HIGH-ORDER SERVICES AND SPATIAL CHANGE IN THE CENTRAL AND EASTERN EUROPEAN COUNTRIES

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1. INTRODUCTION

The demise of communism, the ensuing opening up of the Central and Eastern European Countries (CEECs) and the liberalization of trade triggered the ongoing process of integration with the European Union (EU) and indeed with the world economy. Integration is a polysemic concept with political, institutional, social and economic facets. Here, its economic aspects alone are considered. Economic integration is generally taken to mean decreasing transaction costs. In the EU, economic integration is understood as trade liberalization (Baldwin, 1995), common trade policy, the single market, social and regional regulations, mutual recognition, harmonization, standardization and competition policy. In this paper integration is defined as a process by which interactions, especially complex, high-level interactions, develop among countries, regions and cities. The concept of integration is related to the formation of networks. The CEECs will be successfully integrated in an enlarged EU if they come to play a significant part in the post-industrial economy.

Either of two scenarios might occur.
The first relates to complementarity; the CEECs might become EU "satellite countries" with EU incumbents relocating their labor intensive activities in the CEECs, where labor costs are lower. Under this scenario, the CEECs are not strategic decision-makers. This function is fulfilled by the EU incumbents. This would be a case of partial integration with a form of hierarchy headed by existing EU member states.
The second scenario involves competition among all countries in an enlarged Europe. The CEECs would engage in economic activity just like any other EU states, that is, in the processes of decision making, creation and control. This would imply well-developed high-order services in the CEECs because it is the level of development of such services which determines a country's capacity to participate in the global network.

Accordingly, this paper examines the level of high-order services in the CEECs.
These services are of growing strategic importance across the whole range of production sectors in developed economies (Bailly and Coffey, 1994). They are both the cause and the consequence of globalization, in a cumulative process. It is through high-order services that large cities, and the regions around them, become closely interconnected within global networks. These services are fundamental features both in the changing pattern of regional disparities across an enlarged EU and in the process of metropolization (Bourdeau-Lepage, 2004a and Bourdeau-Lepage Huriot, 2002 and 2004). The development of high-order services will be a key factor in the successful integration of the CEECs in an enlarged EU.

One point is worth noting in respect of EU enlargement: the successful integration of the CEECs will depend on their overall performance in terms of GDP, but it will also depend on

their involvement in the post-industrial production system in which high-order services play a leading part. For decades these countries operated with planned economies. Industry was predominant and the proportion of workers employed in the service sector was relatively low (e.g. 33.9% in Poland in 1992 compared with 58.4% in 2000). With the deregulation of business, economic coordination has taken on a new form. Coordination is no longer achieved through central planning; the old regulations and routines are no longer operative and new economic agents have adopted western market practices and business strategies (Bourdeau-Lepage, 2004b). This has led to a rise in services in the CEECs, and especially in services related to production (producer services and finance). This reflects a change in the production structure which will determine whether or not their integration in the EU is successful.

The aim of this paper is to appraise the potential of CEEC regions for integration in the EU through the most prominent features of their production structures with special emphasis on the relative importance of high-order services.

The paper is organized as follows.
First, the main features of production structures in the CEECs are described. By comparing the classification by country (section 2) and by region, national and regional effects are identified (section 3). Large disparities among the CEECs are revealed at national and regional levels. Regional inequalities may be partly explained by features specific to national settings, termed "country effects", and also by geographic, capital-city and historical factors specific to regions, termed "region effects".
Second, regional production potentials are assessed by calculating (Euclidean) distances between the employment structure by sector in each region and the average employment structure of EU countries (section 4). This evaluation of production potential shows a shortfall compared with the EU average.
Then, the resulting classification of regional disparities is compared with per capita GDP. The results confirm the relationship between employment structures and GDP but show that these two criteria have distinct but complementary meanings.
So, there are clearly unequal potentials for EU integration explained by three interdependent factors: the location effect, the historical effect and the urbanization effect (section 5).

2. Differences in national structures despite a common legacy

This section aims at characterizing the production structures of the CEECs and changes therein relative to the EU average.

The analysis is based on employment data for 17 NACE branches (EU nomenclature of activities, see table A1 in appendix for the list) at NUTS I level in 2000 and 1995. It covers Bulgaria (bg), the Czech Republic (cz), Estonia (ee), Hungary (hu), Latvia (lv), Lithuania (lt), Poland (pl), Romania (ro) and Slovakia (sk) and also six current EU member states: Denmark, France, Greece, Ireland, Italy and Spain (Geographical entities, see table A2 in appendix for the list). For statistical reasons, other EU countries and Slovenia are excluded. High-order services are represented by branches J (financial intermediation) and K (real estate, renting and producer services). The analysis is conducted in three steps.

First, changes in the CEEC average employment structure are calculated to identify average trends (2.1). Second, the share of each economic activity in each country's employment is calculated for 1995 and 2000 and country structures are compared (2.2). Thirdly, all countries are classified on the basis of their employment structure (2.3).

2.1 The CEEC average employment structure is moving toward the EU-6 production structure but still had a long way to go in 2000

The CEEC average employment structure from 1995 to 2000 saw a 3.8% fall in the total number of jobs, with the greatest falls in Estonia, Bulgaria and Romania, respectively of 9.8%, 9.3% and 9.1%, and the lowest falls in Poland and Latvia (see table A1 in appendix). The only exception to this trend was Hungary, with a 5.7% rise in employment, probably a sign of a better economic climate than in the other CEECs.

In this context, de-industrialization in the CEECs was noticeable, with 13.7% fewer jobs in the industry and construction sector. However, the sector still accounted for an average 29.6% of employment in the CEECs as against 26.5% in the EU-6 in 2000.
Conversely, financial and business activities expanded with respective increases of 9.2% and 22% in employment in sectors J and K from 1995 to 2000 (see table B1 in appendix). Nevertheless, in the CEECs, these activities occupied about half as many workers on average as in the EU-6 in 2000 (6.6% versus 12.8%, see table 1).

Agricultural employment declined everywhere except for Romania, where it rose by 9.3% from 1995 to 2000. So, in a context of rising unemployment, Romanian workers returned to farming. That activity seems to be a downturn activity in Romania. Thus, economic restructuring meant Romania remained distinct from the EU production structure in terms of agricultural employment.

Therefore, CEEC and EU-6 employment structures were still different in 2000 (see table 1). Agriculture was dominant in the CEECs and still employed 23.3% of workers as against 5.7% in the EU-6. The difference also relates to the level of development of high-order services (as seen previously) and other services such as hotels & catering. Thus, in the EU-6, the GHI sector accounted for 25.2% of employment compared with 21% in the CEECs. The CEEC employment structure differed too from the EU-6 structure in the weight of industry in economic activity. However, some CEECs (e.g. Latvia) are not as industrialized as the others. These differences can be apprehended from the analysis of employment structures in the CEECs. It reveals some interesting features.

Table 1: CEEC and EU-6 employment structures as percentages (1995 and 2000).

Sector/country	j		k		ab		cdef		ghi		lop		Total	
	1995	2000	1995	2000	1995	2000	1995	2000	1995	2000	1995	2000	1995	2000
Romania	0.7	0.9	3.4	3.1	**34.4**	**41.4**	33.6	27.3	16.3	14.9	11.5	12.4	100	100
Bulgaria	1.3	1.1	3.1	4.1	24.4	26.2	32.6	28.3	19.8	22.0	18.9	18.3	100	100
Poland	1.3	**2.2**	4.8	5.6	27.8	26.3	30.1	26.8	19.3	20.3	17.3	18.8	100	100
Czech Republic	**1.9**	**2.1**	5.0	5.6	6.7	5.2	**42.1**	**39.9**	23.4	24.3	21.0	22.9	100	100
Hungary	**2.3**	**2.2**	3.6	5.4	8.1	6.6	33.0	33.8	24.7	25.8	28.2	26.3	100	100
Estonia	1.1	1.3	4.9	**6.9**	10.1	7.1	34.0	33.2	**25.2**	27.1	24.6	24.3	100	100
Slovakia	1.6	1.9	**6.7**	**6.8**	9.0	6.3	36.8	34.0	24.3	27.0	21.6	24.0	100	100
Latvia	1.3	1.6	4.8	5.5	18.5	15.3	25.8	24.4	25.0	**27.4**	24.5	25.8	100	100
Lithuania	1.3	1.0	3.0	3.7	23.8	19.9	28.2	26.2	19.8	22.8	24.0	26.5	100	100
CEEC average	**1.5**	**1.7**	**3.9**	**4.9**	**23.2**	**23.3**	**33.0**	**29.6**	**20.1**	**21.0**	**18.3**	**19.4**	100	100
EU-6 average	2.9	2.8	9.2	10.0	6.8	5.7	27.8	26.5	24.8	25.2	28.5	29.8	100	100

Sources: EUROSTAT (2003); BULSTAT (2003) and CSO (2003).

2.2 CEEC employment structures are very varied

Romania is atypical.
In Romania more than 40% of workers were employed in agriculture in 2000. From 1995 to 2000, the trend intensified. So whereas in 1995 the number of workers employed in agriculture was 50% higher than the CEEC average, in 2000, it was 80% higher (table 1). This was because of the poor economic situation in those years which saw the 1997–1999 crisis (Andreff, 2003). Economic recession and the land ownership statute (no. 18/1991) led to migration from urban to rural areas (Parlog and Caracota 2002).

Poland and Bulgaria were also dominated by the primary sector which employed more than one in four of their workers. In the Czech Republic, Slovakia and Hungary, the proportion of agricultural employment in 2000 was very close to the EU-6 average of 5.7%, respectively 5.2%, 6.3% and 6.6% (see table 1).

The industry and construction sector stands in contrast to agriculture except for Bulgaria.
In the Czech Republic, Slovakia, Hungary and Estonia, this sector employed more than one-third of workers in 2000. There were also more jobs in industry and construction than in agriculture in Lithuania, Latvia, Bulgaria and Poland although the percentages were lower.

The development of services is differentiated across the CEECs
Trade, hotels & catering, transport and communication (GHI sectors) were equally as well-developed in Latvia, Estonia, Slovakia, Hungary and the Czech Republic as in the EU-6 in 2000. FIRE (Finance, Insurance and Real Estates) and producer services were more developed in Slovakia and Estonia, where they accounted for more than 8% of employment. Next came Poland, the Czech Republic and Hungary with more than 7.5%.

A better understanding of these complex discrepancies can be gained by classifying countries on the basis of their employment structure. The method of clustering used here is the classification in ascendant hierarchy. Countries are progressively assigned to a class whose number is determined automatically in order to minimize the intra-class dissimilarities in relation to the inter-class dissimilarities. Then, variance tests of the chosen variables *i.e.* the sector of activity, for the different classes are tested and are statistically significant. So, the sectors of activity discriminate well the classes.

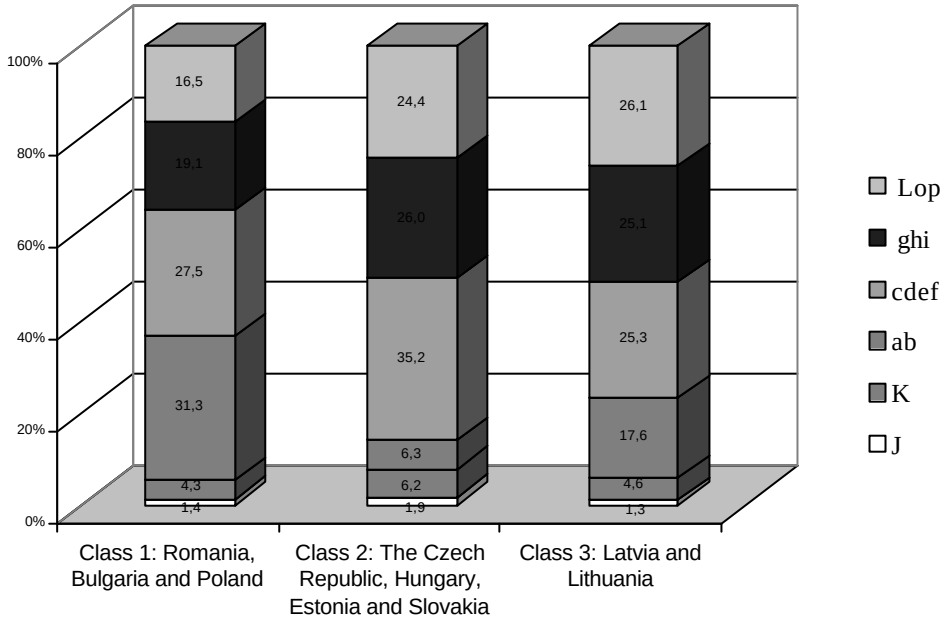
2.3 The CEECs fall into three clearly distinct classes for 2000

Class 1 is composed of Romania, Bulgaria and Poland. It is characterized by the dominant position of agriculture, which employs more than 31% workers, but also, by a weak service sector, whether trading, finance, producer or public services (see histogram). Within this class, Bulgaria is closer to Poland than to Romania.

The Czech Republic, Hungary, Estonia and Slovakia form class 2, which is characterized by having a higher proportion of workers in industry than in agriculture, as well as by having the highest proportions in finance, producer services and trade.

Class 3 is made up of Latvia and Lithuania where more than one in four workers are employed in the public sector.

Histogram: Production structures of country-classes (2000)



Poland is a special case where ranking varies by sector

When all sectors are included in the classification, agriculture appears to be the most discriminating factor and Poland joins class 1, as seen above. However, if the analysis is confined to branches J, K and D, Poland lies closer to the Czech Republic and Hungary than to Romania and Bulgaria. True, industry has a lower proportion of employment in Poland than in Hungary or in the Czech Republic, but this can be explained in part by the predominance of farming in Poland. However, the strategic sectors, especially finance, are well-developed in Poland.

By this classification Hungary, the Czech Republic and Slovakia appear to be in a more favorable position than Bulgaria and Romania for successfully integrating the EU. Indeed, this analysis conducted at national level reveals the framework in which regional structures are situated. Within the given framework, regional structures may differ and be variously endowed in activities which facilitate their integration. The occurrence of marked economic differences among the CEECs suggests there will be regional disparities in their potential for integration.

3. Regional disparities are very marked

This section draws attention to similarities and differences in potential for integration among CEEC regions as reflected by their employment structure in 2000. The same data are used as previously. So, employment data are available for 2000 for 52 NUTS II level regions of Central and Eastern Europe. In order to eliminate regional size effects in the cases of Prague, Bucharest and Bratislava, these regions are merged with a contiguous region (see table A2 in appendix for the list of regions). The sample includes 49 CEEC regions.
The analysis is based primarily on the location quotient (LQ). Thus, the relative size of the main sectors in the 49 regions is evaluated by calculating their LQs. For a given sector, LQ is the ratio of the proportion of that sector in the region's employment to the average proportion of that sector in all 49 regions. LQ is independent of the country structures and so allows direct comparisons among the employment structures of the 49 regions purely in terms of their relative ability to interact in an enlarged Europe.
The study is conducted in three stages. First, differences in regional specialization are identified with particular emphasis on high-order services (3.1). Second, CEEC regions are classified so as to characterize the overall regional structure of the CEECs (3.2). Third, the CEEC classification by region is compared with the classification by country to identify any "country effects" or "region effects" (3.3).

3.1 Differences in production structures are more marked between regions than between countries

CEEC regions are distinguished by their level of agricultural activity, the proportion of which varied in 2000 from 1.7% in the Budapest region (hu01 Közép-Magyarorszag) to 51.2% in the South-West Romania region (ro04 Sud-est).

A spatial differentiation is apparent. In 2000, agriculture accounted for less than 12% of employment in the Czech, Slovakian and Hungarian regions whereas in the eastern regions of Romania and Poland more than 26% of jobs were in farming (see and table B2 in appendix). Overall, Romania, Poland and Bulgaria display a significant East-West split. In Poland, this is a familiar pattern, Poland A and Poland B (Bourdeau-Lepage, 2002; Chi *et alii*, 2003). Farming is over-represented in eastern regions relative to the CEEC regional average, with the location quotient varying from 2.2 to 1.6 (see table B3 in appendix) in 2000.

The differences in agricultural activity within CEEC regions (Polish regions excluded) intensified from 1995 to 2000. The standard deviation rose from 12.5 to 15.9 over the period reflecting widening divergence in employment structures. The highest value in the rankings increased whereas the lowest value decreased (in 1995, the South-West Romania region 43.3% and 2.3% in the Budapest region). Thus, the proportion of agriculture in employment grew in all Romanian and Bulgarian regions while it fell in the Czech, Slovakian and Hungarian regions. The Romanian and Bulgarian regions seem, then, to have lost some of their integration potential because they have become more farming-oriented, which is a movement away from the EU standard. Indeed, their sectoral adjustment process has increased their future economic vulnerability with regard to the post-industrial economy. This

remark should be completed by observation of changes in their industrial employment patterns and the development of services.

Specialization in industry and construction (CDEF sector) is less marked than in farming. In 2000, the Hungarian, Slovakian and Czech regions (except for the Budapest and Prague regions) and the Slaskie region (Poland), the North-Central Bulgaria region and the Central Romania region were more specialized in industry and construction than the CEEC regional average, their LQs varying from 1.1 to 1.5 (see table B3 in appendix). As expected, the greatest specializations in the industry and construction sector and in agriculture varied in opposing directions. Thus, the eastern regions and the remaining regions were not specialized in the CDEF sector.

The finance and producer services sector (JK sector) is highly discriminating among CEEC regions. High-order services are principally concentrated in metropolitan regions (except for the Bucharest region). In these regions, they accounted for at least 10% of employment in 2000 as against an average of 6.6% in CEEC regions and respectively 2.2% and 2.7% in the NW Bulgaria region and the S-W Romania region.
It appears that the relative specializations of the five capital regions in high-order services differ. The relative specialization in the JK sector is more marked in the Warsaw region (LQ: 1.8) and above all in the Prague and Budapest regions (LQ: 1.9), while the Bratislava and Sofia regions are less specialized than these three regions (LQ: 1.6). For the Sofia region, this could stem from the general economic characteristics of Bulgaria, which has less advanced structures than the other countries (Bourdeau-Lepage, 2004a).
To a lesser extent, five Polish regions are also specialized in the JK sector. These are the western border regions and a southern border region (Slaskie). Their LQs vary from 1.2 to 1.6, that is, their share of employees in high-order services is 60% higher than the average proportion in the 49 CEEC regions (see table B3 in appendix). Poland's east-west split is again apparent.

On the whole, the different levels of specialization in the GHI and LOP sectors are much less significant, with LQs varying respectively only from 0.6 to 1.4 and from 0.5 to 1.5 in 2000 (see table B3 in appendix). The Hungarian, Czech and Slovakian regions are relatively specialized in these activities unlike the Bulgarian and Romanian regions.

The employment structure analysis by region, conducted using location quotients, reveals intense specialization, especially in activities related to globalization such as finance and producer services, but also in agricultural activities. *This presages large differences in integration potentials among the 49 CEEC regions. CEEC regions in 2000 displayed a simple pattern: an east-west split for agriculture and a center-south split for high-order services.*

The 49 CEEC regions were ranked in ascending order to identify those with similar employment structures.

3.2 Four classes of region stand out clearly

The previous method of classification is used (see, 2.2) and applied to the 49 CEEC regions on the basis of their LQ to eliminate the size effect (see, table B3 in appendix for details). Table 2 gives the main characteristics of classes.

Table 2: Characteristics of region classes in 2000

Classes	Characteristics	Freq. LQ	ab	cdef	ghi	JK	Lop	Total	Eucl. Dist. from EU-6*	GDP/inhab. UE-15 (SPA)=100*
1	Industrial	17	8.4	37.1	24.2	5.9	24.3	100	10.0	41
2	Agricultural	9	45.7	22.1	14.2	3.5	14.5	100	32.2	24
3	Balance Ag-ind	13	27.7	28.5	19.4	5.2	16.9	100	19.4	29
4	HO services	10	11.6	30	25.6	10.4	22.2	100	7.5	50
CEEC regional average	-	-	23.4	29.6	21	6.6	19.4	100	15.7	37
UE-6 average	-	-	5.7	26.5	25.2	12.8	29.8	100		-
1	Central	LQ	0.4	1.3	1.2	0.9	1.3			
2	Eastern/underdev.	LQ	2.0	0.7	0.7	0.5	0.7			
3	Intermediate	LQ	1.2	1.0	0.9	0.8	0.9			
4	Western/urbanized	LQ	0.5	1.0	1.2	1.6	1.1			
CEEC regional average	-	LQ	1.0	1.0	1.0	1.0	1.0			

Sources: Calculated from EUROSTAT (2003); BULSTAT (2003); CSO (2003) and Behrens (2003).* in 2000.

In 2000, the 49 CEEC regions formed four clearly distinct and easily characterized classes.

An industrial core in a central zone of the CEEC regions

More than a third of the 49 CEEC regions are predominantly industrial. Their industry and construction sector employs on average 37.1% of workers compared with a CEEC regional average of 29.6% and an EU-6 average of 26.5%. These 17 regions make up class 1 and comprise all of Slovakia, the Czech Republic and Hungary but for the capital regions and the Baltic states (Estonia, Lithuania and Latvia). They form the industrial core in a central zone of CEEC regions.

This class is relatively more specialized than the others in the industrial and construction sector and in public services, with LQs of 1.3 for the CDEF sector and the LOP sector. These regions have well-developed consumer services although less so than the EU-6. In fact, such services employ only 24.2% of workers in class 1 as against 25.2% on average in EU-6. FIRE and producer services are not very developed compared with the EU-6 even if their level of development is close to the CEEC regional level. The proportion of high-order services in employment is half that of the EU-6.

An underdeveloped zone on the eastern border of the CEEC regions

By contrast with class 1, class 2 is composed of nine regions where on average more than 45% of jobs are in farming. The relevant regions are located along the eastern fringes of the CEECs. There are the eastern regions of Poland (Lubelskie, Podlaskie, Podkarpackie, Swietokrzyskie), all the Romanian regions (but for the central, western and Bucharest regions) and the NW Bulgaria region. In these highly specialized agricultural regions (LQ: 2), high-order services are not expanding and employed a mere 3.5% of workers in 2000. The relative under-specialization in public and consumer services completes the picture of this class (see table 2).

The employment structure of class 2 is far removed from that of EU-6 and indeed from the other classes.

An intermediate zone between West and East, characterized by a balance between agriculture and industry

The following class includes the central regions of Poland (6 regions), three Romanian regions (the Bucharest, western and central regions) and the easternmost Bulgarian regions. The balanced distribution of activities between industry and agriculture, and the low proportion of employment in high-order services are the two features of class 3. Thus, agriculture and the industry and construction sector respectively provide 27.7% and 28.5% of employment while FIRE and producer services (JK sector) account for only 5.2% of employment. The production structure of this class is still far removed from the EU-6 structure. The Bucharest region deserves a comment. This region is included in class 3 rather than class 4 because of its agricultural specialization and the underdevelopment of high-order services in the vicinity of the Romanian capital (sectors JK and ab respectively represented 3.1% and 48.5% of employment in 2000).

Urbanized regions (and to a lesser extent the Polish western borders) as high-order services centers in the CEECs

Class 4 is composed of the capital regions (except Bucharest) and five western regions of Poland. Its outstanding feature is its marked specialization in high-order services compared with the CEEC regional average. Class 4 easily ranks first for sector JK, which is largely more represented (LQ: 1.6) than the CEEC average. High-order services account for more than 10% of employment, which is close to the EU-6 average. Among the regions in this class, high-order services are expanding more in the capital regions.

This class is relatively less specialized in the GHI sector (LQ: 1.2) but still outranks the other classes. It is noteworthy that industry and construction is dominant, employing 30% of workers. This characteristic means this class still does not match the EU-6 employment structure.

Specialization of the capital regions in FIRE and producer services is hardly surprising. It is well known that these activities concentrate in large cities where they find a skilled labor force. It is through high-order services that large cities, and the surrounding regions, become closely interconnected within global networks. Thus, large cities seem to take on the same role in Central and Eastern Europe as in Western Europe.

Marked differences in economic performance among the four classes

Apart from employment structures, the four classes differ markedly in economic performance as measured by per capita GDP (on a base of 100 for EU). Thus, the average per capita GDP of class 4 (urbanized regions) is twice that of class 2 (agricultural regions) and more than 1.5 that of class 3. But it still only amounted to 50% of EU per capita GDP in 2000 (see table 2).

The regional classification by per capita GDP seems to be correlated with the level of specialization in high-order services, except for the Sofia region. Thus, the capital regions have the highest per capita GDP, 85 for the Prague region (Praha and Stredni Cechy region), 76 for the Budapest region (Kozep-magyaroszag) and respectively 59 and 57 for the Warsaw (Mazowia) and the Bratislava regions (Brastislavsky and Zapadne Slovensko). Next come some industrial regions from class 3, for example, the Jilozapad region (a Czech region) and the Polish regions of class 4 such as, the Slaskie region (see, table B5 in appendix). The case of the Bulgarian capital region, which, despite its relative specialization in FIRE and producer services, has a low per capita GDP (34), deserves fuller examination. It may be linked to the

overall economic situation of Bulgaria. Perhaps there is a strong country effect. In this respect, the next section attempts to identify "country effects" and "region effects".

3.3 Some obvious "country effects" and "region effects"

Comparison of the classifications by region and by country suggests the occurrence of "country effects" and "region effects".

Regions of the same country, as well of countries with similar structures, are grouped in the same class

For example, all the Czech, Hungarian and Slovakian regions, except for their capital regions are in regional class 1 (specialized in industry), while these three countries have very similar national structures and together form country class 2 (see 2.3).

This is also true, although to a lesser extent, of Bulgaria and Romania. As seen previously, these countries have somewhat similar employment structures and form country class 1. Their regions (if the Sofia region is excluded) do not form a single region class but are grouped with some Polish regions in region classes 2 and 3.

That is probably because regional inequalities in terms of production structure within each of these countries are more marked than in the Czech Republic, Slovakia and Hungary. Nevertheless, regional differences in production structures in Romania and Bulgaria seem to be only slight to moderate since they cluster in just two classes.

There is also a country effect for Poland. Poland is less industrialized than Hungary, Slovakia and the Czech Republic (see table 1). This is reflected in the regional classification. In fact, none of the Polish regions is included in regional class 1, characterized by a dominant industrial activity and made up of Hungarian, Czech and Slovakian regions plus Lithuania, Latvia and Estonia.

Poland as an example of region effects

The atypical situation of Poland, mentioned earlier (2.3), can be partly accounted for by regional disparities. Poland is made up of distinct regions.

Four of them, located in the East of the country, are specialized in agriculture and along with eastern Romanian regions form region class 2. This is referred to here as the "eastern effect".

Six of the remaining Polish regions are in region class 4. These regions enjoy a high level of industrialization and urbanization, as well as a favorable geographical location bordering the EU, and they also have well-developed services. These regions benefit from the "western effect".

Between these two types of regions, the central regions are characterized by a balance between agriculture and industry and form a transitional zone in terms of geography and economics. This is the "Polish central region effect".

Consequently, in Poland, three regional effects can be discerned, in addition to the metropolitan effect.

A metropolitan effect

The capital regions enjoy an advantage in terms of political, social and economic factors. These regions have a diversified and skilled labor force. They usually concentrate most of the foreign investment in the country (CEPII, 2003). Thus, between 1996 and 2000, in Poland, Hungary, Slovakia and the Czech Republic, the capital regions accumulated foreign direct investment stocks, evaluated as a percentage of GVA (growth of added value) at twice the national average (Tondl and Vuksic, 2003, pp. 14 and 32). As a whole, they benefit from the

proximity of political power and economic decisions-makers (Bourdeau-Lepage and Huriot, 2003). Their economic performance in terms of progress in the transition process is better than that of other regions (see 3.2). This is confirmed by several studies which report that in the regions where capital cities are located, services are more extensive and growth outperforms other regions (in particular, Resmini 2003; Tondl and Vuksic, 2003). This kind of regional effect in capital regions is known as the "metropolitan effect" by reference to the concept of the metropolis.

The current results suggest that the CEEC regional pattern is made up of four very mixed classes of regions. The regions are subject to strong country effects. A region falls into one or other regional class depending on its country. Its possibilities are limited. Regional effects also occur, such as the metropolitan effect or the eastern effect. Thus, the eastern border regions, especially in Poland, seem to be disadvantaged in terms of geographical location whereas the western regions benefit from favorable factors such as proximity to the EU. The regional disparity in employment structure suggests that regional potentials for integration are unequal. In addition, the overall analysis predicts that the gap with the EU in terms of employment structures and per capita GDP will vary for the different CEEC regions.

4. CEEC regional structures faced with the EU

In order to confirm or invalidate the previous hypothesis and to evaluate the regional potentials for integration, CEEC regional structures of production are compared with a European reference in the form of the Euclidean distances between employment structures. The methodological basis for this choice is set out (4.1) before presenting the results (4.2).

4.1 Methodological remarks

An employment structure can be represented by the vector of the shares of the different branches in total employment. The gaps between employment structures can then be evaluated from the distance between the corresponding vectors.
Distances measured between numerical vectors, such as the Tchebychev distance, the Klafszky distance, the logarithmic distance or the angular distance, have statistical drawbacks, and in particular entail some loss of information. Furthermore, some of them give greater weights to the larger differences between vectors (see Colorni *et alii*, 2001 for a summary). Euclidean distance is chosen here because all the gaps between vectors are treated equally, and also because it is easy to calculate and interpret (see note 1 in appendix for technical considerations).

The differences in employment structure between each CEEC region, each regional class or each country measured by Euclidean distances, can be used to compare potential for successful integration in an enlarged EU. To facilitate the interpretation, distances are presented on a base of 100. Thus, the Euclidean distance varies from 0 between identical structures to 100 between the most widely differing structures. It must be recalled that these figures have no absolute meaning because they result from the particular distance used. But they can be compared with each other and over time. Table B5 in appendix shows the ranking of CEEC regions and the CEECs in terms of their distance to the EU average in 2000. It

should be pointed out that regional data are here compared with the EU-6 average, which masks substantial disparities.

The Euclidean distance is a simple indicator of dissimilarity but it requires careful interpretation. A large distance to the EU-6 average may indicate that the region or the country is either lagging behind or alternatively very far ahead in the conversion process. For the CEECs, the first possibility is more likely but the second cannot be excluded. The results and data of the preceding sections are used and certain results are carefully set out. On the whole, they concur with the previous assessments.

4.2 The structural discrepancies between the CEECs and EU-6 are confirmed

The CEECs differ in production structures by sector
In 2000, the Euclidean distances between the CEECs and EU-6 varied from 6.0 for Estonia to 27.3 for Romania, with an average of 14.3.

Bulgaria and above all Romania are still removed from the EU-6 production structure. Over the period 1995–2000, their distances increased respectively from 15.0 and 21.9 to 16.6 and 27.3 (table B4 in appendix), especially because of the growing proportion of agriculture in their total employment whereas the EU-6 agriculture proportion decreased over the same period from 6.8% to 5.7% (see table 1).

Even if the Polish distance was similar to that of Bulgaria in 2000, Poland seems to be in a better position than both Bulgaria and Romania. Closer analysis of the employment structures provides some explanations. First, between 1995 and 2000, the Polish structural gap with the EU-6 narrowed (from 16.5 to 16.1; see table B4 in appendix). Second, finance and producer services are more extensive in Poland than in Romania or Bulgaria. Consequently, the Polish gap is more the result of an overdeveloped agricultural sector and underdeveloped public services than the effect of underdeveloped high-order services (table 1 and 2.2). So, Poland's specificity is emphasized once more.

Given the small Euclidean distance and the characteristics of their employment structures (see 2.3), Estonia, Hungary, Slovakia and the Czech Republic were closer to the EU-6 average than Latvia and Lithuania in 2000. Thus, those four countries have the highest potentials for successful integration.

At regional level, the differences in the Euclidean distances are sizeable
Euclidean distances ranged from 4.7 to 34.5 in 2000. The Euclidean distance of the SW Romania region from the EU-6 average was around 7.5 times greater than that of the Prague region (see table B5 in appendix). Regions follow the same trend as their respective countries. Thus, the Czech, Hungarian and Slovakian regions are close to the EU average, whereas the Bulgarian and Romanian regions (except the Sofia region) are very far from it. The Polish regions lie at various distances from the EU average.

The CEEC regional ranking of Euclidean distances from the EU-6 average falls into two groups.
The first group is composed of all the Czech, Hungarian and Slovakian regions together with the six Polish regions included in region class 4 and the Sofia region, the Euclidean distances of which are between 4.7 and 13.1. Thus, region class 4, (urbanized class) and region class 1

(industrial class) appear to be the classes that are the most advanced in the transition process, based on their Euclidean distance and the characteristics of their employment structure. Among these classes, the urbanized class is the closest to the EU-6 with an average distance of 7.5 (see table 2). Within class 4, the Warsaw region (pl07) lies at the greatest distance from the EU-6 structure. This does not reflect underdevelopment of the high-order services but is due to the considerable weight of its farming sector in the vicinity of the capital city. Thus, the Polish capital region is in a better position than is shown by the indicator of dissimilarity.

The second group in this regional ranking is not surprisingly made up of the Romanian, Polish and Bulgarian regions. Regions with a balance between industry and agriculture, that is, those of class 3, occupy the top end of the second group. On account of their greater industrial activity, these regions are closer to the EU-6 structure than the farming regions of class 2. The differences in employment structures are too sizeable for the gap to be closed in the immediate future. In fact, they varied from 15 for the Polish region of Warminsko-Mazurskie to 34.5 for the SW Romania region in 2000.

In order to assess the relationship between economic performance and the specificity of regional employment structures, the previous classification is set against regional disparities in GDP per capita.

The ranking of regional distances is generally well correlated with that of per capita GDP
The correlation coefficient is 0.72. However, differences do arise for particular regions (see, table B5 in appendix).

Therefore, certain regions which rank well in terms of per capita GDP occupy a low rank for distance from the European average. The Warsaw region is a good example, with its over-proportioned agricultural sector, despite the presence of high-order services and of a well-developed industrial sector. Other examples are the Hungarian and Czech regions. The GDP ranking for most Czech regions is better than their distance ranking (e.g. Jihozapad or Severovychod). This may be because of the industrial specialization of these regions, which moves these regions away from the EU-6 average structure of employment, but at the same time moves them closer to EU economic performances. Here, additional factors are doubtless at play but they cannot be deduced from this analysis.

The reverse situation is found in the Sofia region, the vychodné Slovensko region (Sk04) and the Del-Dunantul region (Hu04) together with Estonia and Lithuania. These regions and countries are relatively close to the EU-6 employment structure compared with the other CEEC regions but come nowhere near EU per capita GDP. These differences in ranking may be due to the low productivity of the factors concerned. Other explanations can probably be suggested. The division into branches used here may conceal sizeable differences in intra-branch compositions between the EU-6 and CEEC regions and countries. It is well-known that certain industrial activities are more productive than others, such as manufacturing with its high added value. Differences in intra-branch structures are therefore a plausible explanation.

Two conditions probably have to be fulfilled for two equivalent employment structures to yield the same per capita GDP. First, the chosen sectors must have the same intra-branch composition and, second, these sectors must have the same productivity. More in-depth analysis is required to understand the factors differentiating these two characteristics.

However, the results confirm the relation between production structures and GDP and show that these two factors have different but complementary meanings.

5. Conclusion

The evaluation of production structures through employment reveals large regional disparities in Central and Eastern Europe and a shortfall compared with the EU in terms of economic performance. Regional positions are not independent of the country effect. Indeed, the analysis brings out regional effects, such as the metropolitan effect and the Eastern effect. So, there are unequal potentials for integration in the EU. Consequently, the overall process of integration will prove more complex than the two scenarios described in the introduction. CEEC regions already differ and will differ in the ways they interact with each other and with the EU regions. Thus, it is very difficult to predict the future role of these regions in the EU. This role will depend on three series of interdependent factors resulting from the present analysis: the location effect, the historical effect and the urbanization effect.

The location effect: periphery as a handicap
The regions of classes 2 and 3, which are identified as underdeveloped, are still a long way short of the EU level of economic performance. High-order services are not very developed in these regions. These regions do not coordinate economic activities. These coordination functions are fulfilled by other regions such as the capital regions of the CEECs. Thus, the Bulgarian, Romanian and Polish regions and especially the eastern border regions have little chance of fully integrating the EU economic system. They do not display the requisite features to participate in the processes of decision-making, creation and control. Indeed, these regions do not enjoy a favorable geographical location. They have a peripheral position with respect to the EU and are located near weakly developed countries like the Ukraine.

In this context, the Eastern border regions, will probably become the "satellite regions" of the enlarged Europe. Thus, these regions will be only partially integrated in the EU-25 with reference to the first scenario of integration (see 1). So, the peripheral character of the Eastern and Southern CEEC regions will continue after enlargement if no changes in infrastructures and education appear in the immediate future. Some commentators, notably Tondl & Vuksic (2003), recommend investing in transport infrastructures to overcome the location disadvantages of these easternmost regions.

The historical effect
As expected, the Czech, Hungarian, Slovakian and Western Polish regions are in a more favorable position than the preceding classes of regions. In this respect, they form the historical industrial core of Central and Eastern Europe. In the early 19th century, the Czech Republic and the regions around the Hungarian cities of Miskolc, Gyor and Pecs were as industrialized as France was (Bairoch, 1997). Thus, long-term history matters, as new economic geography claims. The past differences in development between the CEEC regions and countries seem to have affected the transition process of CEEC regions. The economic theory of agglomeration (Krugman, 1996; Fujita and Thisse, 2002) and especially the cumulative character of economic development, could clarify the forces in play. In combination with their historical assets, these regions enjoy location advantages relative to their proximity to the EU, especially in terms of markets and investments (Tondl and Viskav,

2003). Consequently, the Hungarian, Czech, Slovakian and Western Polish regions, together with Estonia, Latvia and Lithuania, are the most advanced in the process of post-industrial development. Even these advantaged regions are highly differentiated depending on their level of urbanization.

The urbanization effect

Among the Central and Western regions, the urbanized regions (class 4) and especially the capital regions have the employment structure that most resembles that of the EU-6. Services are more developed and productive, and efficient firms have developed in these regions. In addition, these regions attract foreign direct investments and are relatively specialized in high-order services. Agglomeration economies play a significant part in these regions. Consequently, the capital regions will probably fully integrate the European Union, that is, interact with the other EU regions and take part in the decision-making processes. Their regions may well become the gateway to the global network for all CEEC regions.

These effects are mutually reinforcing and generate cumulative processes which can hardly be halted. A number of other factors which may influence the integration process have been omitted here because this paper seeks to shed light on production structures. Accordingly, further analysis will be necessary for a fuller understanding of the process of integration, in particular the role of foreign direct investments and of social and regional regulations.

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Appendix

Note 1: Calculating distances between employment structures

Let us consider a number of spatial units j (j = 1, … J) in the CEECs, and let *eu*6 designates Europe of 6. The units set can be defined in terms of regions, groups of regions, or countries.

Let e_i^j be the share of sector i employment, in the spatial unit j of the CEECs, with

$0 < e_i^j < 100$ and $\sum_i e_i^j = 100$,

e_i^{eu6} the average share of sector i employment in *eu*6, with the same properties.

The Euclidean distance between the employment structure of unit j and the employment structure of *eu*6 is given by:

$$D(j, eu6) = \sqrt{\sum_i \left(e_i^j - e_i^{eu6}\right)^2}$$

The maximum value of this distance is 141. By dividing D by 1.41, we obtain an indicator that varies between 0 and 100:

$$d(j, eu6) = \frac{D(j, eu6)}{1.41}.$$

Table A1: European nomenclature of activities

NACE 1 rev. 1 - 17 branches	
A	Agriculture. hunting and forestry.
B	Fishing
D	Manufacturing
C	Mining and quarrying
E	Electricity. gas and water supply
F	Construction
G	Wholesale and retail trade; repair of motor vehicles. motorcycles and personal and household goods
H	Hotels and restaurants
I	Transport. storage and communication
J	Financial intermediation
K	Real estate. renting and business activities
L	Public administration and defense; compulsory social security
M	Education
N	Health and social work
O	Other community. social and personal service activities.
P	Activities of households
Q	Extra-territorial organizations and bodies

Source: recomposed from EUROSTAT (2003).

Table A2: Geopolitical entities

CEECs: 9 countries - NUTS I	**49 Regions NUTS II bis level**
Bulgaria (bg)	6 regions
The Czech Republic (cz)	7 regions instead of 8 *cz01+cz02: Praha + Střední Cechy*
Estonia (ee)	1 region
Hungary (hu)	7 regions
Lithuania (lt)	1 region
Latvia (lv)	1 region
Poland (pl)	16 regions
Romania (ro)	7 regions instead of 8 *ro03 + ro08: Sud + Bucaresti*
Slovakia (sk)	3 regions instead of 4 *sk01+sk02: Bratislavský + Západné Slovensko*
Euroipean Union: 6 countries - NUTS I	
Denmark	
Greece	
Spain	
France	
Ireland	
Italy	

Source: recomposed from EUROSTAT (2003).

Table B1: CEEC average employment structure (1995–2000)

Branches NACE	1995	2000	Percentage change in employment structure 1995–2000								
	CEEC average			Bg*	ee	cz	hu	lt	lv	pl	ro	sk
a to p	100	100	-3.8	**-9.3**	**-9.8**	-4.6	**5.7**	-3.4	-0.7	-0.7	**-9.1**	-7.4
ab	23.2	23.4	-3.0	-2.3	-37.0	-26.2	-14.7	-19.1	-17.8	-6.0	**9.3**	-35.2
c	2.0	1.3	-35.6	-37.3	-21.7	-27.4	-43.8	-10.3	-35.5	-33.0	-43.9	-8.5
d	23.1	20.5	-14.6	-21.3	-17.9	-9.7	9.6	-7.3	-13.1	-13.3	-26.3	-16.4
e	1.9	1.8	-8.5	4.7	-3.9	-23.7	-17.0	-15.4	4.1	-10.3	1.3	0.7
f	6.0	5.9	-4.7	-23.1	14.6	-2.4	22.9	-16.0	15.6	3.7	-26.3	-11.3
g	11.8	12.7	4.0	9.6	-0.9	-0.6	17.7	10.3	18.6	5.8	-10.3	4.9
h	1.8	1.9	3.4	11.4	15.7	1.5	14.4	44.3	11.3	8.7	-24.7	-4.0
i	6.6	6.3	-7.3	-12.9	-10.9	-2.9	-2.5	5.8	-7.2	-0.7	-24.6	0.6
j	1.5	1.7	9.2	-24.0	11.6	7.7	1.5	-25.2	18.0	21.3	4.2	6.3
k	3.9	4.9	22.0	18.5	28.2	8.7	56.8	17.7	13.5	50.6	-16.3	-5.8
l	3.2	3.9	14.4	25.1	-1.9	14.5	6.4	14.9	11.2	22.5	12.3	5.4
m	6.4	6.6	-1.3	-14.7	-17.1	-3.3	-5.2	14.2	-3.4	2.7	-3.4	6.9
n	5.7	5.8	-1.9	-20.9	-20.4	2.6	4.4	7.7	-9.0	-3.1	2.5	4.4
o	2.9	3.1	4.1	-17.3	1.0	3.1	-12.8	-17.4	31.1	39.2	-18.3	-12.2
p	0.0	0.0	38.1	-	-	150.0	-45.1	-	-	-	-	-
ab	23.2	23.3	-3.0	-2.3	-37.0	-26.2	-14.7	-19.1	-17.8	-6.0	9.3	-35.2
cdef	33.0	29.6	**-13.7**	-21.2	-11.9	-9.7	8.3	-10.2	-6.3	-11.6	-26.2	-14.3
j	1.5	1.7	**9.2**	-24.0	11.6	7.7	1.5	-25.2	18.0	21.3	4.2	6.3
k	3.9	4.9	**22.0**	18.5	28.2	8.7	56.8	17.7	13.5	50.6	-16.3	-5.8
ghi	20.1	21.0	0.2	1.1	-3.1	-1.1	10.1	11.0	8.9	4.1	-16.6	2.9
lop	18.3	19.4	2.2	-12.3	-10.8	4.1	-1.6	6.8	4.4	8.0	-2.4	2.9
a to p	100	100	-3.8	-9.3	-9.8	-4.6	5.7	-3.4	-0.7	-0.7	-9.1	-7.4

Sources: EUROSTAT (2003); BULSTAT (2003) and CSO (2003). *1996-2000

Table B2: CEEC regional employment structures (1995, 2000)

Regions/ branches	Total	ab		cdef		ghi		j		k		Lop	
		1995	2000	1995	2000	1995	2000	1995	2000	1995	2000	1995	2000
UE-6 average	100	6.8	5.7	27.8	26.5	24.8	25.2	2.9	2.8	9.2	10.0	28.5	29.8
bg01*	100	30.6	38.6	31.2	25.2	16.1	15.7	1.0	0.7	1.2	1.5	19.9	18.3
bg02*	100	25.3	27.2	36.1	32.5	18.5	20.4	1.0	0.7	1.5	2.1	17.6	17.1
bg03*	100	31.8	33.3	27.2	23.4	20.1	22.2	1.1	0.8	1.7	2.5	18.0	17.9
bg04*	100	12.6	13.3	33.2	29.1	23.8	26.0	2.1	2.0	7.0	8.5	21.3	21.1
bg05*	100	27.4	30.5	35.1	30.5	16.5	19.5	0.9	0.7	1.8	2.3	18.3	16.4
bg06*	100	31.3	32.8	28.9	24.1	20.7	23.3	1.0	0.9	1.6	2.2	16.4	16.7
cz01+cz02	100	4.0	2.9	33.1	30.6	27.6	29.1	2.7	3.2	8.1	9.6	24.5	24.7
cz03	100	10.3	7.4	41.8	42.1	23.2	24.3	2.0	2.0	3.6	4.1	19.1	20.3
cz04	100	5.1	3.9	44.8	41.7	26.1	24.4	1.6	1.6	3.3	4.8	19.1	23.6
cz05	100	7.8	6.1	46.4	43.8	21.8	22.0	1.8	1.8	3.6	4.2	18.6	22.1
cz06	100	8.7	7.7	42.2	40.9	20.0	20.5	1.5	1.7	6.0	5.4	21.6	23.7
cz07	100	8.4	6.0	46.5	45.3	20.7	21.9	1.6	1.7	2.8	3.5	20.0	21.5
cz08	100	4.0	3.3	48.2	44.4	22.1	24.6	1.1	1.8	4.0	3.8	20.4	22.1
hu01	100	2.3	1.7	27.9	28.0	29.3	30.1	3.5	3.4	6.6	9.3	30.3	27.4
hu02	100	8.3	6.9	42.1	43.9	20.4	21.3	1.8	1.6	2.4	3.5	25.0	22.8
hu03	100	7.7	6.1	42.0	41.8	21.9	23.5	2.0	1.6	2.3	3.7	24.1	23.2
hu04	100	12.2	10.0	31.3	32.5	24.4	24.9	1.2	1.6	2.1	4.1	28.8	26.8
hu05	100	6.7	5.6	37.6	37.2	21.3	23.0	2.1	2.0	2.8	3.7	29.5	28.5
hu06	100	11.0	8.9	30.3	33.3	23.3	24.5	1.6	1.2	2.2	3.5	31.5	28.6
hu07	100	17.9	14.9	29.9	31.7	24.1	24.8	1.5	1.7	1.7	2.8	24.8	24.1
pl01	100	-	15.6	-	30.7	-	22.7	-	2.4	-	6.9	-	21.7
pl02	100	-	24.2	-	29.4	-	20.6	-	2.0	-	4.7	-	19.2
pl03	100	-	47.9	-	16.4	-	14.5	-	1.6	-	2.6	-	16.9
pl04	100	-	17.0	-	29.3	-	23.8	-	2.3	-	6.1	-	21.5
pl05	100	-	29.7	-	27.2	-	18.5	-	2.0	-	4.7	-	17.9
pl06	100	-	33.8	-	23.5	-	18.2	-	1.6	-	5.0	-	17.8
pl07	100	-	22.4	-	22.6	-	22.4	-	3.5	-	8.8	-	20.3
pl08	100	-	27.8	-	28.9	-	17.9	-	1.9	-	4.6	-	18.9
pl09	100	-	44.8	-	21.9	-	13.9	-	1.3	-	3.1	-	15.0
pl0a	100	-	42.1	-	18.3	-	16.1	-	1.9	-	3.0	-	18.6
pl0b	100	-	14.3	-	30.2	-	25.0	-	2.5	-	6.5	-	21.7
pl0c	100	-	12.2	-	38.3	-	22.8	-	1.9	-	6.4	-	18.3
pl0d	100	-	44.9	-	20.4	-	15.4	-	1.4	-	2.7	-	15.3
pl0e	100	-	24.7	-	26.6	-	20.5	-	2.0	-	4.9	-	21.3
pl0f	100	-	24.4	-	30.3	-	20.9	-	2.1	-	5.2	-	17.2
pl0g	100	-	15.1	-	27.8	-	27.1	-	2.3	-	5.8	-	21.9
ro01	100	43.0	51.2	29.0	22.5	13.9	11.8	0.6	0.5	2.2	2.2	11.3	11.8
ro02	100	37.5	44.4	30.1	25.3	18.8	15.5	0.7	0.7	2.1	2.4	10.8	11.8
ro03+ro08	100	25.9	32.2	36.9	29.5	17.9	17.8	0.9	1.3	6.0	5.6	12.4	13.6
ro04	100	43.3	51.2	30.0	23.4	14.2	11.9	0.6	0.6	2.1	2.1	9.7	10.8
ro05	100	30.1	35.9	35.0	30.7	18.7	16.6	0.8	0.8	3.3	2.9	12.2	13.1
ro06	100	38.3	45.9	31.9	25.6	13.9	13.2	0.8	0.8	3.1	2.3	12.0	12.2
ro07	100	29.1	34.0	40.4	34.3	15.8	16.0	0.7	0.9	2.5	2.3	11.5	12.5
sk01+sk02	100	8.2	5.8	35.9	33.7	25.5	26.6	1.9	2.2	8.1	8.5	20.4	23.2
sk03	100	9.8	7.3	40.2	36.9	22.6	25.8	1.4	1.6	4.7	4.2	21.4	24.2
sk04	100	9.9	6.4	35.1	32.0	23.6	28.9	1.3	1.4	5.8	5.7	24.3	25.6
ee	100	10.1	7.1	34.0	33.2	25.2	27.1	1.1	1.3	4.9	6.9	24.6	24.3
lt	100	23.8	19.9	28.2	26.2	19.8	22.8	1.3	1.0	3.0	3.7	24.0	26.3
lv	100	18.5	15.3	25.8	24.4	25.0	27.4	1.3	1.6	4.8	5.5	24.5	25.8
CEEC average	100	20.7	23.4	34.6	29.6	20.6	21.0	1.4	1.7	4.0	4.9	18.8	19.4

Sources: calculated from EUROSTAT (2003); BULSTAT (2003) and CSO (2003). * in 1996

Table B3: CEEC regional location quotients in 2000 (employment structure)

Regions/Branches	ab	c	d	e	f	g	h	i	j	k	l	m	n	op	cdef	ghi	JK	lop
bg01	1.6	0.3	0.8	2.7	0.6	0.6	0.9	1.0	0.4	0.3	0.8	1.1	1.0	0.8	0.9	0.7	0.3	0.9
bg02	1.2	0.4	1.3	1.0	0.6	0.9	1.2	1.1	0.4	0.4	0.7	1.1	0.8	0.8	1.1	1.0	0.4	0.9
bg03	1.4	0.3	0.8	1.0	0.7	0.9	1.6	1.2	0.5	0.5	0.7	1.2	0.9	0.8	0.8	1.1	0.5	0.9
bg04	0.6	1.4	1.0	0.9	0.9	1.1	1.5	1.4	1.2	1.7	1.1	1.1	1.0	1.3	1.0	1.2	1.6	1.1
bg05	1.3	1.7	1.1	1.1	0.7	0.8	1.6	0.9	0.4	0.5	0.6	1.1	0.8	0.6	1.0	0.9	0.5	0.8
bg06	1.4	0.7	0.9	0.8	0.7	0.9	1.7	1.3	0.5	0.5	0.7	1.0	0.8	0.8	0.8	1.1	0.5	0.9
cz01+cz02	0.1	0.3	0.9	0.8	1.7	1.2	2.0	1.5	1.8	1.9	1.8	0.9	1.1	1.8	1.0	1.4	1.9	1.3
cz03	0.3	0.4	1.5	1.1	1.6	1.0	2.2	1.1	1.1	0.8	1.8	0.8	1.0	0.8	1.4	1.2	0.9	1.0
cz04	0.2	3.2	1.2	1.4	1.7	0.9	1.7	1.5	1.0	1.0	1.9	0.9	1.2	1.1	1.4	1.2	1.0	1.2
cz05	0.3	0.4	1.6	0.6	1.4	0.9	1.6	1.1	1.0	0.9	1.6	1.0	1.0	1.1	1.5	1.0	0.9	1.1
cz06	0.3	0.4	1.4	0.9	1.6	0.9	1.4	0.9	1.0	1.1	1.8	1.1	1.1	1.0	1.4	1.0	1.1	1.2
cz07	0.3	0.3	1.7	0.8	1.6	1.0	1.7	1.0	1.0	0.7	1.4	1.1	1.0	1.0	1.5	1.0	0.8	1.1
cz08	0.1	4.6	1.4	0.8	1.4	1.1	1.3	1.3	1.0	0.8	1.4	1.1	1.1	1.0	1.5	1.2	0.8	1.1
hu01	0.1	0.1	0.9	0.8	1.4	1.3	1.8	1.6	2.0	1.9	1.9	1.2	1.0	2.0	0.9	1.4	1.9	1.4
hu02	0.3	0.9	1.6	1.6	1.2	0.9	1.6	1.1	0.9	0.7	1.8	1.1	1.0	0.9	1.5	1.0	0.8	1.2
hu03	0.3	0.5	1.6	1.1	1.1	1.0	2.3	1.1	0.9	0.7	1.6	1.2	1.0	1.1	1.4	1.1	0.8	1.2
hu04	0.4	0.3	1.1	1.6	1.0	1.1	2.1	1.1	0.9	0.8	1.9	1.4	1.2	1.1	1.1	1.2	0.8	1.4
hu05	0.2	0.9	1.3	1.7	1.0	1.0	1.7	1.2	1.1	0.7	2.3	1.4	1.3	1.0	1.3	1.1	0.8	1.5
hu06	0.4	0.3	1.3	1.0	0.9	1.0	1.4	1.3	0.7	0.7	1.9	1.6	1.3	1.1	1.1	1.2	0.7	1.5
hu07	0.6	0.2	1.1	1.0	1.1	1.1	1.7	1.1	1.0	0.6	1.9	1.1	1.0	1.1	1.1	1.2	0.7	1.2
pl01	0.7	1.8	1.0	1.1	1.1	1.1	0.9	1.0	1.4	1.4	0.9	1.0	1.4	1.0	1.0	1.1	1.4	1.1
pl02	1.0	0.1	1.1	0.8	0.9	1.1	0.5	0.9	1.1	1.0	0.9	1.0	1.1	0.9	1.0	1.0	1.0	1.0
pl03	2.0	0.3	0.5	0.6	0.6	0.7	0.4	0.7	1.0	0.5	0.7	1.0	1.1	0.5	0.6	0.7	0.6	0.9
pl04	0.7	0.2	1.1	0.9	0.9	1.2	0.7	1.1	1.3	1.2	1.1	1.0	1.3	1.0	1.0	1.1	1.3	1.1
pl05	1.3	0.5	1.0	1.0	0.7	1.0	0.6	0.7	1.2	1.0	0.8	0.9	1.2	0.8	0.9	0.9	1.0	0.9
pl06	1.4	0.8	0.8	0.6	1.0	0.9	0.9	0.7	0.9	1.0	0.7	0.9	1.1	0.9	0.8	0.9	1.0	0.9
pl07	1.0	0.0	0.7	0.7	1.0	1.2	0.7	0.9	2.0	1.8	0.9	0.9	1.0	1.7	0.8	1.1	1.8	1.0
pl08	1.2	0.3	1.0	1.1	1.1	0.9	0.7	0.8	1.1	0.9	0.8	0.9	1.3	0.7	1.0	0.9	1.0	1.0
pl09	1.9	0.5	0.8	0.7	0.7	0.7	0.4	0.6	0.8	0.6	0.7	0.8	0.9	0.5	0.7	0.7	0.7	0.8
pl0a	1.8	0.1	0.6	0.7	0.7	0.8	0.5	0.7	1.1	0.6	0.8	1.0	1.2	0.7	0.6	0.8	0.7	1.0
pl0b	0.6	0.1	1.1	0.9	1.1	1.2	1.2	1.2	1.4	1.3	0.9	1.1	1.3	1.1	1.0	1.2	1.3	1.1
pl0c	0.5	6.7	1.0	1.3	1.2	1.2	0.7	1.0	1.1	1.3	0.7	0.9	1.2	0.9	1.3	1.1	1.3	0.9
pl0d	1.9	0.5	0.7	0.9	0.8	0.8	0.4	0.7	0.8	0.5	0.6	0.8	1.0	0.6	0.7	0.7	0.6	0.8
pl0e	1.1	0.1	0.9	0.9	0.9	1.0	0.8	0.9	1.2	1.0	1.0	1.1	1.3	0.9	0.9	1.0	1.0	1.1
pl0f	1.0	0.6	1.1	0.7	1.0	1.1	0.6	0.8	1.2	1.1	0.7	0.9	1.0	0.9	1.0	1.0	1.1	0.9
pl0g	0.6	0.2	0.9	1.2	1.1	1.3	1.4	1.3	1.3	1.2	1.0	1.0	1.3	1.1	0.9	1.3	1.2	1.1
ro01	2.2	0.6	0.8	0.9	0.6	0.6	0.4	0.5	0.3	0.4	0.3	0.8	0.7	0.5	0.8	0.6	0.4	0.6
ro02	1.9	0.6	0.9	1.0	0.8	0.6	0.6	1.0	0.4	0.5	0.4	0.7	0.7	0.6	0.9	0.7	0.5	0.6
ro03+ro08	1.4	1.0	1.0	1.2	0.8	0.8	0.6	1.0	0.8	1.1	0.6	0.7	0.7	0.8	1.0	0.9	1.0	0.7
ro04	2.2	2.4	0.7	1.4	0.7	0.6	0.5	0.6	0.3	0.4	0.4	0.7	0.6	0.4	0.8	0.6	0.4	0.6
ro05	1.5	2.7	1.0	1.2	0.7	0.8	0.7	0.7	0.5	0.6	0.5	0.7	0.8	0.6	1.0	0.8	0.6	0.7
ro06	2.0	1.1	0.9	0.8	0.6	0.6	0.5	0.7	0.5	0.5	0.4	0.8	0.7	0.5	0.9	0.6	0.5	0.6
ro07	1.4	0.9	1.3	1.1	0.6	0.8	0.7	0.8	0.5	0.5	0.4	0.8	0.7	0.5	1.2	0.8	0.5	0.6
sk01+sk02	0.1	16.8	0.1	3.8	2.9	0.2	4.1	0.4	5.0	0.9	2.4	0.9	0.6	0.0	1.1	1.3	1.6	1.2
sk03	0.3	0.3	1.4	0.7	1.2	1.3	0.9	1.2	0.9	0.9	1.2	1.6	1.3	0.6	1.2	1.2	0.9	1.3
sk04	0.3	0.6	1.1	0.8	1.2	1.4	1.0	1.4	0.8	1.2	1.1	1.5	1.3	1.2	1.1	1.4	1.1	1.3
ee	0.3	0.9	1.1	1.4	1.2	1.1	1.8	1.6	0.8	1.4	1.7	1.2	0.9	1.6	1.1	1.3	1.2	1.3
lt	0.8	0.2	0.9	1.2	1.0	1.2	0.9	1.0	0.6	0.7	1.3	1.5	1.2	1.4	0.9	1.1	0.7	1.4
lv	0.7	0.1	0.8	0.9	1.1	1.3	1.3	1.3	0.9	1.1	1.6	1.3	1.0	1.8	0.8	1.3	1.1	1.3
CEEC average	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Sources: calculated from EUROSTAT (2003); BULSTAT (2003) and CSO (2003).

Table B4: Euclidean distance of the CEECs and of CEEC regions from EU-6 average structure (2000 and 1995) – Euclidean distance are presented on a base of 100

year		Eucl. distance in 1995		Eucl. distance in 2000	
Base		EU-6 1995	EU-6 2000	EU-6 2000	EU-6 1995
	Bulgaria	15.0	16.4	16.6	15.4
	Estonia	7.1	8.6	6.0	4.8
	The Czech Republic	8.4	9.8	8.4	7.1
	Hungary	6.1	7.5	6.6	5.1
	Lithuania	13.6	14.7	12.2	11.1
	Latvia	9.8	11.0	8.7	7.9
	Poland	16.5	17.7	16.1	15.0
	Romania	21.9	23.1	27.3	26.2
	Slovakia	7.1	8.6	7.3	6.1
	CEEC average	13.6	14.9	14.3	13.1
bg01*	North-West region	19.4	20.7	25.7	24.7
bg02*	North Central regin	17.7	19.1	18.8	17.5
bg03*	North-East region	20.0	21.1	21.5	20.5
bg04*	South-West region	7.0	8.2	7.5	6.3
bg05*	South central region	17.8	19.1	20.2	18.9
bg06*	South-East region	19.9	21.0	21.2	20.1
ee	Estonia	7.1	8.6	6.0	4.8
cz01+cz02	Praha + Strední Cechy	4.1	4.8	4.7	4.9
cz03	Jihozápad	9.2	10.7	10.7	9.3
cz04	Severozápad	9.1	10.2	8.8	7.8
cz05	Severovýchod	12.3	13.7	12.5	11.2
cz06	Jihovýchod	9.5	10.9	9.8	8.3
cz07	Strední Morava	13.6	14.9	13.1	11.8
cz08	Moravskoslezko	11.2	12.3	10.7	9.7
hu01	Közép-Magyarország	5.7	5.6	4.9	5.4
hu02	Közép-Dunántúl	10.2	11.7	12.2	10.8
hu03	Nyugat-Dunántúl	11.2	12.5	11.9	10.6
hu04	Dél-Dunántúl	7.4	8.7	7.6	6.0
hu05	Észak-Magyarország	8.7	10.1	9.2	7.8
hu06	Észak-Alföld	8.6	9.9	9.1	7.6
hu07	Dél-Alföld	10.1	11.5	9.8	8.2
lt	Lithuania	13.6	14.7	12.2	11.1
lv	Latvia	9.8	11.0	8.7	7.9
pl01	Dolnoslaskie	-	-	9.2	7.9
pl02	Kujawsko-Pomorskie	-	-	15.1	13.8
pl03	Lubelskie	-	-	31.9	31.0
pl04	Lubuskie	-	-	10.3	8.9
pl05	Lódzkie	-	-	18.6	17.5
pl06	Malopolskie	-	-	21.3	20.4
pl07	Mazowieckie	-	-	13.0	12.3
pl08	Opolskie	-	-	17.4	16.2
pl09	Podkarpackie	-	-	29.4	28.5
pl0a	Podlaskie	-	-	27.5	26.6
pl0b	Pomorskie	-	-	8.6	7.2
pl0c	Slaskie	-	-	10.1	9.1
pl0d	Swietokrzyskie	-	-	29.5	28.6
pl0e	Warminsko-Mazurskie	-	-	15.0	13.9
pl0f	Wielkopolskie	-	-	15.2	13.9
pl0g	Zachodniopomorskie	-	-	8.8	7.7
ro01	Nord-Est	27.6	28.7	34.2	33.3
ro02	Sud-Est	23.9	25.0	29.4	28.4
ro03+ro08	Sud +Bucuresti	16.5	17.8	20.6	19.5
ro04	Sud-Vest	28.2	29.2	34.5	33.6
ro05	Vest	19.2	20.3	23.7	22.5
ro06	Nord-Vest	24.6	25.8	30.6	29.5
ro07	Centru	21.0	22.4	23.4	22.1
sk01+sk02	Bratisl. + Záp. Slov.	6.1	7.4	6.4	5.3
sk03	Stredné Slovensko	10.2	11.7	10.4	9.0
sk04	Východné Slovensko	7.4	8.9	7.4	6.3
	CEEC regional average	12.3	13.7	14.3	13.1

Sources: calculated from EUROSTAT (2003); BULSTAT (2003) and CSO (2003) and Behrens (2003). * in 1996.

Table B5: Ranking of CEEC regions in function of their Euclidean distance and their per capita GDP in 2000

Regions NUTS II Bis		Euclidean distance from EU-6 average structure		GDP/inhab EU-15 SPA=100	
		Rank	Variation from 0 to 100	Rank	Variation
cz01+cz02	**Praha + Strední Cechy**	1	***4,7***	1	85
hu01	**Közép-Magyarország**	2	4,9	**2**	76
ee	Estonia	3	**6,0**	***15***	40
sk01+sk02	**Bratisl. + Záp. Slov.**	4	*6,4*	5	56
sk04	Východné Slovensko	5	7,4	***23***	35
bg04	**South-West region**	6	7,5	***27***	34
hu04	Dél-Dunántúl	7	7,6	***20***	37
pl0b	***Pomorskie***	8	8,6	17	39
lv	Latvia	9	8,7	***32***	31
cz04	Severozápad	10	8,8	11	46
pl0g	***Zachodniopomorskie***	11	8,8	19	38
hu06	Észak-Alföld	12	9,1	30	32
hu05	Észak-Magyarország	13	9,2	31	32
pl01	Dolnoslaskie	14	9,2	16	40
cz06	Jihovýchod	15	9,8	8	49
hu07	Dél-Alföld	16	9,8	21	36
pl0c	Slaskie	17	10,1	13	43
pl04	Lubuskie	18	10,3	24	35
sk03	Stredné Slovensko	19	10,4	18	39
cz03	Jihozápad	20	10,7	6	52
cz08	Moravskoslezko	21	10,7	10	47
hu03	**Nyugat-Dunántúl**	22	11,9	**4**	57
lt	Lithuania	23	12,2	22	36
hu02	Közép-Dunántúl	24	12,2	7	50
cz05	Severovýchod	25	12,5	9	48
pl07	**Mazowieckie**	26	13,0	**3**	59
cz07	Strední Morava	27	13,1	12	45
pl0e	Warminsko-Mazurskie	28	15,0	35	29
pl02	Kujawsko-Pomorskie	29	15,1	25	35
pl0f	Wielkopolskie	30	15,2	14	41
pl08	Opolskie	31	17,4	29	33
pl05	Lódzkie	32	18,6	28	34
bg02	North Central regin	33	18,8	43	23
bg05	South central region	34	20,2	46	21
ro03+ro08	**Sud +Bucuresti**	35	**20,6**	33	31
bg06	South-East region	36	21,2	39	26
pl06	Malopolskie	37	21,3	26	35
bg03	North-East region	38	21,5	44	23
ro07	Centru	39	23,4	40	25
ro05	Vest	40	23,7	41	24
bg01	North-West region	41	25,7	42	24
pl0a	Podlaskie	42	27,5	36	29
ro02	Sud-Est	43	29,4	47	21
pl09	Podkarpackie	44	29,4	37	28
pl0d	Swietokrzyskie	45	29,5	34	30
ro06	Nord-Vest	46	30,6	45	22
pl03	Lubelskie	47	31,9	38	27
ro01	Nord-Est	48	34,2	49	16
ro04	Sud-Vest	49	34,5	48	20

Sources: calculated from EUROSTAT (2003); BULSTAT (2003); CSO (2003) and Behrens (2003).