	-4.8	4.5	-8.6	9.4	-3.3	6.9	-18.5	4.4
Price gap, change 1995-2001	-3.5	-1.8	-1.2	2.0	-2.8	17.9	2.4	15.6	-17.4	8.0
Market share, change 1995-2001	-0.01	0.09	0.03	0.01	0.02	0.05	0.23	0.02	0.03	0.00



Accession to the EU may have effects on the supply side of the food processing industry, on production itself, and on the demand side (exports and domestic markets).

- Improvements in the agricultural sector in the wake of EU accession (efficiency, quality) will help the food processing industry to improve as well.
- Rising input prices of agricultural raw materials, unless compensated by EU payments, will increase costs in the food processing industry and hence reduce cost competitiveness.
- Increasing wages will also decrease cost competitiveness unless they are accompanied by growing productivity.
- The implementation of the *acquis*, ensuring health safety, quality of food and the observance of other requirements such as animal welfare and environmental protection, will put high pressure on domestic enterprises, many of which will have to close down.
- Foreign direct investment inflow into the CEECs will continue and may even intensify.
- The opening-up of the EU internal market will probably bring about better export opportunities – but only for companies able to meet EU standards.
- The opening-up of the domestic market will bring about stronger import competition from EU products, which are backed by better marketing and large sales promotion budgets.
- The EU common external tariff on food products is currently lower than the tariffs applied in several CEECs; thus, in these countries imports from non-EU countries will increase. However, the requirement to meet EU standards will put a brake on these imports.
- The long-term rise in income will benefit the food processing industry, although the income elasticity for many food products is less than one; in addition, specific areas will be favoured as the domestic food consumption structure changes (luxury goods).

Accession to the EU will bring about new opportunities for the food industry in the new member countries:

- There will be chances for more growth in the sphere of high income-elasticity products, a fact that should attract further foreign direct investment.
- More emphasis can be put on the branding of products. In fact, old brand names from the communist or pre-communist period experience a revival today, and domestic enterprises as well as foreign direct investment companies can profit from that.
- In the past years of transition, many farms could not afford purchasing large amounts of agro-chemicals. This fact represents a good starting condition for organic farming and the processing of its output. As this branch of agriculture and food processing is relatively labour-intensive, the low wages in the CEECs are an additional advantage.
- The emergence of clusters is vital for the further development of the food processing industry. Clusters generally have a positive influence on innovation, competitiveness, skill formation and information as well as on further concentration and growth dynamics. In the CEECs, cluster creation is still in its initial stage.

### 3 Consequences for the agro-food sector as a whole

In the Copenhagen agreement, the chapter related to agriculture reflects the Commission's interest in freezing agricultural production in volume terms in the new EU member states, despite the fact that except for Hungary, all of them are already net importers of agro-food. Currently, living standards in the candidate countries are significantly lower than those in the EU-15. However, as the catching-up process moves ahead and GDP per capita rises, the demand for higher quality foodstuffs will also increase. Today, despite a slight drop, the EU-15 as a whole is producing agro-food surpluses; it can only export these surpluses by resorting to massive export subsidies. Given the CAP rules on common agro-food markets within the club, the agro-food surpluses from the EU-15 states will be off-loaded on the 'new' EU states.

Table 9

#### Accession countries: Trade in agro products and processed food with EU-15

CEEC-10	NACE rev. 1	Exports in % of imports						
		1995	1996	1997	1998	1999	2000	2001
Growing of crops; market gardening; horticulture	1.1	68.6	44.8	44.1	55.0	69.5	52.9	56.2
Farming of animals	1.2	292.7	291.1	311.2	269.0	330.7	258.8	261.3
Forestry, logging and related services activities	2.0	1478.3	2022.7	1968.0	1493.7	1424.1	1198.5	1034.7
Fishing, operation of fish hatcheries and fish farms	5	251.9	282.3	297.7	189.5	227.5	165.1	159.6
<b>Agro -total</b>		<b>136.9</b>	<b>93.0</b>	<b>106.3</b>	<b>119.3</b>	<b>141.8</b>	<b>111.0</b>	<b>107.5</b>
Meat products	15.1	144.0	172.3	150.6	128.7	209.3	154.9	168.7
Fish and fish products	15.2	93.2	70.8	70.2	83.2	134.9	125.4	111.2
Fruits and vegetables	15.3	250.4	256.9	234.4	213.2	302.1	308.1	314.6
Vegetable and animal oils and fats	15.4	15.6	23.2	14.4	10.0	13.8	14.4	12.5
Dairy products; ice cream	15.5	74.2	103.6	106.6	88.3	98.5	107.5	245.1
Grain mill products and starches	15.6	12.9	11.8	7.8	9.0	14.8	12.9	17.2
Prepared animal feeds	15.7	16.4	29.2	33.0	29.7	34.1	127.2	50.5
Other food products	15.8	15.0	18.0	18.8	19.2	19.3	24.8	23.2
Beverages	15.9	55.0	58.4	64.8	68.8	73.0	75.8	69.0
Tobacco products	16	4.2	0.9	2.7	2.4	1.1	2.5	1.9
<b>DA-Food - total</b>		<b>57.9</b>	<b>63.5</b>	<b>61.9</b>	<b>57.3</b>	<b>71.5</b>	<b>77.2</b>	<b>71.4</b>
Agro total plus food total		77.8	72.8	74.3	73.2	91.4	88.2	81.8
<b>Total</b>		<b>85.8</b>	<b>76.5</b>	<b>75.9</b>	<b>79.6</b>	<b>85.6</b>	<b>89.4</b>	<b>92.0</b>

Source: Eurostat, own calculations.

In the long run, however, we can expect some differentiation in the structure of the agro-food trade balance. As mentioned above, the CEECs have run up major deficits, at least where trade in processed food is concerned, notwithstanding that they are net exporters of

agricultural raw materials. As FDI flows into the food processing sector in the new member states, the output of foodstuffs with high value-added will increase and a larger share of the rising demand for higher quality food will thus be covered gradually by domestic supplies. At the same time, domestic demand for agricultural raw materials driven by foreign-owned companies will expand. As a result, over the long term, total agro-food deficits may well drop in the new member states.

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## Appendix (Tables)

Table A1

	Main indicators 2001 <sup>1)</sup>									
	Bulgaria	Czech Republic	Hungary	Estonia	Latvia	Lithuania	Poland	Romania	Slovakia	Slovenia
Total territory, mn hectare	11.099	7.887	9.303	4.523	6.459	6.530	31.268	23.839	4.904	2.026
Population, annual average										
Total, mn persons	8.0	10.3	10.2	1.4	2.4	3.5	38.6	22.4	5.4	2.0
Employment in agriculture										
mn persons	0.8	0.2	0.2	0.04	0.2	0.3	3.9	3.6	0.1	0.04 <sup>2)</sup>
in % of total employment	26.3	3.9	6.5	6.7	14.7	17.7	25.6	41.4	6.7	5.2
Used agricultural land (UAL)										
mn hectare	6.252	4.280	5.853	0.890	2.480	3.370	18.413	14.731	2.442	0.486
% of total	56.3	54.3	62.9	19.7	38.4	51.6	58.9	61.8	49.8	24.0
Hectare per person employed in agriculture	0.778	0.416	0.574	0.653	1.052	0.966	0.477	0.657	0.454	0.244
Gross domestic product (GDP)										
EUR billion at current exchange rates	13.6	63.0	58.0	6.2	8.4	13.4	196.9	44.3	22.3	21.0
Per capita (EUR at current exchange rates)	1884	6120	5690	4465	3572	3836	5096	1979	4122	10564
pro capita (EUR at purchasing power parities)	5980	13710	11760	9330	7040	7230	9110	6410	11040	16440
Average share of food purchases in total household income, in %	44.9	21.5	29.5	35.1	36.5	35.0	31.2	53.4 <sup>2)</sup>	23.5	17.7

Notes: 1) Preliminary estimate. - 2) Including beverages and tobacco.

Source: wiiw Database based on national statistics and WIFO Database.

Table A2

## Accession countries: Trade of agro products and processed food with EU-15

CEEC-10	NACE rev.1	Imports from the EU , ths EUR						
		1995	1996	1997	1998	1999	2000	2001
Growing of crops; market gardening; horticulture	1.1	918,438	1,315,972	1,237,456	1,163,451	1,159,131	1,463,044	1,636,402
Farming of animals	1.2	118,333	112,807	117,530	121,257	97,461	130,196	156,236
Forestry, logging and related services activities	2.0	31,137	19,564	26,742	39,828	49,415	58,887	62,952
Fishing, operation of fish hatcheries and fish farms	5	21,463	17,975	16,222	26,505	23,912	30,380	31,525
<b>Agro –total</b>		<b>1,089,371</b>	<b>1,466,318</b>	<b>1,397,950</b>	<b>1,351,041</b>	<b>1,329,919</b>	<b>1,682,507</b>	<b>1,887,115</b>
Meat products	15.1	460,773	418,290	503,232	563,238	366,487	575,021	598,588
Fish and fish products	15.2	151,151	171,016	177,548	205,049	157,058	178,571	224,910
Fruits and vegetables	15.3	198,872	194,046	243,833	275,479	214,126	227,987	256,807
Vegetable and animal oils and fats	15.4	399,986	358,506	525,552	603,841	491,728	560,537	733,646
Dairy products; ice cream	15.5	150,317	143,489	164,324	174,421	166,671	160,552	129,573
Grain mill products and starches	15.6	93,384	111,472	134,364	129,732	124,130	145,166	167,959
Prepared animal feeds	15.7	144,944	139,806	188,048	246,117	216,225	60,512	349,992
Other food products	15.8	1,175,513	1,165,913	1,191,990	1,239,250	1,108,623	978,267	1,596,829
Beverages	15.9	322,481	340,779	339,691	326,886	339,744	364,680	406,317
Tobacco products	16	135,744	163,272	127,621	157,888	189,894	233,796	210,611
<b>DA-Food - total</b>		<b>3,233,165</b>	<b>3,206,589</b>	<b>3,596,203</b>	<b>3,921,901</b>	<b>3,374,686</b>	<b>3,485,089</b>	<b>4,675,232</b>
Agro total plus food total		<b>4,322,536</b>	<b>4,672,907</b>	<b>4,994,153</b>	<b>5,272,942</b>	<b>4,704,605</b>	<b>5,167,596</b>	<b>6,562,347</b>
<b>Total</b>		<b>51,020,106</b>	<b>60,770,963</b>	<b>73,613,754</b>	<b>83,949,940</b>	<b>87,690,890</b>	<b>107,519,435</b>	<b>119,436,129</b>

Source: Eurostat.

Table A3

**Accession countries: Trade of agro products and processed food with EU-15**

CEEC-10	NACE rev.1	Exports in the EU, ths EUR						
		1995	1996	1997	1998	1999	2000	2001
Growing of crops; market gardening; horticulture	1.1	630,295	589,498	546,209	640,138	805,900	774,227	919,069
Farming of animals	1.2	346,396	328,360	365,711	326,127	322,327	336,893	408,248
Forestry, logging and related services activities	2.0	460,297	395,719	526,274	594,908	703,721	705,741	651,365
Fishing, operation of fish hatcheries and fish farms	5	54,056	50,749	48,293	50,231	54,402	50,143	50,299
<b>Agro -total</b>		<b>1,491,044</b>	<b>1,364,326</b>	<b>1,486,487</b>	<b>1,611,404</b>	<b>1,886,350</b>	<b>1,867,004</b>	<b>2,028,981</b>
Meat products	15.1	663,701	720,651	758,071	725,120	766,999	890,879	1,009,634
Fish and fish products	15.2	140,889	121,004	124,670	170,537	211,927	223,917	250,128
Fruits and vegetables	15.3	497,973	498,450	571,424	587,235	646,920	702,429	807,858
Vegetable and animal oils and fats	15.4	62,416	83,053	75,592	60,108	68,095	80,808	91,535
Dairy products; ice cream	15.5	111,488	148,595	175,190	153,994	164,163	172,628	317,640
Grain mill products and starches	15.6	12,067	13,125	10,427	11,654	18,342	18,731	28,928
Prepared animal feeds	15.7	23,769	40,852	61,971	73,090	73,743	76,969	176,916
Other food products	15.8	176,205	209,302	224,265	238,452	213,710	242,544	370,647
Beverages	15.9	177,500	199,178	220,160	225,041	248,181	276,272	280,444
Tobacco products	16	5,737	1,432	3,508	3,726	2,054	5,794	3,954
<b>DA-Food - total</b>		<b>1,871,745</b>	<b>2,035,642</b>	<b>2,225,278</b>	<b>2,248,957</b>	<b>2,414,134</b>	<b>2,690,971</b>	<b>3,337,684</b>
Agro total plus food total		<b>3,362,789</b>	<b>3,399,968</b>	<b>3,711,765</b>	<b>3,860,361</b>	<b>4,300,484</b>	<b>4,557,975</b>	<b>5,366,665</b>
<b>Total</b>		<b>43,779,281</b>	<b>46,501,995</b>	<b>55,891,948</b>	<b>66,783,056</b>	<b>75,090,341</b>	<b>96,126,112</b>	<b>109,901,017</b>

Source: Eurostat.

Table A4

### Accession countries: Trade of agro products and processed food with EU-15

CEEC-10	NACE rev.1	Shares in imports total							Shares in exports total						
		1995	1996	1997	1998	1999	2000	2001	1995	1996	1997	1998	1999	2000	2001
Growing of crops; market gardening; horticulture	1.1	1.8	2.2	1.7	1.4	1.3	1.4	1.4	1.4	1.3	1.0	1.0	1.1	0.8	0.8
Farming of animals	1.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.8	0.7	0.7	0.5	0.4	0.4	0.4
Forestry, logging and related services activities	2.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	1.1	0.9	0.9	0.9	0.9	0.7	0.6
Fishing, operation of fish hatcheries and fish farms	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0
<b>Agro -total</b>		<b>2.1</b>	<b>2.4</b>	<b>1.9</b>	<b>1.6</b>	<b>1.5</b>	<b>1.6</b>	<b>1.6</b>	<b>3.4</b>	<b>2.9</b>	<b>2.7</b>	<b>2.4</b>	<b>2.5</b>	<b>1.9</b>	<b>1.8</b>
Meat products	15.1	0.9	0.7	0.7	0.7	0.4	0.5	0.5	1.5	1.5	1.4	1.1	1.0	0.9	0.9
Fish and fish products	15.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.2	0.2
Fruits and vegetables	15.3	0.4	0.3	0.3	0.3	0.2	0.2	0.2	1.1	1.1	1.0	0.9	0.9	0.7	0.7
Vegetable and animal oils and fats	15.4	0.8	0.6	0.7	0.7	0.6	0.5	0.6	0.1	0.2	0.1	0.1	0.1	0.1	0.1
Dairy products; ice cream	15.5	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.3	0.3	0.3	0.2	0.2	0.2	0.3
Grain mill products and starches	15.6	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prepared animal feeds	15.7	0.3	0.2	0.3	0.3	0.2	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Other food products	15.8	2.3	1.9	1.6	1.5	1.3	0.9	1.3	0.4	0.5	0.4	0.4	0.3	0.3	0.3
Beverages	15.9	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3
Tobacco products	16	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Food - total</b>		<b>6.3</b>	<b>5.3</b>	<b>4.9</b>	<b>4.7</b>	<b>3.8</b>	<b>3.2</b>	<b>3.9</b>	<b>4.3</b>	<b>4.4</b>	<b>4.0</b>	<b>3.4</b>	<b>3.2</b>	<b>2.8</b>	<b>3.0</b>
<b>Agro total plus food total</b>		<b>8.5</b>	<b>7.7</b>	<b>6.8</b>	<b>6.3</b>	<b>5.4</b>	<b>4.8</b>	<b>5.5</b>	<b>7.7</b>	<b>7.3</b>	<b>6.6</b>	<b>5.8</b>	<b>5.7</b>	<b>4.7</b>	<b>4.9</b>
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Eurostat, own calculations.

## **Structural change in transition countries: a comparison of three manufacturing sectors**

### **Abstract**

*This chapter analyses three sectors of manufacturing in Central and Eastern Europe countries, comparing the leather and leather products sector, the chemical sector and the metals sector. Although these three sectors show different features in terms of history, size, factor intensity, company structure and trade orientation, all of them have developed less successfully during the last ten years of transition than the (total) manufacturing average and hence can be termed 'losers' of transition. This chapter examines in detail the structure and development of these sectors and investigates the reasons behind their performance.*

### **Introduction**

After the collapse of communism, the Central and Eastern European countries (CEECs) were hit by a transformational recession and manufacturing suffered from double-digit negative annual growth rates over the period 1989-1992. From 1993, however, growth gained momentum in all CEECs and a more active (strategic) process of restructuring began. Manufacturing output started to expand, but not uniformly: some sectors were restructured faster and became growth leaders in the respective country, often supported by a high inflow of foreign direct investment. Other sectors, however, lagged behind average growth and were handicapped by a number of problems.

This chapter analyses three sectors of manufacturing in the Central and Eastern European countries, which – although showing different features in terms of history, size, factor intensity, company structure and trade orientation – have developed less successfully than the (total) average and hence can be termed '*losers' of transition*'. The structure and development of these sectors will be analysed in detail and the reasons behind their performance will be discussed.

The three sectors covered are:<sup>20</sup>

- the leather and leather products sector (DC)
- the chemicals, chemical products and man-made fibres sector (DG) and
- the basic metals and fabricated metal products sector (DJ)

Section 1 presents a comparison of these three sectors and deals with the general reasons for their relative decline. Sections 2, 3 and 4 provide a thorough survey of the developments and prospects in the leather and leather products sector, in the chemical sector and in the metals sector respectively. The concluding section gives a summary on all three sectors. The CEECs examined are Bulgaria, the Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia (termed CEEC-7 in the following); the period of investigation is 1989 to 2000.

## 1 The three sectors in comparison

In general, the three sectors differ significantly in size and in their characteristics:

The *leather and leather products sector* is one of the smallest sectors of manufacturing in most CEECs and is considered a labour-intensive, low-skilled and low-technology industry.

The *chemical sector*, on the other hand, ranges in the (upper) middle field of manufacturing in terms of production and employment and is classified as a capital-, R&D-, and skill-intensive sector, in some sub-branches it is also characterized by high energy intensity (basic chemicals). Furthermore, it is defined as a medium-high-technology sector – except for the high-technology pharmaceuticals sector.

The *metals sector* too is a major sector of manufacturing and considered a capital-intensive (basic metals), labour-intensive (fabricated metal products) and energy-intensive sector. It is classified as a medium-low-technology industry.

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<sup>20</sup> This investigation is based on the WIW Industry Studies series, which covers 12 manufacturing sectors out of 14. Each of these studies presents a detailed picture of the development and prospects of a particular industry in Central and Eastern Europe. Mechanical Engineering (March 1999), Paper and Printing (May 1999), Wood and Wood Products (September 1999), Transport Equipment (December 1999), Other-Non-metallic Mineral Products (January 2000), Rubber and Plastic Products (March 2000), Food Products, Beverages and Tobacco (October 2000), Leather and Leather Products (February 2001), Electrical and Optical Equipment (June 2001), Chemicals, Chemical Products and Man-made Fibres (November 2001), Basic Metals and Fabricated Metal Products (February 2002) and Textiles and Textile Products (May 2002).

Table 1

**Production shares of individual industries in total manufacturing (at current prices),  
2000, in %**

		Czech Republic <sup>1)</sup>		Hungary	Poland <sup>1)</sup>	Romania <sup>1)</sup>	Slovak Republic Slovenia <sup>1)</sup>	
D	Manufacturing total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
DA	Food products; beverages and tobacco	23.6	17.2	15.2	24.8	21.0	12.5	14.9
DB	Textiles and textile products	6.8	4.4	3.3	4.8	7.7	3.6	7.3
<b>DC</b>	<b>Leather and leather products</b>	<b>1.2</b>	<b>0.8</b>	<b>0.6</b>	<b>0.9</b>	<b>1.8</b>	<b>1.2</b>	<b>1.5</b>
DD	Wood and wood products	1.5	2.7	1.1	3.8	3.4	3.0	3.2
DE	Pulp, paper & paper products; publishing and printing	4.3	4.7	4.3	6.4	3.5	6.3	7.1
DF	Coke, refined petroleum products & nuclear fuel	18.7	2.8	6.3	4.4	10.7	10.1	0.4
<b>DG</b>	<b>Chemicals, chemical products &amp; man-made fibres</b>	<b>9.8</b>	<b>6.7</b>	<b>7.2</b>	<b>6.5</b>	<b>7.8</b>	<b>6.4</b>	<b>10.0</b>
DH	Rubber and plastic products	1.9	4.3	3.3	4.6	2.4	3.4	4.5
DI	Other non-metallic mineral products	4.3	6.4	2.7	5.4	4.7	4.6	4.8
<b>DJ</b>	<b>Basic metals and fabricated metal products</b>	<b>13.2</b>	<b>15.9</b>	<b>8.1</b>	<b>10.7</b>	<b>15.8</b>	<b>17.0</b>	<b>12.3</b>
DK	Machinery and equipment n.e.c.	7.2	8.0	4.1	5.5	5.1	6.8	10.4
DL	Electrical and optical equipment	4.4	7.9	27.2	7.2	4.7	7.9	8.6
DM	Transport equipment	1.6	14.3	15.4	10.3	7.7	14.5	9.9
DN	Manufacturing n.e.c.	1.7	3.9	1.3	4.6	3.7	2.7	5.3

Note: 1) 1999.

Source: wiiw Industrial Database.

All three sectors have in common that they have performed worse than total manufacturing over the whole period of transition (1989-2000) and hence can be called relative 'losers' of transition.<sup>21</sup> During the first period of transformation, from 1989 to about 1992, they have been much more affected by the transformational recession than total manufacturing, thereafter they participated less successfully in the general upswing. In this second period of transformation, from about 1993 onwards, average growth rates were smaller than in total manufacturing or even remained negative in some countries.<sup>22</sup> The *leather and leather products sector* was hit hardest among the three sectors in that second period, the *metals sector* least and the *chemical sector* fell in between (see Figure 1).

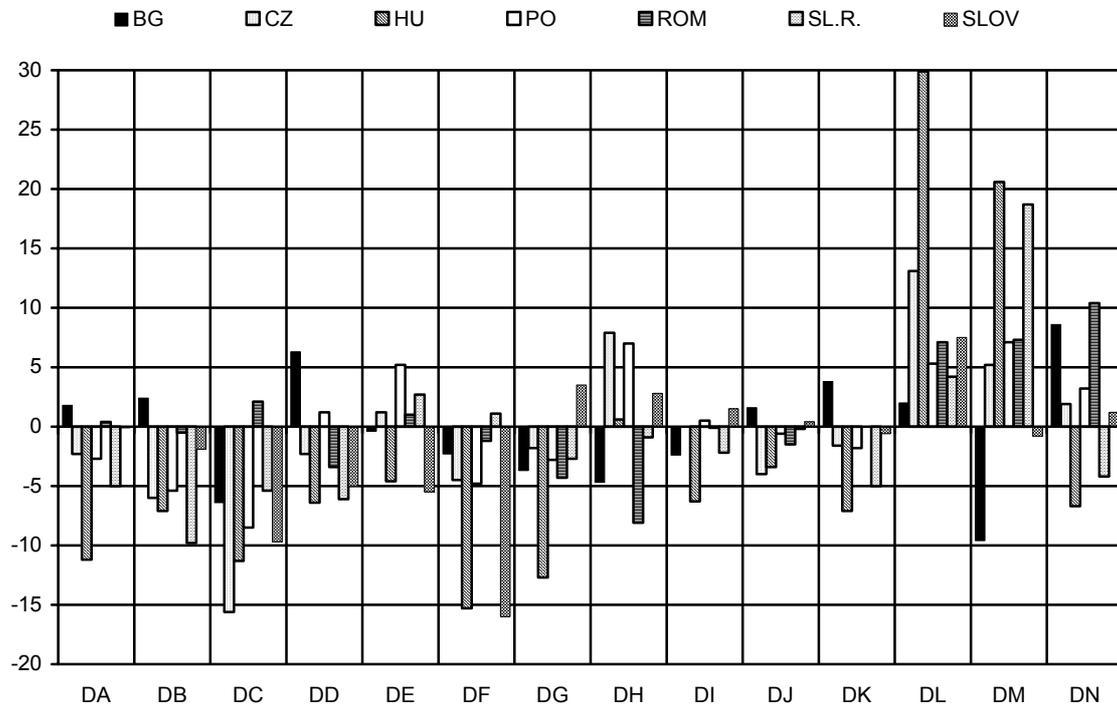
<sup>21</sup> Compare Urban (2000), p. 22.

<sup>22</sup> In fact, the average was strongly shaped by the high growth rates of three manufacturing sectors: electrical & optical equipment (DL), transport equipment (DM) and manufacturing n.e.c. (DN, including furniture) (see Figure 1), representing the only *'winners' of transition*. All other sectors of manufacturing turned out to be *'losers' of transition*, ranging from food, beverages & tobacco (DA) to machinery & equipment n.e.c. (DK).

Figure 1

### Winners and losers of transition, 1993-2000

Annual average growth rates in production compared to total manufacturing, in percentage points



Note: See Table 1 for the NACE codes of sectors. Bulgaria 1997-2000.

Source: wiiw Industrial Database.

For explaining these unfavourable developments, several parallel trends can be discerned in all three sectors:

- Productivity changes have been smaller than in total manufacturing, pointing to slow restructuring of the sectors in general.
- Sectoral exports to the EU-15 markets typically developed less dynamically than total manufacturing exports; market shares stagnated, with CEEC exports often hampered by trade restrictions; in addition the quality of exports was mostly low (exports of low value added, cheap products).
- Import competition has been strong and growing; domestic markets are challenged either by very cheap products (footwear), by a more diverse product mix (pharmaceuticals) or by higher-quality products (metals, fabricated metal products).
- Foreign direct investment has been comparatively small in the leather and leather products as well as in the metals sector, and is substantial in certain sub-branches in the chemical sector only.

## 2 SECTOR PROFILE: The leather and leather products sector in the CEECs

Throughout the world, the leather and leather products sector is a rather small sector of manufacturing. Together with the textile and clothing industry it belongs to the core of consumer and light industry. The sector is strongly shaped by globalization and easy relocation of production to low-cost countries, such as East-Asia and China. Procuring raw hides and skins from slaughtering houses, the leather and leather products sector converts these raw materials into leather – a process called ‘tanning and dressing of leather’ – and then manufactures a limited range of products for final consumption. The product range includes a small number of products for technical application (belts), basic necessity goods such as shoes, but also luxury articles such as leather handbags, luggage, briefcases etc. making the sector highly sensitive to the business cycle. Production takes place mostly in small and medium-sized enterprises (SMEs).<sup>23</sup>

The leather and leather products sector is of minor importance in the CEE economies with a total production volume of EUR 2 billion and a workforce of 205 thousand persons in 2000.

Among the CEEC-7, Poland was by far the largest producer of leather and leather products in terms of current production at the end of the 1990s (EUR 800 million), followed with a gap by Romania and the Czech Republic (about EUR 300 million). In Hungary, Slovakia and Slovenia the sector's production volume still ranged between EUR 170 and 260 million, while in Bulgaria production was relatively small (EUR 88 million).

Regarding employment, Romania took the lead in the region, followed by Poland. In Romania about 75,000 persons were employed in the leather and leather products sector in 2000, and in Poland 46,000. Employment figures ranged around 20,000 in Hungary, the Czech Republic, Bulgaria and Slovakia, while the number was considerably smaller in Slovenia (7,000).

Comparing the levels of production with the levels of employment in the different CEECs reveals significant differences in output per employee (= labour productivity) in the sector. While in Poland the leather and leather products sector produced an output of EUR 800 million with 46,000 persons, in Romania the sector produced only EUR 323 million with 75,000 persons. Labour productivity is quite low in Romania and Bulgaria, pointing to high labour hoarding (meaning excess employment with the possibility for future employment cuts!) and/or the prevalence of particularly labour-intensive practices in these countries.

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<sup>23</sup> In the NACE rev. 1 classification system (Statistical classification of economic activities in the European Community) the term 'leather and leather products' denotes the sub-section 'DC' (identical to division 19), which consists of the following groups: Tanning and dressing of leather (19.1); Manufacture of luggage, handbags and the like, saddlery and harness (19.2); Manufacture of footwear (19.2).

Table 2

### Leather and leather products

Overview of production and employment, 2000

	Production <sup>1)</sup>			Employment	
	EUR million	% of GDP	% of manuf.	ths. persons	% of manuf.
Bulgaria	88.4	0.7	1.2	18.3	3.5
Czech Republic <sup>2)</sup>	302.3	0.6	0.8	19.0	1.8
Hungary	256.7	0.5	0.6	22.5	3.0
Poland <sup>2)</sup>	797.5	0.5	0.9	45.7	1.9
Romania <sup>2)</sup>	322.6	1.0	1.8	75.1	4.8
Slovak Republic	204.0	1.0	1.2	17.4	3.6
Slovenia <sup>2)</sup>	166.6	0.9	1.5	7.0	3.1
<b>CEEC-7</b>	<b>2138.2</b>	.	.	<b>205.0</b>	.

Notes: 1) At current prices.- 2) Production data 1999.

Source: wiiw Industrial Database.

### Minor position of the leather and leather products sector in the past and today

Today, the leather and leather products sector plays only a minor role in the economies of the CEECs – ranging between 0.8% in the Czech Republic and 1.8% in Romania – and hence is the smallest segment of manufacturing in most countries (at current prices).

In general, the leather and leather products sector is small compared to other sectors of manufacturing. In the CEECs, the sector was furthermore neglected during the command economy with the latter's pronounced bias towards heavy industry and the production of raw materials and intermediate products. The manufacture of consumer goods such as shoes was usually paid less attention to and the quantity and quality of products was often unsatisfactory. Confronted with open markets, the loss of CMEA markets and the declining purchasing power of the domestic population, the leather and leather products sector

Table 3

### Production shares of selected light industries (DB, DC, DD) in total manufacturing (at current prices), 2000, in %

	Czech			Slovak			
	Bulgaria	Republic <sup>1)</sup>	Hungary	Poland <sup>1)</sup>	Romania <sup>1)</sup>	Republic	Slovenia <sup>1)</sup>
DB Textiles and textile products	6.8	4.4	3.3	4.8	7.7	3.6	7.3
<b>DC Leather and leather products</b>	<b>1.2</b>	<b>0.8</b>	<b>0.6</b>	<b>0.9</b>	<b>1.8</b>	<b>1.2</b>	<b>1.5</b>
DD Wood and wood products	1.5	2.7	1.1	3.8	3.4	3.0	3.2

Notes: Compare Table 1 in the first section for all sectors of manufacturing. - 1) 1999.

Source: wiiw Industrial Database.

experienced a dramatic fall in production and a huge cut in employment. Unfavourable productivity developments in most countries and stagnating competitiveness on export markets pose serious problems and hence make further restructuring of the sector necessary.

In the region, Slovenia has always been specialized on the leather and leather products sector, with a production share (at constant prices 1996) well above the CEE average due to a longstanding historical tradition.<sup>24</sup> In Romania, and to a lesser extent in Bulgaria as well, specialization started later, in line with these countries' lower development level and thus higher concentration on the labour-intensive sectors of manufacturing. In Slovakia, specialization was less pronounced and fluctuated over time. In general, however, shares of the leather and leather products sector are rather similar across all CEECs (ranging between 0.5% and 2% at constant prices 1996).

### **Dramatic drop in the production of leather and leather products**

During the first phase of transition, from 1989 to about 1992, all CEECs experienced a severe transformational recession and the production of the leather and leather products sector declined as well – almost 20% per year. Indeed, the sector was much more affected than total manufacturing in most CEECs (except Romania) and became what may be called a relative 'loser' of this period. This is due to the fact that there were dramatic drops in real incomes leading to declines in the purchase of consumer goods, and due to import competition.

During the second transition period, from 1993 onwards, growth returned to the region but the leather and leather products sector continued to suffer. Growth remained negative in almost all countries and did turn positive only in Poland, Hungary and Romania. Compared to manufacturing total, the sector remained less successful and has been a major 'loser' (again with the exception of Romania). Overall, this negative development of the leather and leather products sector was mainly due to the negative performance of the footwear sub-branch, the major producer and employer within the sector, although the decline in 'tanning and dressing of leather' was even more pronounced.<sup>25</sup> During transition, domestic demand for shoes fell significantly and has not reached pre-transition levels yet. In the Czech Republic, for example, the consumption of shoes (pairs) per capita reached 4.7 in 1989, 3.2 in 1998 and only 2.9 in 1999. In Slovakia, consumption stood at 4.5 pairs per capita in 1990 and decreased to 1.5-2 pairs per capita in 1999. In the longer term, shoes are regarded as basic necessity goods with an income elasticity less than one: when incomes rise, their share in private consumption declines. Thus industries supplying these

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<sup>24</sup> Indeed, in the 1980s, former Yugoslavia belonged to the world leading producers of footwear and of leather and fur products (however, on a lower rank than in footwear). See UNIDO (1998).

<sup>25</sup> In 1999, 'footwear' accounted for about 70% to 84% of the sector's production and for 64% to 90% of the sector's employment.

goods can be expected to grow less than average.<sup>26</sup> In addition, domestic shoe producers face strong import competition from cheap shoe imports from China and other East-Asian countries. On the export markets, the export-oriented leather and leather products sector was first hit hard by the loss of the CMEA markets, then by the Russian crisis in 1998; it also faces heavy competition from other low-cost producers. On the supply side, companies suffer from a shortage of funds and from difficulties in obtaining loans. Hence raw materials suppliers prefer to export their products, obtaining higher prices abroad.

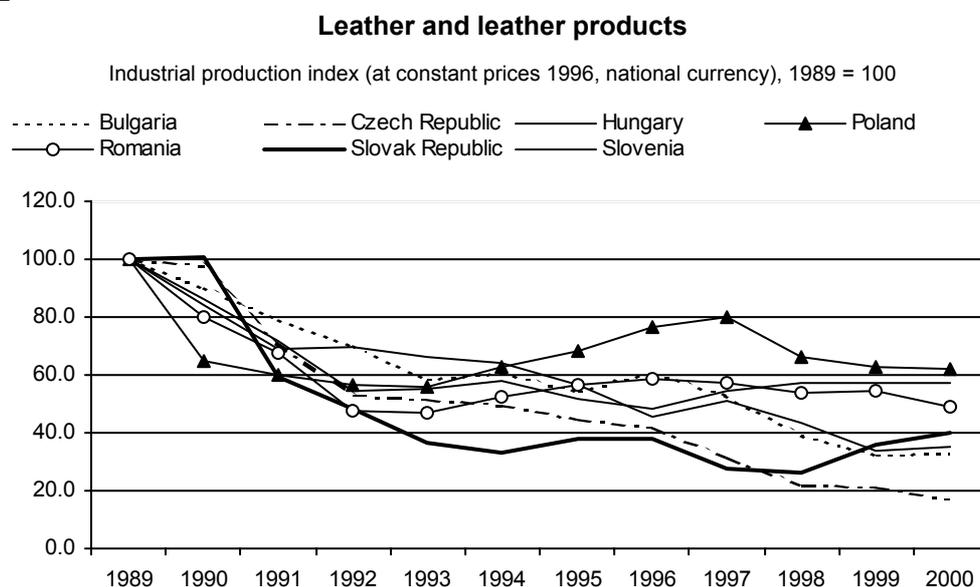
Table 4

<b>Leather and leather products</b>						
Production growth (at constant prices 1996)						
	Average annual changes in %		Relative to total manufacturing, in percentage points		Index 2000	Index 2000
	1990-92	1993-2000	1990-92	1993-2000	1989=100	1993=100
Bulgaria	-11.1	-13.9 <sup>1)</sup>	7.9	-6.4 <sup>1)</sup>	33.3	56.9
Czech Republic	-19.2	-13.1	-5.0	-15.6	17.1	33.1
Hungary	-18.4	0.6	-3.2	-11.3	57.0	103.3
Poland	-17.2	1.1	-6.1	-8.5	61.9	110.6
Romania	-21.8	0.4	2.2	2.1	49.3	105.0
Slovak Republic	-21.6	-2.4	-5.7	-5.4	39.7	109.6
Slovenia	-11.4	-8.1	-0.1	-9.7	35.4	53.3

Note: 1) 1997-2000

Source: wiiw Industrial Database.

Figure 2



Source: wiiw Industrial Database.

<sup>26</sup> On the other hand, leather products such as handbags or leather gloves are mostly luxury goods with an income elasticity greater than one.

## Minor role as an employer – large employment cuts

In employment, the leather and leather products sector plays a relatively more important role than in production, due to its labour-intensive nature. Nevertheless shares in total manufacturing employment are small, ranging between 2% in the Czech Republic and Poland and 5% in Romania in 2000. During transition, employment was dramatically reduced in all countries – the number of employees dropped to about half or even less than half of the 1989 level – and the share of leather and leather products in total manufacturing employment fell, except in Bulgaria and Romania. Today, approximately 7000 persons are employed in the leather and leather products sector in Slovenia, about 20,000 in the smaller CEECs, 46,000 in Poland and 75,000 in Romania.

Table 5

<b>Leather and leather products</b>					
Employment shares, in %					
Manufacturing = 100					
	<b>1989</b>	<b>1992</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
EU-North <sup>1)</sup>	.	1.0	0.7	.	.
EU-South <sup>2)</sup>	.	3.9	4.1	.	.
Austria	1.8	1.5	1.2	1.1	.
Bulgaria	2.3	2.6	3.5	3.5	3.5
Czech Republic	2.9	2.8	2.0	1.9	1.8
Hungary	3.5	3.9	3.5	3.3	3.0
Poland	4.0	3.2	2.3	2.0	1.9
Romania	3.7 <sup>3)</sup>	3.7	4.4	4.6	4.8
Slovak Republic	.	4.7	3.4	3.4	3.6
Slovenia	4.1	4.3	3.6	3.3	3.1

Notes: 1) Including UK, France, Germany and Belgium.- 2) Including Greece, Portugal and Spain.- 3) 1990.

Source: wiiw Industrial Database

## Productivity and labour costs

Major input costs for the leather and leather products sector derive from material and labour because of the labour-intensive character of the sector.<sup>27</sup> In the Hungarian leather and leather products sector, for example, materials and services accounted for 52% of total production costs in 1996, wages and salaries for 28.5%, as compared to 72% and 12%

<sup>27</sup> Apart from wage costs, other factors play a role for competitiveness as well: the proximity of major export markets, differences in labour productivity, differences in the type, quality and fashion content of products, marketing efforts and services offered, flexibility etc. See ILO (2000).

respectively in total manufacturing.<sup>28</sup> The high mobility of the leather and leather products industry, i.e. the easy relocation of production to the most favourable location, puts pressure on wages to stay low.

As is typical for all CEECs and their manufacturing industry, wages, productivity and unit labour costs in the leather and leather products sector have been generally lower than in Western countries (except Slovenia, see below). In 2000, nominal wage rates (gross wages at current exchange rates per employee) in the leather and leather products sector hovered between 10% and 20% of the Austrian level in most countries, but were even lower in Bulgaria and Romania (5%), and somewhat higher in Slovenia (38%). The estimated productivity level ranged between 15% of the Austrian level in Bulgaria and 35% in Poland. Unit labour costs differ widely, again being lowest in Romania and Bulgaria (30% of the Austrian level) and highest in Slovenia. In 2000, Slovenian estimated unit labour costs were even above Austrian ones, reaching almost 130%. In the other CEECs, unit labour costs lay between 50% and 85% of the Austrian level.<sup>29</sup>

During transition, wages in the leather and leather products sector grew throughout the region: in the Czech Republic, wages rose fastest and increased by about 11% annually between 1993 and 2000. Productivity in the leather and leather products sector improved in most countries, except Bulgaria, the Czech Republic and Slovenia.<sup>30</sup> However, as the productivity increase was smaller than the wage increase, unit labour costs (ULCs) rose in all countries, except Hungary.<sup>31</sup>

Looking at the wage level in the leather and leather products sector, wages lay significantly below manufacturing average and reached between 61% and 78% of the manufacturing average in 2000. Hence workers in the leather and leather products sector were among the worst paid of all workers in total manufacturing. This is typical for jobs requiring little qualification and skills. The relative situation deteriorated significantly during transition as wage differentials increased strongly.

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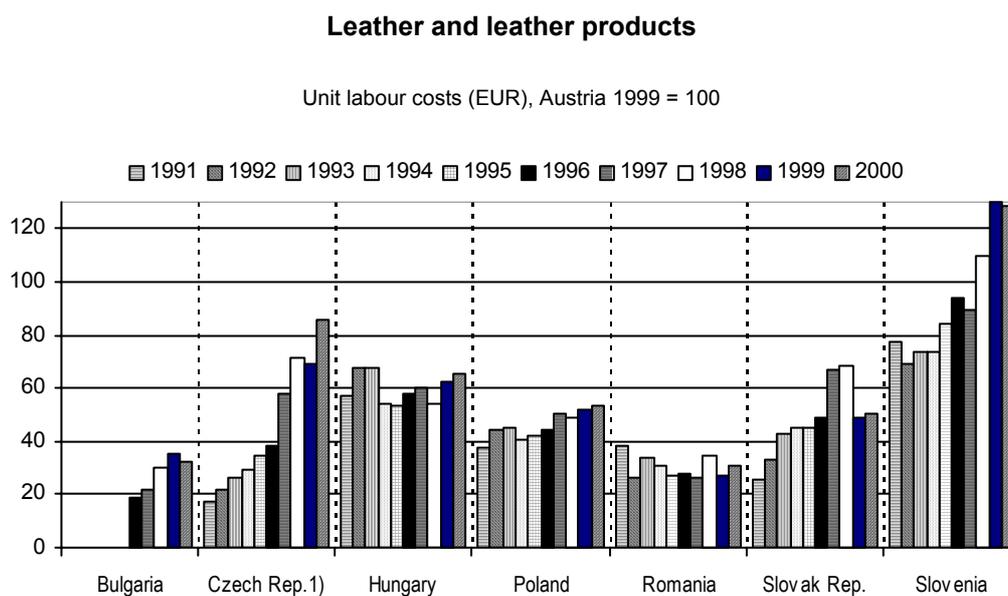
<sup>28</sup> In the leather and leather products sector, summing up to 100% includes 11% social security contributions, 2.5% depreciation and 6% other costs. In total manufacturing, 4.5% social security contributions, 5% depreciation and 7% other costs. See Statistical Yearbook of Hungary 1997 (1998), p. 310.

<sup>29</sup> These figures are however strongly affected by the choice of conversion rates at which national output is calculated. In the text, these rates used were the purchasing power parity (PPP) rates for GDP.

<sup>30</sup> Labour productivity for the period  $t$  is defined as:  $productivity_t = output_t / employment_t$ . Changes of productivity therefore can be explained by the change of output on the one hand and the change of employment on the other:  
 $d productivity dt = d output dt - d employment dt$ .

<sup>31</sup> Unit labour costs (ULCs) for the period  $t$  are defined as:  $ULC_t = wages_t / productivity_t = wages_t * employment_t / output_t$ . Changes of ULCs thus depend on the respective changes of wages, employment and output:  
 $d ULCs dt = d wages dt + d employment dt - output dt$ .

Figure 3



Note: 1) Coverage of Czech industrial statistics had a break in 1996/97 due to the size of enterprises included.

Source: wiiw Industrial Database.

Table 6

**Leather and leather products**

Average annual growth rates, 1993-2000  
in %

	Output	Employment	Productivity (EUR basis)	Productivity relative to total manuf.	Wage rates (EUR basis)	Unit Labour Costs (EUR basis)
Bulgaria <sup>1)</sup>	-13.9	-9.3	-5.1	-5.7	8.3	14.1
Czech Republic	-13.1	-9.1	-4.4	-10.7	10.7	15.8
Hungary	0.6	-5.8	6.8	-8.4	5.6	-1.0
Poland	1.1	-7.9	9.8	-1.4	9.8	0.0
Romania	0.4	-4.1	4.7	-1.1	6.5	1.7
Slovak Republic	-2.4	-6.5	4.3	-2.5	5.9	1.5
Slovenia	-8.1	-7.3	-0.9	-6.4	6.3	7.3

Note: 1) 1997-2000.

Source: wiiw Industrial Database.

## Trade with the EU-15

Trade with the EU is investigated in detail as the EU is the dominant trading partner of all CEECs today: after the collapse of the CMEA market, CEECs' trade became heavily oriented towards EU markets.<sup>32</sup> In the leather and leather products sector, trade with the EU is even relatively more important than in total manufacturing, particularly in exports and particularly in Bulgaria and Romania due to outward processing trade. By the end of the 1990s, the EU-15 accounted for 65% to 96% of CEECs' total leather and leather products exports. The share of exports going to the EU-15 was largest in Romania (96%), Bulgaria, Hungary and Slovakia (89%, 88% and 84% respectively) and still relatively pronounced in Poland and the Czech Republic (slightly above 70%) but somewhat smaller in Slovenia (65%). Especially in the first four countries, export orientation towards the EU-15 markets was distinctly above that of total manufacturing (compare footnote 13). On the import side, the share of imports coming from the EU-15 ranged between 60% and 90% and was hence also larger than for total manufacturing imports (except in the Czech Republic).

Looking at the share of leather and leather products exports in total manufacturing exports to the EU-15, the importance of the sector differs significantly between two country groups today. In the more advanced transition countries (Czech Republic, Hungary, Poland, Slovenia) leather and leather products exports only account for a small share in total manufacturing exports to the EU: in 2000, this share ranged between 1% of total manufacturing exports to the EU in the Czech Republic and 2% in Hungary. However, in the less advanced countries Bulgaria and Romania, but in Slovakia as well, the leather and leather products sector is relatively more important, accounting for 4% in Slovakia, 5% in Bulgaria and even 12% in Romania in 2000, thus belonging to the largest exporters in the latter country. Export shares are generally larger than production shares throughout the region, reflecting the above-average export orientation of the leather and leather products sector.

Between 1995 and 2000, leather and leather products exports to the EU grew most dynamically in Romania, Slovakia and Bulgaria; in 2000 they reached 280%, 230% and 170% respectively of the 1995 level, thanks to a major competitive gain in 'footwear' exports.<sup>33</sup> Export shares rose only in Romania, while those in Bulgaria and Slovakia showed the same size in 2000 compared to 1995. In the other CEECs export shares were falling.

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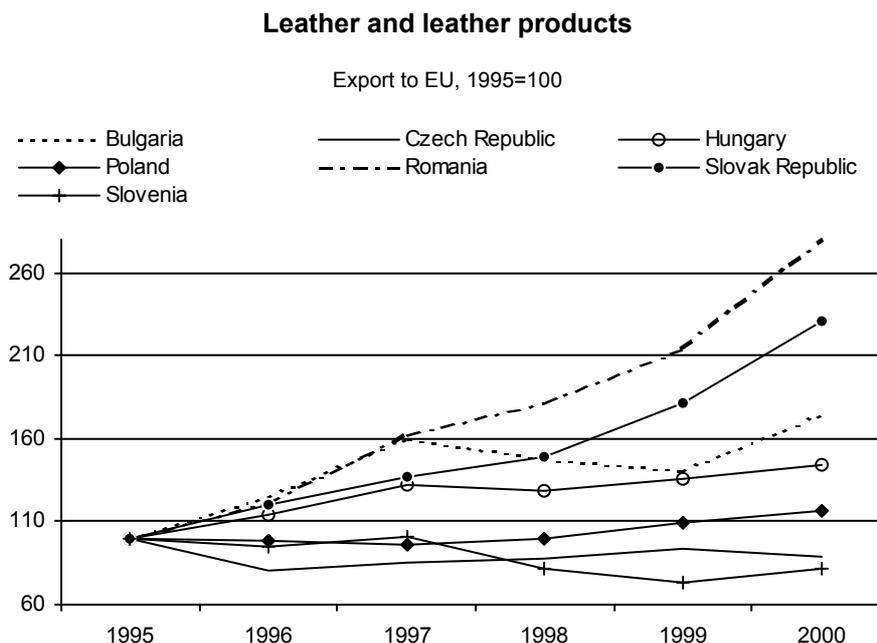
<sup>32</sup> By 1999, more than 70% of Hungarian total exports went to the EU-15, for Poland and the Czech Republics the levels were about 70%, for Romania and Slovenia somewhat below 70%, for the Slovak Republic 60%, and for Bulgaria around 50% (40% in 1997). On the import side, Slovenian and Polish imports from the EU-15 accounted for roughly 70%, in the Czech Republic, Hungary and Romania EU-15 imports had a share of about 60%, in Slovakia and Bulgaria of 50% (Bulgaria 40% in 1997).

<sup>33</sup> Measured by 'shift and share analysis'. See Havlik, Landesmann and Stehrer (2001). Competitive gain is here defined as a gain in the market share weighted by the value of exports of a particular industry in the base year.

Leather and leather products imports from the EU-15 account for only a small share of total CEECs' imports from the EU: in 2000, shares ranged between 1% in the Czech Republic and 2% in Slovakia and Slovenia. Bulgaria and Romania were again exceptions: here the shares were somewhat larger, accounting for 4% and 7.7% of EU imports respectively due to the importance of outward processing in these countries. Between 1995 and 2000, imports rose in all countries but in most cases less than in total manufacturing, so that import shares were falling. Only in Bulgaria and Romania did they increase slightly. Within the region, imports of leather and leather products rose fastest in Romania, reaching 280% of the 1995 level in 2000, followed by Poland (234%).

Keeping in mind the influence of outward processing in the leather and leather products sector, the sectoral trade balance data show again a divided picture of the region: In Romania, Slovakia and Bulgaria higher exports than imports led to a sectoral trade surplus during the whole period 1995 to 2000; in 2000, the trade surplus reached EUR 277 million in Romania, EUR 147 million in Slovakia and EUR 35 million in Bulgaria. In the other CEECs, the trade balance was negative in 2000 (as it was for most of the whole period), and largest for Poland with EUR -183 million.

Figure 4



Source: Eurostat, wiiw calculations.

### Increasing export specialization on footwear, diversifying import structure

At a more detailed three-digit NACE level, in 2000 the majority of leather and leather products exports from the CEECs to the EU-15 came from the sub-branch 'footwear' (including for example parts of footwear, footwear with leather uppers, ski-boots etc.),

accounting for between 57% of the sector's exports in Slovenia and 63% in Poland (smallest shares) and 95% in Romania (largest share). Exports of 'tanning and dressing of leather' played some role in Poland, Slovakia, and Slovenia (10-30%), exports of 'luggage, handbags and the like, saddlery and harness' in the Czech Republic and Slovenia (20%).

Between 1995 and 2000 the dominance of 'footwear' exports in the export structure of the leather and leather products sector generally strengthened, while the shares of 'tanning and dressing of leather' as well as of 'luggage, handbags and the like, saddlery and harness' declined (however, the latter share increased significantly in Slovenia).

On the import side, imports of 'tanning and dressing of leather' and 'footwear' each held about half of all leather and leather products imports from the EU in 2000, with some slight variations (imports of 'luggage, handbags and the like, saddlery and harness' were for example more important in the Czech Republic and Slovenia). Between 1995 and 2000, the export share of 'footwear' declined slightly while those of 'tanning and dressing' (necessary inputs) as well as of 'luggage, handbags and the like, saddlery and harness' (luxury articles) increased.

Table 7

**Detailed export and import structure with the EU-15  
of the leather and leather products sector, 2000**

	Czech		Slovak				
	Bulgaria	Republic	Hungary	Poland	Romania	Republic	Slovenia
<b>Export structure, 2000</b>							
19.1 Tanning and dressing of leather	8.4	5.2	5.7	27.1	1.9	11.2	23.8
19.2 Luggage, handbags and the like, saddlery and harness	9.5	18.2	8.8	9.5	3.4	4.3	18.8
19.3 Manufacture of footwear	82.0	76.6	85.5	63.3	94.8	84.5	57.3
<b>DC Leather and leather products in EUR mn</b>	<b>100.0</b>						
	<b>149.2</b>	<b>181.0</b>	<b>370.9</b>	<b>246.2</b>	<b>911.4</b>	<b>270.3</b>	<b>99.6</b>
<b>Import structure, 2000</b>							
19.1 Tanning and dressing of leather	47.2	34.2	58.8	55.4	50.0	52.5	30.6
19.2 Luggage, handbags and the like, saddlery and harness	4.8	23.8	6.1	6.7	1.8	6.5	26.1
19.3 Manufacture of footwear	48.0	42.0	35.1	37.9	48.2	41.0	43.3
<b>DC Leather and leather products in EUR mn</b>	<b>100.0</b>						
	<b>114.1</b>	<b>228.6</b>	<b>376.4</b>	<b>428.8</b>	<b>634.3</b>	<b>123.1</b>	<b>154.4</b>

Source: Eurostat, wiiw calculations.

## Price/quality gap indicator mixed but improving over time

The price/quality gap indicator reveals differences in export prices which under certain conditions can be interpreted as differences in product quality. This indicator is measured by the CEECs' export unit values (value per kg) to the EU-15 compared to the overall EU-import unit value. For the average 1995-2000 and the year 2000 as well, the price/quality gap indicator was negative for exports from the leather and leather products sector from Romania, Bulgaria and the Czech Republic, while it was positive for exports from Poland, Slovakia, Hungary and Slovenia. On average it ranged between -30% in Bulgaria and Romania – confirming their position as low-quality/low-price producers – and +10% and +20% in Hungary and Slovenia. Between 1995 and 2000 the indicator improved and the gap became smaller (except in Slovenia).

At a more detailed level, the price/quality gap of leather and leather products exports differed across sub-branches: within the sector, it was typically lowest for 'footwear' exports, highest for 'luggage, handbags and the like, saddlery and harness', and fell in between for 'tanning and dressing of leather'. In 2000, the price/quality gap indicator was positive for 'luggage, handbags and the like, saddlery and harness' exports from all countries except Slovenia, and differed for the other exports and countries.

Table 8

		Leather and leather products							
		Price/quality gap indicator for CEEC exports to the EU <sup>1)</sup>							
		Czech			Slovak				
		Bulgaria	Republic	Hungary	Poland	Romania	Republic	Slovenia	
19.1	Tanning and dressing of leather	<b>2000</b>	-8.9	-5.4	30.5	16.9	8.3	-6.7	26.8
19.2	Luggage, handbags and the like, saddlery and harness	<b>2000</b>	10.0	21.5	56.8	57.2	31.9	85.4	-39.6
19.3	Manufacture of footwear	<b>2000</b>	-18.4	-12.4	14.9	-9.2	-28.6	6.6	25.4
<b>DC Leather and leather products</b>		<b>1995</b>	-36.9	-8.7	-4.5	-3.9	-27.9	-2.9	21.0
		<b>1996</b>	-35.7	-8.1	10.6	-7.5	-26.7	10.9	17.6
		<b>1997</b>	-35.0	-15.3	12.5	-7.6	-28.7	2.8	22.0
		<b>1998</b>	-31.0	-10.8	12.7	21.8	-24.1	4.0	25.6
		<b>1999</b>	-31.3	-10.9	18.7	1.2	-25.9	1.6	15.8
		<b>2000</b>	<b>-16.6</b>	<b>-7.0</b>	<b>18.4</b>	<b>2.2</b>	<b>-27.0</b>	<b>7.2</b>	<b>11.0</b>
		<b>average 1995-2000</b>	<b>-31.1</b>	<b>-10.1</b>	<b>11.4</b>	<b>1.0</b>	<b>-26.7</b>	<b>3.9</b>	<b>18.8</b>

Note: 1) Defined as the unit value ratio  $uvr_i^c$  of country c, which shows the percentage deviation from the average EU import unit value.

Source: Calculations by R. Stehrer, wiiw.

## Favourable position on the European market

In 1995, CEEC-7 leather and leather products exports to the EU-15 had a market share of 13.6%, which fluctuated in the following period and stood at 13.8% in 2000 (all shares without intra-EU trade). Compared to total manufacturing market shares (9% in 1995 and 11% in 2000) the leather and leather products sector shares were larger, reflecting their significant position on the EU market – although the positive deviation decreased slightly. In 2000, the largest exporter to the EU was Romania (5.6%), followed by Hungary (2.3%). The other countries held EU market shares of around 1%.

Table 9

### Leather and leather products

CEECs' exports to the EU-15 in EUR million, market shares in %

	EU-15 extra-EU imports, EUR mn		Bulgaria		Czech Republic		Hungary		Poland	
	EUR mn	%	EUR mn	%	EUR mn	%	EUR mn	%	EUR mn	%
1995	9728.2		85.7	0.88	202.4	2.08	258.0	2.65	210.2	2.16
1996	10654.8		106.9	1.00	163.9	1.54	295.8	2.78	206.5	1.94
1997	12370.7		136.5	1.10	172.4	1.39	339.9	2.75	202.4	1.64
1998	12334.0		126.2	1.02	176.8	1.43	331.2	2.69	209.2	1.70
1999	13075.2		120.1	0.92	189.7	1.45	351.7	2.69	229.4	1.75
2000	16188.8		149.2	0.92	181.0	1.12	370.9	2.29	246.2	1.52

	Romania		Slovak Republic		Slovenia		CEEC-7		Total Manufacturing CEEC-7 <sup>1)</sup>	
	EUR mn	%	EUR mn	%	EUR mn	%	EUR mn	%	EUR mn	%
1995	325.8	3.35	116.9	1.20	121.9	1.25	1321.0	13.58	38401	8.93
1996	393.9	3.70	140.6	1.32	115.0	1.08	1422.7	13.35	40903	9.05
1997	527.3	4.26	160.6	1.30	123.5	1.00	1662.5	13.44	49447	9.48
1998	590.7	4.79	173.8	1.41	100.0	0.81	1707.9	13.85	59900	10.43
1999	697.4	5.33	211.5	1.62	88.8	0.68	1888.5	14.44	67623	10.71
2000	911.4	5.63	270.3	1.67	99.6	0.62	2228.7	13.77	86379	10.83

Note: 1) CEEC-7 total manufacturing exports to the EU and their market shares.

Source: Eurostat, wiiw calculations

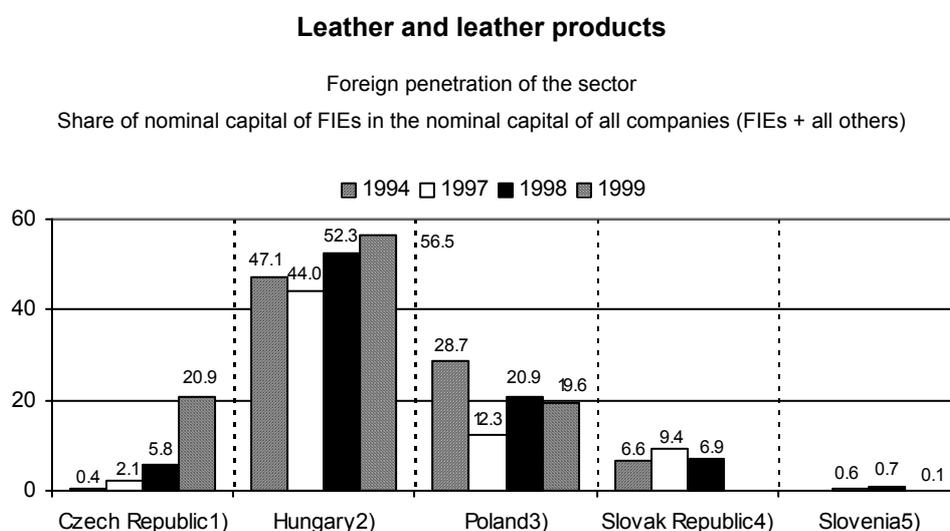
## Foreign direct investment

The leather and leather products sector has not been a prominent target of foreign investors; compared to its production size it only attracted a small share of FDI. This might be due to the low rating and reputation of the sector, unfavourable future prospects, and also due to the prevalence of small and medium-size enterprises in this sector world-wide, for whom FDI often is not considered an option. In addition, the low inflows of FDI can also be explained by the increase of other forms of production integration, including subcontracting, outsourcing and outward processing providing greater flexibility. As the

most important element, outward processing (OP) plays a major role in the leather and leather products sector<sup>34</sup>. Where foreign direct investment took place, investors were mostly driven by cost-cutting strategies.

Foreign penetration of the leather and leather products sector (as measured by the share of nominal capital of the sector's FIEs in the nominal capital of all leather companies) was below the average levels of foreign penetration for total manufacturing in all CEECs over the whole period. In 1999, the largest foreign penetration in the region was measured in Hungary (57%), followed by Czech Republic and Poland (20%). In the other countries, it was rather low and reached 7% in the Slovak Republic and only 0.1% in Slovenia.

Figure 5



Notes: 1) 1994 own capital, 1997-1999 equity capital.- 2) Nominal capital.- 3) Equity capital.- 4) Output of companies; 1995 data instead of 1997, 1996 data instead of 1998.- 5) Nominal capital: data for 1994 not stated due to confidentiality (industry with less than 3 FIEs).

Source: wiiw, FIE Database.

## Prospects

The future prospects of the leather and leather products sector in the region will be largely determined by demand developments on *external markets* because of the strong export orientation of the sector. However, the current outlook is rather unfavourable: In the past few years, the revealed comparative advantage<sup>35</sup> of the sector declined in most countries (except Slovakia) and the share of CEECs' exports on the EU market stagnated. In addition, competitiveness is mostly based on low costs/low wages rather than on product quality – illustrated in particular by price/quality indicators in footwear that are negative and

<sup>34</sup> See Hanzl (2001).

<sup>35</sup> Measured as  $RCA = \frac{\text{exports} - \text{imports}}{\text{exports} + \text{imports}}$ .

smaller than the sectoral average respectively. In the long run, however, the wage differentials to the EU will narrow and the advantage of low wages will thus fade. While Bulgaria and Romania will benefit from low wages for quite some time, quality improvement and niche production may be an option for the other CEECs to improve the sector's performance. Moreover, competition from other low-cost producers in East Asia, in particular China – which is already very strong – might increase, although the CEECs hold some locational advantage.

On the *domestic market*, growth potentials for the sector still exist because per capita shoe consumption is yet below pre-transition levels. Largely influenced by business cycles, the leather and leather products sector also depends on developments in GDP and gross industrial production, for which forecasts are quite favourable for all CEECs in 2002 and 2003 (excepting Poland). The trends in industrial production are most promising in Hungary, followed by the Czech Republic and Slovakia. The growth rates for Romania, Bulgaria and Slovenia are lower but still pronounced, while those for Poland were markedly scaled down recently. Despite these positive factors on the domestic market, it is questionable whether the CEECs' leather and leather products sector will be able to withstand the pressures from import competition. On the whole it seems that the hard times for the leather and leather products sector in the CEECs are not over but will rather continue in the future.

### **3 SECTOR PROFILE: The chemical sector in the CEECs**

World-wide, the chemical sector is characterized by high concentration and strong competition. It is a very heterogeneous sector, with basic production inputs supplied by diverse sectors (petrochemical industry, mining, even agriculture). A large part of chemical products (approximately 33%) is further processed in the sector itself and/or supplied to other manufacturing sectors, to agriculture and to the final consumer. Products range from soaps, cosmetics and pharmaceuticals to fertilizers, plastics and synthetic rubber in primary forms.<sup>36</sup>

The chemical sector plays an important role in the economies of the CEECs with a total production volume of EUR 15.5 billion and a workforce of about 328 thousand persons in the CEEC-7.

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<sup>36</sup> In the NACE rev. 1 classification system (Statistical classification of economic activities in the European Community) the chemical sector is termed 'chemicals, chemical products and man-made fibres' sector, denoting the sub-section 'DG', which is identical to division '24'. The chemical sector includes the following sub-branches: Basic chemicals (24.1); Pesticides and other agro-chemical products (24.2); Paints, varnishes and similar coatings, printing ink and mastics (24.3); Pharmaceuticals, medicinal and botanical products (24.4); Soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations (24.5); Other chemical products (24.6); Man-made fibres (24.7)

Table 10

**Chemicals, chemical products and man-made fibres**

Overview of production and employment, 2000

	Production <sup>1)</sup>			Employment	
	EUR million	% of GDP	% of manuf.	ths. persons	% of manuf.
Bulgaria	739.3	5.7	9.8	31.0	5.9
Czech Republic <sup>2)</sup>	2624.5	5.1	6.7	40.0	3.8
Hungary	2903.0	5.8	7.2	35.4	4.7
Poland <sup>2)</sup>	5669.5	3.9	6.5	111.9	4.6
Romania <sup>2)</sup>	1402.4	4.2	7.8	77.0	4.9
Slovak Republic	1064.4	5.1	6.4	20.8	4.3
Slovenia <sup>2)</sup>	1114.0	5.9	10.0	11.7	5.2
<b>CEEC-7</b>	<b>15517.0</b>	.	.	<b>327.8</b>	.

Notes: 1) At current prices. - 2) Production data 1999.

Source: wiiw Industrial Database.

Among the CEEC-7, Poland was the largest producer of chemical products in terms of current production in 2000 (EUR 5.7 billion), followed by Hungary and the Czech Republic (both about EUR 3 billion). In Romania, Slovenia and Slovakia the chemical sector reached a production volume of about EUR 1 billion, in Bulgaria production was relatively small.

Regarding employment, Poland again took the lead in the region, followed by Romania. In Poland about 112,000 persons were employed in the chemical sector in the year 2000, in Romania 77,000. In the Czech Republic, Hungary and Bulgaria between 40,000 and 31,000 employees worked in the chemical sector, while the number was considerably smaller in Slovakia (21,000) and Slovenia (12,000).

Comparing the levels of production with the levels of employment in the different CEECs reveals significant differences in output per employee (= labour productivity) in the sector. While in Hungary the chemical sector produced an output of EUR 3 billion with 35,000 persons, in Romania the sector produced only EUR 1.4 billion with 77,000 persons. Labour productivity is high in Hungary and Slovenia, but quite low in Romania and Bulgaria.

**Declining importance of the sector in manufacturing production**

The chemical sector is of relatively great importance in CEECs' total manufacturing; it reached about 10% of total manufacturing production in Slovenia and Bulgaria in 2000 (at current prices). In the other countries, shares were slightly smaller, with only minor variations across countries, and ranged between 6.4% in Slovakia and 7.8% in Romania.

Table 11

**Production shares of selected industries (DF, DG and DH)  
in total manufacturing (at current prices), 2000, in %**

	Czech			Slovak			
	Bulgaria	Republic <sup>1)</sup>	Hungary	Poland <sup>1)</sup>	Romania <sup>1)</sup>	Republic	Slovenia <sup>1)</sup>
DF Coke, refined petroleum products & nuclear fuel	18.7	2.8	6.3	4.4	10.7	10.1	0.4
<b>DG Chemicals, chemical products &amp; man-made fibres</b>	<b>9.8</b>	<b>6.7</b>	<b>7.2</b>	<b>6.5</b>	<b>7.8</b>	<b>6.4</b>	<b>10.0</b>
DH Rubber and plastic products	1.9	4.3	3.3	4.6	2.4	3.4	4.5

*Notes:* Compare Table 1 in the first section for all sectors of manufacturing. - 1) 1999.

*Source:* wiiw Industrial Database.

The chemical sector was one of the priority sectors with regard to industrial development during the former command economy with its pronounced bias towards heavy industry and the production of raw materials and intermediate products. It was dominated by heavy chemicals, with the petrochemical industry playing a major role. As natural resources were lacking in most CEECs, the sector was based on cheap oil and gas imports from the Soviet Union resulting in high energy intensity. Under the Council for Mutual Economic Assistance (CMEA) division of labour, the chemical sector was promoted in Hungary, which focused on the pharmaceutical industry (16% of production, at constant prices 1996, in 1989!). With the collapse of communism, the chemical sector lost its priority position and output shares declined. Import competition and the loss of the CMEA market posed a severe threat to the sector. However, it maintained some importance and now lies in the middle-field of manufacturing in terms of production shares. In Hungary, the former specialization on the sector vanished as other segments of manufacturing became more important (transport equipment, electrical and optical equipment). Today, the chemical sector has a prominent position only in Slovenia and Bulgaria.

### **Weak growth pattern of the chemical sector**

During the first period of transformation, from 1989 to about 1992, all CEECs experienced a severe transformational recession, and the production of the chemical sector declined as well. In comparison to total manufacturing, however, the sector was much more affected and hence may be called a relative 'loser' of this period (except in Slovakia).

This development may be explained by several factors on the demand side: First, the chemical sector produces consumer goods (e.g. cosmetics) highly exposed to western import competition (e.g. soaps, detergents, pharmaceuticals). Second, the chemical sector produces a variety of intermediate products, thus the downturn in other segments of

manufacturing spreads to the chemical sector as well. Third, the chemical sector supplies products to the agricultural sector, such as fertilizers and pesticides, the usage of which fell over-proportionally, in part due to the general decline of this sector and also because of an overall cut of subsidies. In Hungary, for example, farmers utilized 260 kg of fertilizers per one hectare of land in 1986, only 40 kg in 1993 and about 70 kg in 1999. The decline in fertilizer usage hit bottom in most countries in 1993, in Bulgaria and Romania however the fall still continues. Fourth, with the collapse of the CMEA market, important export markets for chemical products vanished. On the supply side the transition was characterized by the closing-down of plants, the suspension of product lines (e.g. fertilizer production), the creation of new firms, and the restructuring and reorientation, respectively, of old firms. Higher energy prices were essential in undermining the old patterns of production.

During the second period of transformation, from about 1993 onwards, growth returned to the region and the chemical sector participated in the general upswing. Output of the sector started to grow in most countries, except in Hungary and Romania. When compared to total manufacturing, growth was smaller and the sector remained a 'loser' of this period as well, except in Slovenia. This may have been caused by the slow reorientation of trade towards Western markets, by Eastern markets being hit by the Russian crisis in 1998 and by growing import competition (in Hungary, for instance, demand for pharmaceuticals grew significantly but market shares of domestic companies shrank) – as well as by higher input prices and the lack of capital. Restructuring of former large companies in the chemical sector seems to take longer than expected and to be rather difficult, partly because of environmental requirements with respect to future accession to the EU. In no small part the difficulties felt by the sector have been related to the restrictions (anti-dumping) imposed by the EU on imports of urea and fertilizers from the transition countries.

Table 12

### Chemicals, chemical products and man-made fibres

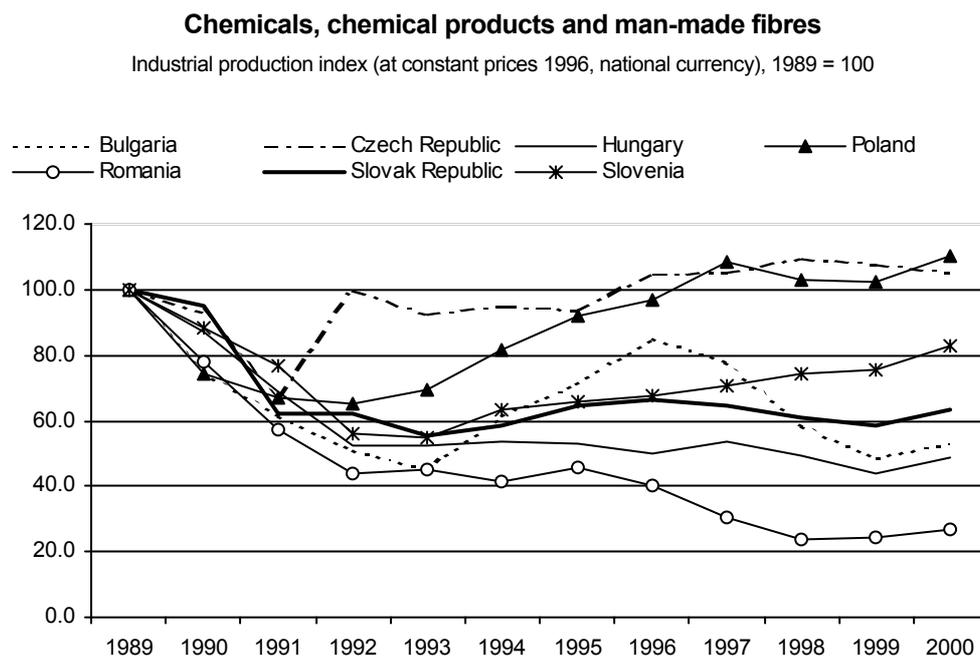
Production growth (at constant prices 1996)

	Average annual changes in %		Relative to total manufacturing, in percentage points		Index 2000	Index 2000
	1990-92	1993-2000	1990-92	1993-2000	1989=100	1993=100
Bulgaria	-20.0	-11.2 <sup>1)</sup>	-1.0	-3.7 <sup>1)</sup>	53.1	117.8
Czech Republic	.	0.7	.	-1.7	105.5 <sup>2)</sup>	114.1
Hungary	-19.5	-0.8	-4.3	-12.7	48.9	93.1
Poland	-13.2	6.8	-2.0	-2.8	110.4	159.0
Romania	-24.1	-6.0	0.0	-4.3	26.7	59.0
Slovak Republic	-14.7	0.2	1.3	-2.8	63.3	114.7
Slovenia	-17.6	5.1	-6.3	3.5	83.1	151.1

Notes: 1) 1997-2000. - 2) Data have to be interpreted with caution.

Source: wiiw Industrial Database.

Figure 6



Source: wiiw Industrial Database.

### Minor role in employment

In employment, the chemical sector plays a smaller role than in production because of its capital-intensive nature. In 2000, employment shares in manufacturing only ranged

Table 13

### Chemicals, chemical products and man-made fibres

Employment shares, in %  
Manufacturing = 100

	1989	1992	1998	1999	2000
EU-North <sup>1)</sup>	.	7.9	8.1	.	.
EU-South <sup>2)</sup>	.	5.3	4.7	.	.
Austria	6.3	6.3	4.5	4.4	.
Bulgaria	4.5	5.5	6.6	6.4	5.9
Czech Republic	.	4.8	3.9	3.9	3.8
Hungary	5.4	6.1	5.8	5.0	4.7
Poland	5.3	5.0	4.7	4.7	4.6
Romania	5.3 <sup>3)</sup>	5.5	4.9	5.0	4.9
Slovak Republic	.	6.3	4.9	4.5	4.3
Slovenia	4.4	4.6	5.4	5.3	5.2

Notes: 1) Including UK, France, Germany and Belgium. – 2) Including Greece, Portugal and Spain. – 3) 1990.

Source: wiiw Industrial Database, Eurostat.

between 4% in the Czech Republic and 6% in Bulgaria. In total numbers, about 112,000 persons were employed in the chemical sector in Poland, and 77,000 in Romania. In the Czech Republic, Hungary and Bulgaria between 40,000 and 31,000 employees worked in the chemical sector, while the number was even smaller in Slovakia (21,000) and Slovenia (12,000). During transition, employment has declined continuously over the whole period in all CEECs. Hence employment figures in 2000 were generally below the 1989 level in all CEECs. As the decrease was more pronounced than in overall manufacturing, employment shares were smaller in 2000 than in 1989, with the exception of Bulgaria and Slovenia. However, in the last few years shares declined in all countries, pointing to enforced restructuring.

### **Productivity and labour costs**

As is typical for all CEECs and their manufacturing industry, wages, productivity and unit labour costs in the chemical sector have been generally lower than in Western countries, for which we use Austria as a reference point. In 2000, nominal wage rates (gross wages at exchange rates per employee) hovered between 10% and 20% of the Austrian level in most countries; they were even lower in Bulgaria and Romania (at 5%), but significantly higher in Slovenia (at almost 40%). The estimated productivity level of the chemical sector was particularly high in the Czech Republic and Slovenia (70%), followed by Slovakia, Poland and Hungary (about 50% of the Austrian level). In Bulgaria and Romania productivity was considerably lower with only 30% of the Austrian level. Unit labour costs reached about 20% of the Austrian level in most countries in 2000, only in Hungary (30%), Poland (40%) and especially Slovenia (60%) were they higher.<sup>37</sup>

During the transition, wages and productivity in the chemical sector grew throughout the region. Between 1993 and 2000, the wage rate increased by more than 10% annually in most countries, the productivity increase was relatively smaller. However, when compared to total manufacturing, the productivity increase in the chemical sector was less pronounced, making the sector a relative productivity loser, except in the Slovak Republic and Slovenia. As the wage increase was higher than the productivity increase, unit labour costs rose in all countries and cost competitiveness of the sector decreased. Both the relatively weak productivity performance and declining cost advantages point to serious problems in the restructuring of the chemical sector in the CEECs.

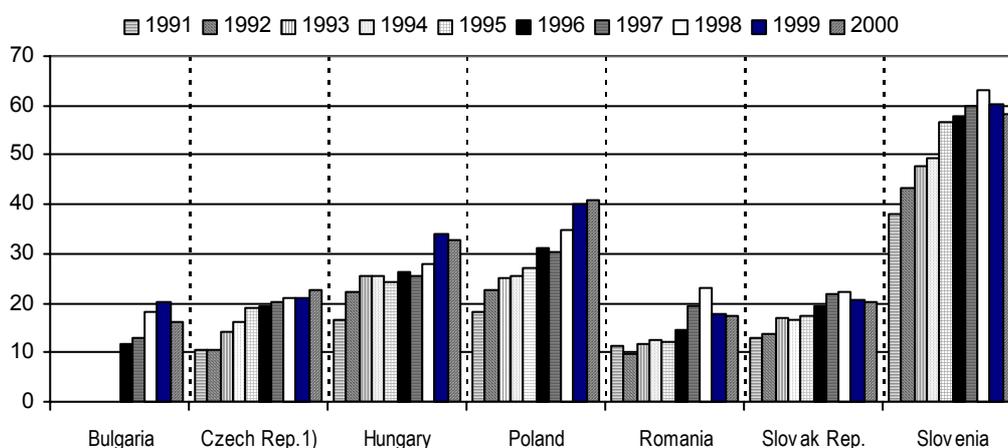
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<sup>37</sup> These figures are however strongly affected by the choice of conversion rates at which national output is calculated. In the text, these rates are defined as PPPs for GDP.

Figure 7

### Chemicals, chemical products and man-made fibres

Unit labour costs (EUR), Austria 1999 = 100



Note: 1) Coverage of Czech industrial statistics had a break in 1996/97 due to the size of enterprises included.

Source: wiiw Industrial Database.

Looking at the wage level in the chemical sector, wages lay significantly above the total manufacturing average in 2000. In Hungary workers received remarkably more than the manufacturing average (160%), in the Czech and Slovak Republic the deviation was smallest, but still reaching 120%. During transition this wage differential increased in most countries.

Table 14

### Chemicals, chemical products and man-made fibres

Average annual growth rates, 1993-2000, in %

	Output	Employment	Productivity (EUR basis)	Productivity relative to total manuf.	Wage rates (EUR basis)	Unit Labour Costs (EUR basis)
Bulgaria <sup>1)</sup>	-11.2	-9.2	-2.2	-2.8	6.3	8.7
Czech Republic	0.7	-4.6	5.5	-0.8	15.5	9.4
Hungary	-0.8	-5.2	4.6	-10.6	9.4	4.6
Poland	6.8	-2.7	9.8	-1.5	15.3	5.0
Romania	-6.0	-8.5	2.7	-3.1	10.3	7.4
Slovak Republic	0.2	-6.5	7.1	0.3	11.6	4.2
Slovenia	5.1	-1.5	6.6	1.1	10.5	3.6

Note: 1) 1997-2000.

Source: wiiw Industrial Database.

## Trade with the EU-15

Trade with the EU is investigated in detail as the EU is the dominant trading partner of all CEECs today: after the collapse of the CMEA market, CEECs' trade became heavily oriented towards EU markets. In the chemical sector, however, the CEECs' trade orientation differs significantly between exports and imports: in terms of imports, the EU-15 have become the major trading partner also in the chemical sector. By the end of the 1990s, the EU-15 accounted for 60% to 70% of CEECs' chemical imports in the individual countries, hence being slightly more important than for total imports (compare footnote 13). However, in terms of exports, trade reorientation was less pronounced and exports to the EU-15 reached only between 30% and 50% of total chemical exports in 1999. Thus the chemical sector is significantly less oriented towards the EU than are total exports (compare again footnote 13). The share of exports going to the EU-15 in 1999 was largest in Poland (52%), the Czech Republic (46%) and Hungary (44%) and smallest in Slovenia (29%). The low share of exports destined for the EU can be attributed to the strong focus on the CMEA market during communism that has probably been maintained.

In total manufacturing exports to the EU-15, the chemical sector is of minor importance today: in 2000, it accounted for just 3.5% of all manufacturing exports going to the EU-15 in Romania, for around 5% in the Czech Republic, Hungary, Slovenia and Poland, and for 6% in Slovakia; in the case of Bulgaria it was slightly more important with 8%. In general, export shares were smaller than production shares.

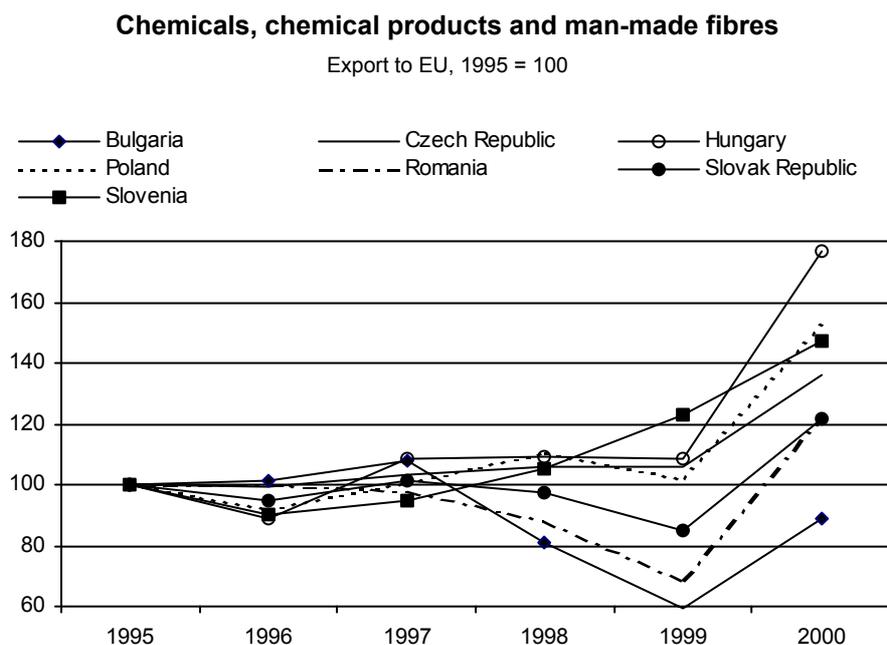
The development of exports between 1995 and 2000 differed markedly between Slovenia and the other CEECs. In Slovenia, chemical sector exports grew at the same speed as total manufacturing and export shares remained constant. In the other CEECs, export shares were smaller in 2000 compared to 1995, either because growth was slower than in total manufacturing or because chemical sector exports fell in absolute terms (Bulgaria only). These developments can be explained by the fact that in Slovenia, exports of 'basic chemicals' and 'pharmaceuticals' belonged to the 30 biggest winners in exports in terms of their competitive gain,<sup>38</sup> while in most other countries exports of 'basic chemicals' were large losers (but not in the case of Hungary and Poland).<sup>39</sup>

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<sup>38</sup> Measured by 'shift and share analysis'. See Havlik, Landesmann and Stehrer (2001).

<sup>39</sup> Indeed in Hungary 'basic chemicals' was a large winning branch, while in Poland exports of 'soap, cleaning, polishing, perfumes & toilet preparations' and 'man-made fibres' experienced a competitive gain. Between 1995 and 1999, developments were more straightforward: In Slovenia, exports of 'man-made fibres' and 'pharmaceuticals' belonged to the 30 biggest winners in exports in terms of their competitive gain, while in all other countries exports of 'basic chemicals' were the largest losers; in addition 'pharmaceuticals' were another loser in Bulgaria, Romania and Slovakia.

Figure 8



Source: Eurostat, wiiw calculations.

In total manufacturing imports from the EU-15, the chemical sector plays a major role. In 2000, import shares ranged between 9% in Romania and Hungary and 14% in Poland and Bulgaria. This is partly due to increased demand for pharmaceutical imports as foreign companies offer a wider range of products, use better marketing and have well-known brand names. Between 1995 and 2000, imports grew in all countries, but somewhat less than in total manufacturing, hence import shares declined slightly except in Bulgaria and Poland.

Imports rising faster than exports in absolute terms led to an increasing sectoral trade deficit with the EU-15 in all CEECs. (However, Bulgaria experienced a sectoral surplus between 1995 and 1997; in Hungary and Slovakia the sectoral trade deficit improved slightly in 2000.) In Bulgaria, Slovakia, Romania and Slovenia the sectoral trade deficit was at a moderate level in 2000, whereas it was slightly higher in Hungary (EUR 800 million), and had already surpassed EUR 1 billion in the Czech Republic. In Poland, rapidly growing imports brought the trade deficit in the chemical sector to the highest level of all CEECs, EUR 3 billion.

***Export structure concentrated on basic chemicals, imports diversified***

At the more detailed three-digit NACE level, in 2000 exports of the CEECs to the EU-15 were heavily concentrated on 'basic chemicals' (between 65% and 84% of the sector's exports). The concentration was most pronounced in Bulgaria and Romania (84%),

Table 15

## Detailed export structure of the chemical sector, trade with the EU-15, 2000, in %

	Bulgaria	Czech Republic	Hungary	Poland	Romania	Slovak Republic	Slovenia
24.1 Basic chemicals	84.1	74.8	81.3	77.0	83.5	67.6	64.4
24.2 Pesticides and other agro-chemical products	0.1	0.9	0.6	0.4	1.2	0.4	1.4
24.3 Paints, varnishes and similar coatings	0.1	1.8	0.2	0.5	0.3	0.2	1.6
24.4 Pharmaceuticals	8.6	7.3	9.1	2.0	5.0	4.1	9.8
24.5 Soap, cleaning, polishing, perfumes & toilet preparations	0.8	5.0	1.6	8.1	0.5	1.1	3.2
24.6 Other chemical products	3.9	4.6	5.3	2.7	1.3	6.3	4.5
24.7 Man-made fibres	2.5	5.7	1.8	9.3	8.2	20.4	15.0
<b>DG Chemicals, chemical products and man-made fibres</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>in EUR mn</b>	<b>231.5</b>	<b>949.8</b>	<b>990.4</b>	<b>1167.4</b>	<b>256.8</b>	<b>409.6</b>	<b>302.2</b>

Source: Eurostat, wiiw calculations.

Table 16

## Detailed import structure of the chemical sector, trade with the EU-15, 2000, in %

	Bulgaria	Czech Republic	Hungary	Poland	Romania	Slovak Republic	Slovenia
24.1 Basic chemicals	19.5	29.1	30.1	31.0	22.5	28.7	33.6
24.2 Pesticides and other agro-chemical products	4.6	3.1	4.6	3.5	3.4	2.8	2.2
24.3 Paints, varnishes and similar coatings	6.5	11.8	7.6	11.2	11.5	12.2	9.8
24.4 Pharmaceuticals	25.7	24.8	24.6	25.3	29.5	30.5	23.1
24.5 Soap, cleaning, polishing, perfumes & toilet preparations	13.8	11.0	10.5	10.1	10.8	5.1	12.7
24.6 Other chemical products	29.3	18.0	21.3	17.4	20.9	20.1	15.7
24.7 Man-made fibres	0.6	2.3	1.3	1.6	1.5	0.7	2.8
<b>DG Chemicals, chemical products and man-made fibres</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>in EUR mn</b>	<b>413.8</b>	<b>2121.2</b>	<b>1800.1</b>	<b>4180.5</b>	<b>714.0</b>	<b>598.3</b>	<b>763.2</b>

Source: Eurostat, wiiw calculations.

Table 17

### Chemicals, chemical products and man-made fibres

Price/quality gap indicator for CEECs' exports to the EU<sup>1)</sup>

		Bulgaria	Czech Republic	Hungary	Poland	Romania	Slovak Republic	Slovenia
24.1 Basic chemicals	2000	-0.8	-9.7	-1.8	-8.4	-3.6	-10.7	-18.5
24.2 Pesticides and other agro-chemical products	2000	-70.1	-67.1	-5.3	-25.9	-36.7	-49.8	20.1
24.3 Paints, varnishes and similar coatings	2000	-60.0	-43.7	-47.9	-26.5	179.6	36.4	-40.9
24.4 Pharmaceuticals	2000	-70.2	-33.7	-14.9	-42.0	-24.5	-3.8	47.0
24.5 Soap, cleaning, polishing, perfumes & toilet preparations	2000	47.5	-41.9	-8.9	-11.1	74.4	-12.9	78.8
24.6 Other chemical products	2000	36.0	-48.6	0.3	-32.1	-28.3	-4.3	-34.9
24.7 Man-made fibres	2000	-29.0	-23.0	4.2	-16.4	-12.2	-15.7	-8.8
<b>DG Chemicals, chemical products and man-made fibres</b>	<b>1995</b>	<b>-14.9</b>	<b>-7.2</b>	<b>-8.6</b>	<b>-11.0</b>	<b>-10.5</b>	<b>-14.9</b>	<b>-16.0</b>
	<b>1996</b>	<b>-12.4</b>	<b>-4.4</b>	<b>-10.2</b>	<b>-14.1</b>	<b>-14.7</b>	<b>-19.3</b>	<b>-17.5</b>
	<b>1997</b>	<b>-11.6</b>	<b>-6.5</b>	<b>-11.8</b>	<b>-13.0</b>	<b>-13.5</b>	<b>-22.4</b>	<b>-17.9</b>
	<b>1998</b>	<b>-13.3</b>	<b>-9.7</b>	<b>-16.0</b>	<b>-16.6</b>	<b>-11.3</b>	<b>-19.7</b>	<b>-14.5</b>
	<b>1999</b>	<b>-13.1</b>	<b>-14.1</b>	<b>-7.7</b>	<b>-17.1</b>	<b>-21.0</b>	<b>-22.7</b>	<b>-14.0</b>
	<b>2000</b>	<b>-9.0</b>	<b>-14.5</b>	<b>-6.0</b>	<b>-11.9</b>	<b>-5.4</b>	<b>-12.3</b>	<b>-11.0</b>
	<b>average 1995-2000</b>	<b>-12.4</b>	<b>-9.4</b>	<b>-10.1</b>	<b>-14.0</b>	<b>-12.7</b>	<b>-18.6</b>	<b>-15.2</b>

Note: 1) Defined as the unit value ratio  $uvr_t^c$  of country c, which shows the percentage deviation from the average EU import unit value.

Source: Calculations by R. Stehrer, wiiw.

followed by Hungary, Poland and the Czech Republic (81% to 75%), while it was smaller in Slovakia and Slovenia (67% and 65%). Apart from this sub-branch, exports of 'man-made fibres' played an important role in the latter two countries (20% and 15% respectively).

Between 1995 and 2000 the dominance of 'basic chemicals' in the export structure weakened (until 1999 exports from this sub-branch dropped, but sharply rose thereafter<sup>40</sup>). Export shares of 'soap, cleaning, polishing, perfumes & toilet articles' gained slightly in size in most CEECs (on the CEEC-7 average about 2.5 percentage points), while in absolute terms exports of 'soap, cleaning, polishing, perfumes & toilet articles' as well as 'paints, varnishes and similar coatings' showed the highest growth rates in most CEECs.

In contrast to the export structure, the import structure of the chemical sector was very diversified in 2000. Major import shares were those of 'basic chemicals', 'pharmaceuticals' and 'other chemical products' (between 20% and 30% each!), followed by 'paints, varnishes and similar coatings' and 'soap, cleaning, polishing, perfumes & toilet preparations' (both about 10%).

Between 1995 and 2000, the importance of 'basic chemicals' in the import structure declined somewhat (but less than in exports); 'pharmaceuticals' and also 'other chemical products' gained in relative size.

### ***Relatively large and persistent export price gaps***

For the average 1995-2000 and the year 2000 as well, the price/quality gap indicator was negative for exports of the chemical sector from all CEECs to the EU-15 and relatively large: average values ranged between -9% in the Czech Republic and -19% in the Slovak Republic. Between 1995 and 2000 the indicator improved slightly, except in the Czech Republic and Poland.

At a more detailed level, the price/quality gap indicator was mostly negative across sub-branches, with only rare exceptions. Continuous positive indicators (between 1995 and 2000) can be found for 'other chemical products' in Bulgaria (rose oil!), 'paints, varnishes and other coatings' in Slovakia and 'pesticides and other agro-chemicals' in Slovenia.

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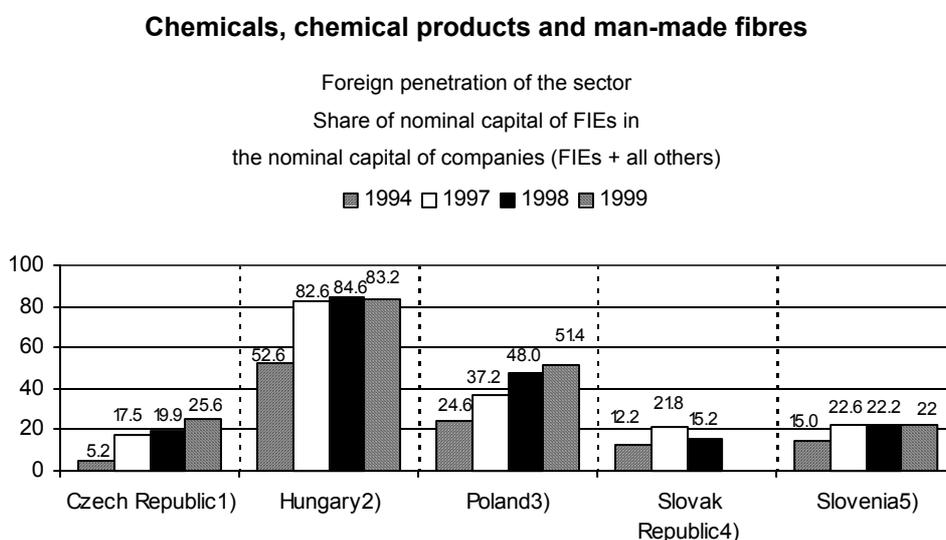
<sup>40</sup> The year 2000 was a special year insofar as world output and thus demand on the world markets rose sharply because of a rare coincidence of high economic growth in the USA and Europe. (The growth rate of world trade reached 5.3% in 1999 and 12.4% in 2000. The World Bank (2001)). The growing demand for commodities was reflected in a sharp increase of the oil price but rising prices for many other commodities as well.



sub-sector of 'soap, cleaning, polishing, perfumes & toilet preparation', Unilever, Procter & Gamble and Colgate-Palmolive Co. pioneered on the market, other companies followed). Foreign direct investment is strong in industrial gases, detergents, paints, and pharmaceuticals.

Foreign *penetration* of the chemical sector (as measured by the share of nominal capital of the sector's FIEs in the nominal capital of all chemical companies) was above the levels of foreign penetration for total manufacturing only in Hungary and Poland in the last few years. In most countries it increased slightly between 1997 and 1999. In 1999, foreign penetration reached 22% in Slovenia, 26% in the Czech Republic, 51% in Poland and 83% in Hungary.

Figure 9



Notes: 1) 1994 own capital, 1997-1999 equity capital.- 2) Nominal capital.- 3) Equity capital.- 4) Output of companies; 1995 data instead of 1997, 1996 data instead of 1998, 23+24 Coke and petroleum + chemicals.- 5) Nominal capital; 1995 data instead of 1994.

Source: wiiw, FIE Database.

## Prospects

The future prospects of the chemical sector are mixed. On the *export markets* the negative trends on the EU-15 markets in the last few years have persisted (except for the year 2000), pointing to unfavourable future developments. Quality upgrading of chemical products is essential in order to mitigate further deterioration and to reach compliance with EU regulations in anticipation of EU accession. On the important Russian and other CIS markets, growth prospects are better. These are however subject to big uncertainties regarding the overall future economic development of that region. Here too, quality

upgrading will be necessary in the long run to withstand competition from West European companies.

On the domestic market, growth potentials for the sector still exist (consumer goods, pharmaceuticals, fertilizer, paints etc.), which are however increasingly challenged by rising imports from the EU-15. Developments in GDP and gross industrial production are currently quite favourable and forecasts are positive for all CEECs in 2002 and 2003 (except Poland). The trends in industrial production are most promising in Hungary, followed by the Czech Republic and Slovakia. The growth rates for Romania, Bulgaria and Slovenia are lower but still pronounced, while those for Poland have recently been scaled down markedly. For the future, the ongoing restructuring, modernization and ecological upgrading has to be pursued – also with the help of FDI – in order to meet international demand and to reach compliance with EU regulations.

#### **4 SECTOR PROFILE: The metals sector in the CEECs**

World-wide, the metals sector is placed among the key manufacturing sectors and is highly sensitive to changes in the business cycle. Having undergone significant restructuring in Western Europe during the 1970s and 1980s, it is still considered a sensitive sector battling with world-wide overcapacities in steel. In general, the metals sector transforms primary raw materials (e.g. coal, iron ore) as well as secondary raw materials (scrap) into metals, which are an essential input for both the investment goods industry (construction, machinery, heavy transport) and the consumer goods industry (automotive, household appliances, packaging). Products range from basic metals (ferrous and non-ferrous) to fabricated metal products such as tanks, steam generators, cutlery, tools, light metal packaging, wires, etc. The metals sector is considered a capital- (basic metals), labour- (fabricated metal products) and energy-intensive sector. It is classified as a medium-low-technology industry.<sup>42</sup>

The metals sector plays an important role in the CEECs' economies with a total production volume of EUR 26.8 billion and a workforce of 857,700 persons in the CEEC-7.

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<sup>42</sup> In the NACE rev. 1 classification system (Statistical classification of economic activities in the European Community) the term 'basic metals and fabricated metal products', thereafter called metals sector, denotes the sub-section 'DJ', which consists of the following industries (27, 28):

*Manufacture of basic metals (27)* including 'basic iron and steel and ferro-alloys (ECSC)' (27.1), 'tubes' (27.2), 'other first processing of iron and steel and production of non ECSC ferro-alloys' (27.3), 'basic precious and non-ferrous metals' (27.4), and the 'casting of metals' (27.5). (ECSC = European Coal and Steel Community)

*Manufacture of fabricated metal products, except machinery and equipment (28)* including 'structural metal products' (28.1), 'tanks, reservoirs and containers of metal; central heating radiators and boilers' (28.2), 'steam generators, except central heating hot water boilers' (28.3), 'forging, pressing, stamping and roll forming of metal; powder metallurgy' (28.4), 'treatment and coating of metals; general mechanical engineering' (28.5), 'cutlery, tools and general hardware' (28.6), and 'other fabricated metal products' (28.7).

Among the CEEC-7, Poland was the largest producer of metal products in terms of current production in 2000 (EUR 9.3 billion), followed by the Czech Republic (EUR 6.2 billion). In Hungary the production volume reached EUR 3.3 billion, in Romania and Slovakia EUR 2.8 billion, and it was relatively smaller in Slovenia and Bulgaria.

Regarding employment, Poland took again the lead in the region, followed by the Czech Republic and Romania. In Poland about 274,900 persons were employed in the metals sector, in the Czech Republic 177,000 and in Romania 166,800. In Hungary and the Slovak Republic about 75,000 employees worked in the metals sector, while the number was somewhat smaller in Bulgaria (54,700) and Slovenia (34,800).

Comparing levels of production with the levels of employment in the different CEECs reveals significant differences in output per employee (= labour productivity) in the sector. While in Hungary, for instance, the metals sector produced an output of EUR 3.3 billion with 75,200 persons, in Romania the sector produced only EUR 2.8 billion with more than double the number of employees (166,800). High productivity is observed not only in Hungary but also in Slovenia, while Romania and Bulgaria show low productivity, pointing to delayed restructuring in the latter two countries.

Table 19

### Basic metals and fabricated metal products

Overview of production and employment, 2000

	Production <sup>1)</sup>			Employment	
	EUR million	% of GDP	% of manuf.	ths. persons	% of manuf.
Bulgaria	994.9	7.6	13.2	54.7	10.3
Czech Republic <sup>2)</sup>	6206.7	12.1	15.9	177.0	16.7
Hungary <sup>3)</sup>	3266.6	6.5	8.1	75.2	10.1
Poland <sup>2)</sup>	9333.4	6.4	10.7	274.9	11.2
Romania <sup>2)</sup>	2826.3	8.5	15.8	166.8	10.7
Slovak Republic	2826.3	13.6	17.0	74.3	15.3
Slovenia <sup>2)</sup>	1370.9	7.3	12.3	34.8	15.5
<b>CEEC-7</b>	<b>26825.0</b>	.	.	<b>857.3</b>	.

Notes: 1) At current prices. - 2) Production data 1999.

Source: wiiw Industrial Database.

### Major importance in production – specialization in the Slovak Republic

The metals sector is one of the major sectors in the economies of the CEECs. In 2000 it reached 17% of manufacturing production in Slovakia and was hence the largest segment of manufacturing there, and 16% in the Czech Republic and Romania. In Bulgaria,

Slovenia and Poland shares ranged between 13% and 11%, only in Hungary the metals sector was slightly smaller with 8% (at current prices).

The metals sector was considered a priority sector with regard to industrial development during the former command economy with its pronounced bias towards heavy industry and the production of raw materials and intermediate products. Also for defence reasons, investments were primarily channelled into this sector, which became heavily over-represented in turn. As natural resources were missing in most CEECs, the sector was based on cheap raw material and energy imports from the Soviet Union resulting in high energy intensity. Hence, when the CEECs opened up in 1989, the metals sector was larger than these economies could support, its technology was outdated and polluting, and its production range non-competitive. Facing the loss of the former CMEA market and increasing high-quality import competition, the sector's relative size in manufacturing was scaled down in most countries (yet growing in Slovakia and staying the same in Slovenia), but nevertheless remained of great importance. Today, the metals sector has a strong position in the Slovak Republic, Romania, Bulgaria and the Czech Republic – although declining in the latter one. But while the restructuring process has proceeded in Slovakia, privatization and restructuring were largely delayed in Romania and Bulgaria, making further changes necessary.

Table 20

**Production shares of selected industries (DI, DJ and DK)  
in total manufacturing (at current prices), 2000, in %**

	Czech			Slovak			
	Bulgaria	Republic <sup>1)</sup>	Hungary	Poland <sup>1)</sup>	Romania <sup>1)</sup>	Republic	Slovenia <sup>1)</sup>
DI Other non-metallic mineral products	4.3	6.4	2.7	5.4	4.7	4.6	4.8
<b>DJ Basic metals and fabricated metal products</b>	<b>13.2</b>	<b>15.9</b>	<b>8.1</b>	<b>10.7</b>	<b>15.8</b>	<b>17.0</b>	<b>12.3</b>
DK Machinery and equipment n.e.c.	7.2	8.0	4.1	5.5	5.1	6.8	10.4

Notes: Compare Table 1 in the first section for all sectors of manufacturing. - 1) 1999.

Source: wiiw Industrial Database.

### Stagnation of the metals sector

During the first period of transformation, from 1989 to 1992, all CEECs experienced a severe transformational recession, and the production of the metals sector declined as well. In some countries average growth fell by more than 20%. In comparison to total manufacturing, the sector was typically much more affected and hence may be called a relative 'loser' of this period (except in Slovakia). This was due to lower demand on the domestic market caused by the declining need for investment goods as well as for military

equipment and the collapse of the CMEA market, which had been not only an important target of exports but also a significant supplier of raw materials. This led to a so-called 'supply-side shock'. Especially production of crude steel plummeted during these first years of transition.

During the second period of transformation, from about 1993 onwards, growth returned to the region and the metals sector participated in the general upswing. Output started to grow in most countries, except in Romania and the Czech Republic. When compared to total manufacturing, growth was smaller and the sector remained a 'loser' of this period as well, except – to some extent – in Slovenia.

On the demand side, the relatively weak performance of the sector was partly due to a shift of demand on the domestic market (e.g. in the booming and foreign-owned automotive industry) to higher-quality products, increasingly met by imports. The export expansion to the EU has been constrained by the trade regime prevalent in the sector. On the supply side, the restructuring and privatization of former big state-owned steel enterprises with thousands of employees has started, but is difficult and often delayed and hence growth impulses are missing. Small and medium-sized enterprises in the 'fabricated metal products' industry seem to have been developing quite dynamically in the more advanced CEECs, but less so in Bulgaria and Romania, possibly due to constraints in funding.

Table 21

**Basic metals and fabricated metal products**

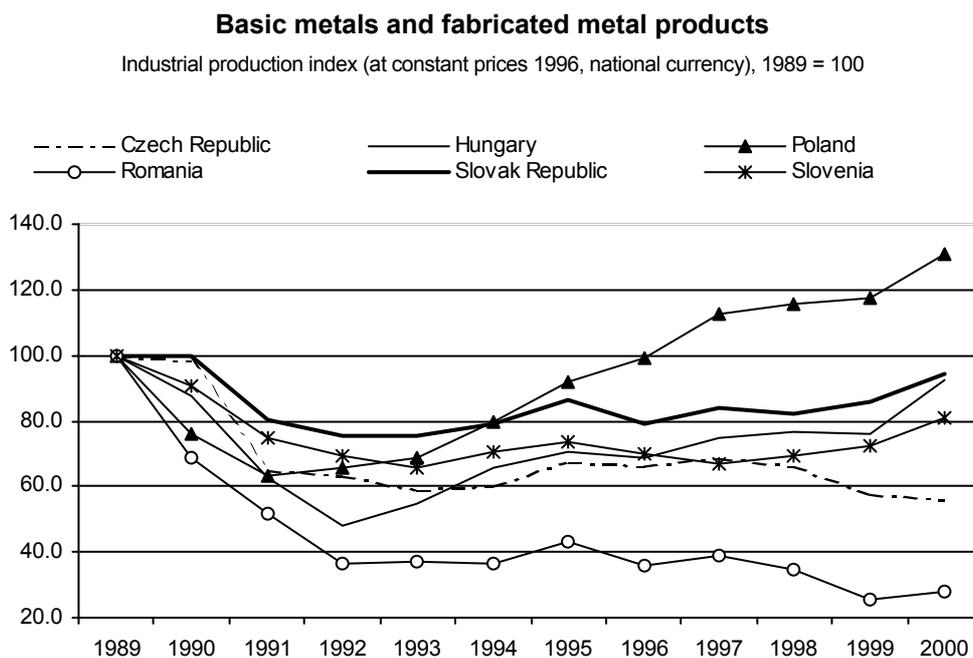
Production growth (at constant prices 1996)

	Average annual changes in %		Relative to total manufacturing, in percentage points		Index 2000	Index 2000
	1990-92	1993-2000	1990-92	1989=100	1993-2000	1993=100
Bulgaria	-20.7	-5.9 <sup>1)</sup>	-1.7	1.6 <sup>1)</sup>	.	.
Czech Republic	-14.1	-1.5	0.1	-3.9	56.2	95.4
Hungary	-21.7	8.5	-6.5	-3.4	92.3	168.3
Poland	-12.9	9.0	-1.7	-0.6	131.0	191.4
Romania	-28.7	-3.1	-4.6	-1.4	28.1	76.0
Slovak Republic	-8.9	2.8	7.0	-0.2	94.3	125.3
Slovenia	-11.5	2.0	-0.2	0.4	81.2	123.1

Note: 1) 1997-2000.

Source: wiiw Industrial Database.

Figure 10



Source: wiiw Industrial Database.

### Major role in employment

In employment, the metals sector plays an important role and is one of the largest employers in manufacturing. In the Czech Republic, Slovenia and the Slovak Republic the

Table 22

### Basic metals and fabricated metal products

Employment shares, in %

Manufacturing = 100

	1989	1992	1998	1999	2000
EU-North <sup>1)</sup>	.	12.9	12.8	.	.
EU-South <sup>2)</sup>	.	13.5	13.4	.	.
Austria	16.7	15.7	16.2	16.1	.
Bulgaria	9.8	10.0	11.6	11.8	10.3
Czech Republic	13.9	17.6	17.5	17.3	16.7
Hungary	10.6	10.3	8.9	10.1	10.0
Poland	12.0	11.5	11.8	11.5	11.2
Romania	10.5 <sup>3)</sup>	12.7	12.4	11.7	10.7
Slovak Republic	.	9.9	14.9	14.6	15.3
Slovenia	16.9	16.5	14.0	14.8	15.5

Comparisons should be made with caution due to statistical breaks.

Notes: 1) Including UK, France, Germany and Belgium. - 2) Including Greece, Portugal and Spain. - 3) 1990.

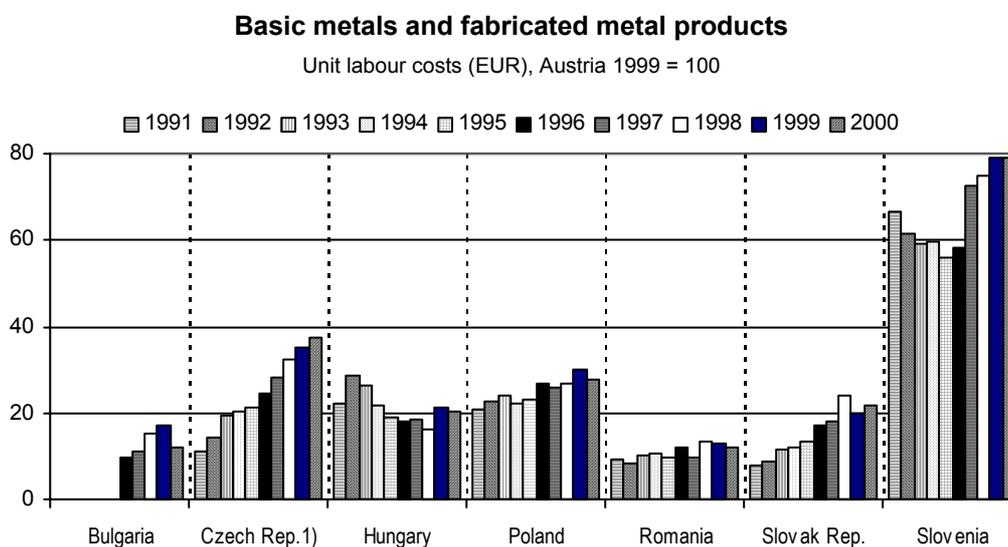
Source: wiiw Industrial Database, Eurostat.

sector even ranked first in 2000, with shares between 17% and 15%. In the other CEECs, the metals sector accounted for 10% to 11% then. In total numbers, about 274,900 persons were employed in the metals sector in Poland, 177,000 in the Czech Republic and 166,800 in Romania. In Hungary and the Slovak Republic about 75,000 employees worked in the metals sector, while the number was smaller in Bulgaria (54,700) and Slovenia (34,800). In general, employment declined during transition and employment figures were smaller in 2000 than in 1989.

### Productivity and unit labour costs

As is typical for all CEECs and their manufacturing industry, wages, productivity and unit labour costs in the metals sector have been generally lower than in Western countries, for which we have used Austria as a reference point. In 2000, nominal wage rates (gross wages at exchange rates per employee) hovered between 10% and 20% of the Austrian level in most countries; they were even lower (at 6%) in Bulgaria and Romania, but somewhat higher in Slovenia (31%). The estimated productivity level of the metals sector was particularly high in Poland, Hungary and Slovakia (70% in the former two countries and 60% of the Austrian level in the latter country), while it was especially low in the Czech Republic and Slovenia (40%), and reached 50% in the other CEECs. Unit labour costs ranged between 10% of the Austrian level in Bulgaria and Romania and 40% in the Czech Republic, only in Slovenia were they significantly higher with almost 80%.

Figure 11



Note: 1) Coverage of Czech industrial statistics had a break in 1996/97 due to the size of enterprises included.

Source: wiiw Industrial Database.

Table 23

**Basic metals and fabricated metal products**

Average annual growth rates, 1993-2000, in %

	Output	Employment	Productivity (EUR basis)	Productivity relative to total manuf.	Wage rates (EUR basis)	Unit Labour Costs (EUR basis)
Bulgaria <sup>1)</sup>	-5.9	-11.5	6.3	5.7	11.9	5.2
Czech Republic	-1.5	-4.1	2.7	-3.6	13.5	10.5
Hungary	8.5	-4.2	13.3	-1.9	6.9	-5.6
Poland	9.0	-1.8	10.9	-0.3	11.1	0.2
Romania	-3.1	-9.0	6.5	0.7	11.6	4.8
Slovak Republic	2.8	0.9	1.9	-4.9	10.8	8.8
Slovenia	2.0	-5.4	7.9	2.3	9.2	1.3

Notes: 1) 1997-2000. - 2) 1993-1999.

Source: wiiw Industrial Database.

During the transition, wages and productivity rose throughout the region. Between 1993 and 2000 the wage rate increased by more than 10% in most countries, the productivity increase was relatively smaller (except in Hungary). Notably, when compared to total manufacturing, the productivity increase in the metals sector was less pronounced, making the sector a relative productivity loser (except in Bulgaria, Romania and Slovenia). As the wage increase was higher than the productivity increase, unit labour costs rose in all countries except Hungary and the sector's cost competitiveness decreased. However, the weaker productivity performance of the metals sector may point to changes in the product mix and in the sectoral structure towards higher-quality, more labour-intensive products.

Looking at the wage level in the metals sector, wages lay somewhat above the total manufacturing average in 2000 – with the exception of Hungary where wages were slightly lower than the manufacturing average in that year. During the transition relative wages declined modestly in some countries and increased in others.

**Trade with the EU-15**

For the steel industry, the still existing special *trade regime* should be kept in mind. In the European Union, the coal and steel industry belongs to what are called the 'sensitive sectors' and is therefore more protected than others. Special treatment is provided through the European Coal and Steel Community (ECSC), set up by the Treaty of Rome in 1951 and expiring in July 2002. The regulatory framework under which the sector has operated until then will have changed into an EU policy applied to the whole of the manufacturing industry. Until the end of 1991, trade in coal and steel between the EU and the CEECs was restricted by voluntary export restraints. Then the newly established Europe Agreements exempted the sensitive areas from early liberalization, but trade restrictions on coal and

steel imports from the CEECs to the EU were finally lifted in 1996 (asymmetric opening). However, there is still the possibility of applying the safeguard mechanism and anti-dumping duties. In addition, a double licence system with certain countries acts as an early-warning system for dumping by supplying information in time.

The Europe Agreements contain a Protocol on ECSC products (Protocol 2), which includes the provisions on public aid for restructuring. A five-year grace period on state aid has expired for most CEECs and a further five-year extensions has been requested. However, certain conditions have to be met before an extension is granted: a sound national restructuring programme and viability plans for the individual companies.

Trade with the EU is investigated in detail as the EU is the dominant trading partner of all CEECs today: after the collapse of the CMEA market, CEECs' trade became heavily oriented towards EU markets. Also in the metals sector, the EU-15 have become the major trading partner of the CEECs. By the end of the 1990s, the EU accounted for about 70% of total metal exports in Slovenia, Poland, Hungary and the Czech Republic. In Bulgaria and Romania the share of exports to the EU reached 50%, in Slovakia 45%. In total metal imports the EU was important as well, accounting for 60% to 70% of CEECs' total imports, except in Slovakia and Bulgaria where shares were smaller (49% and 43% respectively).

In total manufacturing exports to the EU-15, the metals sector is of major importance today and one of the largest exporting segments. In 2000, it accounted for almost 32% of all manufacturing exports going to the EU-15 in Bulgaria, and for 12% to 15% in the other CEECs; it was smaller only in the case of Hungary with 6%. Hence, it was the largest exporting branch in Bulgaria and ranked second in Romania (behind the textiles & textile products sector) and in Poland and Slovenia (behind the transport equipment sector). In 2000, export shares were larger than production shares in Bulgaria, Poland and Slovenia, indicating an above-average export orientation of the metals sector to the EU-15. In the other countries, production shares were somewhat larger.

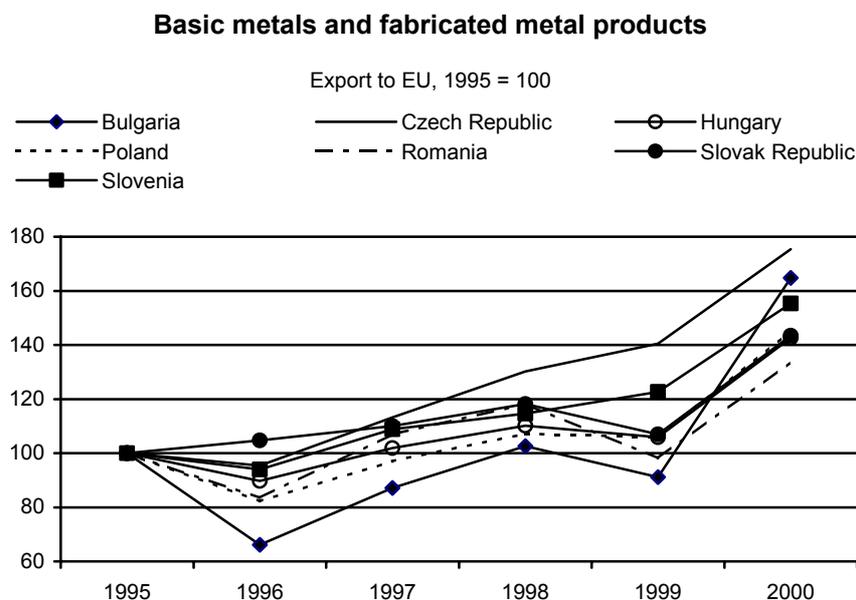
Between 1995 and 2000 metal exports were expanding, but less than total manufacturing exports; thus export shares fell considerably. Only in Slovenia did metal exports increase slightly more than total manufacturing so that shares remained constant. In the region, the increase of export volumes was quite strong in the last year and generally most pronounced in the Czech Republic, reaching 180% of the 1995 level in 2000.<sup>43</sup>

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<sup>43</sup> The year 2000 was a special year in so far as world output and thus demand on the world markets rose sharply because of a rare coincidence of high economic growth in the USA *and* Europe. (The growth rate of world trade reached 5.3% in 1999 and 12.4% in 2000; see The World Bank (2001).) The growing demand for commodities was reflected in a sharp increase in the oil price but rising prices for many other commodities as well.

In total manufacturing imports from the EU-15, the metals sector is less important than in exports, except in Hungary. In 2000, the sector measured shares from 6% in Romania and Bulgaria to 11% in the Czech Republic and 12% in Slovenia and thus ranged in the (upper) middle field of total manufacturing imports. Between 1995 and 2000, imports grew but shares remained fairly constant.

Figure 12



Source: Eurostat, wiiw calculations.

Higher exports than imports led to a moderate sectoral trade surplus in most CEECs in 2000, except in Hungary and Slovenia. In Bulgaria, the trade surplus was largest and reached EUR 700 million. In Hungary and Slovenia, the former trade surplus turned negative from 1997 onwards. Poland temporarily experienced a sectoral trade deficit in 1998 and 1999.

### Exports concentrated on 'basic metals', imports evenly distributed

At a more detailed three-digit NACE level, in 2000 exports of the CEECs to the EU-15 were concentrated on 'basic metals' (between 60% and 95% of the sector's exports), except in the Czech Republic (44%) where exports of 'fabricated metal products' (56%) were more important in the sectoral structure. The concentration on 'basic metals' was most pronounced in Bulgaria (95%) and Romania (85%) and least in Poland (58%) and of course the Czech Republic. Exports came mainly from the sub-branches 'basic precious and non-ferrous metals', 'basic iron and steel, ferro-alloys (ECSC)' and also from 'other fabricated metal products'.

Table 24

## Detailed export structure of the metals sector, 2000, in %

		Bulgaria	Czech Republic	Hungary	Poland	Romania	Slovak Republic	Slovenia
<b>27</b>	<b>Basic metals</b>	<b>94.9</b>	<b>43.7</b>	<b>62.4</b>	<b>58.0</b>	<b>84.7</b>	<b>73.0</b>	<b>62.7</b>
27.1	Basic iron and steel, ferro-alloys (ECSC)	32.8	19.2	20.2	20.4	31.7	34.8	13.5
27.2	Tubes	1.6	5.4	3.6	3.5	5.7	6.4	3.2
27.3	Other first processing of iron and steel	0.5	6.5	1.7	3.0	4.8	5.6	8.1
27.4	Basic precious and non-ferrous metals	59.9	12.6	36.9	31.1	42.5	26.2	37.9
<b>28</b>	<b>Fabricated metal products</b>	<b>5.1</b>	<b>56.3</b>	<b>37.6</b>	<b>42.0</b>	<b>15.3</b>	<b>27.0</b>	<b>37.3</b>
28.1	Structural metal products	0.4	12.5	9.7	12.1	2.3	5.6	6.0
28.2	Tanks, reservoirs, central heating radiators and boilers	0.2	3.9	3.5	2.6	1.3	3.1	1.6
28.3	Steam generators	0.1	0.6	1.8	2.4	0.3	0.8	0.1
28.6	Cutlery, tools and general hardware	1.4	10.8	5.9	3.9	2.3	2.4	12.0
28.7	Other fabricated metal products	3.0	28.5	16.8	20.9	9.2	15.0	17.6
<b>DJ</b>	<b>Basic metals and fabricated metal products</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
	<b>in EUR mn</b>	<b>924.0</b>	<b>2725.8</b>	<b>1313.5</b>	<b>3178.5</b>	<b>908.9</b>	<b>917.2</b>	<b>851.4</b>

Source: Eurostat, wiiw calculations.

Table 25

## Detailed import structure of the metals sector, 2000, in %

		Bulgaria	Czech Republic	Hungary	Poland	Romania	Slovak Republic	Slovenia
<b>27</b>	<b>Basic metals</b>	<b>55.3</b>	<b>55.7</b>	<b>44.6</b>	<b>50.3</b>	<b>44.3</b>	<b>47.8</b>	<b>61.4</b>
27.1	Basic iron and steel, ferro-alloys (ECSC)	8.7	19.4	14.6	19.8	13.5	10.2	24.0
27.2	Tubes	18.4	7.6	5.9	6.3	7.9	7.8	5.0
27.3	Other first processing of iron and steel	4.7	7.9	7.0	5.7	3.9	7.8	8.7
27.4	Basic precious and non-ferrous metals	23.5	20.9	17.2	18.4	19.0	22.0	23.7
<b>28</b>	<b>Fabricated metal products</b>	<b>44.7</b>	<b>44.3</b>	<b>55.4</b>	<b>49.7</b>	<b>55.7</b>	<b>52.2</b>	<b>38.6</b>
28.1	Structural metal products	9.1	4.8	5.6	7.8	11.7	4.1	5.6
28.2	Tanks, reservoirs, central heating radiators and boilers	3.0	2.1	4.2	5.8	9.2	3.2	2.0
28.3	Steam generators	0.6	0.5	0.6	1.0	1.6	0.6	0.2
28.6	Cutlery, tools and general hardware	11.2	14.5	17.0	14.1	11.5	16.3	11.4
28.7	Other fabricated metal products	20.8	22.4	27.9	21.0	21.7	28.0	19.3
<b>DJ</b>	<b>Basic metals and fabricated metal products</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
	<b>in EUR mn</b>	<b>183.0</b>	<b>2491.5</b>	<b>1580.6</b>	<b>2947.9</b>	<b>456.7</b>	<b>475.2</b>	<b>904.1</b>

Source: Eurostat, wiiw calculations.

Table 26

**Basic metals and fabricated metal products**Price/quality gap indicator for CEEC exports to the EU<sup>1)</sup>

		Bulgaria	Czech Republic	Hungary	Poland	Romania	Slovak Republic	Slovenia
27.1 Basic iron and steel, ferro-alloys (ECSC)	2000	-4.4	-9.7	-1.6	-8.0	0.3	-6.5	12.7
27.2 Tubes	2000	-30.6	-20.5	-24.5	-28.7	-36.3	-22.1	-21.1
27.3 Other first processing of iron and steel	2000	-20.8	-12.0	-22.4	-19.9	-17.3	-9.8	-1.6
27.4 Basic precious and non-ferrous metals	2000	-1.5	-1.0	5.7	-5.4	-2.8	-0.4	-3.8
28.1 Structural metal products	2000	-40.6	-24.9	-9.3	-11.8	-21.4	-22.5	12.6
28.2 Tanks, reservoirs, central heating radiators and boilers	2000	-54.6	-30.7	-18.0	-25.5	-7.4	28.2	51.9
28.3 Steam generators	2000	182.0	-45.5	77.0	-12.2	-25.8	-18.5	-49.4
28.6 Cutlery, tools and general hardware	2000	-51.3	-22.9	-17.4	-11.2	-47.7	-30.8	-20.1
28.7 Other fabricated metal products	2000	-34.2	-22.2	-14.2	-28.1	-44.5	-35.1	-18.8
<b>DJ Basic metals and</b>	<b>1995</b>	<b>-16.8</b>	<b>-23.0</b>	<b>-12.0</b>	<b>-17.3</b>	<b>-21.9</b>	<b>-17.9</b>	<b>-9.9</b>
<b>fabricated metal products</b>	<b>1996</b>	<b>-13.2</b>	<b>-12.9</b>	<b>-5.2</b>	<b>-5.3</b>	<b>-21.9</b>	<b>-12.4</b>	<b>-6.6</b>
	<b>1997</b>	<b>-11.6</b>	<b>-22.4</b>	<b>-14.6</b>	<b>-13.8</b>	<b>-15.4</b>	<b>-15.4</b>	<b>-12.1</b>
	<b>1998</b>	<b>-12.2</b>	<b>-19.5</b>	<b>-13.1</b>	<b>-17.9</b>	<b>-14.8</b>	<b>-13.2</b>	<b>-9.1</b>
	<b>1999</b>	<b>-10.1</b>	<b>-19.6</b>	<b>-15.3</b>	<b>-17.2</b>	<b>-16.4</b>	<b>-17.5</b>	<b>-10.3</b>
	<b>2000</b>	<b>-5.5</b>	<b>-17.5</b>	<b>-4.1</b>	<b>-14.0</b>	<b>-11.5</b>	<b>-12.1</b>	<b>-5.6</b>
	<b>average 1995-2000</b>	<b>-11.6</b>	<b>-19.2</b>	<b>-10.7</b>	<b>-14.3</b>	<b>-17.0</b>	<b>-14.8</b>	<b>-8.9</b>

Note: 1) Defined as the unit value ratio  $uvr_t^c$  of country c, which shows the percentage deviation from the average EU import unit value.

Source: Calculations by R. Stehrer, wiiw.

Between 1995 and 2000, the concentration on 'basic metals' in the export structure declined remarkably in many countries and there were also certain changes at the level of sub-branches. Looking at the gaining and losing industries, 'basic iron and steel, ferro-alloys (ECSC)' was in fact the largest loser in exports in terms of its competitive loss (except in Slovenia), while 'basic precious and non-ferrous metals' was a major winner (except in Poland). In addition, 'cutlery, tools and general hardware' and 'other fabricated metal products' exports also experienced a competitive gain.<sup>44</sup>

The import structure of the metals sector was evenly distributed between 'basic metals' and 'fabricated metal products', each accounting for about half of the sector's imports in 2000. The main import sub-branches were 'other fabricated metal products', 'basic precious and non-ferrous metals', 'basic iron and steel, ferro-alloys (ECSC)' and also 'cutlery, tools and general hardware'. Between 1995 and 2000, the import structure at industry level (looking at 'basic metals' and 'fabricated metal products') remained the same and also at the level of sub-branches there were on average less changes than in exports.

### **Price/quality gap indicator**

For the average of 1995-2000 as well as for the year 2000, the price/quality gap indicator was negative for exports from the metals sector of all CEECs to the EU-15 – and quite substantial: for the average it ranged between -9% in Slovenia and -19% in the Czech Republic. Between 1995 and 2000, the indicator improved and the gap became smaller.

Also, at a more detailed level, the price/quality gap was mostly negative, with only rare exceptions. In general, the gap was larger for 'fabricated metal products' than for 'basic metals', pointing to a relatively lower quality of higher value-added products.

### **Prominent position on the EU market**

In 1995, CEEC-7 metals sector exports to the EU-15 had a market share of 15% which remained fairly constant in the following period and still stood at 15% in 2000 (all shares without intra-EU trade). Compared to total manufacturing market shares (9% in 1995 and 11% in 2000) the metals sector shares were larger, reflecting their significant position on the EU market – although the positive deviation was slightly decreasing. In 2000, the largest exporters to the EU were Poland and the Czech Republic with market shares around 4%, followed by Hungary with 2%. The other countries held shares of around 1%.

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<sup>44</sup> Measured by 'shift and share analysis'.

Table 27

**Basic metals and fabricated metal products**

CEECs' exports to the EU-15 in EUR million, market shares in %

	EU-15 extra-EU imports, EUR mn		Bulgaria		Czech Republic		Hungary		Poland	
	EUR mn	%	EUR mn	%	EUR mn	%	EUR mn	%	EUR mn	%
1995	47933.3		560.7	1.17	1554.4	3.24	921.2	1.92	2187.2	4.56
1996	43399.9		371.1	0.86	1483.1	3.42	826.7	1.90	1797.9	4.14
1997	50090.4		488.6	0.98	1760.3	3.51	938.9	1.87	2123.5	4.24
1998	58361.8		575.5	0.99	2023.2	3.47	1014.9	1.74	2344.7	4.02
1999	53978.6		511.2	0.95	2183.6	4.05	975.3	1.81	2316.0	4.29
2000	72474.2		924.0	1.27	2725.8	3.76	1313.5	1.81	3178.5	4.39
Total Manufacturing										
	Romania		Slovak Republic		Slovenia		CEEC-7		CEEC-7 <sup>1)</sup>	
	EUR mn	%	EUR mn	%	EUR mn	%	EUR mn	%	EUR mn	%
1995	679.7	1.42	639.6	1.33	548.2	1.14	7091.0	14.79	38401	8.93
1996	567.5	1.31	669.5	1.54	515.1	1.19	6230.9	14.36	40903	9.05
1997	726.8	1.45	703.5	1.40	596.5	1.19	7338.1	14.65	49447	9.48
1998	802.9	1.38	755.7	1.29	628.6	1.08	8145.4	13.96	59900	10.43
1999	666.7	1.24	684.0	1.27	672.1	1.25	8009.0	14.84	67623	10.71
2000	908.9	1.25	917.2	1.27	851.4	1.17	10819.4	14.93	86379	10.83

Note: 1) CEEC-7 total manufacturing exports to the EU and their market shares.

Source: Eurostat, wiiw calculations.

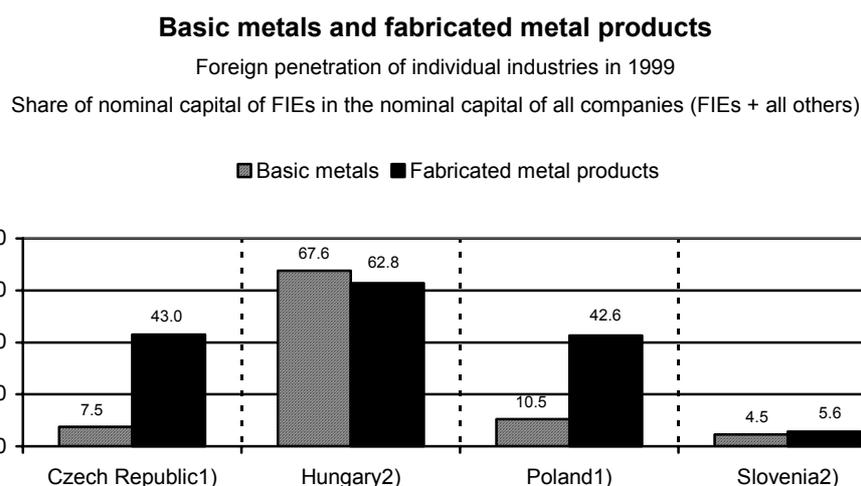
**Foreign direct investment**

The metals sector has not been a prominent target for foreign direct investors, mostly due to problems in privatization and restructuring of the iron and steel industry (failed privatization programmes, annulling of contracts, renationalization of companies etc.). Although EU investors have been interested in CEE steel companies, participation of large EU groups in privatization has largely failed to date. On the part of the CEECs, this might be due to the heavy involvement of political interests, trying to put strict structural and employment conditions on private investors, as well as due to high debts and huge restructuring needs. On the part of the EU, the CEECs prove to be an interesting export market for over-capacities in the West and EU companies might be reluctant to build up competitors. Interest from non-European groups comes from U.S. Steel in the Slovak VSŽ Košice, and the Indian company Ispat in Polish and Romanian steel companies.<sup>45</sup> However, it will be difficult to raise investment for the modernization of steel companies without foreign help. Foreign investors are more interested in CEECs' non-ferrous metallurgy, especially aluminium production.

<sup>45</sup> *Neue Zürcher Zeitung* (2001), 1/2 September.

Foreign *penetration* of the metals sector (measured by the share of nominal capital of the sector's FIEs in the nominal capital of all metals companies) has always been below the levels of foreign penetration for total manufacturing. It was lowest in Slovenia, with 5% in 1999, somewhat higher in Slovakia, the Czech Republic and Poland, and reached 65% in Hungary. This might be explained by differences within industries: while in the Czech Republic and Poland foreign penetration was lower in 'basic metals' and higher in 'fabricated metal products', in Hungary both industries achieved nearly the same level of foreign penetration.

Figure 13



Notes: 1) Equity capital. - 2) Nominal capital.

Source: wiiw, FIE Database.

## Prospects

Future prospects are generally overshadowed by delayed and complex *privatization* processes of large steel companies in the region and will depend on the success of subsequent *restructuring*. This will entail further capacity and employment reductions. The latter are however difficult to realize because of a strong regional concentration of large companies and their dominant role as employers (regional unemployment). Yet investment and modernization are urgently needed in order to upgrade production and to meet environmental requirements. Raising sufficient funding is difficult as the metals sector is not a prominent target for foreign investment. Further restructuring is also necessary in light of *EU accession*, which requires capacity reductions, the viability of companies, and the solving of social, technical and environmental problems. In addition, the CEECs will have to comply with the EU rules of state aid, which were important in the accession negotiations in closing the competition chapter.

On the *domestic market*, growth potentials for the metals sector exist as there is still pent-up demand for products (e.g. for consumer goods but also for investment goods, infrastructure and especially for construction). Growth impulses might also come from dynamic small and medium-sized enterprises in the 'fabricated metal products' industry. Developments in GDP and gross industrial production are currently quite favourable and forecasts are positive for all CEECs in 2002 and 2003 (except Poland). The trends in industrial production are most promising in Hungary, followed by the Czech Republic and Slovakia. The growth rates for Romania, Bulgaria and Slovenia are lower but still pronounced, while those for Poland were recently scaled down markedly. However, domestic markets might get under pressure from West European high-quality imports as well as from Russian and Ukrainian low-price products.

On the *export markets*, CEE exports to the EU hold an important position and trade volumes have increased, but EU market shares have stagnated. In addition, the role of metal exports in total CEE exports to the EU declined (shares decreased) and revealed comparative advantages diminished. Expansion was yet constrained by the relevant trade regime, i.e. anti-dumping procedures, which will however cease upon accession to the EU, entailing better export opportunities and also protection against cheap imports from outside the EU for future EU members. In the meantime, Central and Eastern markets pose an interesting alternative to Western markets with good growth prospects. Here too, quality upgrading will be necessary in the long run to withstand competition. Also exports to developing countries can be considered as a potential outlet.

## **5 Summary**

Under the socialist command economy with its pronounced bias towards heavy industry and the production of raw materials and intermediate products, the *chemical* and especially the *metals sectors* were regarded as priority sectors, while the *leather and leather products sector* was considered a light industry and hence was neglected under this system. Along with the collapse of communism and the adjustment to market structures, the former two sectors partly lost their prominent position as expected, and the leather and leather products sector – suffering from former under-investment – declined further. Moreover, during transformation all three sectors were hit by the collapse of the CMEA market which had been an important customer and supplier of raw materials (cheap inputs) as well. The loss of traditional markets left industries with huge overcapacities. In addition, the opening-up of the domestic markets meant an increase in import competition.

During transition, all three sectors have developed less successfully than total manufacturing, regardless of their different characteristics in terms of factor intensity, company structure and export orientation:

- The labour-intensive leather and leather products sector was hit as well as the capital-intensive chemical sector.
- The leather and leather products sector, characterized by small and medium-sized companies, declined as did the chemical sector and the metals sector, both made up of large companies whose restructuring and privatization turned out to be particularly problematic.
- Neither the export orientation towards EU markets in the case of the leather and leather products sector nor the orientation towards other markets in the chemical sector helped to stop the decline.

However, on the positive side, branch-specific features dampened the decline in the three sectors to some extent. In the *leather and leather products sector* outward processing takes an important position, representing an opportunity (upgrading to higher value-added products) as well as posing a threat to the future development of the sector (low generated earnings and hence low investment). The *chemical sector* benefited from the substantial inflow of foreign direct investment into selected sub-branches (industrial gases, detergents, paints and pharmaceuticals). In the *metals sector* the 'fabricated metal products' industry, made up of small and medium-sized enterprises, developed relatively better than 'basic metals'.

The imminent prospects for all three sectors are not too favourable. However, on the domestic market growth potentials prevail, due to the still existing pent-up demand in many parts of the economy (personal demand for shoes or cosmetics, investment demand for infrastructure and construction etc.). On the EU-15 export markets, trade restrictions, i.e. anti-dumping procedures, will cease along with the accession to the EU, entailing better trading possibilities within the Single Market. In the meantime, Central and Eastern European markets represent an interesting supplement to Western markets with good growth prospects. Generally, for the future, restructuring has to proceed in all three sectors, competitive niches have to be searched for or consolidated, and the right place in the international division of labour and the appropriate quality segment has to be found.

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