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Economic integration, regional structural change and cohesion in the EU new member-states

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Abstract

The systemic change in Central and Eastern Europe has caused radical changes in the socio-economic status of the European continent, with the parallel and interacting processes of integration and transition as the driving forces. The need for the period of transition and pre-accession to be re-evaluated is evident, concerning the mobility of economic activities and the possible re-location of industries, the behavior of the individual regions, the dynamics of regional discrepancies and the stability of the territorial structures, in the area of the EU new member-states. A series of question needs to be answered: i) what is the impact of economic integration on regional industrial patterns? ii) have advanced and lagging-behind regions developed similar or different types of regional specialization? iii) have metropolitan and peripheral regions developed the same or different mix of economic activities? iv) are there particular types of structural change more closely related to strong growth performance? v) is the process of integration associated with winners and losers at the regional level? The reported findings and conclusions constitute a valuable basis for the understanding of the impact of economic integration on regional structural change and cohesion in the EU new member-states' area.

Key-Words: EU new member-states, economic integration, regional structural change, regional cohesion

JEL: R11, R12

1. Introduction

The systemic change in Central and Eastern Europe has caused radical changes in the socio-economic status of the European continent, with the parallel and interacting processes of integration and transition¹ as the driving forces. The ensuing EU NMS² have experienced, often forcefully and painfully, the negative impact of these processes as a pre-condition for catch-up with the prosperous EU-15 countries. These processes, being still in motion, have altered the intraregional division of labor, affecting the patterns of regional specialization and sectoral concentration and increasing the level of interregional competition and inequalities, in a newly emerged internationalized, free-market, economic environment.

The issue of the EU NMS has attracted the attention of the scientific literature; the nature and the extent of these changes, however, are still issues of major dialogue and concern, with many unknown parameters. The need for the period of transition and pre-accession to be re-evaluated is evident, concerning the mobility of economic activities and the possible re-location of industries, the behavior of the individual regions, the dynamics of regional discrepancies and the stability of the territorial structures. A series of question needs to be answered: i) what is the impact of economic integration on regional industrial patterns? ii) have advanced and lagging-behind regions developed similar or different types of regional specialization? iii) have metropolitan and peripheral regions developed the same or different mix of economic activities? iv) are there particular types of structural change more closely related to strong growth performance? v) is the process of integration associated with winners and losers at the regional level?

The main part of the analysis is conducted on a basis of employment data, as a proxy for industrial structures in NUTS III spatial level, disaggregated by manufacturing branches according to NACE rev.1 2-digit classification. Secondary data derived from REGSTAT (ZEI), EUROPEAN REGIONAL (CAMBRIDGE ECONOMETRICS), REGIO (EUROSTAT) and COMEXT (EUROSTAT) databases are elaborated. Emphasis is given to the countries of Bulgaria, Romania, Slovenia, Hungary and Estonia due to lack of statistical information for the other countries under research, in the regional-industrial level. The country sample, however, can be considered representative of the whole area since it covers all its distinctive parts – Southeastern Europe / Balkans (Bulgaria, Romania), Central Europe (Hungary, Slovenia) and Eastern Europe / Baltic (Estonia). The analysis covers the period

¹ Two sides of the same coin (Isard 1956).

² The notion includes also the candidate member-states of Bulgaria and Romania (going to be full EU members on January 2007). Cyprus and Malta are not included in the analysis due to their different former socio-economic status (comparing to the other EU NMS).

between the years 1991 and 2000, a period of extreme significance since it includes both the shocks and the upsets of the early transition (1991-1995) and the recent, more independent, trends (1995-2000). The reported findings and conclusions constitute a valuable basis for the understanding of the impact of economic integration on regional structural change and cohesion in the EU NMS.

2. The road towards the EU accession

During the socialist period the EU NMS were under the Soviet dominance being members of the COMECON. COMECON had almost no economic transactions with the rest of the world. The break-up of the COMECON, after the collapse of the Soviet system, has contributed to the fall of its (former) members' GDP, leading them to economic isolation. The prospect of the EU accession, under these circumstances, considered (for these countries) to be a one-way road; "one of the greatest historical and economic chances" (Daianu 1995:15, Kawecka – Wyrzykowska 1996:251)³. The European Agreements, signed in the start of the 90s, constituted the legal background for the creation of the necessary economic conditions for their gradual embedment on the EU context. The EU Accession Treaty, signed in the Athens European Summit on April 2003, finalized the accession of the EU NMS in the EU.

The beginning of integration process was accompanied by a remarkable increase in the trade flows between the EU NMS and the EU-15 countries (Resmini and Traistaru 2003). The EU NMS exports to (imports from) the EU-15 were in the year 1999 six (seven) times as much as the respective of the year 1989. The share of the EU-15 on the EU NMS imports (exports) was reached the levels of 62% (69%), in the year 1999. Moreover, a change in the structure of trade activity started to take place in the end of the 90s marking the enforcement of intra-industry trade; while in the early period of transition the EU NMS used to import consumer goods and export labor-intensive products, in the late period of transition they started to trade technologically-advanced products. This is a clear indication of the increase in the levels of the EU NMS economic integration with the EU-15 (Dohrn 2001, Weise et al 2001).

The assessment of the level of economic integration between each EU NMS and the EU-15 can be captured by an index of integration (IOI) expressed as the proportion of the

³ It is noticeable that "the process of transition was supported even when former communist parties regain the power in their countries" i.e. Hungary and Poland (Thirkell et al 1998:39-40)

trade activity⁴, in value terms, with the EU-15 to the total (world) trade activity (Petraikos et al 2003:53). The IOI takes values within the interval [0, 100], from no to complete economic integration.

$$IOI_{NAT} = (TRADE_{EU-15} / TRADE_W) * 100$$

The IOI can be calculated in regional level under the logic of the export base theory due to the non-availability of statistical data on regional trade flows. The manufacturing sector is considered to be the basic sector in the EU NMS⁵ due to its significance during the previous politico-economic regime and its dependency on the external EU-15 economic conditions (Traistaru et al 2003). Under this assumption, the IOI is weighted by the location quotient (LQ_D) of the manufacturing sector, in employment terms, taking its regional dimension. The regional IOI takes values within the interval [0,∞), from no to complete economic integration.

$$IOI_{REG} = (TRADE_{EU-15} / TRADE_W) * (LQ_D) * 100$$

Regions are classified, following Resmini (2002a and 2002b), according to their geopolitical position in the greater groups of capital regions (CAP), internal regions (INT), bordering with EU-15 regions (BEU), bordering with other EU NMS regions (BNM) and bordering with external countries' regions (BEX). This classification allows for the better analysis and interpretation of the regional IOI figures.

[Figures 1a – 1b about here]

The majority of the EU NMS present high levels of integration with the EU-15. Even countries with small IOI figures (i.e. Latvia, Bulgaria, Lithuania) present increasing trends over time. This is quite impressive phenomenon, considering the rather short period that the process of integration is in motion, indicates the significant structural changes took place in the EU NMS in order for them to become reliable trade partners in the enlarged EU framework. In regional level, the highest IOI levels are presented in BEU regions (with the exception of Bulgaria). These regions present, moreover, either the highest IOI increases (Bulgaria, Estonia, Hungary) or the lowest IOI decreases (Slovenia). The most impressive IOI changes over time are recorded in the majority of Romanian (reaching in some cases the levels of ±60%), Slovenian and Hungarian regions whereas the respective changes in the rest of the regions cannot be considered of extreme significance. The main outcome of the IOI analysis in regional level is that the EU NMS regions are not present the same level of

⁴ Unambiguously, the level of foreign direct investment (FDI) is another indicator of economic integration. FDI, however, are not included in the IOI since in the case of the EU NMS are inward and spatially and sectorially located, in their majority (Resmini 2005).

⁵ Export base theory discerns two sectors of economic activity in each region; the basic and the non-basic sector. The efficiency of the non-basic sector is depended mainly on the internal economic conditions whereas the efficiency of the basic sector is depended mainly on the external ones (McCann 2001).

economic integration with the EU-15. Given the significance of the manufacturing sector to the estimation of the economic integration levels, it is evident that in a framework of an ongoing integration process, regions with obsolete productive systems are in a very stressful position (Petraikos 2000).

3. Patterns of regional development in the EU NMS

The transition towards the free-market economic regime has not yet verified the ex ante favourable scenarios concerning the impact of the EU membership on the economic efficiency of the EU NMS (Baldwin et al 1997, Brown et al 1997, Lejour et 2001). The majority of the EU NMS and (their) regions is characterised “by unstable macroeconomic environment and intense deregulation of their productive systems” (Sokol 2001:645). Given the examples of the countries of the European South, strong concerns are generated concerning the cohesion of the enlarged EU (Gorzalak 2000), “in a socioeconomic environment, where efficiency prevails over equality”⁶ (Hallet 2002:17).

The area of the EU NMS is not homogeneous, neither in demographic nor in economic terms.

[Maps 1a – 1c about here]

Each EU NMS has its own spatial pattern of development, as an outcome of the different initial conditions and the different policies implemented afterwards, with the countries of Central (especially) and Eastern Europe being the most developed. The majority of population and economic activities, however, is concentrated mainly in the CAP regions of each EU NMS because of the activation of the agglomeration economies. Moreover, in the countries of Central Europe evident is the prevalence of the BEU regions, taking advantage of their favorable geographic component⁷ (Artelaris et al 2004) due to their proximity to the EU-15. The dynamism of the BEU regions reveals that border regions are not always suffer from developmental hysteresis (Nitsch 2002) since proximity ceased to matter only in the closed country context (Topaloglou et al 2005).

The EU NMS pattern of regional development verifies the outcomes of the early (Downes 1996, Petraikos 1996 and 2000) and recent (Petraikos and Economou 2002, Petraikos

⁶ This is a classical trade-off relationship that characterizes the implementation of regional policy (Williamson 1965).

⁷ The geographical component of a region is captured through the estimation of a Gravity Index taking into account the distances between its centroid and the centroids of the other regions.

$$G_i = \sum_j (1/d_{ij})$$

et al 2005a, Petrakos et al 2005b) literature. In macro-geographical level, Central European countries prevail over the countries of the Baltics and the Balkans (especially), whereas in micro-geographical level, CAP and BEU regions prevail especially in the countries of Central Europe. It is evident that in a relatively short period of time the EU-15 economic divides have been reproduced in the EU NMS area.

4. Regional structural changes in the EU NMS

The interacting processes of transition and integration have affected the EU NMS intraregional allocation of labor, increasing the interregional competition in an internationalized economic environment (Traistaru et al 2003). Given the low intrasectoral mobility of labor (Olesen and Skak 2001), product competition constitutes the main diffusion channel of the impact of economic integration on regional labor markets (Fertig 2003). Significant part of labor mobility in the EU NMS is intersectoral since some sectors strengthened their position whereas some others were shrunk (Sabirianova 2000). Depending on their nature and degree of specialization some regions fell (or remained) in a sphere of economic downturn, losing significant part of their labor force. Manufacturing is the EU NMS sector absorbed the greatest pressure from the external environment since it was a central element on the productive structure of the former regime (Stern 1998, Petrakos and Tsiapa 2000). A series of transition policies – privatizations and deregulation - were implemented in the manufacturing sector with the restructuring of the industrial base as the ultimate purpose (Bevan et al 2001). The possible success of the restructuring process considered to be a success for the transition process itself, in such a way that “restructuring and transition could be considered as the two sides of the same coin” (Sharma 1997:1).

The shares of the secondary sector of production (Kallioras et al 2004), in terms of employment, recorded significant decrease in the majority of the EU NMS regions during the pre-accession period (Hungarian regions are an exception since mix trends are observed). This decrease – significant in many cases – reveals the pressures from the external environment and justifies the intense scientific concern on this particular issue. The respective shares of the tertiary sector were increased (Romanian regions are an exception since mix trends are observed) in the great majority of the EU NMS regions, in expense of those of the secondary sector. The shares of the primary sectors were decreased in the Hungarian, Slovenian and Estonian regions whereas in the Bulgarian and Romanian regions were increased. This trend is one more indication concerning the economic inefficiency of the Balkan countries in comparison to the rest of the EU NMS.

Based on the employment shares of each manufacturing sector in each EU NMS region (Kallioras et al 2004), the Coefficient of Structural Change (CSC) is employed, following Jackson and Petrakos (2001) in order to capture the structural changes took place during the period of transition, in the sector of manufacturing. CSC is a correlation of the shares of one sector in a region between two periods of time.

$$\boxed{\text{CSC} = \text{Cor}(X_{i,t}, X_{i,t+k})}$$

CSC takes values within the interval [0, 1] from complete to no structural change over time. Significant structural changes were recorded in the majority of Hungarian and Estonian regions whereas small were the structural changes took place in the Bulgarian, Romanian and Hungarian regions.

[Tables 1a – 1e about here]

[Figures 2a – 2e about here]

The important outcome of the analysis is that each EU NMS region had a different reaction to the pressures of the outside, internationalized, economic environment, experiencing its own kind and level of structural level.

The ex post assessment of the structural changes took place during the period of transition, is able to reveal whether these changes can be attributed to the strategic, offensive, choices of the EU NMS regions or simply are impulsive, defensive, reactions. The economy of the EU-15, despite its structural problems (Aiginger 1999), constitutes a benchmark for this kind of assessment; extremely common is the opinion that the process of transition is going to finish when the EU NMS face similar structural problems with the EU-15 (Suhrcke 2001). An Index of Dissimilarity (IDIS) is employed to this direction, following Jackson and Petrakos (2001), comparing the employment shares in the manufacturing sector of each EU NMS region to the respective of the EU-15.

$$\boxed{\text{IDIS} = (a_{i,t}, b_{i,t})^2}$$

The increasing trend of the IDIS reveals that the economies under consideration are getting more and more dissimilar over time whereas the decreasing trend of the IDIS reveals that the respective economies are getting more and more similar. The IDIS figures reveal the offensive restructuring took place in the great majority of the Slovenian regions and in a significant part of the Estonian and Hungarian regions. On the contrary, the great majority of the Bulgarian and Romanian regions present increasing IDIS figures, as a result of the defensive restructuring experienced during the transition period.

[Figures 3a – 3b about here]

The structural changes took place in the EU NMS regions have led to a variety of regional patterns of industrial specialization. The Theil index (Theil 1972:26-27) has chosen among a series of similar indices in order to assess the level of regional diversification patterns – notion inverse to that of regional specialization – in the EU NMS regions. The advantage of the Theil index is the production of absolute (and relative, comparing to country average) figures allowing for international comparisons, downgrading, at the same time, the significance of the extreme values (Bode et al 2004).

Let $empl_{ri}$ be the employment in region r and sector i and define $p_{ri} = \frac{empl_{ri}}{\sum_r \sum_i empl_{ri}}$ having

the property that $\sum_r \sum_i p_{ri} = 1$. The Theil regional-diversity entropy-measure is

$$\text{then: } H_r = \sum_i \frac{p_{ri}}{p_r} \log \frac{p_r}{p_{ri}}, \text{ where } p_i \text{ is defined as } p_r = \sum_i p_{ri}.$$

The Theil index takes the value of 0 when only one sector is present in region r and the value $\ln(n)$ where all n sectors employ the same number of persons in the region in question.

The figures of the Theil Index and their evolution over time reveal the significant changes recorded in the EU NMS regional diversification patterns. The changes in the regional-industrial patterns are significant in the Hungarian and Estonian regions (regions experienced the highest degrees of structural change) whereas in the other EU NMS regions the respective changes are of less importance. Increase in the level of regional diversification is recorded in the regions of Hungary whereas in the regions of the other EU NMS mixed trends are observed.

[Figures 4a – 4b about here]

Manufacturing sectors can be classified, according to the participation of the production factors in their production function, in labour-intensive (LINT), intermediate intensiveness (IINT) and capital-intensive (CINT) sectors (Jackson and Petrakos 2001). This classification allows the examination of the nature of regional-industrial specialization patterns in the EU NMS. Given the allocation of the shares of each manufacturing sector (Kallioras et al 2004), only some CAP, INT and BEU regions are specialized in CINT manufacturing branches (branches of increasing returns of scale) whereas the majority of the EU NMS regions is specialized in LINT manufacturing sectors. The EU NMS regional-industrial patterns, their characteristics and their evolution over time, verify, in a great extent, the principles of the new economic geography school. The prevalence of the CAP and INT

regions and the dynamism the BEU regions reveal the “winners” and the “losers” of the economic integration process in the framework of the EU NMS regions.

5. The relation among regional economic integration, regional-industrial patterns and regional economic efficiency in the EU NMS

The diachronic analysis of the EU NMS regional-industrial patterns reveals the uneven impact of the economic integration process on their levels of economic efficiency. The dynamics of agglomeration and adjacency prevail in the configuration of the economic activities' allocation patterns among the EU NMS regions, in favor of the Central European countries and the great majority of the CAP, INT and BEU regions. These spatial entities can be considered as the winners (in relative terms) of the economic integration process since a series of interesting relations are developed in their advance.

[Table 2 about here]

The EU NMS regions present high levels of economic integration with the EU-15, present also high levels of per capita GDP. Regions being closer to the EU-15 (and presenting the highest levels in the Gravity Index) are taking advantage of this relation, revealing the significance of geographical component to the configuration of the patterns of regional development in the EU NMS.

[Figures 5-6 about here]

Given the differences in the IOI levels among the EU NMS regions, the positive and statistically significant relation between economic integration and per capita GDP, generates a series of relations concerning the EU NMS regions' structural characteristics.

The significance of the secondary sector of production is revealed through its relation with the level of the per capita GDP. Their positive and statistically significant relation indicates that the EU NMS regions that managed to keep the largest parts of their GDP shares in the secondary sector (mainly due to small decreases in their manufacturing sectors' shares), present the highest per capita GDP levels. High per capita GDP levels present also the EU NMS regions that manage to increase their GDP shares in the tertiary sector of production, counterbalancing the respective decreases in the secondary sector. On the contrary, the EU NMS regions with the lower GDP shares in the tertiary sector (mainly due to high presence of the primary sector of production) are associated with lower per capita GDP levels also.

[Figures 7-8 about here]

The examination of the EU NMS regions' structural patterns, inside the manufacturing sector, reveals the negative consequences of the structural changes took place during the pre-

accession period. The positive and statistically significant relation between the level of per capita GDP and the CSC, reveal that regions experienced small levels of structural change present the highest levels of economic efficiency. The negative and statistically significant relation between the level of per capita GDP and the IDIS substantiates the same outcome since the EU NMS regions present low or decreasing degrees of dissimilarity with the EU-15 (an indication of offensive structural change) are associated with high per capita GDP levels.

[Figures 9-10 about here]

The relation between the level of per capita GDP and the IDIS reveals also that the EU NMS regions present low levels of specialization have the highest levels of economic efficiency, being less vulnerable to asymmetric shocks. The positive relation between the level of per capita GDP and the Theil Index is getting even stronger in the EU NMS regions hosting a significant number of specialized employers, capturing by the high levels of employment in the CINT manufacturing sectors.

[Figures 11-12 about here]

These relations, having the level of per capita GDP as their central element, reveal the emerging pattern of regional development in the EU NMS. The EU NMS regions presenting the highest levels of economic integration, the highest shares in the secondary and the tertiary sector of production, the more diversified industrial patterns and the high presence of specialized population, present the highest levels of per capita GDP, in their great majority. These regions are mainly the CAP, the INT and the BEU regions that manage to take advantage of the dynamics of agglomeration and adjacency, in an ongoing economic integration framework.

6. Conclusions

The interacting processes of transition and economic integration have contributed, to a large extent, to the enormous economic changes observed in the EU NMS regions during the pre-accession period. These processes altered the intraregional division of labor, affecting the patterns of regional specialization and increasing the level of interregional competition, in a newly emerged internationalized environment.

The impact of economic integration was uneven among the EU NMS regions revealing the “winners” and the “losers” of the whole process. A series of economic divides emerged in the EU NMS area in favor of the CAP and the BEU regions, especially. These regions, presenting high levels of economic integration with the EU-15, achieved to exploit the advantages of agglomeration and proximity, respectively, on their behalf.

The structural patterns of the EU NMS regions constitute a critical element associated with the levels of their economic efficiency. Especially the sector of manufacturing is of great significance being a central element on the productive structure of the former regime. The EU NMS regions that managed to maintain their GDP shares in the secondary sector of production present higher levels of per capita GDP. Analogous is the situation with the EU NMS regions present high GDP shares in the tertiary sector of production whereas the EU NMS regions with expanded primary sector present an intense hysteresis.

Being activated in an internationalized, free-market, economic environment the EU NMS regions experienced different kinds and levels of structural changes during the pre-accession period. The EU NMS regions, experienced defensive structural changes in their majority, presented high (or increasing) levels of dissimilarity with the economy of the EU-15, with negative consequences to their economic efficiency. This is the outcome of the implementation of wrong or / and inappropriate structural policies that were in no position to overcome the side-effects of the economic integration process. The EU NMS regions, on the contrary, experienced an offensive structural change, managed to achieve relatively higher levels of per capita GDP.

The EU NMS regions with the highest levels of economic efficiency in the EU NMS area present low (or decreasing) levels of dissimilarity with the EU-15 economy. The EU-15 economy constitutes a benchmark for the evaluation of the economies of the EU NMS regions since the confrontation of similar structural problems on their side is probably going to signify the end of the transition process. The EU NMS regions that present low levels of dissimilarity with the EU-15 are characterised by low (high) levels of regional specialization (diversification). This is an indication of their strength to the various asymmetric shocks occurred in the EU NMS area during the pre-accession period. Moreover, these regions are characterised by the high presence of specialized workforce that constitutes a significant source of economic efficiency in every economy.

The analysis of the economic integration dynamics and their impact on regional structural change and cohesion in the EU NMS revealed the economic divides emerged in the area as a consequence of the occurring structural changes. Together with the already existing ones, in the EU-15 context, these divides constitute a major concern for the enlarged EU policies. The deterioration of these divides is *sine qua non* since cohesion is a major EU priority.

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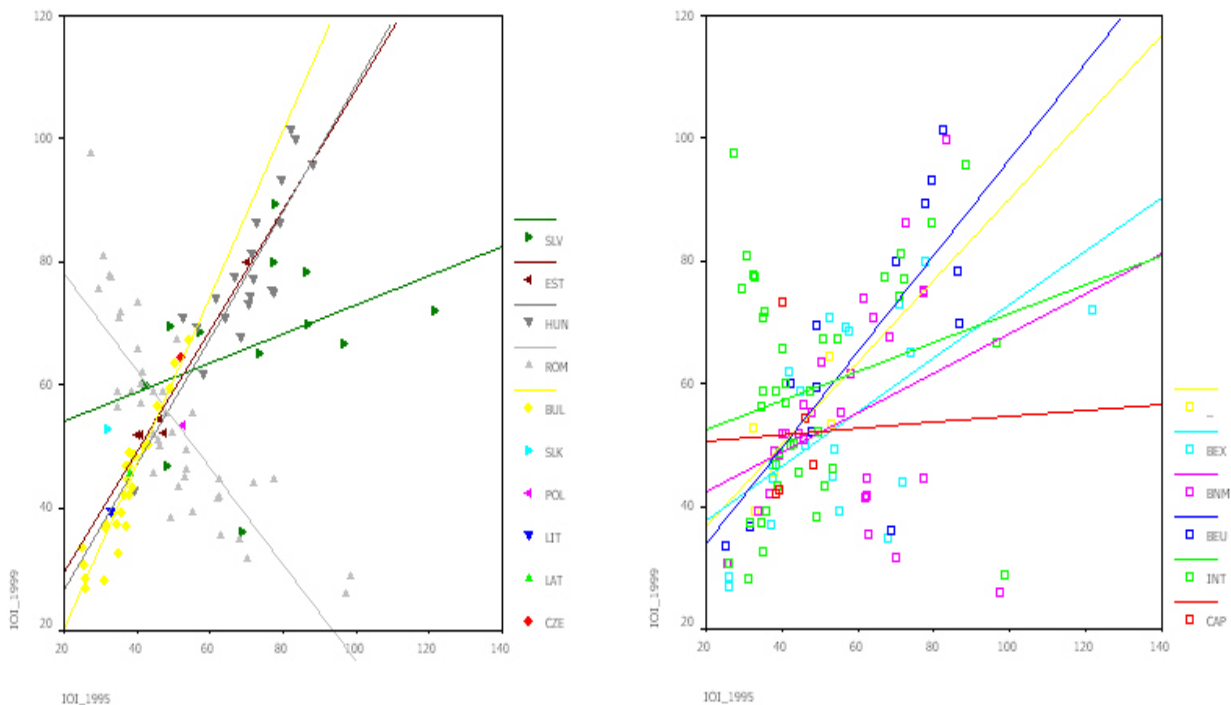
Appendix

Figure 1a: Evolution of IOI (1995-1999) – Classification by country

Figure 1b: Evolution of IOI (1995-1999) – Classification by geopolitical position of regions

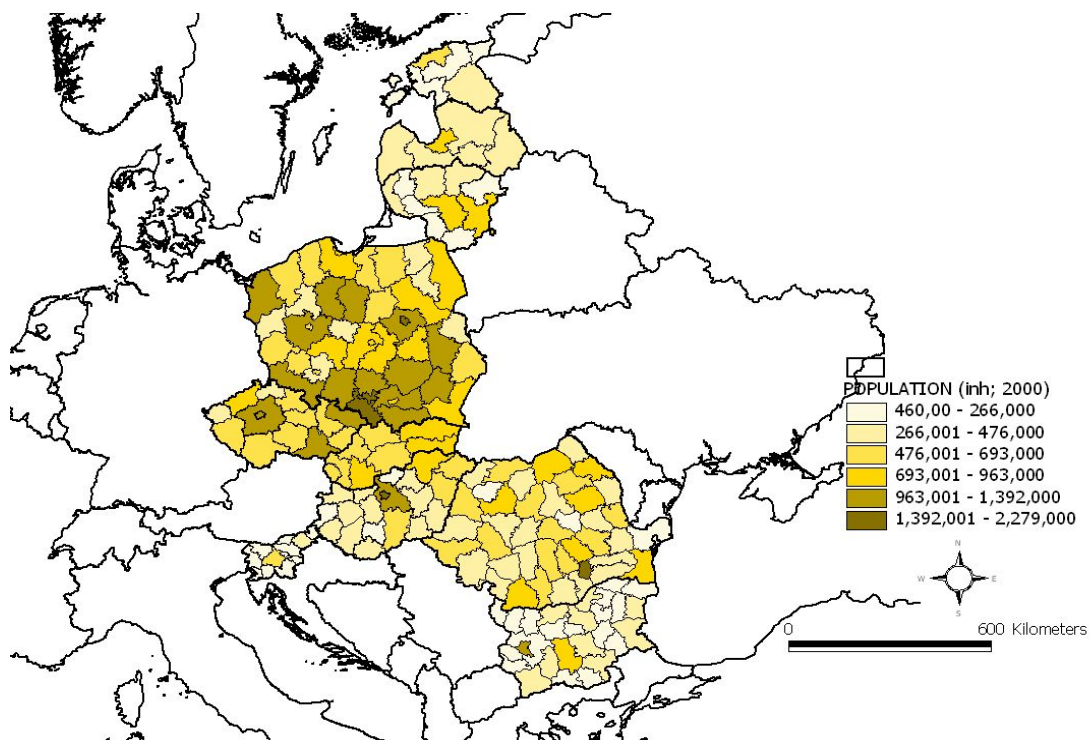
1a

1b



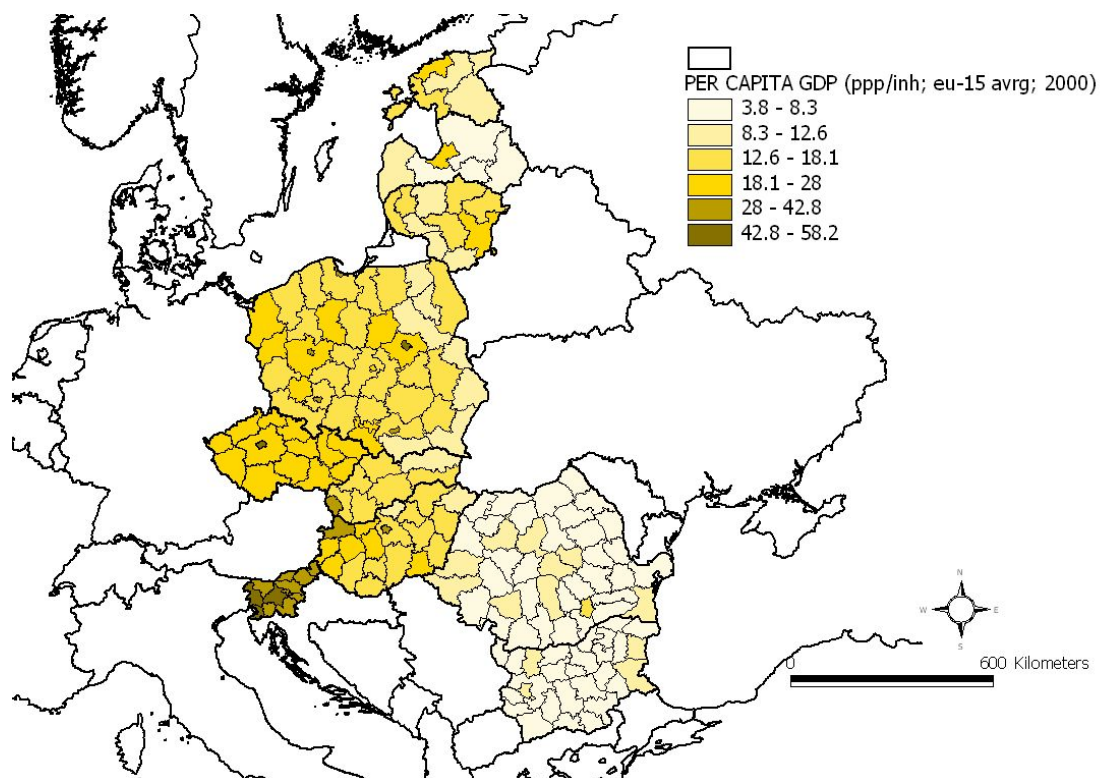
Sources: EUROSTAT COMEXT Database – ZEI REGSTAT Database – Authors' Elaboration

Map 1a: Population (inh.) in the EU NMS NUTS III regions (2000)



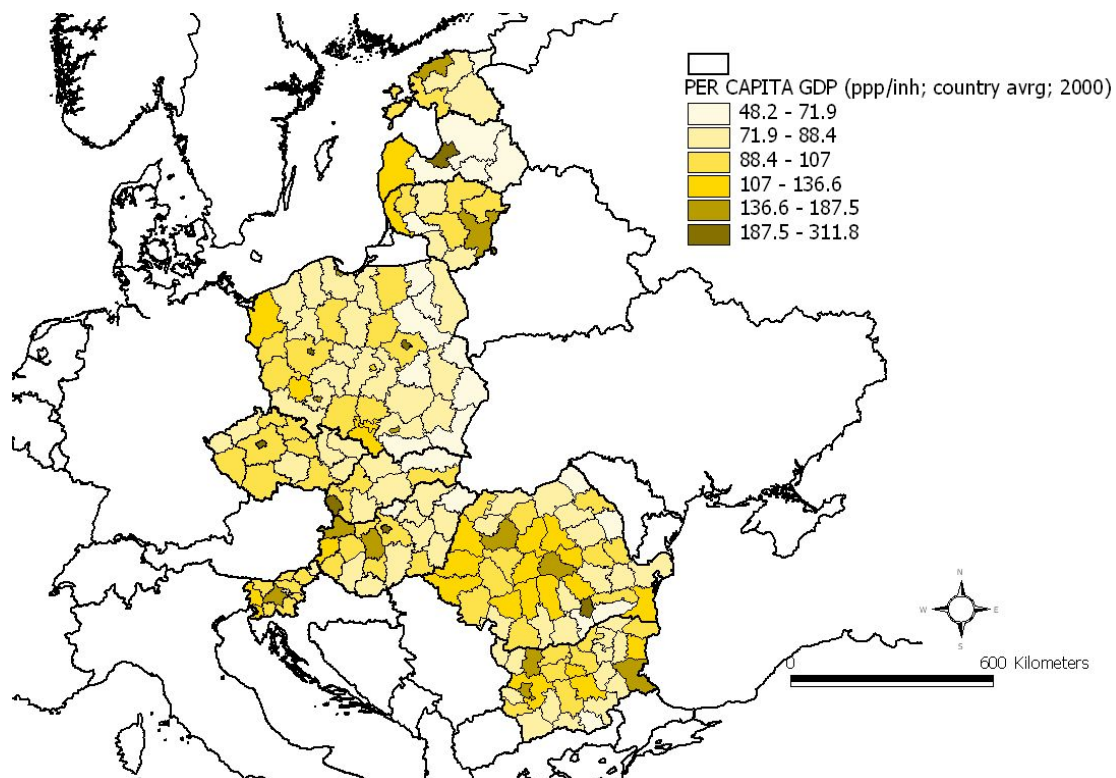
Sources: EUROSTAT REGIO Database – Authors' Elaboration

Map 1b: Per Capita GDP (ppp; EU-15 average) in the EU NMS NUTS III regions (2000)



Sources: EUROSTAT REGIO Database – Authors' Elaboration

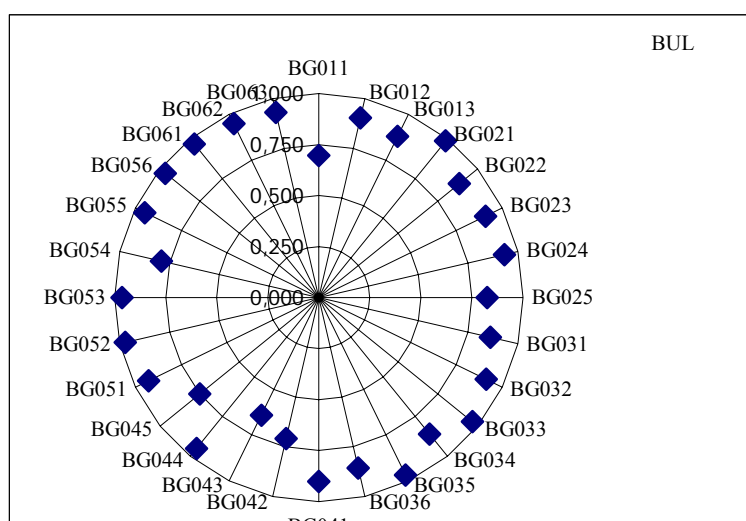
Map 1c: Per Capita GDP (ppp; country average) in the EU NMS NUTS III regions (2000)



Sources: EUROSTAT REGIO Database – Authors' Elaboration

Table 1a / Figure 2a: CSC (employment in manufacturing) in Bulgarian regions (1991-1999)

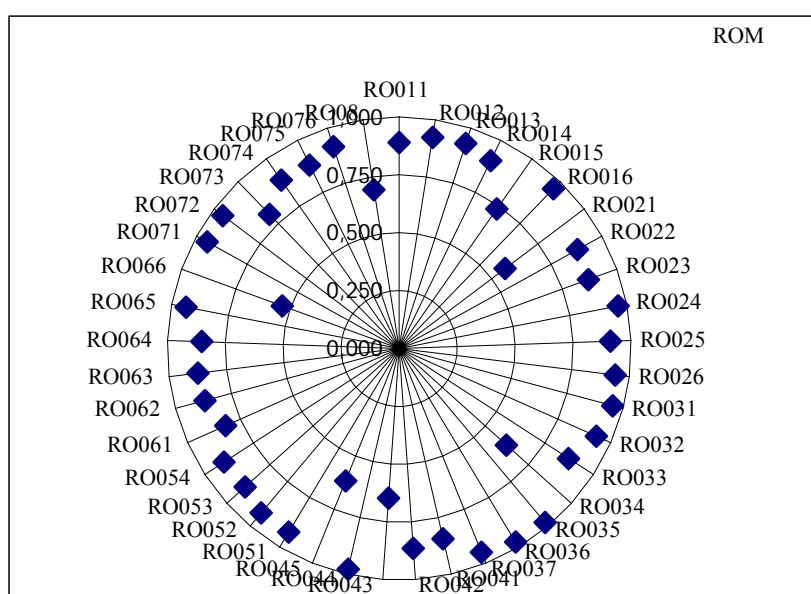
BG011	0.696
BG012	0.904
BG013	0.879
BG021	0.988
BG022	0.885
BG023	0.910
BG024	0.933
BG025	0.825
BG031	0.862
BG032	0.912
BG033	0.968
BG034	0.863
BG035	0.968
BG036	0.857
BG041	0.901
BG042	0.710
BG043	0.641
BG044	0.951
BG045	0.750
BG051	0.928
BG052	0.973
BG053	0.964
BG054	0.791
BG055	0.948
BG056	0.966
BG061	0.969
BG062	0.949
BG063	0.931



Sources: ZEI REGSTAT Database – Authors' Elaboration

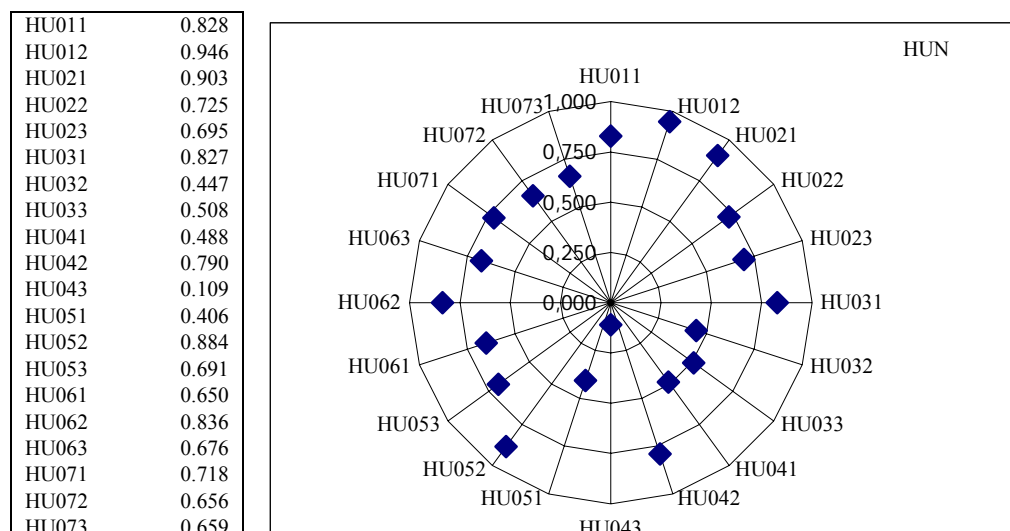
Table 1b / Figure 2b: CSC (employment in manufacturing) in Romanian regions (1991-1999)

RO011	0.890
RO012	0.923
RO013	0.931
RO014	0.902
RO015	0.735
RO016	0.958
RO021	0.573
RO022	0.880
RO023	0.868
RO024	0.963
RO025	0.911
RO026	0.939
RO031	0.954
RO032	0.931
RO033	0.871
RO034	0.622
RO035	0.981
RO036	0.976
RO037	0.948
RO041	0.844
RO042	0.867
RO043	0.647
RO044	0.977
RO045	0.616
RO051	0.926
RO052	0.927
RO053	0.893
RO054	0.900
RO061	0.819
RO062	0.867
RO063	0.876
RO064	0.853
RO065	0.936
RO066	0.537
RO071	0.948
RO072	0.952
RO073	0.805
RO074	0.887
RO075	0.881
RO076	0.916
RO08	0.693



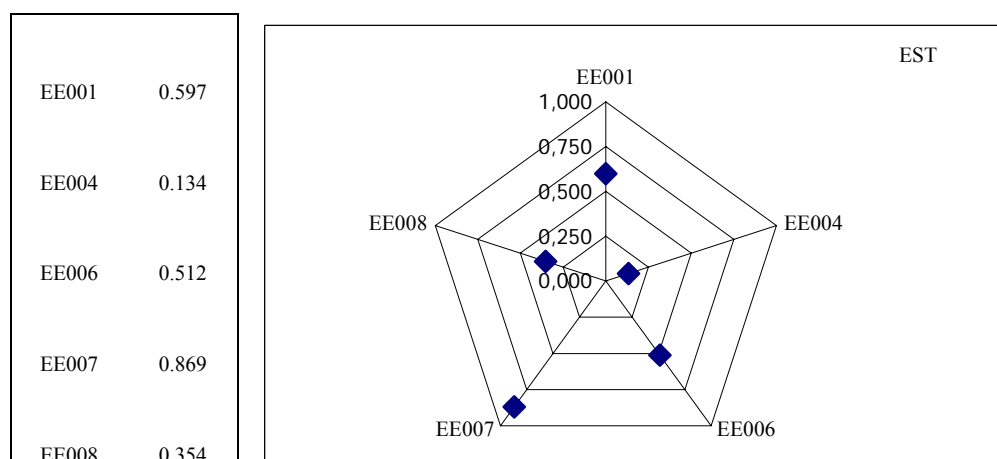
Sources: ZEI REGSTAT Database – Authors' Elaboration

Table 1c / Figure 2c: CSC (employment in manufacturing) in Hungarian regions (1991-1999)



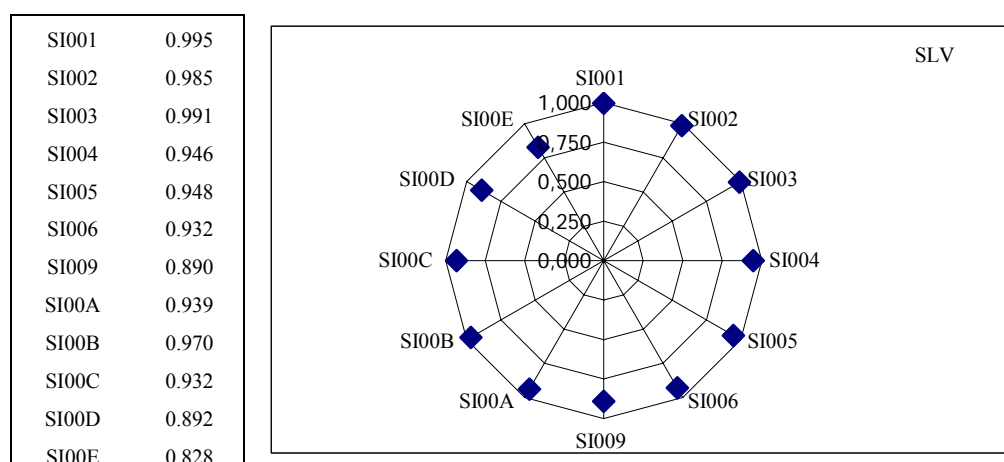
Sources: ZEI REGSTAT Database – Authors' Elaboration

Table 1d / Figure 2d: CSC (employment in manufacturing) in Estonian regions (1991-1999)



Sources: ZEI REGSTAT Database – Authors' Elaboration

Table 1e / Figure 2e: CSC (employment in manufacturing) in Slovenian regions (1991-1999)

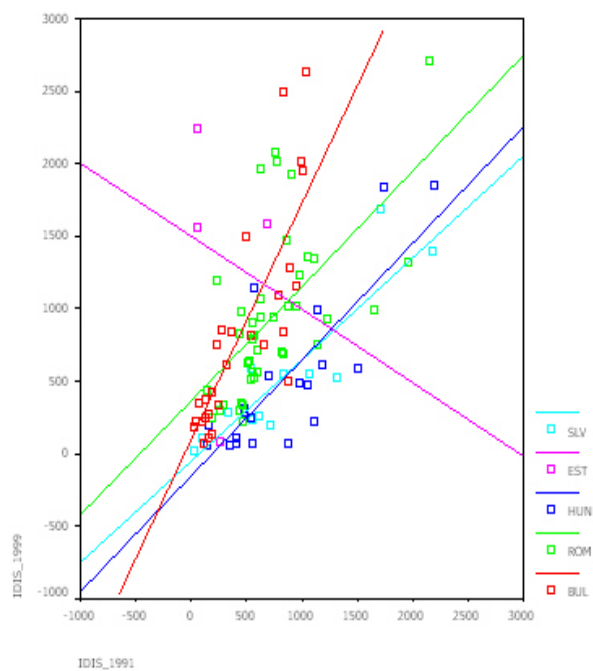


Sources: ZEI REGSTAT Database – Authors' Elaboration

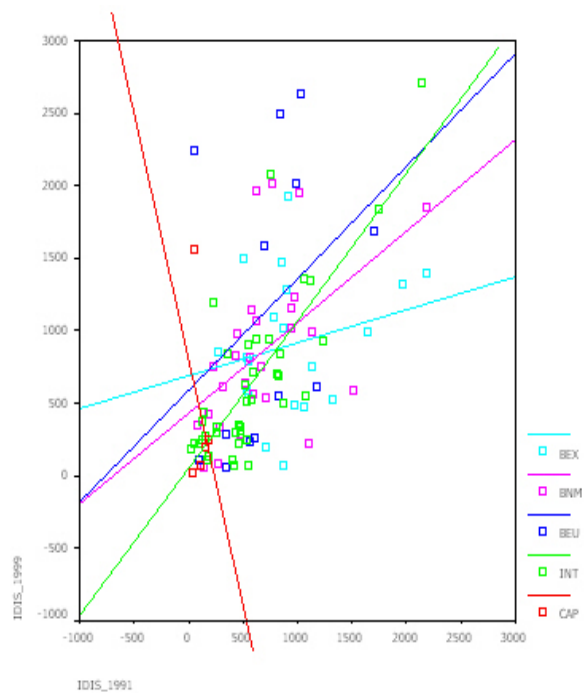
Figure 3a: Evolution of IDIS (1991-1999) – Classification by country

Figure 3b: Evolution of IDIS (1991-1999) – Classification by geopolitical position of regions

3a



3b

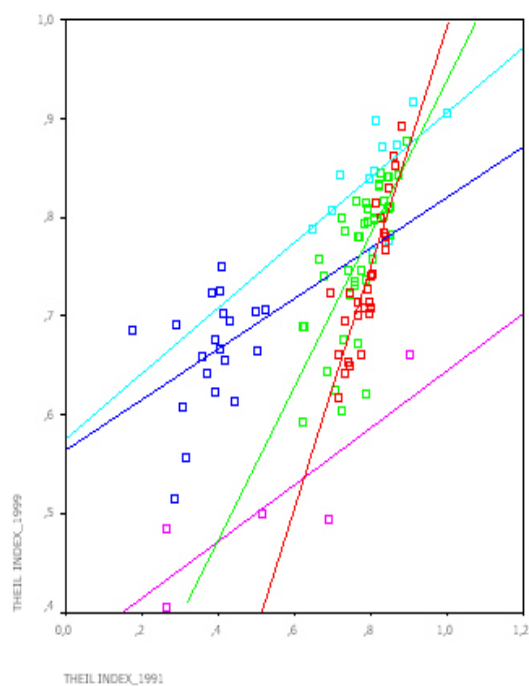


Sources: ZEI REGSTAT Database – CAMBRIDGE ECONOMETRICS EUROPEAN REGIONAL Database -
Authors' Elaboration

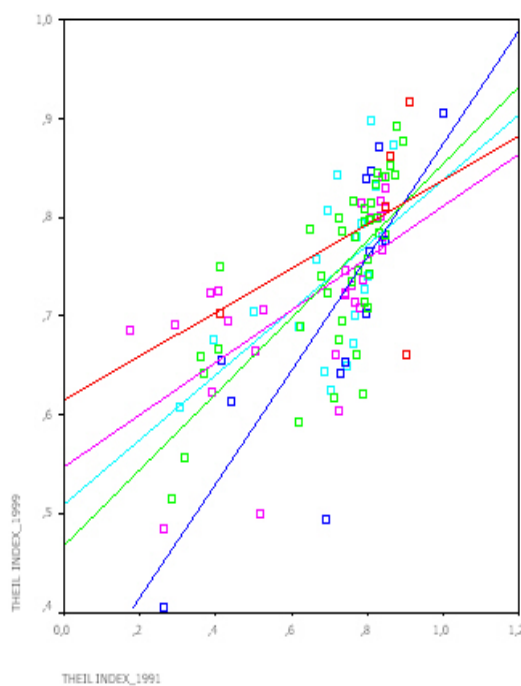
Figure 4a: Evolution of Theil Index (1991-1999) – Classification by country

Figure 4b: Evolution of Theil Index (1991-1999) – Classification by geopolitical position of regions

4a



4b



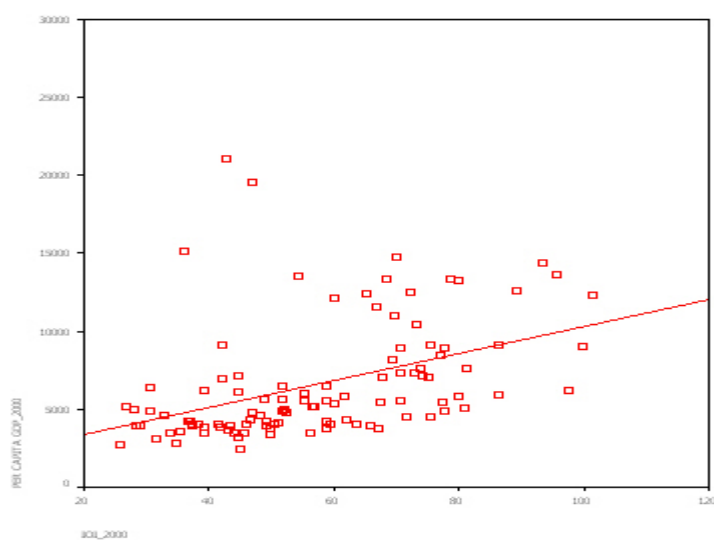
Sources: ZEI REGSTAT Database – Authors' Elaboration

Table 2: The relation among regional economic integration, regional-industrial patterns and regional economic efficiency in the EU NMS regions (2000)

RELATION	DEGREE (PEARSON)	SIGNIFICANCE
Per Capita GDP – GDP share of secondary sector	38.5%	(0.000)
Per Capita GDP – GDP share of secondary sector	38.2%	(0.000)
Per Capita GDP - IOI	42.4%	(0.000)
Per Capita GDP – IDIS	-32.1%	(0.001)
Per Capita GDP – Employment in CINT sectors	26.3%	(0.007)
Per Capita GDP – THEIL Index	15.7%	(0.108)
Per Capita GDP – CSC	18.7%	(0.071)
Per Capita GDP – Gravity Index	69.9%	(0.000)

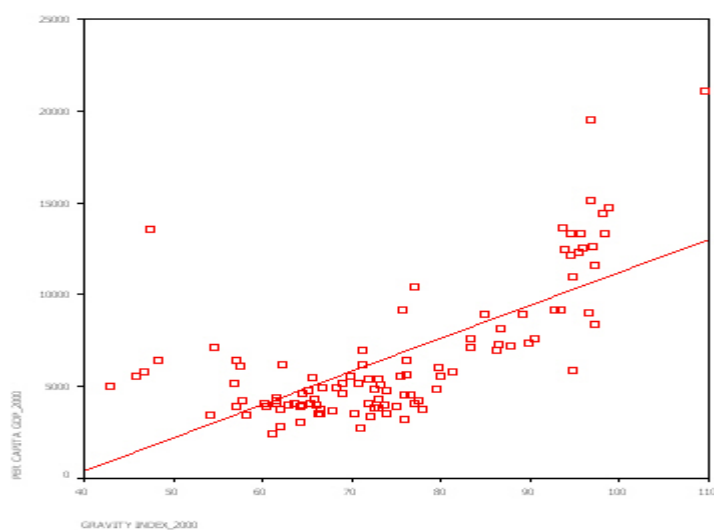
Sources: EUROSTAT REGIO Database – EUROSTAT COMEXT Database – ZEI REGSTAT Database – CAMBRIDGE ECONOMETRICS EUROPEAN REGIONAL Database – Authors' Elaboration

Figure 5: Correlation between per capita GDP (ppp/inh.) and IOI in the EU NMS regions (2000)



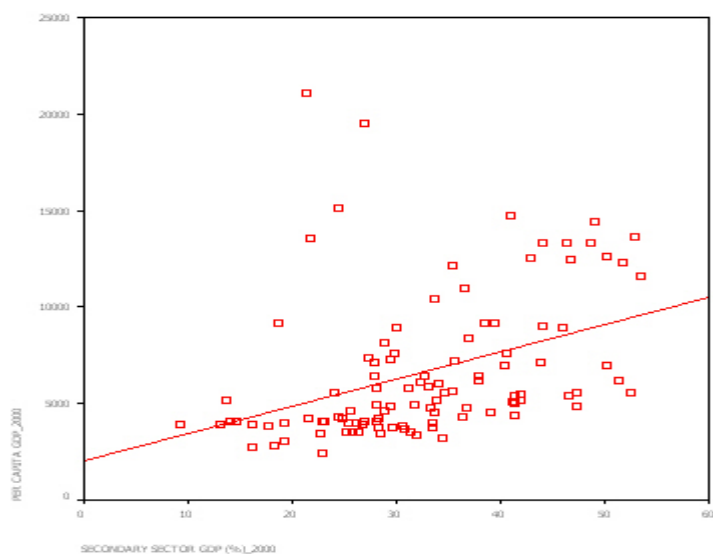
Sources: EUROSTAT REGIO Database – EUROSTAT COMEXT Database – Authors' Elaboration

Figure 6: Correlation between per capita GDP (ppp/inh.) and Gravity Index in the EU NMS regions (2000)



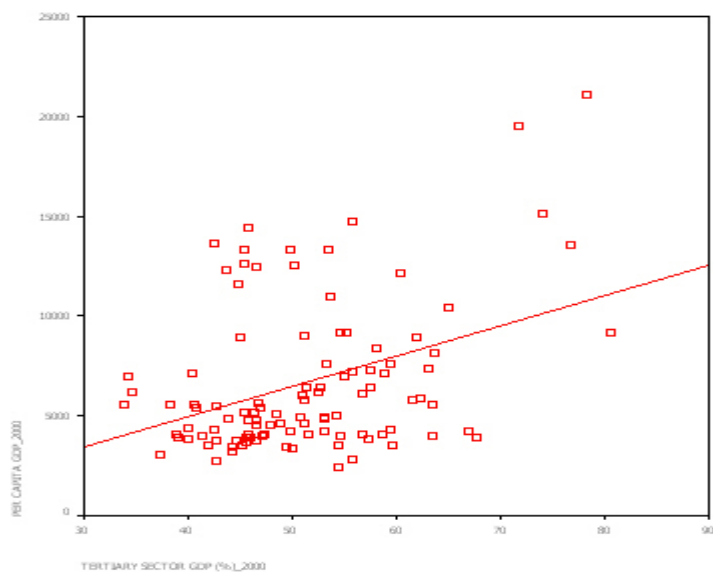
Sources: EUROSTAT REGIO Database – EUROSTAT COMEXT Database – Authors' Elaboration

Figure 7: Correlation between per capita GDP (ppp/inh.) and the shares of secondary sector of production (% GDP) in the EU NMS regions (2000)



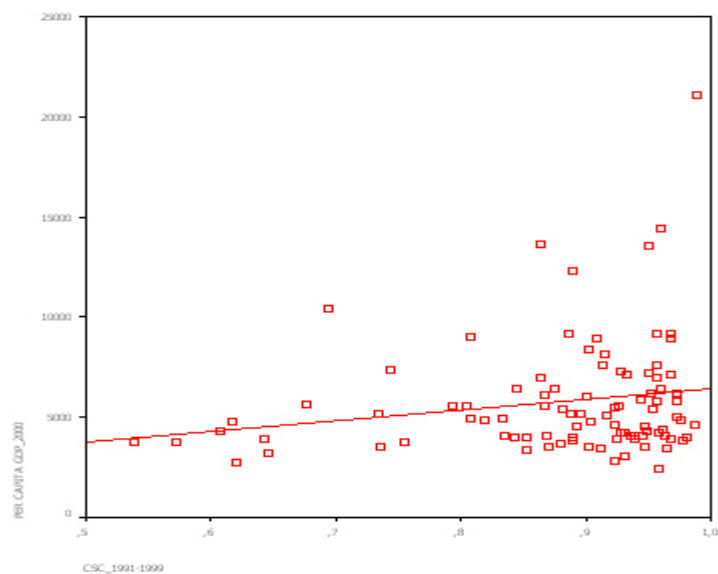
Sources: ZEI REGSTAT Database – EUROSTAT REGIO Database - Authors' Elaboration

Figure 8: Correlation between per capita GDP (ppp/inh.) and the shares of tertiary sector of production (% GDP) in the EU NMS regions (2000)



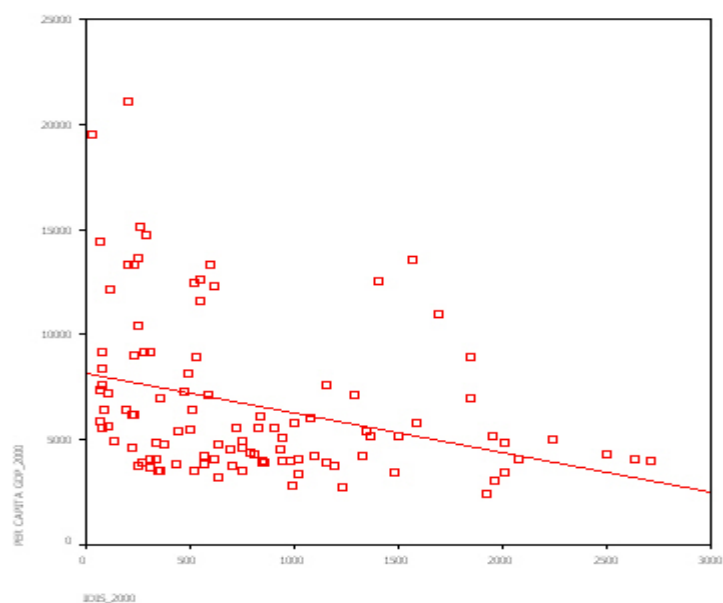
Sources: ZEI REGSTAT Database – EUROSTAT REGIO Database - Authors' Elaboration

Figure 9: Correlation between per capita GDP (ppp/inh.) and the CSC in manufacturing in the EU NMS regions (2000)



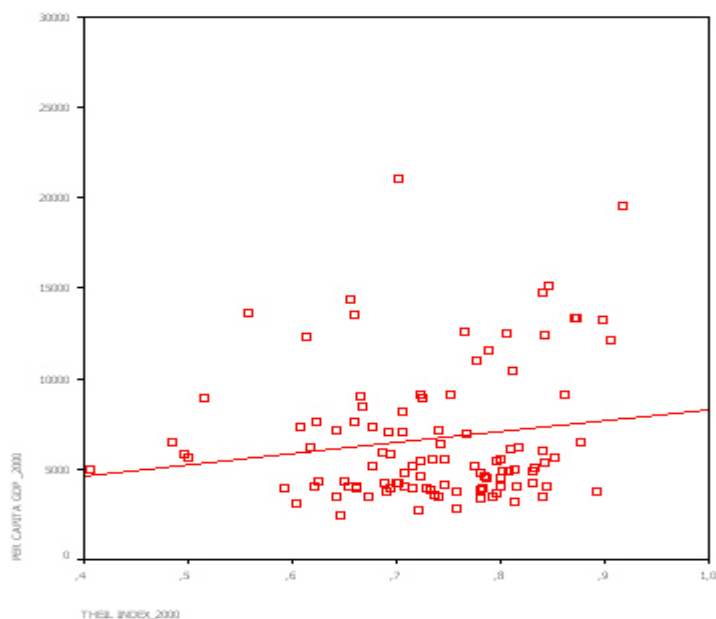
Sources: ZEI REGSTAT Database – EUROSTAT REGIO Database - Authors' Elaboration

Figure 10: Correlation between per capita GDP (ppp/inh.) and the IDIS with the EU-15 in the EU NMS regions (2000)



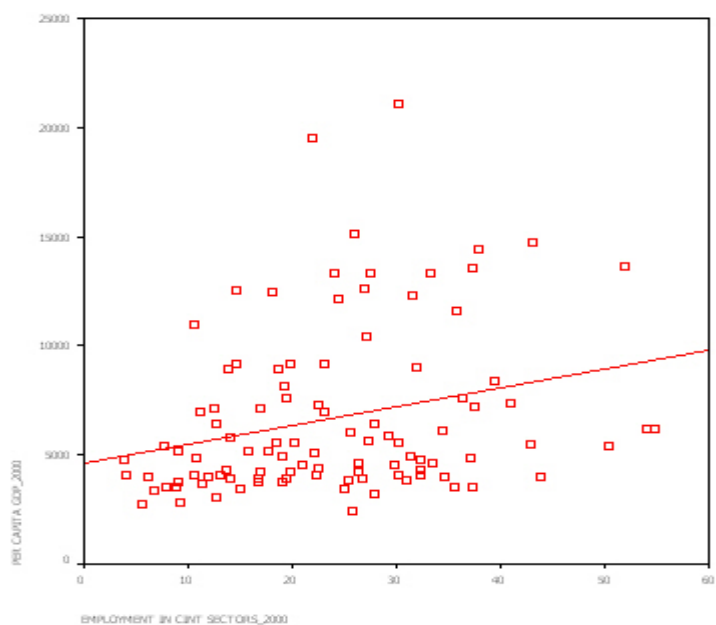
Sources: ZEI REGSTAT Database – EUROSTAT REGIO Database – CAMBRIDGE ECONOMETRICS EUROPEAN REGIONAL Database - Authors' Elaboration

Figure 11: Correlation between per capita GDP (ppp/inh.) and the Theil Index in manufacturing in the EU NMS regions (2000)



Sources: ZEI REGSTAT Database – EUROSTAT REGIO Database - Authors' Elaboration

Figure 12: Correlation between per capita GDP (ppp/inh.) and employment in CINT manufacturing sectors in the EU NMS regions (2000)



Sources: ZEI REGSTAT Database – EUROSTAT REGIO Database - Authors' Elaboration