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PATTERNS OF REGIONAL INEQUALITY IN TRANSITION ECONOMIES*

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PATTERNS OF REGIONAL INEQUALITY IN TRANSITION ECONOMIES*

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Introduction

This paper examines on a comparative basis some distinct aspects of regional development in transition economies, on the basis of regional statistics available for Poland, Hungary, Romania and Bulgaria. More specifically it examines the geographical pattern of disparities, the convergence / divergence trends that have taken place at the regional level and the relation of regional disparities to aggregate economic performance and the process of transition.

Initially, the paper presents a review of the basic issues discussed in the regional economic literature and provides a theoretical basis for the regional dynamics of the transition process, by reviewing the relevant theoretical and empirical literature involved. Then, it provides a theoretical and empirical analysis of regional disparities under transition, testing the convergence / divergence hypothesis and addressing issues related to the distribution of costs and benefits of restructuring over space. In addition, the paper examines in an empirical way the relation of regional disparities to aggregate economic performance and economic cycles, testing whether inequalities become greater (smaller) during periods of high (slow) growth. Our purpose is to see whether the emerging pattern of development is going to be a spatially selective one, deteriorating further the position of lagging behind and depressed regions or - on the contrary - have a diffusing nature.

A review of the literature concerning regional disparities

Theories of regional inequality as well as empirical evidence regarding actual trends at the national or international level have been discussed and debated in the economic literature for over three decades. Early debates concerning the impact of market mechanism on regional inequality in the West (Myrdal 1957, Borts 1960), have become popular again in the 1990s. Following the work of Barro and Sala-I-Martin (1991, 1992) that attempts to evaluate the neoclassical proposition of convergence in the levels of development among different countries in the new internationalized economic environment, a number of studies have appeared, testing for convergence or divergence tendencies at the regional level. The basic hypothesis tested in these studies is the neoclassical proposition concerning balanced development. The findings of these studies, that have focused on the European Union or individual country members, tend to indicate that over time it has been a significant reduction in the level of inequalities at the regional level (Abraham and van Rompuy 1995, Armstrong 1995, Molle and Boeckhout 1995, Petrakos and Saratsis 1997). Certain studies, however, also report the existence of selective tendencies such as convergence clubs, asymmetric shocks or pro-cyclical effects (Baumol 1986, Fagerberg and Verspagen 1995, Funke 1995, Chatterji and Dewhurst 1996, Petrakos and Saratsis 1997), that tend to increase inequalities over time.

Given the mixed evidence, it becomes increasingly clear that regional disparities are affected by a number of processes taking place at different time scales (Camagni, 1993):

- *Long-term processes* tend to result to interregional homogenization of economic and structural conditions in an integrated economic and social space with no major actual, mental or perceptual barriers. As the neoclassical or stages-of-development models would predict, information diffusion, integration of local cultures and know-how, strong imitation processes in both economic organization and life style, inter-regional movements of labor and capital as well as the spread of basic social and technical infrastructure play a major role towards that direction. Critical, however, conditions for the realization of these converging in the long-term processes are the ability of markets or policies to eventually overcome distance and culture related barriers, as well as deficiencies in the institutional setting of the peripheral and lagging behind regions.
- *Medium-term processes*, as the cumulative causation theory would predict, tend to result to differential growth and divergence. The selective -with respect to space- nature of innovation and technological change, the tendency of economic activities to cluster in order to benefit from urbanization, localization or industrial complex economies and the rapid shift of modern economies towards the new tertiary sector that requires large urban agglomerations to grow, generate an overall unfavorable environment for the less advanced regions. Radical innovations and advanced infrastructure are more rapidly adopted and developed in core areas or advanced regions possessing a higher quality of human capital and higher demand, although diffusion to the periphery may take time or be partial in nature.
- *Short-term processes* usually related to the cyclical behavior of various sectors of economic activity or to exogenous shifts generated in the international markets usually tend to favor core or intermediate regions. As their productive base is stronger, more diversified and better organized, they can deal in a more successful way with new opportunities or threats than the less advanced or peripheral regions.

Although this taxonomy of the expected impact of various dynamics taking place at different time horizons on the prospects for regional convergence or divergence is useful, the far reaching institutional changes that have recently taken place in the European Union have also received the attention of a growing and parallel in nature literature. A number of studies have examined the impact of economic integration in the European Union (that is the implementation of the Single European Market and the policies towards the Economic and Monetary Union). The majority of these studies conclude that the process of integration will lead to an intensification of regional disparities in the EU, as the locational behavior of capital, the importance of geographical factors such as market accessibility and proximity, the variations in productive structures as well as the differences in the levels of technological and human capital development will favor the more advanced and core regions and generate a disproportionate mix of threats and opportunities for the less advanced and peripheral regions (CEC 1991, CEC 1993, CEC 1994, Amin et.al. 1992, Camagni 1992).

The Theory and the Early Evidence on Regional Disparities Under Transition

If the process of integration in the EU comes as a natural next step in a long sequence of policies aiming to unite the European economic space, the process of transition in Central and Eastern Europe (CEE) started as an abrupt brake with the past in the spheres of economic and political organization and institutional

setting. In such a tremendous type of transformation where marketization and openness of the economy generate a series of adjustments in the productive sector, several questions rise with respect to the distribution of costs and benefits of transition over space.

In an early work, Petrakos(1993, 1996) has claimed that the process of transition will have a serious impact on the regional structure of Central and East European countries. In this work a hypothesis was advanced that regional disparities will increase during the process of Transition as a result of *internationalization* and *structural change* that tend to favor metropolitan and western regions, as well as regions with a strong industrial base. In addition it was claimed that at the macro-geographical level the process of transition will shift the gravity center of Europe to the East, favoring countries near the East-West frontier, increasing at the same time disparities at the European level.

(a) The Spatial Impact of Foreign Capital

Openness is realized through the elimination or reduction of barriers to West-East capital and merchandise flows. Given that the behaviour of foreign capital with respect to location is highly selective (CEC 1993a), FDI is expected, at least in the early stages of the transition process, to generate a polarised pattern of development. Central places with respect to the European economic space will attract a larger number of activities with a higher functional order, while non-central places will receive a smaller number of lower order activities (Cohen 1981, Petrakos and Brada 1989, CEC 1992b, CEC 1993a, Rosenbald and Pumain 1993). As a result metropolitan areas such as Prague, Warsaw and Budapest will have a strong tendency to be the immediate recipients of a critical share of foreign investment. This tendency which is expected to be intensified in the medium-term is explained by the ability of metropolitan areas in CEE countries to provide a minimum of infrastructure necessary for international business activities as well as relatively adequate telecommunication and transportation networks for the connection of branches with their international headquarters. As a result, a first spatial impact of the openness and westward orientation of the ECE countries will be a disproportionate concentration of foreign capital in the metropolitan area and a polarizing pattern of economic growth. In this respect, small cities and peripheral regions do not seem to have an equal share in the benefits of openness. In fact, if domestic resources closely match the location pattern of foreign capital, many of them may be further marginalized.

Openness however and economic integration with the Western European economy has an additional spatial implication that depends on the adjacent position and the proximity of a country to Western Europe. For CEE countries having common borders with West Europe there are significant opportunities for trans-frontier cooperation in the form of joint ventures, subcontracting, free trade areas, scientific and technological cooperation, local or regional policy coordination as well as expansion of cross-border transportation and communication infrastructure. Therefore common borders are expected to generate local economic activity and create an alternative route for foreign capital penetration. This may imply a diversion effect for foreign capital as a part of it originating from neighboring countries prefers the benefits of proximity to the benefits of the metropolitan market. It seems therefore that internationalization and

openness have two distinct spatial effects that operate in favor of the metropolitan areas and the western regions, intensifying polarization and a geographically divided pattern of development.

(b) The Spatial Impact of Trade

Besides capital flows, the resumption of international trade with Western European countries and the collapse of the CMEA relations with the other Eastern European countries and the former Soviet Union will be an important factor with serious regional implications. Reduction or elimination of existing trade barriers with the West increases imports and exposes previously protected regional production bases to international competition. As a result, regions that were heavily dependent on CMEA relations or military contracts, monostructure regions or regions with a weakly integrated production structure, are expected to be more sensitive and suffer directly from the openness of the economy. On the other hand, regions with a diversified production base and regions that have implemented a successful land reform and reorganization of agricultural production may have greater success in adapting to the new international environment.

(c) The Spatial Impact of Macro-geographical Adjustments

Finally, openness and integration into the European economy has an additional macro-geographical impact that is related to the proximity of each country to the western European development centers. Distant countries will be integrated more slowly and selectively while adjacent ones will experience sooner the benefits of an eastward directed dispersion of development. Because of the gradual elimination of barriers and the creation of a large European market, geographical factors such as distance, accessibility and centrality emerge as important elements of the spatial organization of activities and the slowly shaped new spatial European economic order (Peschel 1992, Rosenbald and Pumain 1993). In general, it can be argued that the closer to the European gravity center an ECE country is, the greater the possibility of attracting higher order economic functions and develop multiple strategic location cities or regions that will be placed in the upper part of the European hierarchy is. In other words, as distance from the European center of gravity increases, so does the number of cities and regions that do not qualify as European-level strategic locations. Given that in the EU a large part of regional disparities is attributed to inter-country rather than to intra-country disparities, it becomes clear that the relative standing of each country, on the macro-geographical level, affects the internal micro-geographical allocation of activities. Regions can undertake a strategic or central function that is not derived only from their relative position within their country, but also from the position of the country within the emerging hierarchy of the European economic space. In this respect, peripheral regions in countries placed high in the European hierarchy will not have the same difficulties and will not move along the same trajectories as peripheral regions in perimetric countries.

Overall, the impact of internationalization on the spatial regularities of the ECE countries is exerted through a complex set of interacting processes and cannot be attributed to a single overriding factor. The influence however of international forces operating through the selective behavior of foreign capital and the unbalanced pattern of international trade along with the emerging importance of geographical features are

expected to have a strong spatially dividing character. Metropolitan areas, western regions, regions with a diversified production base and those located a short distance from the European development center are expected to experience a positive net effect from internationalization. On the other hand declining monostructure, eastern and perimetric regions are more likely to experience an unfavorable net impact from openness that will further intensify their problems and make the task of restructuring even harder. These regions will tend to replace Southern Europe in forming the new European periphery of the next century.

(d) The Spatial Impact of Aggregate Economic Performance

It has often been claimed that an inverse relation exists between and growth performance on the one hand and regional disparities on the other. The faster the pace of growth, the more likely it is that regional disparities will be diminished (CEC 1991, Dunford 1993, Dunford and Perrons 1993). This, is argued, will occur because of anticipated spread effects and because growth provides the State with the financial resources to intervene and implement an active regional policy. The experience of the EU, that went from a period of high growth and declining regional disparities that ended in the mid 1970s, to a period of low growth and increasing regional disparities afterwards, (CEC 1991) is very indicative of this inverse relationship.

However, evidence from a Southeastern EU member State indicates that periods of higher growth are associated with increasing disparities at the regional level (Petrakos and Saratsis 1997). Although this evidence is in line with the classic efficiency-versus-equity trade off, is in variance with existing evidence at the EU level. A reconciliation of these apparently contrasting empirical findings is possible if differences in the levels of development are taken into consideration. In countries with lower level of development, where the economy is likely to maintain a core-periphery structure, higher growth rates may be associated with increasing disparities, as economic expansion originates to a large extent from the core areas. In countries experiencing, however, higher levels of development, where the various parts of the economy are more closely integrated, higher growth rates may be associated with decreasing regional disparities, as more regions have the opportunity to share the benefits of economic expansion. In the case of the CEE countries it can be claimed that higher rates of growth and higher levels of development are more likely to lead to regional convergence, while lower rates of growth and lower levels of development are more likely to lead to regional divergence.

(e) The Spatial Impact of Structural Change

Finally, a last factor with an important spatial dimension is the sectoral composition of output and employment and the expected changes due to the restructuring process. As we have already seen, the costs and benefits of transformation are not expected to be equally distributed over space. In general, regions with a more diversified economic structure will experience a lower adjustment cost, while monostructure regions such as the old industrial areas that are in decline and backward regions will face serious and lasting difficulties. As far as the last two groups of regions are concerned, their prospects for

recovery are not the same. Given that a decentralization of industrial production on a large scale is not very likely (Peschel 1992), a recovery process is more likely to take place in the former centers of industrial production where idle capital, basic infrastructure and a critical size of labor force with desirable qualifications exists. As a result, in the long run, declining industrial regions will probably be in a better condition than backward and undeveloped ones, provided that serious efforts are made to confront ecological problems and create a high-amenity science-based and services-based urban environment.

Metropolitan areas and industrial regions will also be benefited by a sectoral shift in the composition of output that has taken place in the modern post-industrial world and is slowly being transmitted into the ECE economies. This shift is related to the growing importance of the tertiary sector and the benefits of agglomeration and scale that it derives from its operation in metropolitan areas and large urban concentrations. Activities with an increasing importance in today's economies, such as high-level producer services, banking, financial services, entertainment and commerce, have a strong urban character and can be important sources of employment creation and growth in large urban concentrations (Coffey and Polese 1987, CEC 1992b, Fournier and Axelson 1993, Lever 1993). As a result, the benefits of this sectoral shift that is expected to follow the process of restructuring will not be equally shared by central and peripheral regions.

(f) The formulation of hypotheses

On the basis of this analysis, the following hypotheses can be advanced with respect to the regional dimension of the transition process in CEE countries:

1. Metropolitan regions tend to be relatively more benefited by the process of transition, their success being a function of their size and importance in the European hierarchy of central places.
2. Western regions in CEE countries sharing common borders with EU countries will experience a faster and more successful adaptation to the new economic conditions than the eastern regions. As a result, in these countries a west-east pattern of development will tend to take place. In countries that do not share common borders with the EU, the previous pattern of development is more or less maintained or changed more slowly.
3. The process of transition is associated with increasing regional disparities. Given that CEE countries have in general lower levels of development than the EU average, faster restructuring and growth may be associated with increasing disparities.

(g) The Early Evidence

There are now available reports that transition has increased disparities, as western regions and metropolitan areas in general fare better (Downes 1996). Evidence from Esthonia shows that core-periphery differences have increased, with Talin benefiting the most from the new orientation of the country. Also Western coastal regions are faced with new opportunities in trade, tourism and joint ventures, while Eastern regions face mounting problems in their primarily agricultural economy as traditional ties with large Russian markets in St. Petersburg and Pskov have been interrupted Talin has the greater

concentration of foreign capital and joint ventures, the greatest number of new enterprises and the higher income per capita in recent estimates (Raagmaa 1996). Evidence from East Germany already indicates that development is highly selective and depends on the behavior of foreign capital. Berlin emerges as a development pole with strong links with the West German and the international economy but weak local linkages and low spread effects (Haussermann 1993).

Similar trends are detected in The Slovak Republic, where Bratislava with 9% of national population, generates 30% of the country's GDP (Balaz 1996), while in Hungary, where disparities increased during the early years of transition (Fazekas 1996), FDI and domestic capital prefer metropolitan and western regions (Lorentzen 1996), turning the relatively balanced pre-1989 situation of the regions into an east-west disparity.

Additional evidence comes from Poland, where in 1994 the metropolitan region of Warsaw, Krakov, Poznan and Katowice had the lowest unemployment rate. Also, the regional pattern of unemployment in Poland shows some considerable stability in the 1990-1994 period, indicating that initial best performing regions are the same with final best performing regions and initial losers are final losers also (Ingham et.al. 1996).

This basic picture is also supported by reports for Albania (Petrakos 1996), Bulgaria (Minassian and Totev 1996, Petrakos 1996) and Romania (Ramboll 1996, Constantin 1997) indicating that economic activities are concentrated in a limited number of core regions or development axes and that disparities have increased during transition.

Regional disparities under Transition: new evidence from Poland, Hungary, Romania and Bulgaria

With the financial support of the Phare-ACE Program of the European Commission, a relatively extensive regional data base was constructed for Poland, Hungary, Romania and Bulgaria with information at NUTS III level. Although for several key variables such as Gross Regional Product (GRP) per capita or other income and welfare indicators the information is not available for all countries, this data set provides an opportunity for cross-country comparisons with respect to regional performance that was not available before. Our interest in cross-country comparisons arises from the fact that these CEE countries are characterized by different development levels and different geographical coordinates. On the one hand Poland and Hungary are relatively advanced CEE countries while Romania and Bulgaria are relatively less developed. In addition, the former seem to be more successful in their effort to transform their economy from a centrally planned to a market based than the later. On the other hand, each country has a different place within the new European economic space. Poland is a North-Central European country sharing common borders with Germany and Hungary is a Central European Country sharing common borders with Austria. On the contrary, Romania and Bulgaria are situated in the South-Eastern part of Europe, bordering with Eastern or South-Eastern European countries. As a result, the first two countries have the advantage of geographical proximity and adjacency to the Western European core countries, while the other two do

not[1]. Given that differences in development levels are very likely to have been influenced by different historical trajectories and geographical characteristics, it is interesting to examine here how geographic and economic factors affect the regional structure and performance under transition.

In the first part of this section we examine the demographic characteristics of these countries at the regional level. More specifically we analyze the regional trends of economic activity by examining with the use of maps the geographical patterns of population density and population change. In the second part we examine trends of convergence or divergence at the regional level with the use of various economic indicators and methods.

To facilitate our discussion and also place it in an appropriate context, we present in Map 1 the Regions of the four countries and provide in Table 1 a summary of useful information concerning their number and size for comparability purposes. Although the Map is intended to be a reference point for the subsequent parts of the analysis, the Table provides some information that need to be taken in advance into consideration.

Table 1. Basic Information concerning the regional structure of Poland, Hungary, Romania and Bulgaria

Countries and National 1995 population (in '000.000)	Average National Density	Number of NUTS III Regions	Population of Regions in 1995 (in '000)			Area of Regions (in '000 sq.km.)		
			Average	Largest Region	Smallest Region	Average	Largest Region	Smallest Region
Poland (38.6)	123.5	49	787.9	3,924.8	249.9	6.4	12.3	1.5
Hungary (10.2)	110.1	20	512.3	1,930.0	224.0	4.6	8.4	0.5
Romania (22.6)	95.1	41	539.8	2,332.6	232.5	5.7	8.6	1.8
Bulgaria (8.3)	75.5	28	299.4	1,192.7	147.2	3.9	7.7	1.3

[1] Another differentiating factor that should be kept in mind is that Romania and Bulgaria have been for over four centuries under Ottoman rule, missing to a large extent the influence of Renaissance and the industrial revolution in Western Europe.

We should note that our sample of Transition countries is relatively balanced as it includes a relatively large and a relatively small country from Central and South-Eastern Europe respectively. Given that Central European countries are relatively more advanced than Southeastern European countries, this sample gives us the opportunity to study patterns of regional change in small and large countries in each group.

At the NUTS III level Poland has 49 regions (Voivodships), Hungary has 20 , Romania has 41 and Bulgaria has 28 regions (Oblasti)[2]. A first observation that comes from the Table is that larger countries tend to have larger regions in terms of population and area. As a result, wide differences are found to exist in our sample in terms of average regional size. For example, Poland has average regional size that in terms of population is about 50% greater than that of Hungary or Romania and 150% greater than that of Bulgaria. Bulgaria has the smallest regions in terms of population, while Romania and Hungary have similar sizes. On the other hand, measuring sizes in terms of area, the differences among the four countries are relatively smaller. These differences are normal as territorial divisions in each country are largely affected by historical processes that do not allow a common rule. In the EU, on the basis of 1990 population, the average size of NUTS III region is 330 thousand people, while the average size in UK. (which has the largest regions) is 883 thousand and in Denmark (which has the smallest regions) 148 thousand (CEC 1994).

A second observation that arises from the Table, is that as we move from North to South at the European scale, we meet CEE countries with lower population densities at the national level. Although population densities (and the concentration of activities) at the macro level are affected mainly by long term processes and cannot be attributed to the process of transition or any other single factor, these differences may play a role in the spatial regularities and adjustments at the national level. For example, higher densities may generate greater concentration, as pressure to land and higher demand density favor spatial mobility and agglomeration economies.

(a) Regional Demographic Indicators

In Maps 2, 3 and 4 we present the density of population of Poland, Hungary, Romania and Bulgaria, measured as population per square kilometer, the regional distribution of population, as well as the average annual 1990-1995 population change at the regional level for the four countries. The information provided in the Maps refer to the years 1990 and 1995.

Population density (Map 2) at the regional level is an indicator of the spatial distribution of activities in these countries. The examination of the Map reveals some interesting information about the spatial structure of the countries that need to be discussed. First, in all countries, activities tend to show a higher concentration in some areas and a lower concentration in some others. In 1990, the population and activities of Poland tend to be concentrated in the central and southern part of the country with the regions including Warsaw, Lodz, Katowice and Krakov having the greater population densities. In Hungary the highest density figures

[2] The Bulgarian regions are historical regions that currently do not have any administrative functions.

are found around Budapest and (with notable exemptions) in the north and northeast part of the country. In Romania the pattern is less clear, as regions with higher population density seen to be more dispersed. In general, the regions near Bucharest and the regions including Craiova and Costandja in the south, as well as the regions including Iasi and Bacau in the northeast have a higher concentration of population, giving the impression that a (weak) southwest-to-northeast axis of development exists including areas with higher concentration of activities. Finally, in Bulgaria the pattern seems also to be mixed, as regions with low population density are found almost everywhere. However, taking into consideration that the regions with the higher density are those including Sofia-city, Plovdiv and Varna, it is possible to identify a horizontal development axis running from west to east that connects these cities.

Second, changes in population densities that reflect changes in activities have taken place to some degree in all countries bur are more obvious in Poland and (to a lesser extent) in Hungary. As Map 2 shows for 1995, the population density in Poland has increased in the northwest regions that are close or adjacent to the German borders. In Hungary, population density has increased in the region surrounding Budapest and in the western borders, while in Romania the process is inverse, as the western regions of the country (bordering with Yugoslavia) end up with lower densities. Finally in Bulgaria that has experienced an overall population decline during this period, the regions affected in a more negative way are found in the northern and the southern borders. In Map 3, which presents the regional distribution of population for 1990 and 1995, we see that overall, the regions with very high population density tend also to have a higher share of the national population.

Finally in Map 4 we present information about the average annual population changes in these countries for the period 1990-1995. We first observe that at the macro-geographic level as we move from north to south, we meet countries with greater population losses at the national and regional level. Poland has experienced at the national level a population increase of 1.5% for the entire period, Hungary a population reduction of -1.23%, Romania a population reduction of -2.05% and Bulgaria a population reduction of -4.22%.

Second, Poland and Hungary, having the smallest changes at the national level, show relatively small differentiation at the regional level, while Romania and Bulgaria, having greater population losses at the national level, experience greater differentiation at the regional level.

Third, Metropolitan regions seem to do worse than average in terms of population change in Poland and Hungary, but better than average in Romania and Bulgaria. Although in the case of Hungary the decline of Budapest may me attributed to urban sprawl (sub-urbanization) phenomena, the same does not seem to be the case in Poland, where the regions including Warsaw and Katowice are among those few that lose population. In Southeastern Europe things are different, as in Romania Bucharest, Kostantza and Iasi are among the few regions that gain population, while in Bulgaria Sofia, Plovdiv and Varna are among those regions loosing relatively less population.

Forth, population changes in Poland tend to alter to some extent the spatial pattern and the distribution of activities by favoring regions in the north-west and north part of the country, while in Hungary, Romania and

Bulgaria this trend is not obvious. It is interesting to observe here that in all countries regions having the potential to serve as Eastern gates (at, or close to the borders with FSU countries) fared better in terms of population change. Examining the performance of the southern Hungarian, western Romanian and north-western Bulgarian regions, that is inferior to respective national averages, a question arises for the extent to which it has been affected by proximity to former Yugoslavia and the wider area affected by the Bosnian war.

In Diagrams 1 and 2 we examine whether regions with a higher concentration of activities benefit more from population change. In the first Diagram we plot regional population change against regional population density, while in the second, against the regional share of national population. A positive slope would indicate a trend for increasing regional differentiation as larger or more densely populated regions would tend to attract relatively more population. A negative slope would indicate the opposite. Examining the plots in the two diagrams, we observe that the evidence provided is mixed. In both diagrams, the plots of Poland and Hungary have a negative slope, while the plots of Romania and Bulgaria have a positive slope. As a result, in the more advanced countries of our sample the metropolitan regions had an inferior performance (compared to the other regions) in terms of population change, while in the less advanced countries the metropolitan regions did relatively better in terms of population change.

(b) Regional Economic Indicators

The analysis of regional trends and developments with respect to economic indicators during the first years of Transition is based on the following methodologies and techniques that are used on a comparative cross-country basis:

(a) *Cartographic analysis* with the use of maps that allow the detection of possible West-East or Core-Periphery patterns of change, as well as the formation of possible development areas or axes,

(b) *Diagrammatic analysis* that examines the spread of regional values around the national average and the evolution of recorded disparities over time,

(c) *Statistical analysis* with the use of three distinct measures of disparities:

- The coefficient of regional variation ($\sigma/\bar{x}$), defined as the standard deviation of a variable divided by its mean value,
- The ratio of maximum to minimum regional value (max/min) and
- The b-convergence coefficient estimated from an econometric model in the tradition of Barro and Sala-i-Martin (1991).

The coefficient of variation is a dimension-less index that allows cross-country, cross-variable and over time comparisons of the level of regional disparities. The value of the coefficient is basically determined by the value of standard deviation of a variable and as a result it is affected by all observations. In principle, the greater its value, the greater is the level of regional disparities. The max/min ratio is also a dimension-less index of disparities, but its value is affected only by the two extreme observations of the variable

under consideration. In principle again, the greater its value, the greater is the spread of the observations and the greater the level of disparities. Finally, the b coefficient is estimated from the regression:

$$y_t/y_0 = a + b\, y_0 + e \qquad (1)$$

where y_0 is a variable at the beginning of a time period and yt is the same variable at the end of a time period. Obviously, the y_t/y_0 ratio indicates the growth of the y variable in the (0, t) period. As a result, a positive relation ($b>0$) of this dependent variable with the initial value y_0 would imply that regions with a higher initial value of y would tend to have a higher growth performance. On the contrary, a negative relation ($b<0$) of the dependent variable with the initial value would indicate that the best performing regions tend to be those with the lower initial values. This indicates that positive values of the estimated coefficient b are associated with tendencies of regional divergence, while negative values with tendencies of regional convergence.

The economic indicators we use in order to study the level and evolution of regional disparities for the countries under consideration on a comparative basis are:

1. gross regional product
2. average wages
3. industrial production per capita
4. investment per capita
5. cars per 100 inhabitants
6. TV sets per 100 inhabitants
7. telephones per 100 inhabitants
8. road network per square km and
9. hospital beds per 100 inhabitants

The use of additional or different indicators is not possible because of data availability problems. Although the national data bases constructed under the ACE Project include many more variables at the regional level, most of them are available for only one country, restricting in this way the range of variables that could be used for comparative analysis. Even the variables that we use are rarely available for all countries. Nevertheless, the variables used cover a wide range of regional aspects of these economies. Variables 1-4 allow for the examination of the spatial dynamics related to the productive base of these countries, variables 5-7 allow for the examination of spatial adjustment in levels of welfare, while variables 7-9 allow us to examine spatial variations of indicators related to social and technical infrastructure policies.

1. Cartographic analysis

We start our discussion in this section with the presentation of a set of regional maps, seeking to trace the existence of possible spatial patterns in the allocation of activities, wealth and infrastructure that have not been captured by (or differ from) the cartographic analysis of demographic indicators. In Maps 5-11 we present the spatial variations of a number of variables related to the productive base of the Transition

economies, while Maps 12-14 present variables related to welfare and consumption levels. Finally, Maps 14-16 present spatial variations for indicators related to the provision of social and technical infrastructure and therefore to the spatial aspects of public policy.

The spatial variations in average wages (Map 5) shows a mixed pattern. In general, metropolitan regions, regions with large cities and important ports (especially in Romania and Bulgaria) have fared better than average in terms of average wages. On the other hand, variations in GRP (Map 6) show a much clearer spatial pattern for Poland, where metropolitan and western regions do better than eastern, and for Hungary, where central and western regions do better than eastern. GRP regional variations in Romania however, do not seem to follow any specific pattern, neither they conform with variations in the demographic indicators that were examined earlier. The Map of the industrial production per capita (Map 7) provides a similar picture for Poland, as eastern regions seem to have much lower level of production than average. In Romania, although the pattern is still mixed, one can identify a number of regions at the center of the country, in the southeast (coastal regions) and the east that have done better than many southern, western and northern regions. Putting it in another way, most perimetric border regions have figures that are well bellow the national average. Finally in Bulgaria, the region surrounding Sofia-city, the industrial region of Stara Zagora at the center and the port region of Burgas are doing better than the national average and the perimetric regions in the northern and southern borders.

Maps 8 and 9 depict the spatial variations in investment per capita and the regional share of total investment respectively for countries with available data. Both Maps highlight the ability of metropolitan but also western regions in Poland to attract higher shares of capital, while in Hungary the obvious message is that Budapest and the surrounding regions are mostly benefited from investment activity. However, in the per capita figures the western regions appear doing better than the eastern, although in the regional shares picture, eastern regions seem to attract a significant portion of total capital invested. In Romania the highest per capita figures are found in Gorj (in the southwest) and Costanta (in the southeast), with the northern part of the country lagging behind in terms of investment activity. When regional shares are considered, Bucharest (and a few nearby regions) , Constanta and Gorj are the regions attracting the higher shares of investment, while several regions in the north and the south are left with very low investment shares.

Maps 10 and 11 depict the spatial variations in Foreign Direct Investment (FDI) per capita and the regional distribution of FDI respectively for Poland and Romania. In the case of Poland the core-periphery and west-east differences become for one more time apparent in these two Maps. However, given the strategic character that most FDI have, it would not be totally unrealistic to claim that their presence or absence reveals advantages or disadvantages that are likely to affect development prospects. In this respect, it is interesting to note that in Poland investment activity (and especially that related to foreign capital) tends to shape two possible development axes: One along the western borders of the country and another one of (north-to-southeast direction at the center of the country, joining Warsaw with the Baltic Sea port cities. These two axes, that leave outside (and behind) several regions in the central and eastern part of the country, alter to a considerable degree the spatial picture of the country as it is composed and depicted by the demographic indicators (population density). In the case of Romania, FDI is the first indicator that

shows a clear west-east pattern of spatial allocation. In the case of per capita figures, western regions have clearly attracted more FDI than eastern regions, a pattern that is also evident in the regional distribution Map, although with greater variation. If in this picture we also add the dominant position of Bucharest, FDI in Romania seem to move along the lines predicted by the core-periphery and west-east hypothesis.

Maps 12-14 show the spatial distribution of three indicators that can be taken to (indirectly) represent welfare levels. These indicators are cars, TV sets and telephones per 100. In the first map, showing cars per 100 people for Poland and Hungary, it becomes clear that metropolitan regions enjoy a higher level of welfare than the rest of the country and also that western regions are doing better than eastern regions. In the second Map, showing TV sets per 100 people for Poland, Romania and Bulgaria, we should first say that data for Bulgaria is available only at the NUTS II level. Second, Poland seems to have higher values of this welfare indicator than Romania and Bulgaria. In addition, differences inside each country are not that high, although metropolitan regions and regions having a large city have in general higher values. The third Map, showing telephones per 100 people, has two interesting points to make. First, Hungary and Bulgaria appear with higher average values than Poland and Romania (in probably the first indicator where small countries as a group do better than the large ones). Second, in Poland and Romania the metropolitan regions have better figures than the rest of the country, while in Hungary and Bulgaria the western and northern regions respectively do better.

Finally, Maps 15 and 16, show regional variations in indicators of social and technical infrastructure such as road network per sq. km and hospital beds per 100 people. In the case of road network, it is interesting to observe that the Map resembles (especially for Hungary and Romania) very closely the demographic indicators of population density and change (Maps 2 and 4). This is of course related to the strong interaction existing between infrastructure and economic activity. Another interesting observation is that the three countries shown in the Map appear with similar levels of infrastructure at the national level. Turning to social infrastructure, we do not observe any clear pattern of spatial allocation of hospital beds, except the fact that metropolitan regions have better infrastructure than average. Another observation that can be made is that differentiation in terms of this basic measure of social infrastructure tend to be higher in Poland than the other countries.

Summing up the findings of the cartographic analysis, we can say that there is significant evidence now that on the one hand metropolitan regions have done better than average and on the other that western regions have done better than the eastern regions. Although the differential performance of metropolitan regions is evident in all countries, the same is not always the case for the supperior performance of the western part of these countries over the eastern part. This process is clear in the case of Poland (first) and Hungary (second), but not always clear in the case of Romania and Bulgaria, where perimetric regions are those that usually have an inferior performance. As a result, the hypothesis for a supperior performance of the metropolitan and western regions in transition countries seems to receive significant support in countries that have common borders (and especially those having extended ones) with a western European country and those being closer to the development center of Europe.

2. Diagrammatic analysis

In this section the focus of the analysis is diagrammatic, as our attention shifts to the evolution of regional disparities within each country and the detection of cross-country similarities and differences. In Figures 1-10 we present for a number of indicators the variation of regional values around the national average for two time periods. Using this dimension-less way to depict regional differentiation we are able to detect whether transition has increased or decreased regional disparities and whether there are similarities or differences among countries with respect to regional inequality.

Figure 1 shows regional disparities in average wages in Poland, Hungary, Romania and Bulgaria for two time periods. We observe first that disparities have increased over time in Hungary, Romania and Bulgaria, while the pattern of change is not very clear in Poland. Even in Poland however, the spread of values for the regions bellow the national average has increased. Second, we observe that especially in the second period the pattern of disparities becomes similar for all countries, in the sense that they have a more or less similar spread and a limited number of regions with values above the national average. We should note however that the spread of average wages around the national average is relatively small, compared to the spread of other indicators presented in the following figures. This limitation in variation is of course imposed by labor market regulations (minimum wage setting) in all countries.

Figure 2 presents regional variations in GDP. Unfortunately the available data is limited to only three countries and one time period that in the case of Poland refers to the early years of Transition. As a result, this figure can be used only for a first evaluation of cross-country differences in regional disparities. Although the time periods are not exactly comparable, we could say in broad lines that on the basis of this information Poland appears to have the highest and Romania the lowest disparities with respect to regional GDP. The second observation is that in Poland and Hungary, one region stands way ahead of the others, a trend that is not so obvious in Romania. However, in Poland, that region is not Warsaw (that comes second), neither Katowice (that is close to the national average), but the region of Plock, that is adjacent to Warsaw (is this a case of metropolitan spread effects?). In Hungary, the pattern is more traditional as the region that stands out of the rest in terms of GDP per capita is the metropolitan region of Budapest. Similarly in Romania, the metropolitan region of Bucharest, is the first one in terms of GDP per capita.

Figure 3 provides information for the regional variations of industrial production per capita in Poland, Romania and Bulgaria. This indicator is constructed in the absence of adequate GDP information, aiming to provide additional information about the spatial adjustments of the productive base in these countries during transition. A first observation in this Figure is that regional disparities have clearly increased in Romania and Bulgaria. Poland shows a significant reduction in the range of regional values because of the relative reduction of the value of Plock that is an outlier with respect to the other regions. Even in Poland however, the dispersion of the values of the other regions (excluding Plock) has increased between 1992 and 1995. A second observation is that in none of these countries metropolitan regions have the higher value of the industrial production indicator. In Poland, Warsaw and Katowice are second and third

respectively in 1995, in Romania, Bucharest is in the seventh place in 1995 (from the tenth place in 1990) and in Bulgaria, the city of Sofia is ranked bellow the national average in both periods. This is explained by the fact that metropolitan regions in the East are following the same transformations that have already taken place in the West, that is, decentralizing industrial activities and specializing in tertiary sector activities and especially services. However, we should note that metropolitan regions tend to strengthen their position in terms of performance in industry. Warsaw has moved from the third place to the second in the 1992-1995 period, Bucharest has moved from the tenth place to the seventh in the 1990-1995 period and Sofia region (the one surrounding Sofia-city) has moved from the forth place to the second in the 1989-1995 period in terms of industrial output per capita. This trend is obviously related to productivity gains related to the advantages of metropolitan regions stemming from economies of agglomeration.

Figure 4 presents the regional differentiation in investment per capita in Poland, Hungary and Romania. We first observe that disparities have increased significantly in Poland, remain about the same in Romania where data is available only for the 1989-1991 period and decrease slightly in Hungary. Second, we observe that in Poland and Hungary metropolitan regions maintain by far the first position in terms of investment per capita. In Poland, 15% of total investment in 1995 went to Warsaw and another 10% went to Katowice that maintained a second place in the ranking. Similarly, in Hungary, 36% of total investment in 1995 went to Budapest. In Romania however, the picture is different as Bucharest, despite the fact that it received about 13% of total investment in 1991, it is placed forth in the per capita list, behind Constanta (that received about 8%) and Gorj (that received about 5% of the total).

Figure 5 presents the regional differentiation of foreign direct investment per capita in Poland and Romania. The pattern is clearly a core-periphery one, as in the case of Poland, the metropolitan region of Warsaw with 38% of FDI in 1995 has a per capita figure that is 500% higher than the national average. Similarly, in Romania the metropolitan region of Bucharest concentrated in the 1990-1996 period 51% of total FDI, having a per capita figure that is 400% higher than the national average.

Figures 6, 7 and 8 present the regional differentiation of variables indirectly indicating walfare (or conssumption) levels such as cars, TV sets and telephones per 100 inhabitants for the countries that provided the relevant information. In the case of cars per 100 people in Figure 6, disparities seem to remain rather stable in Poland and increase in Hungary, while in both cases the dominance of metropolitan regions of Warsaw and Budapest seems to increase over time. In the case of TV sets in Figure 7 the evidence is also mixed, as disparities remain constant or increase slightly in Poland but are reduced significantly in Romania. Clearly, this indicator of welfare enjoys a smoother regional distribution than the previous one, presumably because TV sets are considered basic goods now in the East as much as in the West. In the case of telephones per 100 people in Figure 8 we observe that regional disparities tend to decline over time for all countries with available data. Given that this indicator of welfare is also an indicator of regional policy (the regional allocation of infrastructure related to lines and networks) this declining tendency in disparities is encouraging. We should note however that in Poland and Romania the metropolitan regions dominate the provision of lines with a rate that exceeds by more than 100% the national average. On the contrary, in Hungary, Budapest is well behind the national average in terms of telophones per 100 people.

Finally, Figures 9 and 10 present the regional differentiation of variables related to the public provision of technical and social infrastructure for countries with available information. In Figure 9, regional disparities in infrastructure measured by road network per square km are reduced over time in Hungary and remaind about the same in Romania. Another difference between the two countries is that Bucharest has the highest figure among the Romanian regions, while Budapest has the lowest. In the last Figure (10), the picture changes as regional disparities with respect to social infrastructure measured by hospital beds per 100 people have increased over time in the post-1989 period in Poland, Hungary and Romania. The pattern of inequality differs among the three countries as Poland and Romania on the one hand have a smother regional ranking (Warsaw is in the 3rd place and Bucharest in the 5th place of the respective national rank), while Hungary on the other hand has a more traditional pattern of inequality with Budapest maintaining a very dominant position in the national ranking.

Summing up our finding in this section, we can say that in several instances regional disparities tend to increase over time, while metropolitan regions seem to have a supperior performance in critical indicators such as investment and especially FDI.

3. Statistical analysis

In this part of the analysis we estimate the coefficient of regional variation ($\sigma/\bar{x}$), the ratio of maximum to minimum value (max/min) and the b-convergence coefficient for the variables (indicators) and the countries with available data. The estimations are presented in Table 2, while the plots with the regression line of the convergence/divergence function (equation 1) are depicted in Diagrams 3-12. Given that the regions of each country make up the total population in each case, the regression lines in the Diagrams are not sample but population lines. Therefore, t-test analysis for the statistical significance of the slope coefficients are meaningless at the national level. What is important in these Diagrams is the type of relation between the dependent and the independent variable, that is the sign of the slope and the correlation coefficient (r). In Table 2 the values of the parameters $\sigma/\bar{x}$ and max/min are given for two periods where this is possible. This facilitates comparisons of their values in two ways: One *within* countries to examine whether these measures of regional disparity have increased during the first years of transition and one *between* countries to examine cross-country variations in the level of regional disparities. On the other hand the results of the convergence/divergence regression are related to the entire period (usually 1989-1995). The information from the regression analysis that are considered to be more useful and presented in the Table are the sign of the slope coefficient and the value of the correlation coefficient. The first indicates whether a convergence or divergence trend is present in the data and the second indicates how strong or systematic is this trend, that is, how strong is the relationship between the dependent and the independent variable. Bold letters in the Table mean that the specific measure of regional inequality has increased over time, indicating a tendency of divergence for the country and variable under consideration.

Table 2 **Indicators and measures of regional disparities at NUTS III level for Poland, Hungary, Romania and Bulgaria**

Indicators	Measures	Poland		Hungary		Romania		Bulgaria	
Average Wages	years	1989	1995	1990	1994	1994	1995	1989	1995
	$\sigma/\bar{x}$	0.07	**0.11**	0.07	**0.10**	0.111	**0.113**	0.06	**0.13**
	max/min	1.55	**1.58**	1.32	**1.52**	1.59	**1.69**	1.42	**1.62**
	b-convergence		**+/ 0.22**		**+/0.23**		-/0.17		**+/0.05**
Gross Regional Product	years		1992		1994		1994		
	$\sigma/\bar{x}$		0.30		0.28		0.13		
	max/min		3.37		3.04		1.80		
	b-density@		**+/0.39**		**+/0.86**		**+/0.45**		
Industrial Production per Capita ('000)	years	1992	1995			1990	1994	1989	1995
	$\sigma/\bar{x}$	0.58	0.50			0.37	**0.47**	0.33	**0.51**
	max/min	12.73	11.40			5.05	**8.00**	4.55	**6.27**
	b-convergence		-/0.33				**+/0.27**		**+/0.18**
Investment per Capita ('000)	years	1989	1995	1991	1994	1989	1991		
	$\sigma/\bar{x}$	0.14	**0.42**	0.39	**0.42**	0.60	0.49		
	max/min	1.85	**4.68**	4.82	4.10	7.25	5.57		
	b-convergence		**+/0.33**		-/0.20		-/0.54		
Foreign Direct Investment per capita ('000)	years	1993	1995			1989-1996			
	$\sigma/\bar{x}$	1.50	1.37			1.70			
	max/min	684	**2032**			**210**			
	b-density @		**+/0.60**			**+/0.70**			
Cars per 100 inhabitants	years	1989	1995	1990	1995				
	$\sigma/\bar{x}$	0.22	0.21	0.141	**0.147**				
	max/min	1.80	**2.55**	1.71	**1.82**				
	b-convergence		-/0.37		-/0.16				
TV Sets per 100 inhabitants	years	1989	1995			1989	1995		1995*
	$\sigma/\bar{x}$	0.12	**0.31**			0.20	0.16		0.18
	max/min	1.80	**3.82**			2.64	1.90		2.01
	b-convergence		**+/0.25**				-/0.54		
Telephones per 100 inhabitants	years	1989	1995	1990	1994	1989	1995		1995*
	$\sigma/\bar{x}$	0.35	0.31	0.40	0.39	0.41	0.34		0.18
	max/min	3.96	3.82	8.30	4.76	5.42	4.39		2.67
	b-convergence		-/0.32		**+/0.42**		-/0.47		
Road Network per sq. km.	years			1990	1995	1989	1995		1995*
	$\sigma/\bar{x}$			0.27	0.26	0.22	0.22		0.39
	max/min			9.43	6.47	3.08	**3.10**		2.72
	b-convergence				-/0.70		-0.02		
Hospital Beds per 1000 Inhabitants	years	1989	1995	1990	1995	1989	1995		
	$\sigma/\bar{x}$	0.19	**0.25**	0.21	**0.23**	0.20	**0.22**		
	max/min	2.28	**3.17**	3.17	**3.36**	2.51	**2.60**		
	b-convergence		**+/0.07**		-/0.09		**+/0.01**		

*NUTS II level

@ refers to the coefficient of the regression of GDP per capita on population density

We start the discussion of our findings with the variables related more closely to the productive base of these economies, looking for tendencies of regional convergence or divergence during transition in indicators such as income (represented by average wages, GRP and industrial production per capita) as well as investment (represented by investment per capita and FDI per capita). According to our estimates, disparities with respect to average wages have increased in all countries in the post-1989 period. The coefficient of variation and the ratio of maximum to minimum value have increased for all countries while the slope of the regression is positive in three of them (Diagram 3). Although disparities are relatively low due to labor market regulation (the values of $\sigma/\bar{x}$ and max/min are very low compared to other variables), we expect divergence trends to be stronger or more uniform in Poland and Hungary where the correlation coefficient is higher.

Unfortunately, for the variable GRP per capita we have available data only for one period, a fact that does not allow for intertemporal comparisons. On the basis of the values of $\sigma/\bar{x}$ and max/min coefficients however, we can state that regional disparities with respect to GRP are generally higher in Poland and Hungary than Romania. In addition, the results of the regression of GRP per capita on regional population density indicate a positive and relatively high correlation between the two variables (Diagram 4)[3]. This indicates that regions with higher population densities (that is metropolitan regions) tend to be associated with higher levels of GRP per capita, a fact that highlights the presence of agglomeration economies and gives an advantage to metropolitan regions, increasing the possibility for the realization of tendencies of divergence.

Regional disparities with respect to industrial production per capita seem to increase in Romania and Bulgaria, but decrease in Poland. We should note however that disparities in Poland (measured by the values of $\sigma/\bar{x}$ and max/min coefficients) were in the first period significantly higher than in Romania or Bulgaria. In any case, the slope of the regression line is negative for Poland and positive for Romania and Bulgaria (Diagram 5)

The evidence with respect to regional disparities in levels of investment per capita is mixed. All measures indicate a tendency of divergence in Poland, a tendency of convergence in Romania, while the evidence from Hungary is inconclusive ($\sigma/\bar{x}$ increases, max/min decreases and b is negative). The regression results show divergence in Poland, weak convergence in Hungary and strong convergence tendencies in Romania (Diagram 6). We should note however, that, Romania had in 1989 the higher level of disparities (measured by $\sigma/\bar{x}$ and max/min coefficients) among the three countries.

Regional data for FDI is unfortunately limited to two countries. Judging from the value of $\sigma/\bar{x}$ and max/min coefficients, disparities are very high in both Poland and Romania. In addition regional FDI per capita tends to be positively and strongly correlated with regional population density, or regional population distribution

[3] This is an indirect test in the absence of intertemporal data that would allow for the estimation of equation (1).

(Diagram 7), indicating a very selective behavior of foreign capital with respect to location, that favors metropolitan regions.

The next set of variables includes a number of welfare indicators such as cars, TV sets and telephones per 100 people at the regional level, that are used to identify regional differences in the level of well being in the absence of consumption of other wealth data. Starting with cars per 100 people, we observe that the evidence that comes only from two countries is mixed. In Poland, the value of $\sigma/\bar{x}$ decreases slightly, the value of max/min increases, but the slope of the regression line is negative indicating convergence. In Hungary, both values of $\sigma/\bar{x}$ and max/min have increased slightly indicating a weak tendency of regional divergence, but the slope of the regression is negative, indication a weak, if we judge from the value of the correlation coefficient, (Diagram 8) tendency of convergence.

Turning to TV sets per 100 people, we observe that the evidence is also mixed. All measures of regional disparity indicate a process of divergence for Poland and a process of convergence for Romania. Note however, that the correlation coefficient is significantly higher in the case of Romania, indicating a stronger (negative) relation between initial values and relative change than in the case of Poland, where the (positive) relation is not that strong (Diagram 9). The data from Bulgaria cannot be used as it is for one period only and concerns NUTS II regions.

The last welfare indicator we use is telephones per 100 people, where the measures of regional disparity we use show a tendency of convergence in the case of Poland and Romania, while the evidence in the case of Hungary is mixed. The value of the coefficient of correlation of the regression line (Diagram 10) indicates that existing tendencies are relatively significant.

The last set of indicators that we use in our analysis are related to variables capturing spatial variations in public policy in the fields of technical and social infrastructure. With respect to road network per sq. km, we observe that in Hungary the basic tendency is towards regional convergence, while in Romania the changes in the measures of disparity are very small and the trend rather unclear (Diagram 11).

Finally, in terms of hospital beds per capita we observe that the increasing values of $\sigma/\bar{x}$ and max/min indicate that a tendency of regional divergence is rather present in Poland, Hungary and Romania. However, this tendency is rather weak as can be seen by the very low values of the correlation coefficients (Diagram 12).

Summing up the information of Table 2, we should first say that in several cases the use of three different measures of spatial variation, leaves us with some uncertainty with respect to whether disparities have increased or decreased in the post-1989 period in Transition economies. This is of course explained by the fact that the actual processes driving the spatial behavior of important aspects of economic activity are complex, multi-dimentional and often exercise their impact at different time horizons. Nevertheless, there

are some important observations that can be made on the basis of the proceeding analysis and the information provided in the Table.

First of all, we should note that tendencies of regional divergence are present in all countries during the period of transition. Moreover, it seems that these tendencies are recorded more often when the analysis focuses on variables related to the productive base of the countries and less often when the analysis turns to indicators related to regional welfare levels or public policy. Second, on the country level, Hungary presents fewer times clear tendencies of regional convergence, while Romania presents tendencies of regional convergence more often than any other country. On the other hand, Poland is the country that experiences more often clear tendencies of increasing regional disparities, while Hungary concentrates most of the inconclusive cases. Third, on the basis of our measures for GRP, the country with the higher level of regional disparities is Poland, followed in a very short distance by Hungary, while Romania seems to have the lower level of disparities (data for Bulgaria is missing).

How these levels of regional disparities compare to those existing among the EU member States? Petrakos and Saratsis (1997) have estimated from the Regio database of Eurostat the coefficient of regional variation and the maximum to minimum ratio for the EU members States at the NUTS III level for 1989 (Table 3). Comparing the coefficients of Table 2 for Poland, Hungary and Romania with those of Table 3 for the EU member States, we see that the level of disparities in Poland is similar to that of France, the level of disparities of Hungary is similar to that of Italy and the level of disparities of Romania is similar to that of UK. As a result, by EU standards, disparities with respect to regional GDP in Poland and Hungary are relatively high, while disparities in Romania are relatively low.

Table3 Coefficients of regional variation at the NUTS III level for the EU Member States in 1989

Countries	Regional disparities in income levels	
	$\sigma/\bar{x}$	max/min
Denmark	0,07	1,25
Great Britain	0,16	2,20
Greece	0,20	2,55
Holland	0,21	2,43
Belgium	0,23	2,68
Spain	0,24	2,99
Italy	0,25	2,73
France	0,30	4,54
Germany*	0,39	7,83

*East German Länders not included

Source: Petrakos and Saratsis (1997), estimated from data provided by Regio Database, Eurostat

Conclusions

Concluding our analysis there is a number of Interesting observations that we would like to make. First of all, demographic indicators such as population change do not seem to follow very closely the economic indicators. In Poland for example that disparities are relatively higher in terms of a number of indicators and increasing, regional variability with respect to population change is very limited. In addition, in Poland and Hungary that have experienced spatial adjustments favoring more systematically the metropolitan regions, Warsaw and Budapest appear with an inferior than the national average performance when we consider population change. The opposite is happening in Romania and Bulgaria. Although the spatial adjustments do not favor so often the metropolitan regions, Sofia-city and Bucharest appear with a better than average record in terms of population change. All this may simply indicate that demographic processes are relatively slower than other processes and labor mobility in space rather limited due to the conditions and constraints prevailing in the housing market. On the other hand, the failure of demographic indicators such as population change to capture the relative dynamism of Warsaw or Budapest, may simply indicate that these two cities are the western gates of these countries with respect to emigration.

Second, significant differences are found among the countries under examination that can be related to national characteristics (institutional or cultural factors) but also to economic factors (level of development of growth performance), to the success of restructuring and catching up and to geographic coordinates. In Romania and Bulgaria, for example, the border regions are less dynamic than average, as growth poles or development axes tend to ignore them. This raises a question for the role of Dunav (that was not an east-west frontier in the pre-1989 period) to either unite with common activities or divide as a physical barrier the two countries. It also raises a question about the type and the impact of cross-border cooperation between Bulgaria and Greece, a country that also faces serious problems of development in its northern borders. On the other hand, eastern gates of CEE countries like Costanta or Burgas will continue to maintain their importance as a linking point between Central or Eastern Europe and the countries of the FSU. This is particularly true in Southeastern Europe that lacking common borders with the West and being perimetric with respect to the EU economic gravity center, is subject to a greater force of attraction by gravity centers in the East.

Third, it is still unknown to what extent tendencies of divergence or convergence are solely attributed to market forces, or have also been affected by policy intervention. Given that public policies more often than not tend to be counter-cyclical, offsetting market generated spatial disturbances or imbalances, it is highly possible that regional disparities under transition would have been greater in a more liberal type of marketization, deregulation and economic transformation.

Turning to the main findings of this paper, we should say that, although the process of spatial adjustment to the forces of transition is more complex than initially understood, our early expectations have been verified to a large extent by available evidence. In countries sharing common borders with the EU and being in a short distance from the European core, spatial adjustments have been in broad terms along the lines described by theory, favoring metropolitan and western regions. In addition, countries with a better record in

terms of transforming their economy and a stronger growth performance, tend to experience increasing regional disparities in more indicators than countries with a slower pace of adjustment and a less successful record. The evidence provided in this paper indicates that disparities are higher or increase more systematically in countries with a better performance in terms of GDP growth in the period under consideration. This is in line with evidence coming from Southeastern EU States (Petrakos and Saratsis 1997), but its in variance with findings concerning the more advanced EU members and the EU as a whole (Dunford 1993). As a result, it seems that in countries with lower level of development (as those in Central and Southeastern Europe), growth and a successful implementation of economic policies at the national level seem to be positively related with higher disparities.

To the extent that future evidence continues to be in the same direction, CEE countries will soon face a serious dilemma, as a faster restructuring pace and a higher growth rate will take place at the cost of increasing regional disparities. Given that in some of these countries disparities are already high by EU standards and given that the catch-up process has a long way to go, the regional problem in these countries may take such dimensions that will require a more systematic, better financed and more focused regional policy.

On the basis of earlier work and our findings, we consider that a conceptual framework that will allow for predictions about regional disparities in the CEE countries in the future could be constructed along the following lines: In general, that the level of regional disparities in transition countries in a short to medium term forecast will be directly related to the success of restructuring the economy, the growth performance and indirectly related to the distance from the European center of development. This means that countries like Poland and Hungary will experience earlier a shake-up of their regional productive bases associated with the forces of internationalization and restructuring. We have already seen that this shake-up generates greater disparities as all regions are nor equally equipped to deal with the challenges of transition. On the other hand, countries like Romania and Bulgaria will resist for some time a spatial shake-up as transition moves slower and the pressures by the international markets have been modest up to now.

In the long term however the picture is expected to change. Adjacency and proximity to the European core will eventually facilitate for Poland or Hungary a more uniform spatial impact, as eastwards capital movements continue and successful restructuring generates new investment opportunities in more regions. On the contrary, countries that for a number of reasons have followed a slower pace of transition will eventually come to a point to face the regional problems the forerunners of transition faced earlier. In their case however these problems will be more pressing and more persistent, as distance from the European core only permits for a selective (that is unequal) pattern of integration. This scenario however, as possible as it may sound, will need additional evidence from more countries in the near future in order to be verified.

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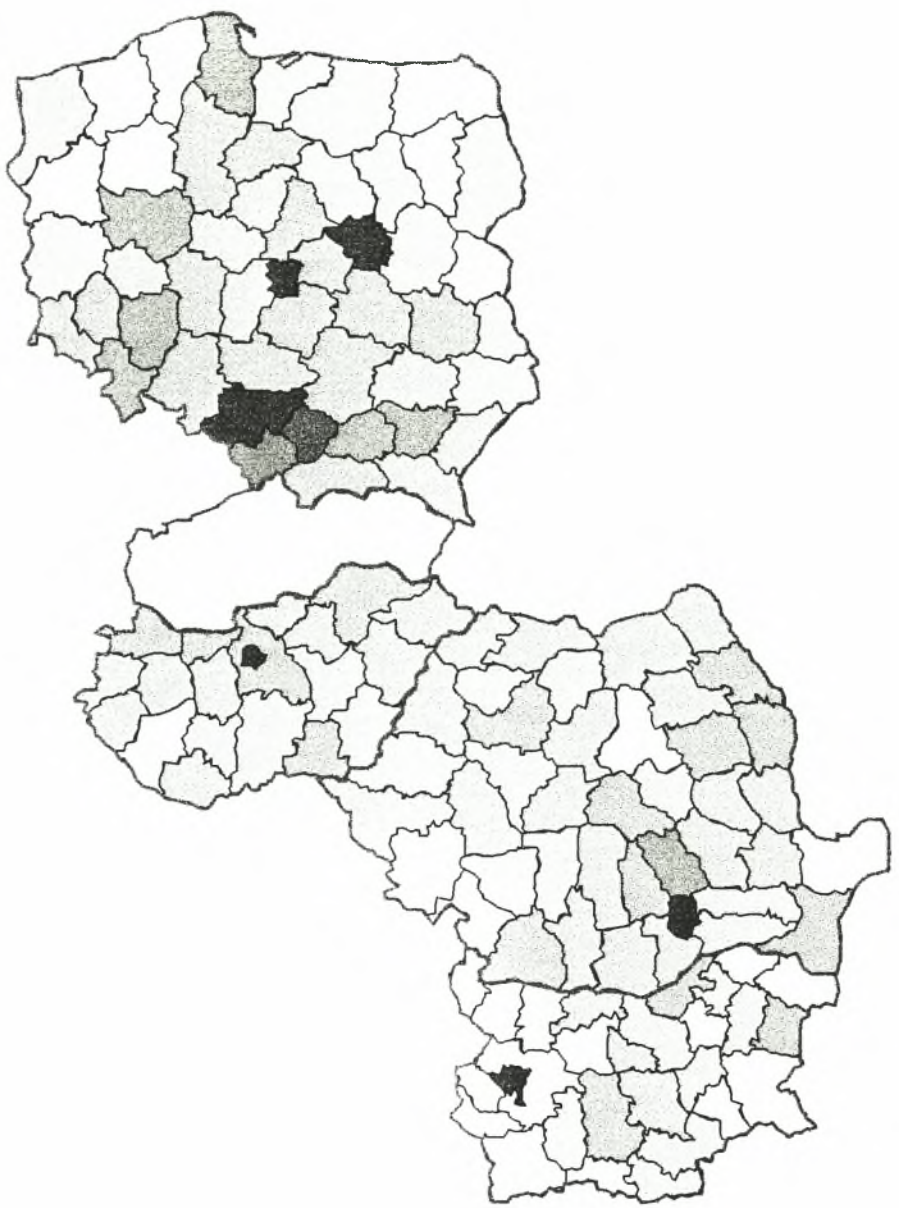
Map 1. The NUTS III level regions of Poland, Hungary, Romania and Bulgaria

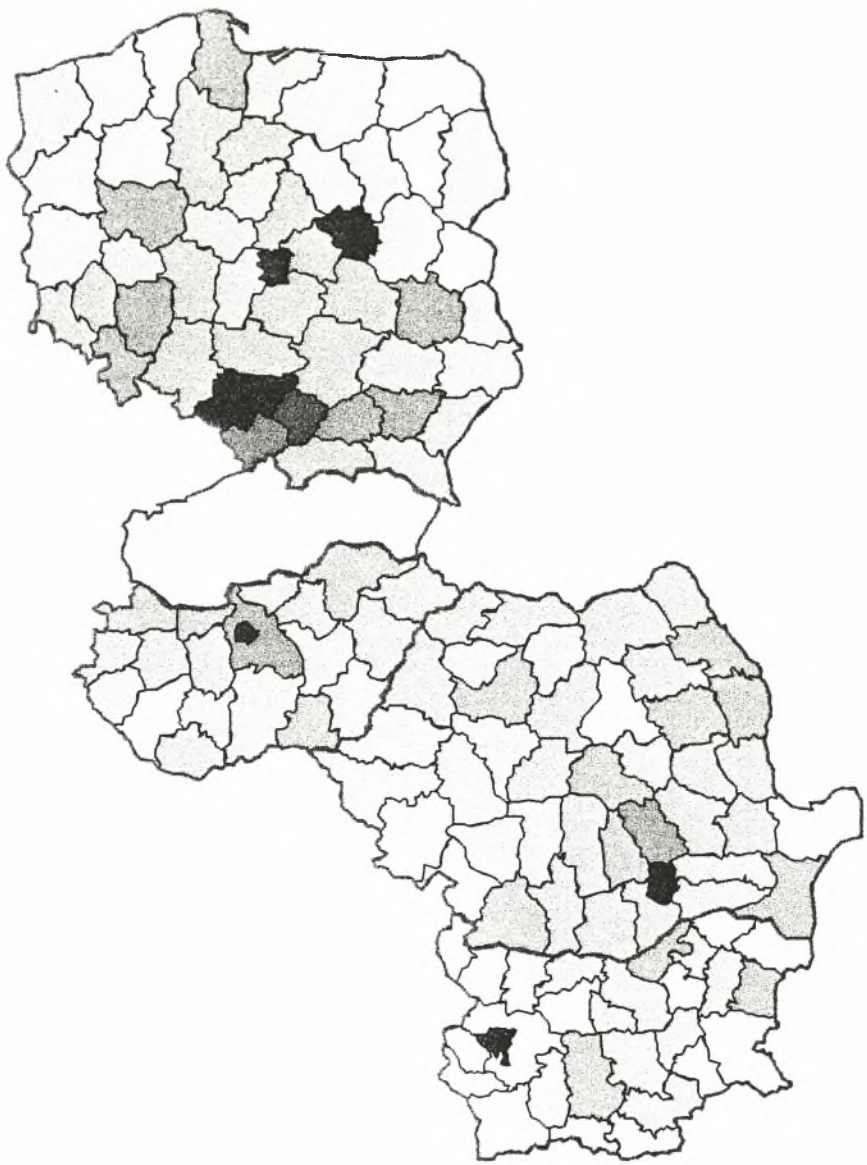
Map 2a. Regional population density in Poland, Hungary, Romania and Bulgaria in 1990

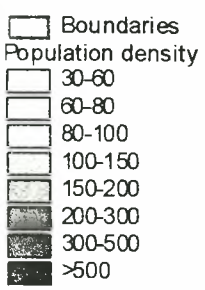


Boundaries
Population density
30-60
60-80
80-100
100-150
150-200
200-300
300-500
>500

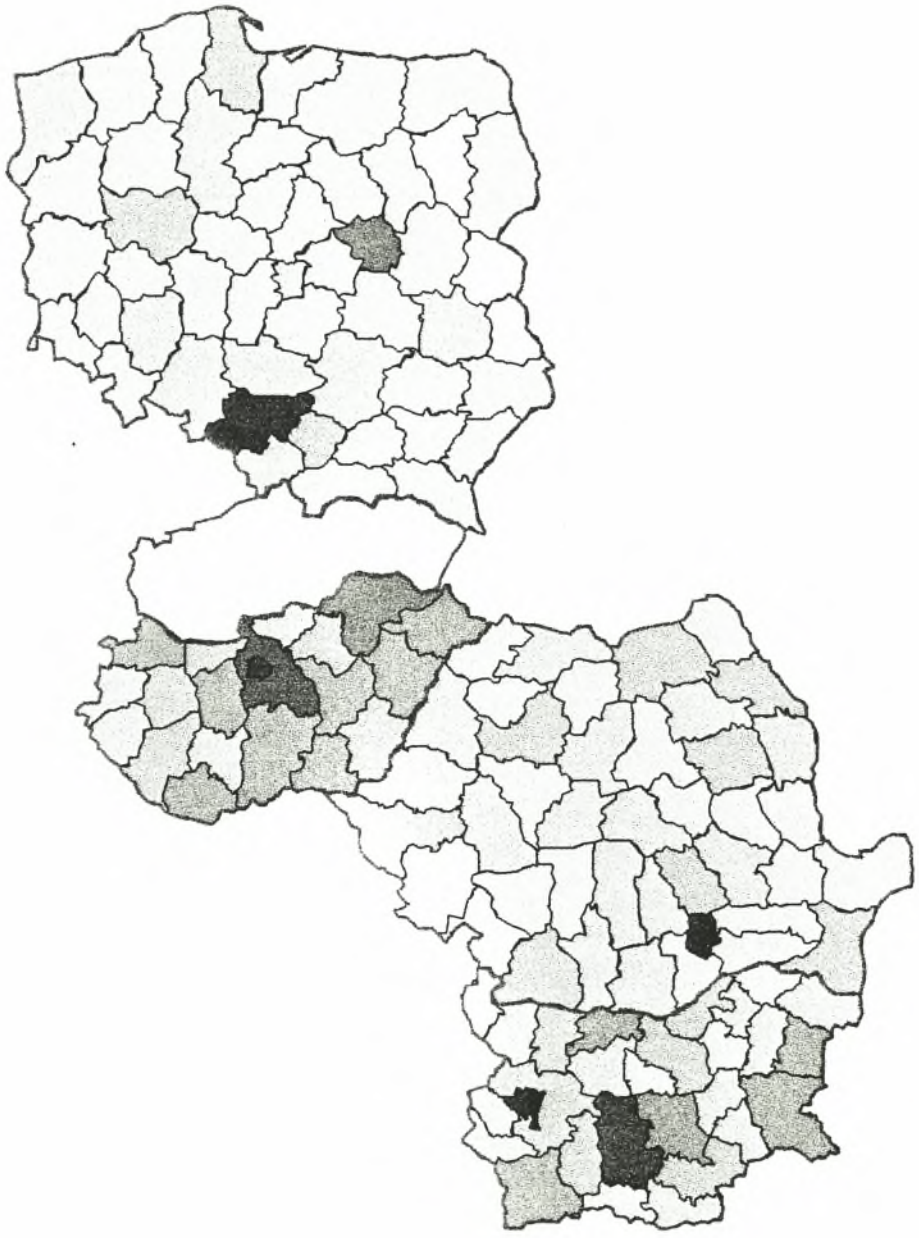
N
W E
S

Map 2b. Regional population density in Poland, Hungary, Romania and Bulgaria in 1995





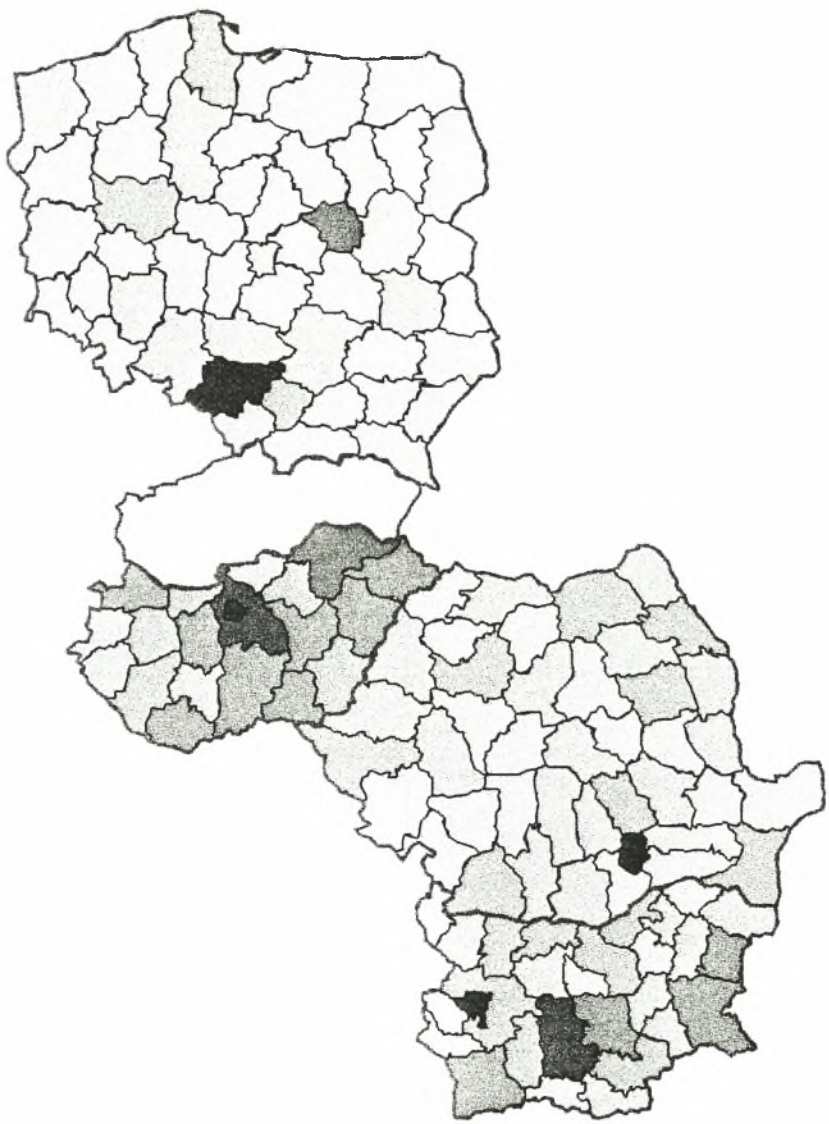
Map 3a. The regional share of national population in Poland, Hungary, Romania and Bulgaria in 1990

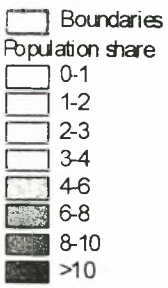


Boundaries
Population share
0-1
1-2
2-3
3-4
4-6
6-8
8-10
>10

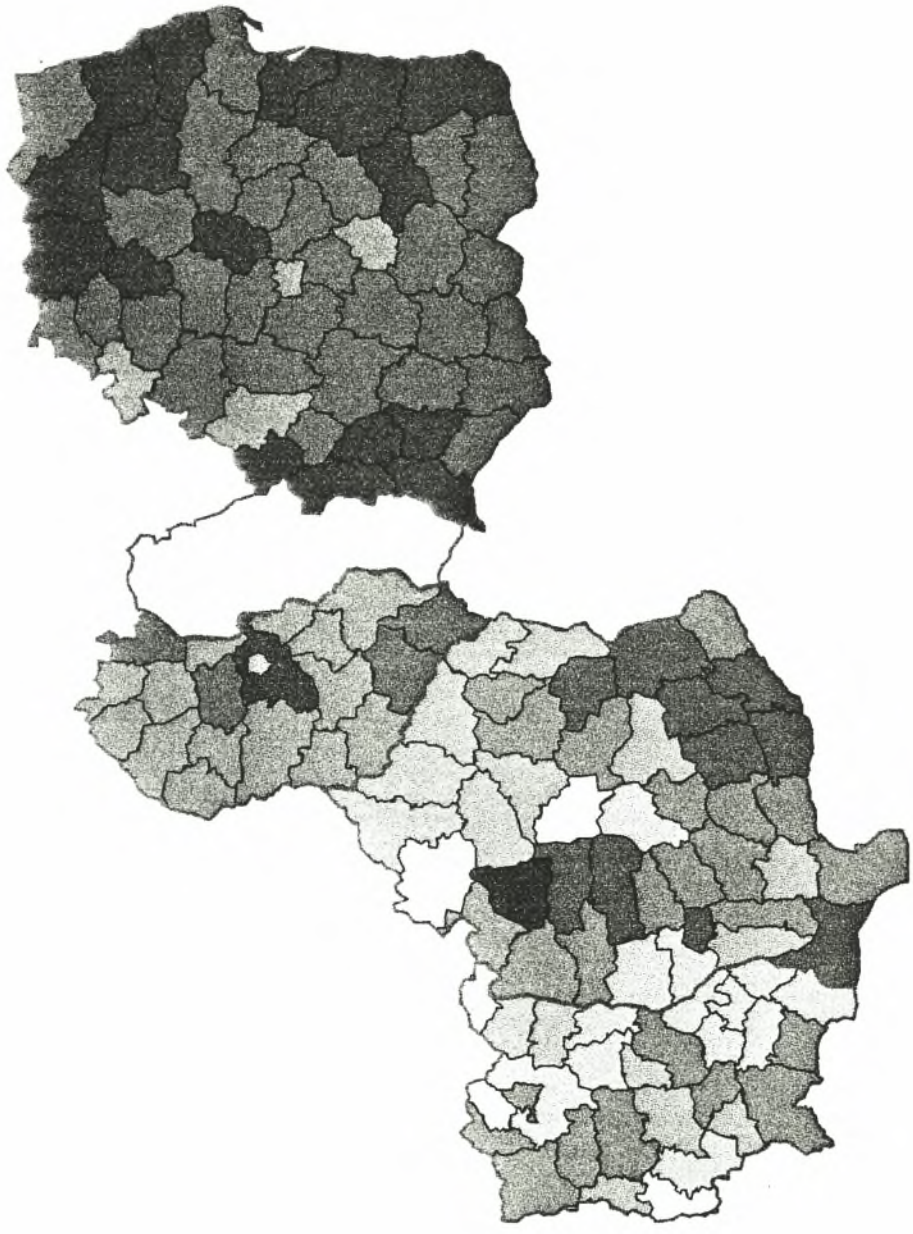
N
W
E
S

Map 3b. The regional share of national population in Poland, Hungary, Romania and Bulgaria in 1995





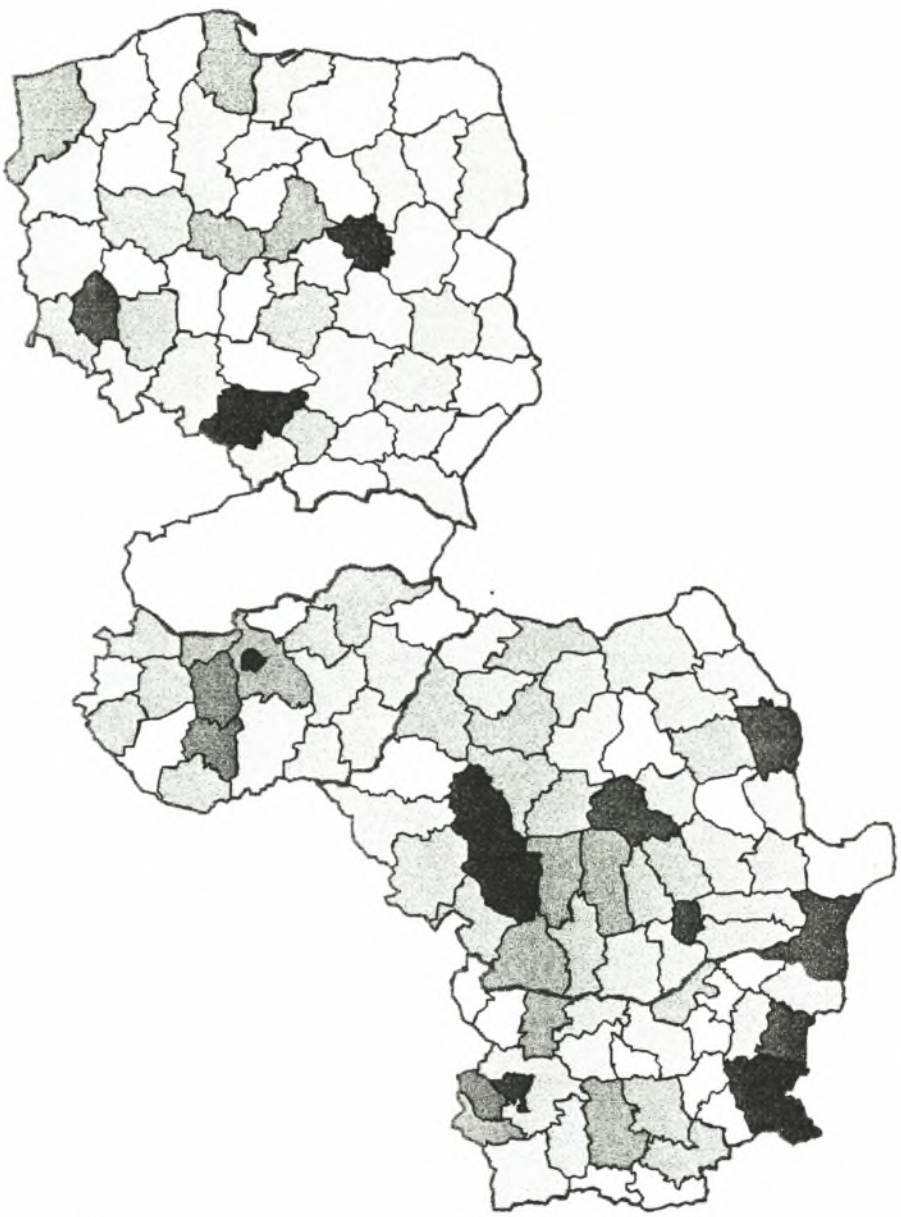
Map 4. Regional population change (annual percentage change) in Poland, Hungary, Romania and Bulgaria (1990-95)

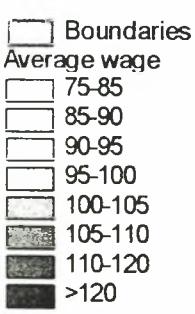


Boundaries
Annual percentage change
-3.42 - -2
-2 - -1.5
-1.5 - -1
-1 - -0.5
-0.5 - 0
0 - 0.4
0.4 - 1

N
W E
S

Map 5. Average wage at the regional level in Poland (1995), Hungary (1994), Romania (1995) and Bulgaria (1995). National level=100



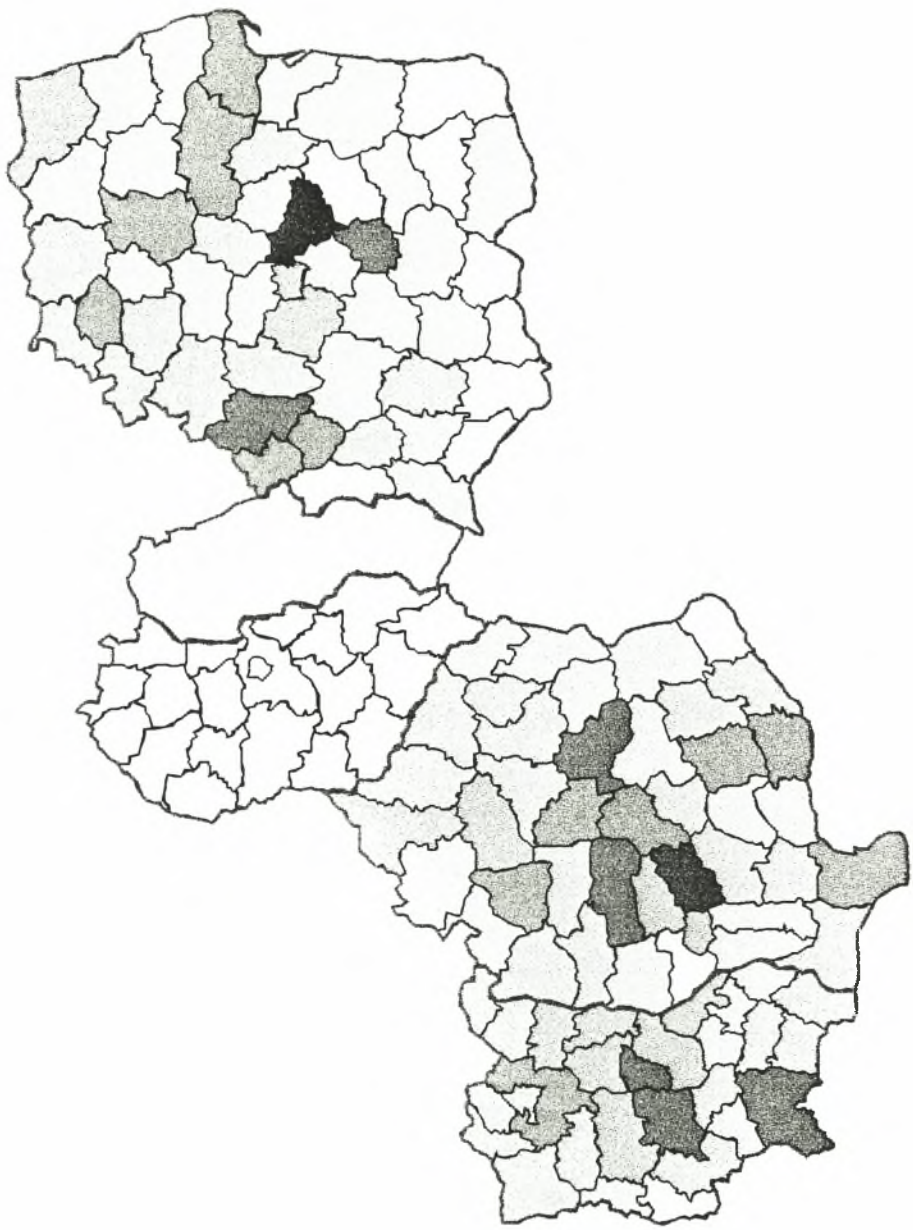


Map 6. Gross Regional Product in Poland (1992), Hungary (1994) and Romania (1994). National average=100

Boundaries
GDP/1000 inhabitants
50-75
75-100
100-125
125-150
150-175
>175

N
W E
S

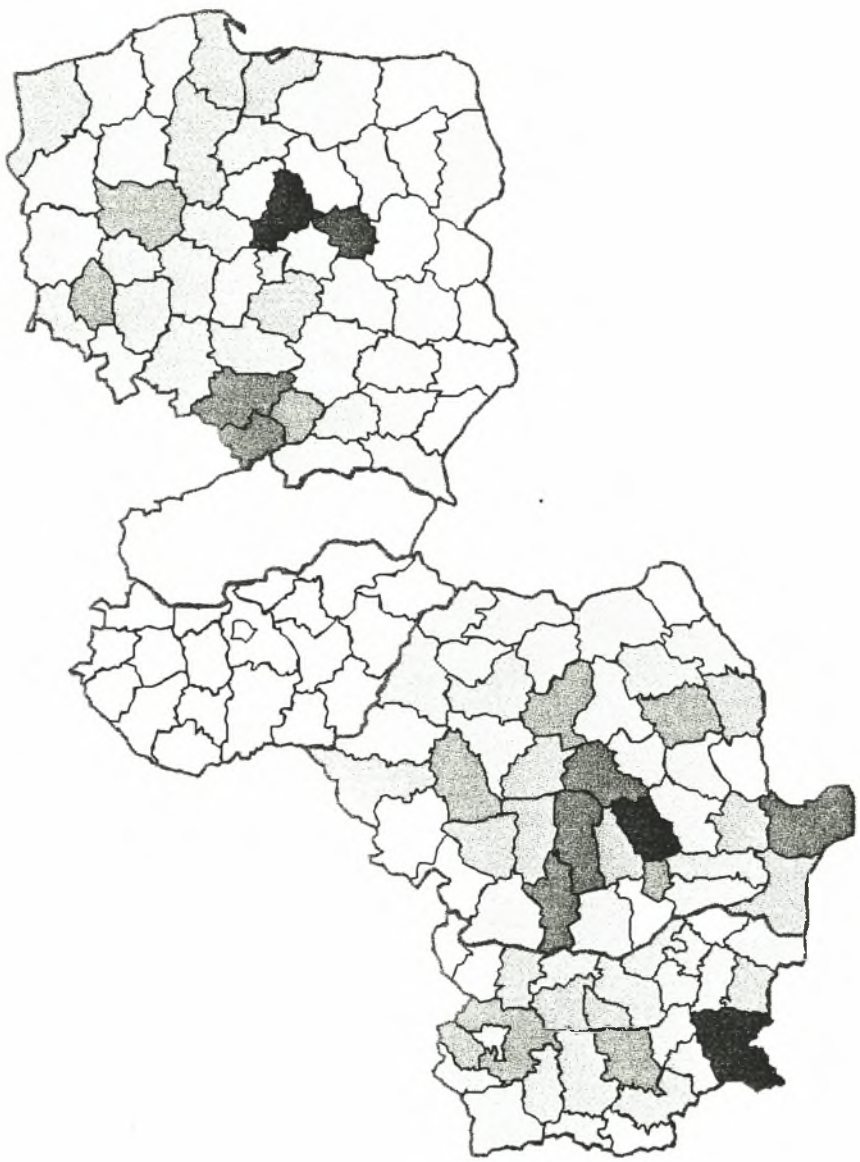
Map 7a. Industrial production per capita at the regional level in Poland (1992), Romania (1990) and Bulgaria (1989). National average=100

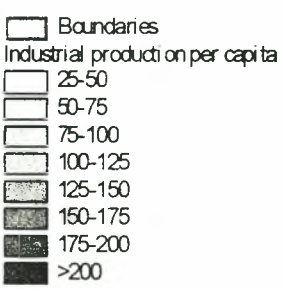


Boundaries
Industrial production per capit
25-50
50-75
75-100
100-125
125-150
150-175
175-200
>200

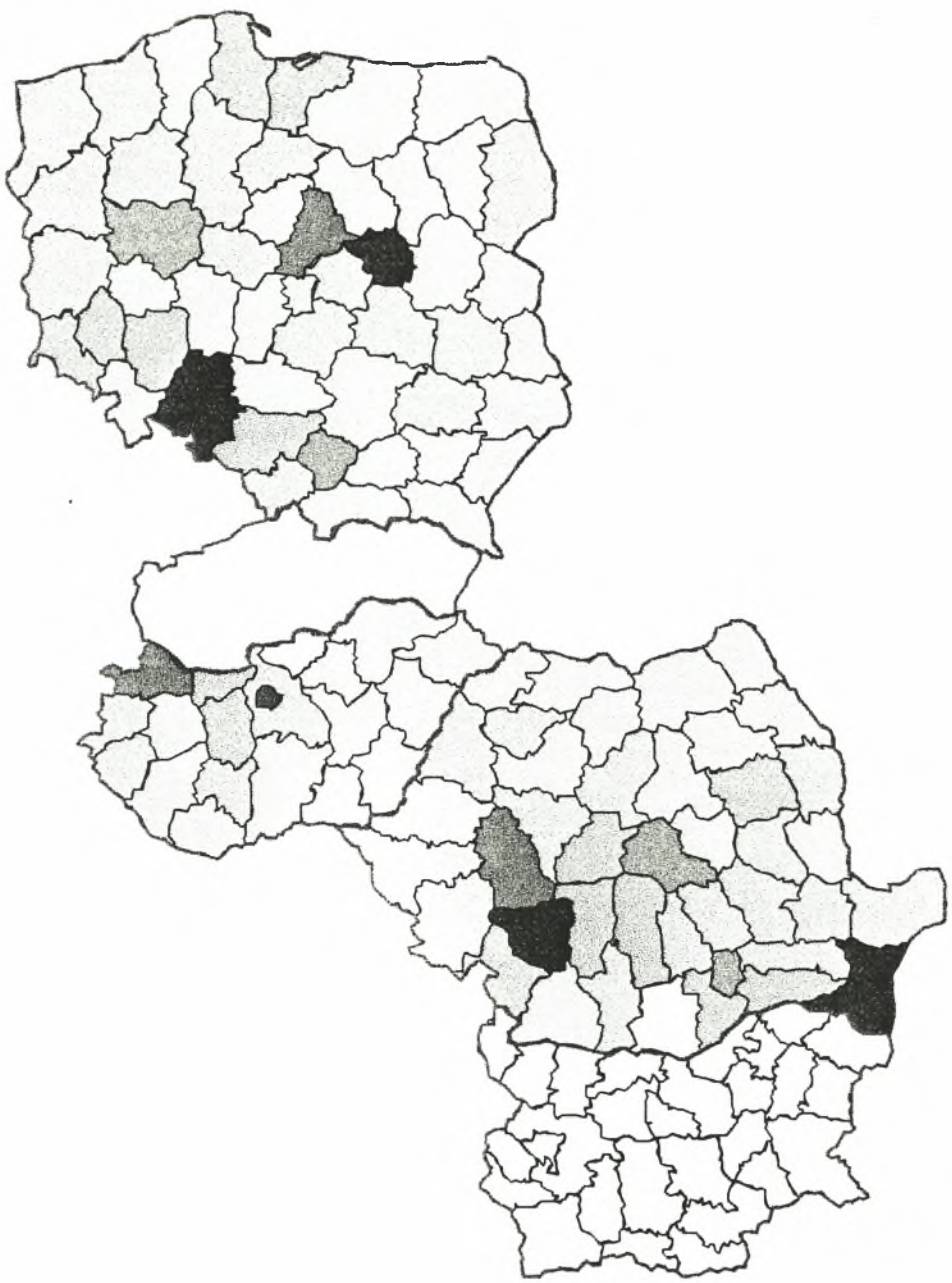
N
W E
S

Map 7b. Industrial production per capita at the regional level in Poland (1995), Romania (1994) and Bulgaria (1995). National average=100





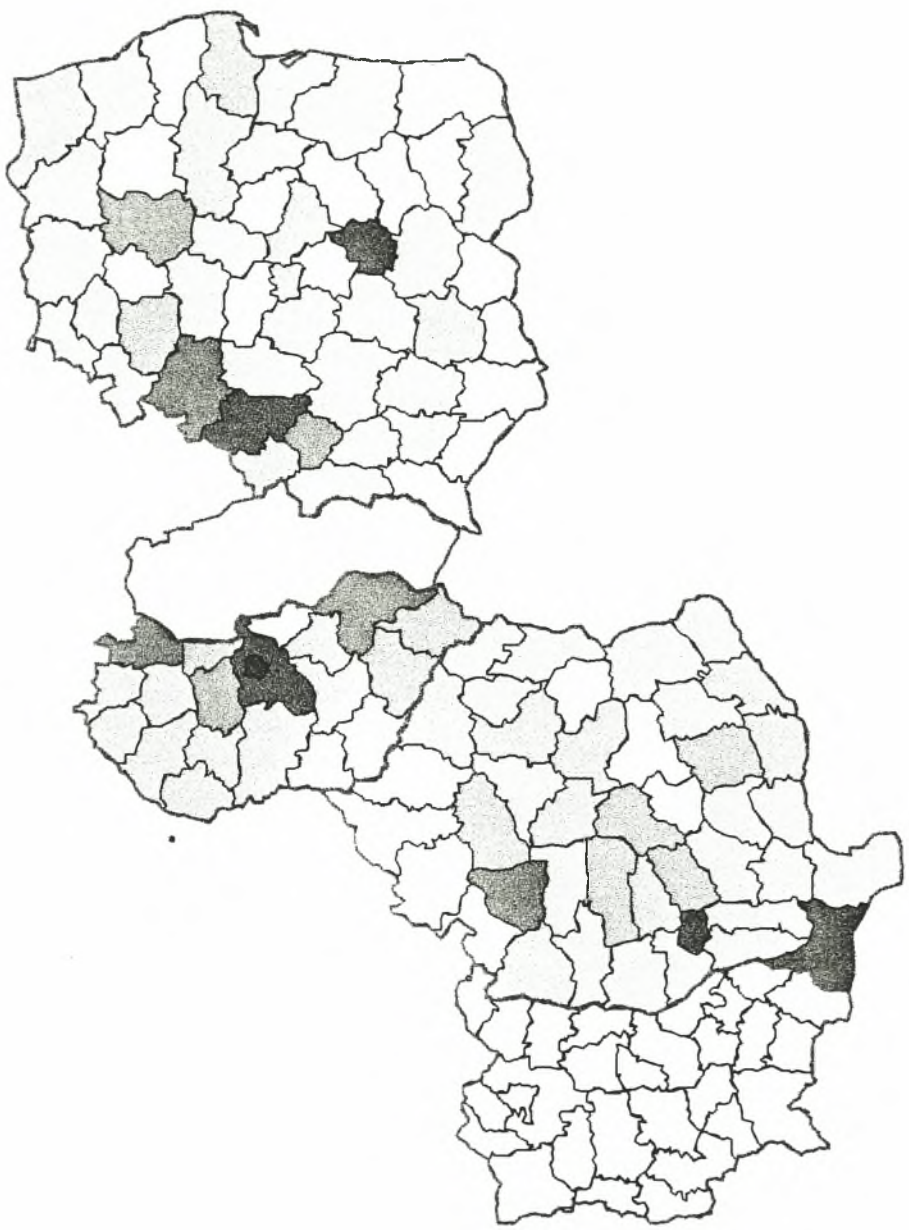
Map 8. Investment per capita at the regional level in Poland (1995), Hungary (1994) and Romania 91991). National level=100



Boundaries
Investments/1000 inhabitants
25-50
50-75
75-100
100-125
125-150
150-175
175-200
>200

N
W E
S

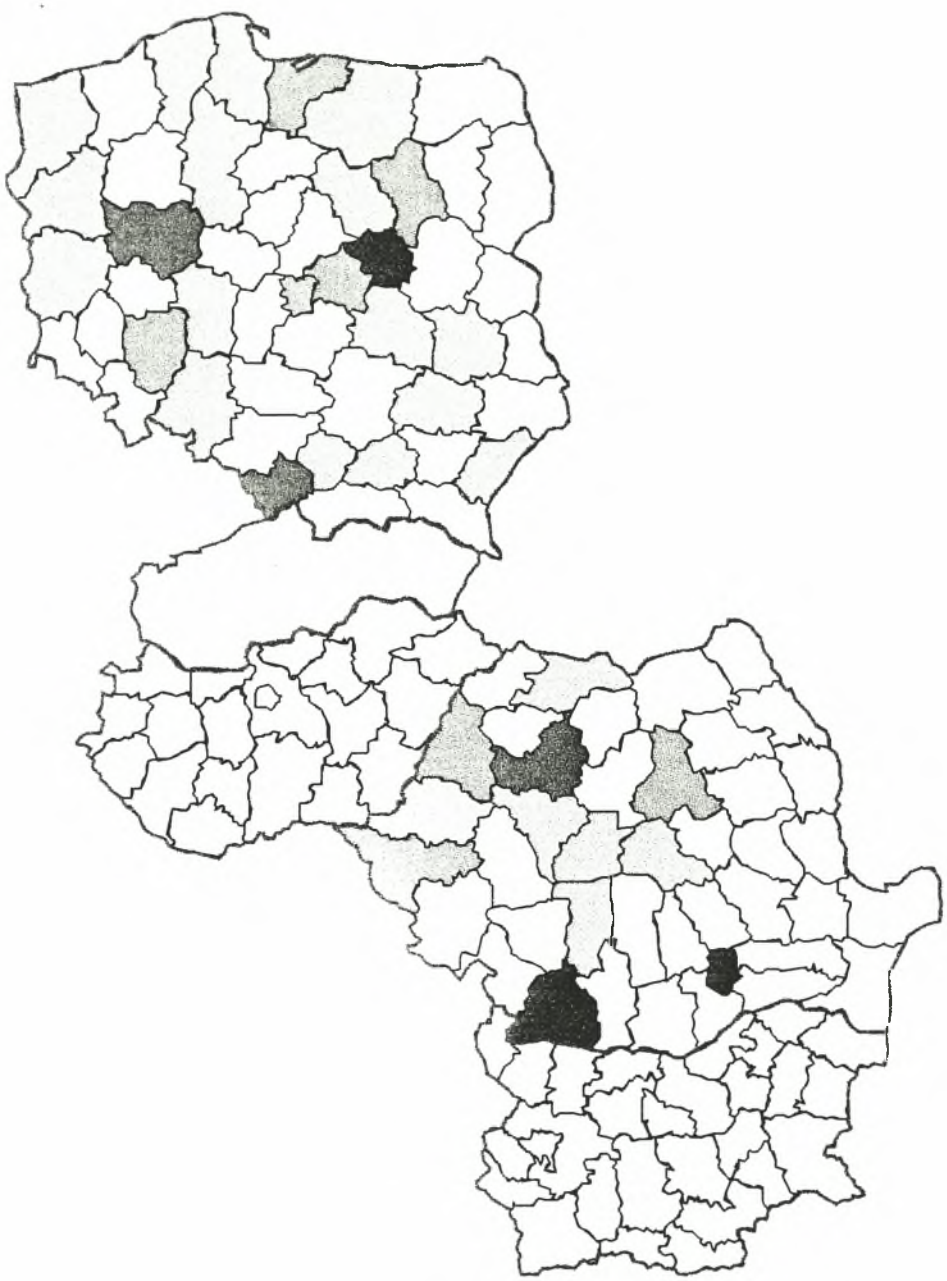
Map 9. The regional distribution of investment in Poland 91995), Hungary (1994) and Romania (1991)

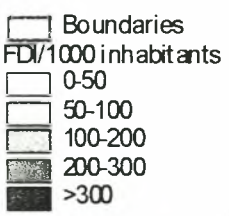


Boundaries
Distribution of investments
0-1
1-2
2-3
3-4
4-5
5-8
8-18
>18

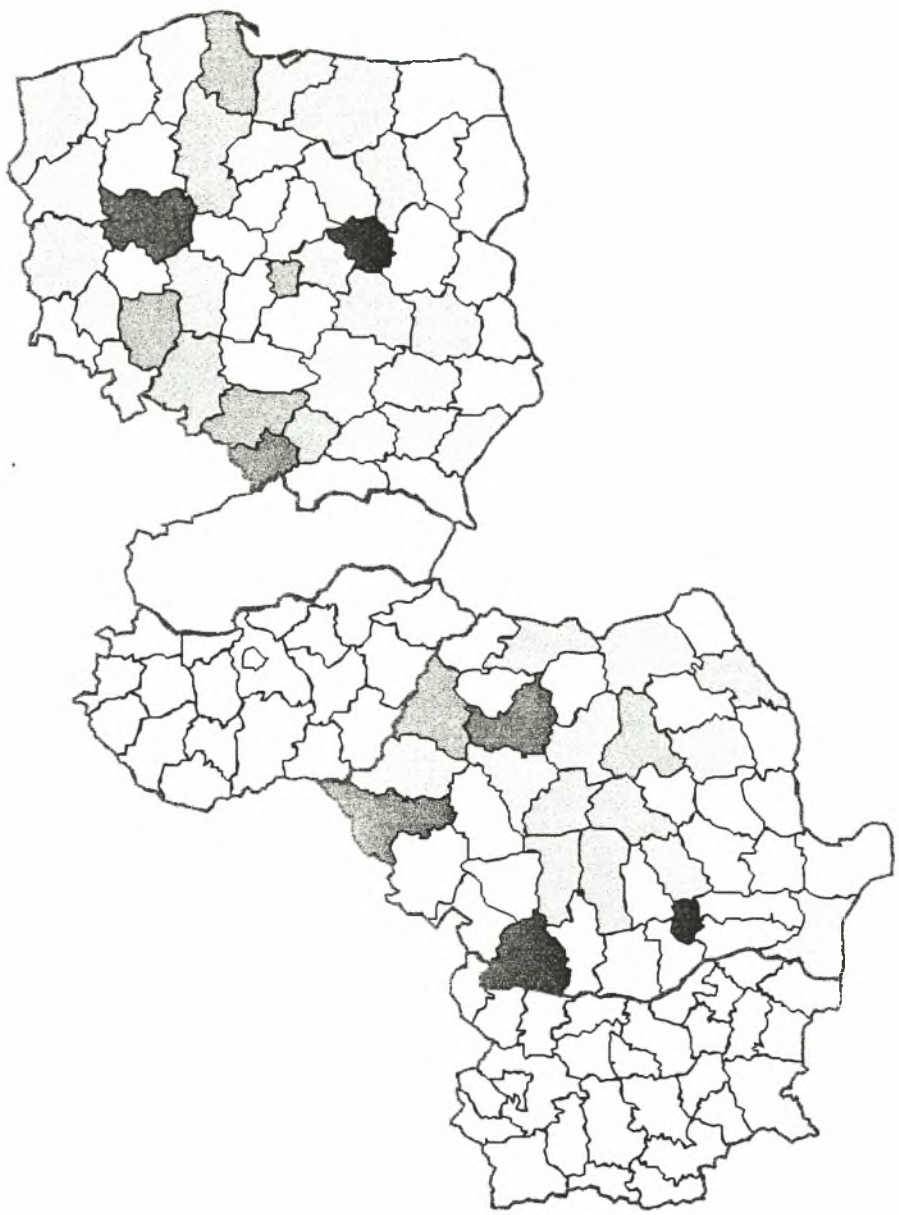
N
W E
S

Map 10. FDI per capita at the regional level in Poland (1995) and Romania (1989-1996). National level=100





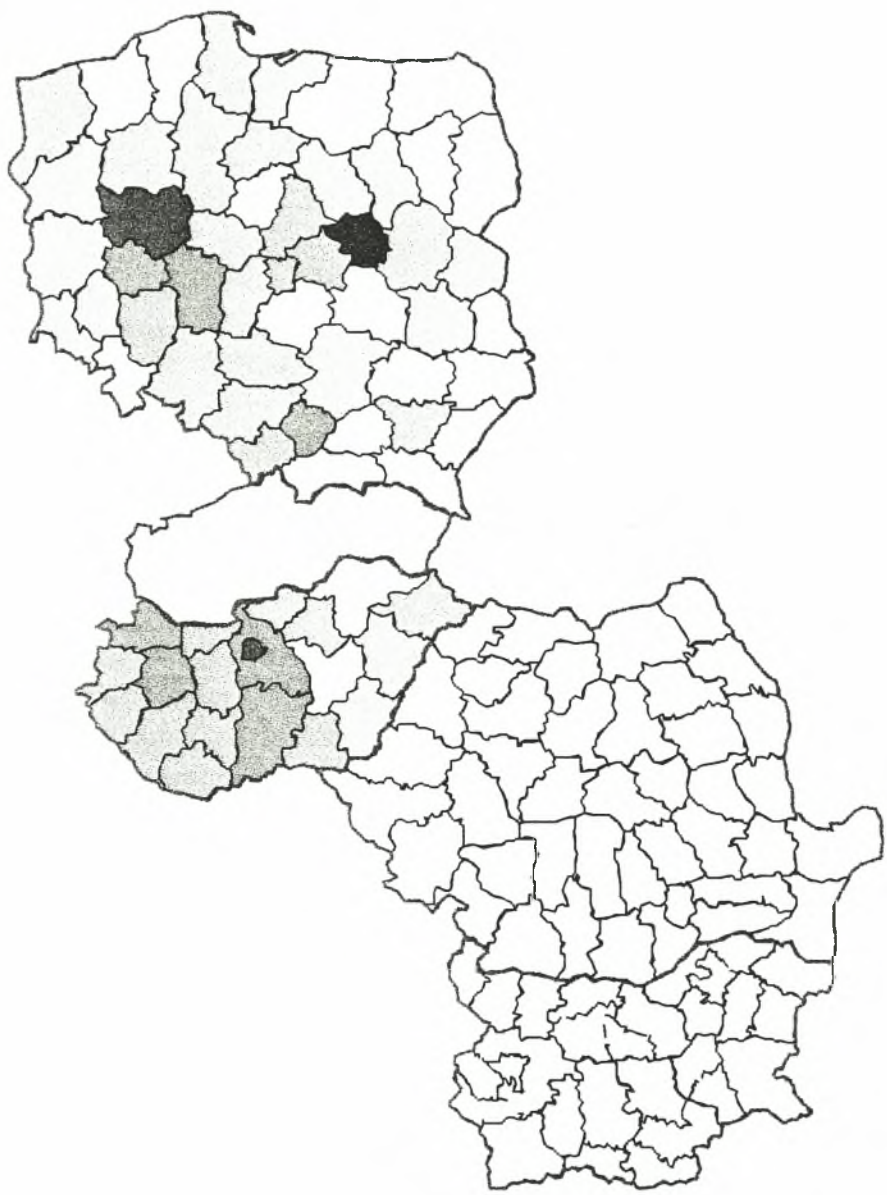
Map 11. The regional distribution of FDI in Poland (1995) and Romania (1989-1996)



Boundaries
Distribution of FDI
0-0.5
0.5-1
1-2
2-3
3-4
4-8
8-18
>18

N
W E
S

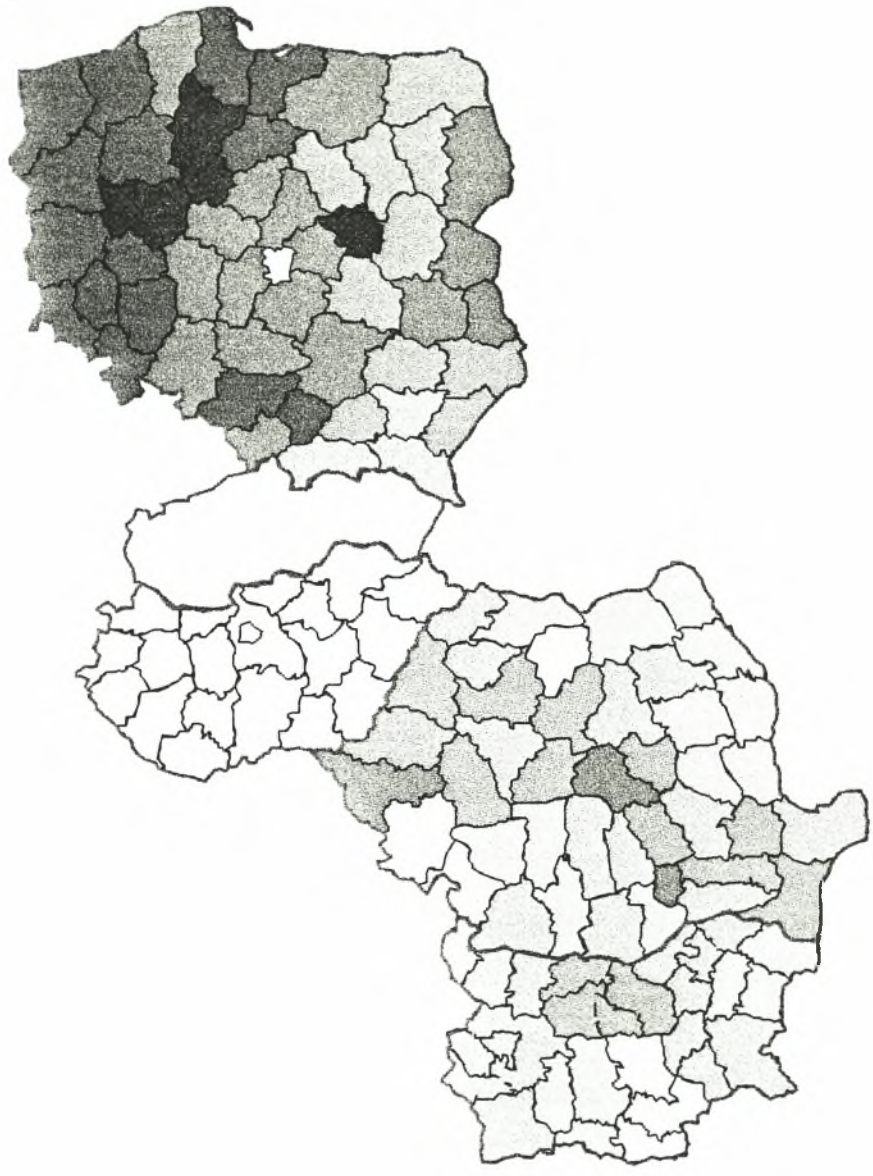
Map 12. Regional welfare indicators I: cars per 100 inhabitants in Poland (1995) and Hungary (1995)



Boundaries
Cars/100 inhabitants
0-16
16-18
18-20
20-22
22-25
25-28
28-30
>30

N
W E
S

Map 13. Regional welfare indicators II: TV sets per 100 inhabitants i Poland (1995), Romania (1995) and Bulgaria (1995)



Boundaries
TV sets/100 inhabitants
10-13
13-16
16-19
19-22
22-25
25-28
28-32

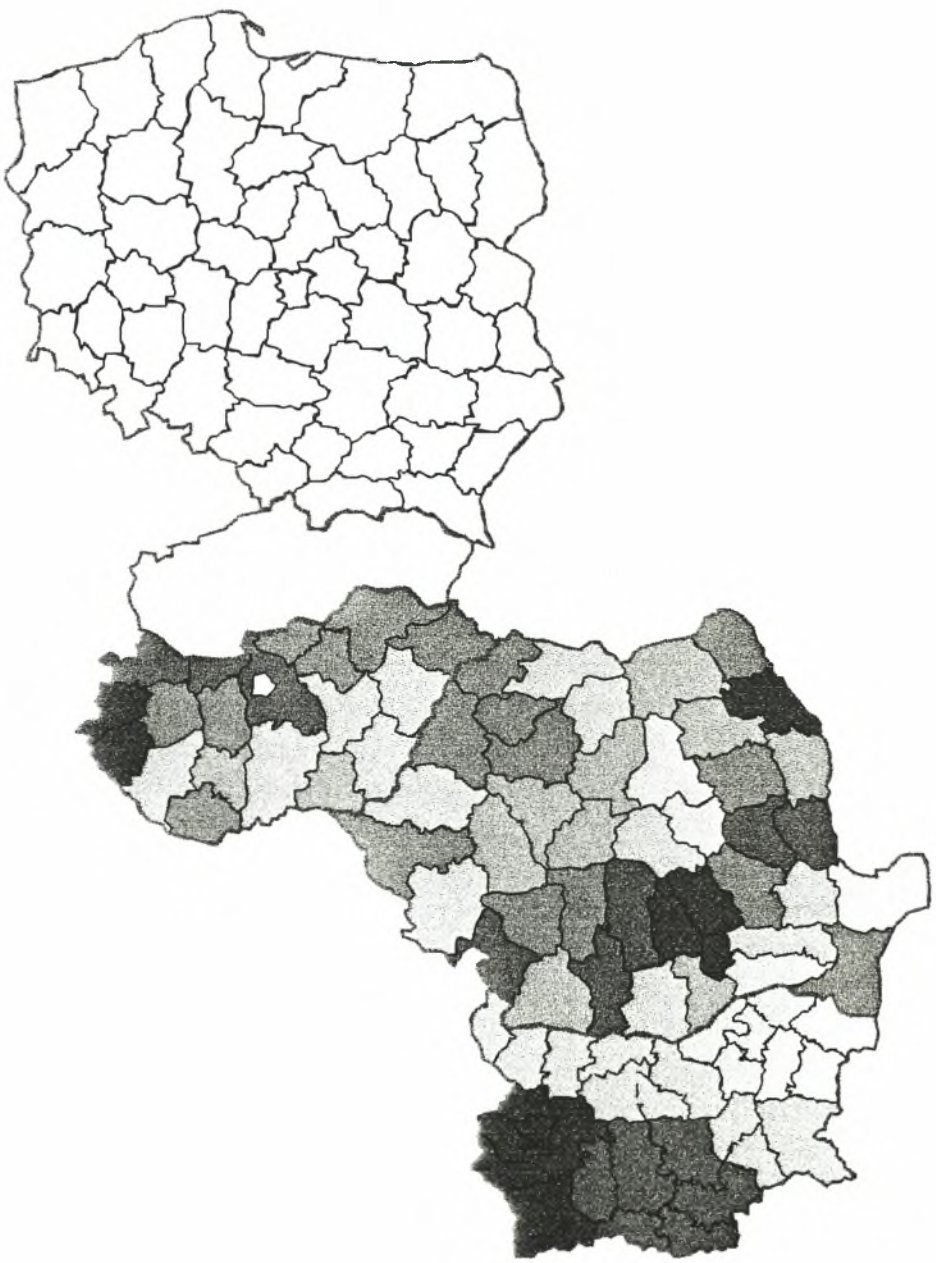
N
W E
S

Map 14. Regional welfare indicators III: telephones per 100 inhabitants in Poland (1995), Hungary (1994), Romania (1995) and Bulgaria (1995)

Boundaries
Phone lines/100 inhabitants
6-8
8-10
10-15
15-20
20-25
25-30
30-40
>40

N
W E
S

Map 15. Regional distribution of technical infastructure: road network per sq. km in Hungary (1995), Romania (1995) and Bulgaria (1995)



Boundaries
Road network (sq. km)
0.07-0.12
0.12-0.17
0.17-0.22
0.22-0.27
0.27-0.32
0.32-0.37
0.37-0.42
>0.42

N
W E
S

Map 16. Regional distribution of social infrastructure: hospital beds per 100 inhabitants in Poland (1995), Hungary (1995) and Bulgaria (1995)

Boundaries
Hospital beds/100 inhabitants
0.30-0.45
0.45-0.60
0.60-0.75
0.75-0.90
0.90-1.05
1.05-1.20
1.20-1.35
>1.35

N
W E
S

Figure 1. Regional disparities in average wages in Poland (1989,1995), Hungary (1990,1994), Romania (1995) and Bulgaria (1989,1995). National average=100

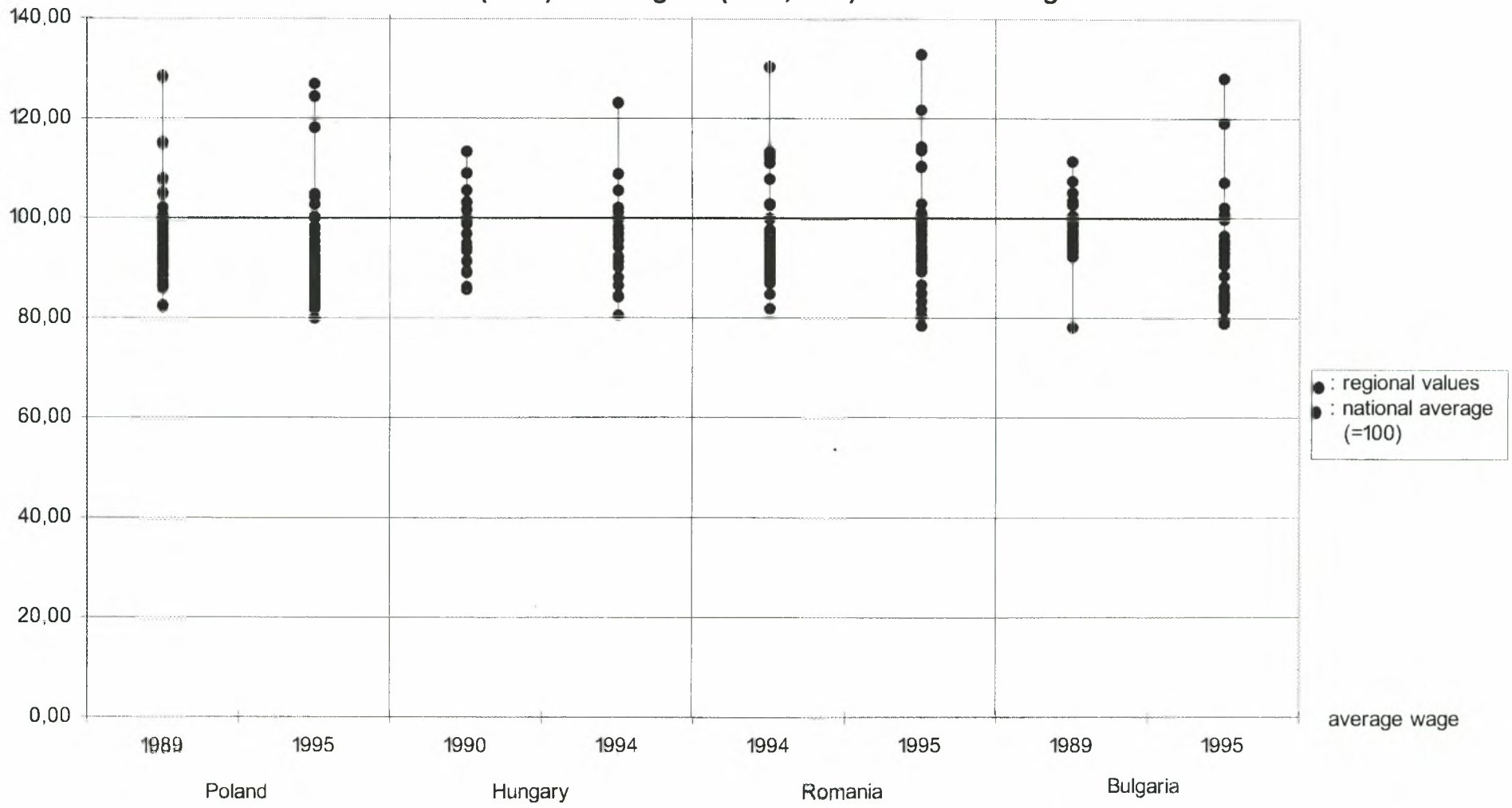


Figure 2. Disparities in regional GDP per capita in Poland (1992), Hungary (1994) and Romania (1994). National average=100

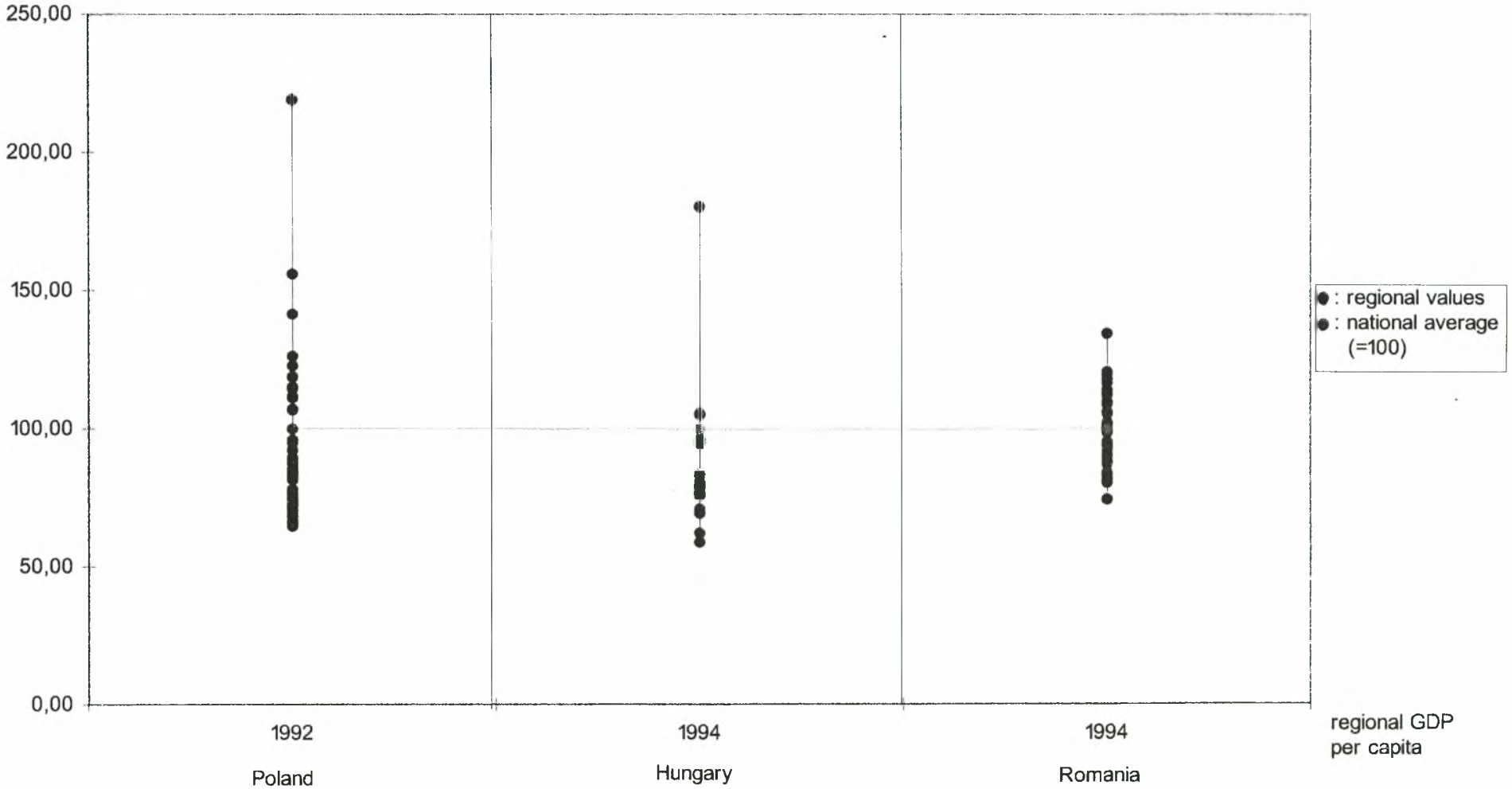


Figure 3. Regional dispariries in industrial production per capita in Poland (1992,1995), Romania (1990,1994) and Bulgaria (1989,1995). National average=100

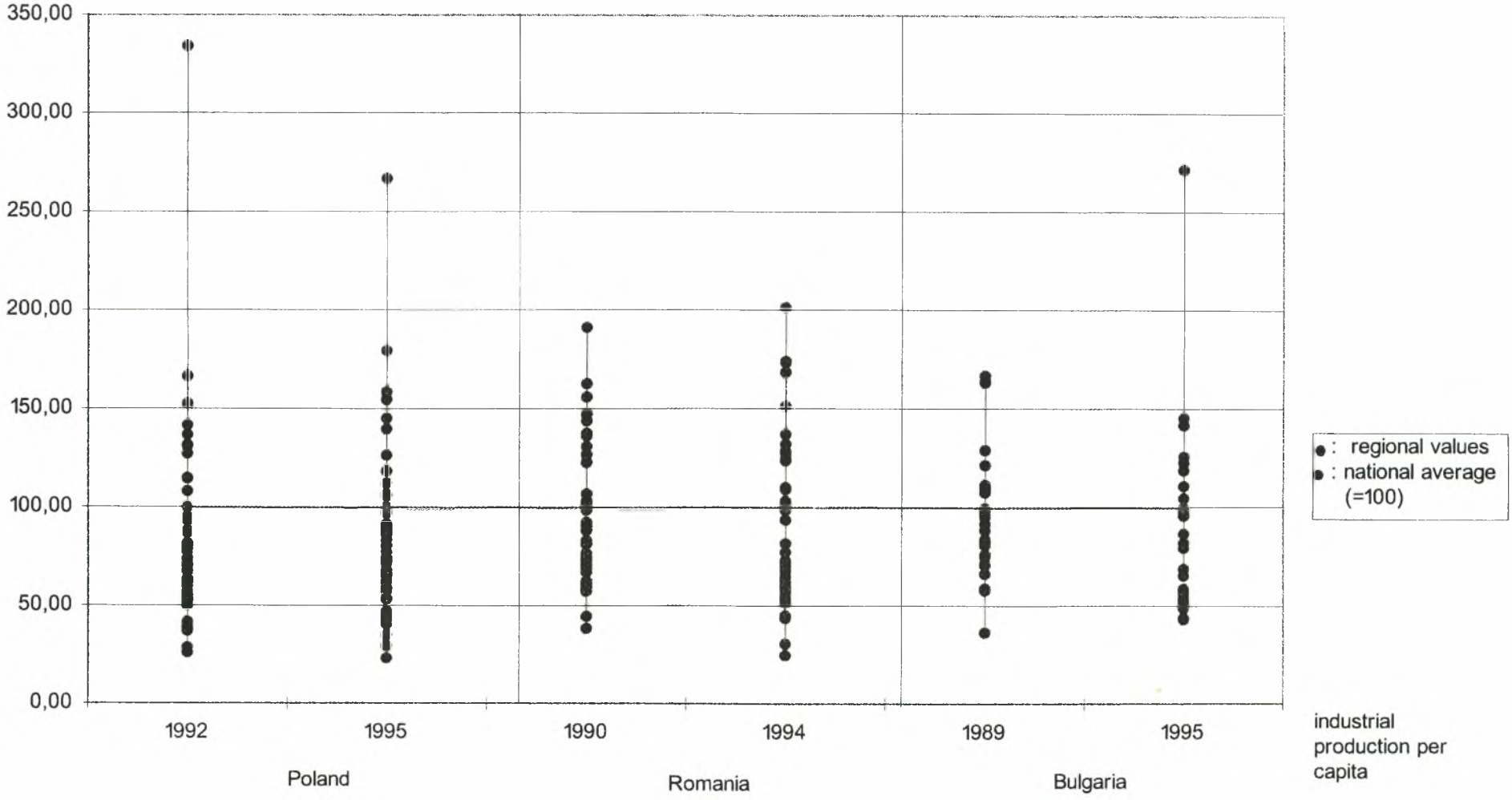


Figure 4. Regional disparities in investment per capita in Poland (1989,1995), Hungary (1991,1994) and Romania (1989,1991). National average=100

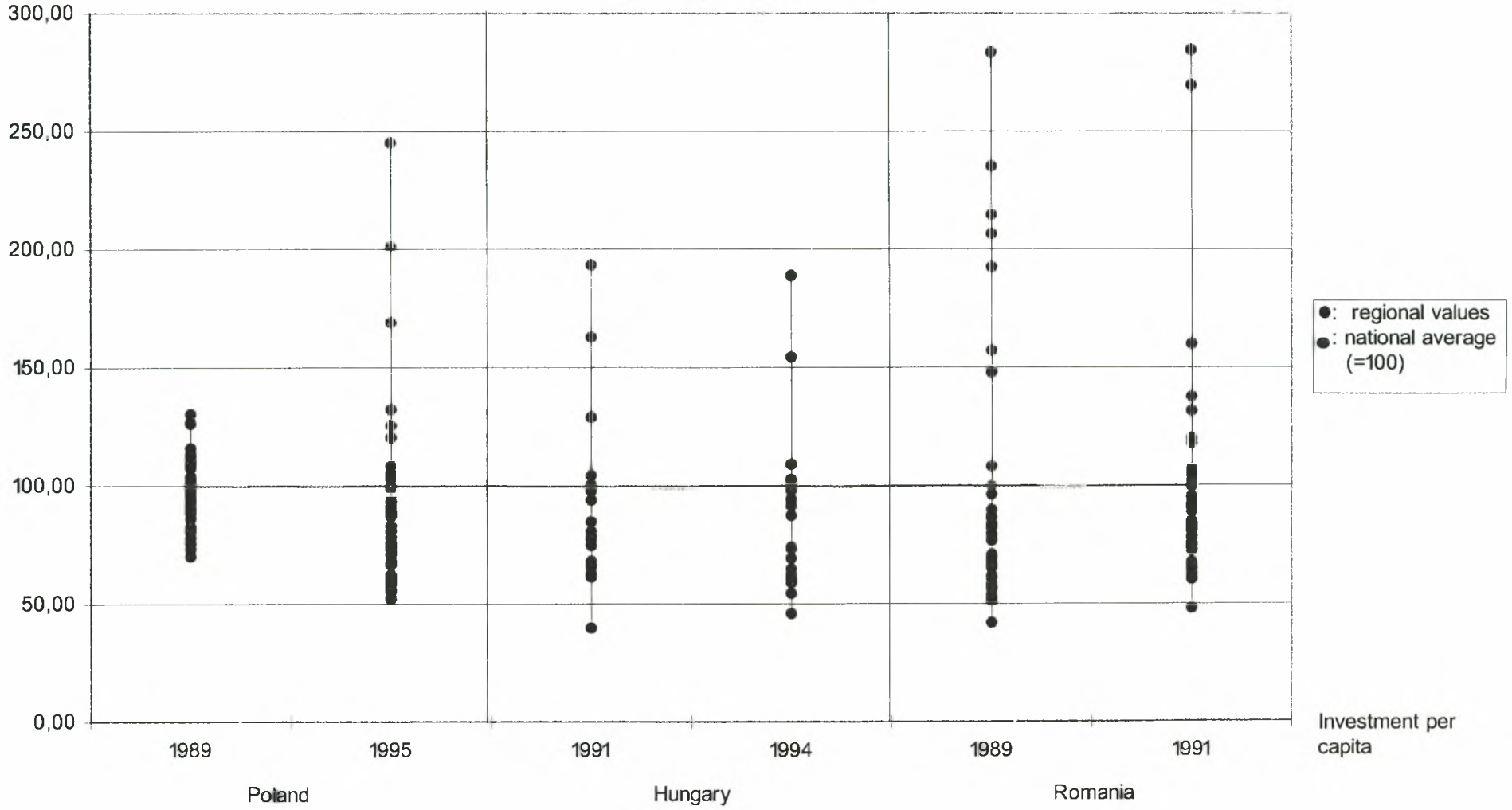


Figure 5. Regional disparities in FDI per capita in Poland (1993,1995) and Romania (1990-1996). National average=100

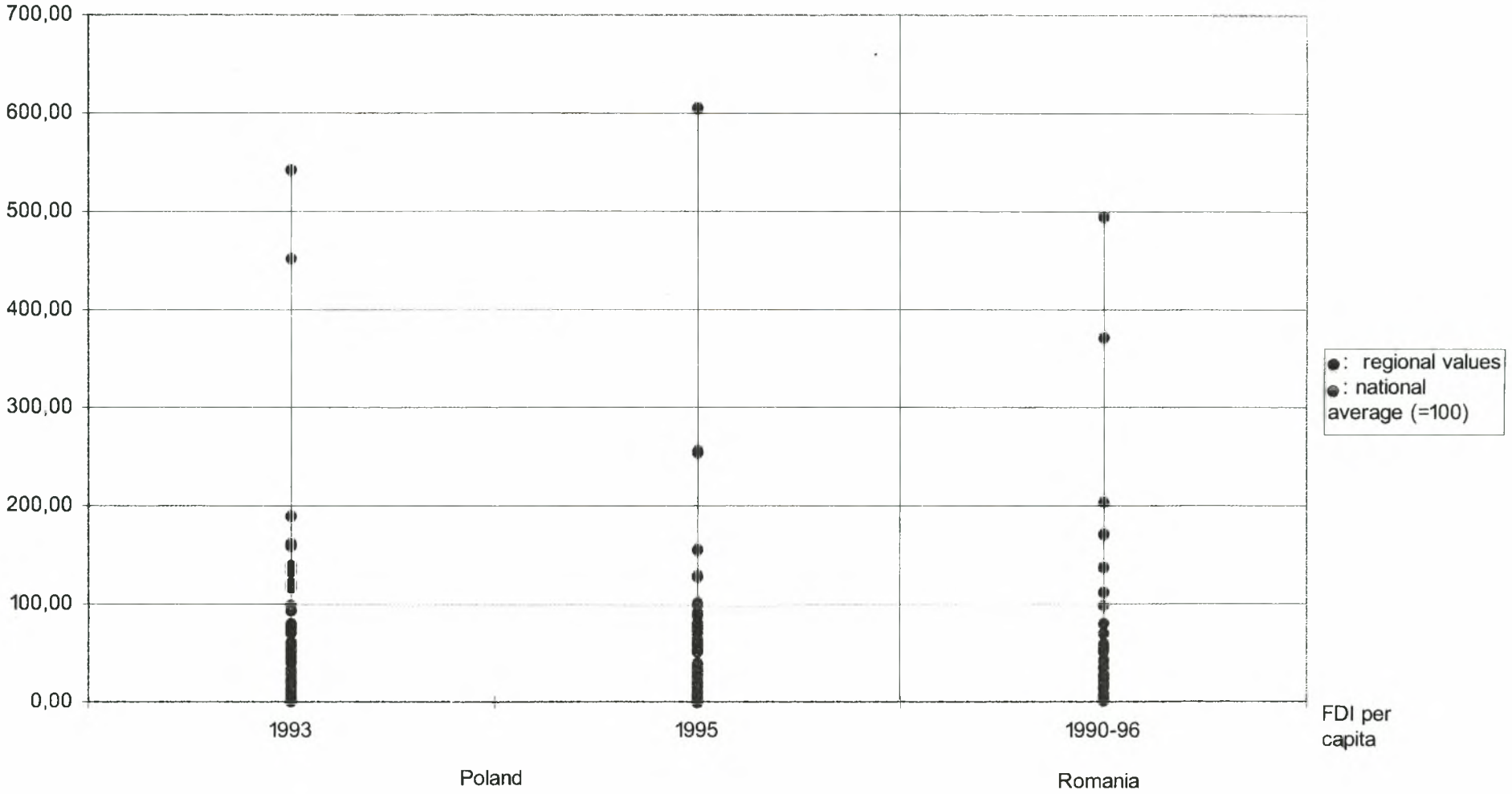


Figure 6. Regional disparities in cars per 100 inhabitants in Poland (1989,1995) and Hungary (1990,1995). National average=100

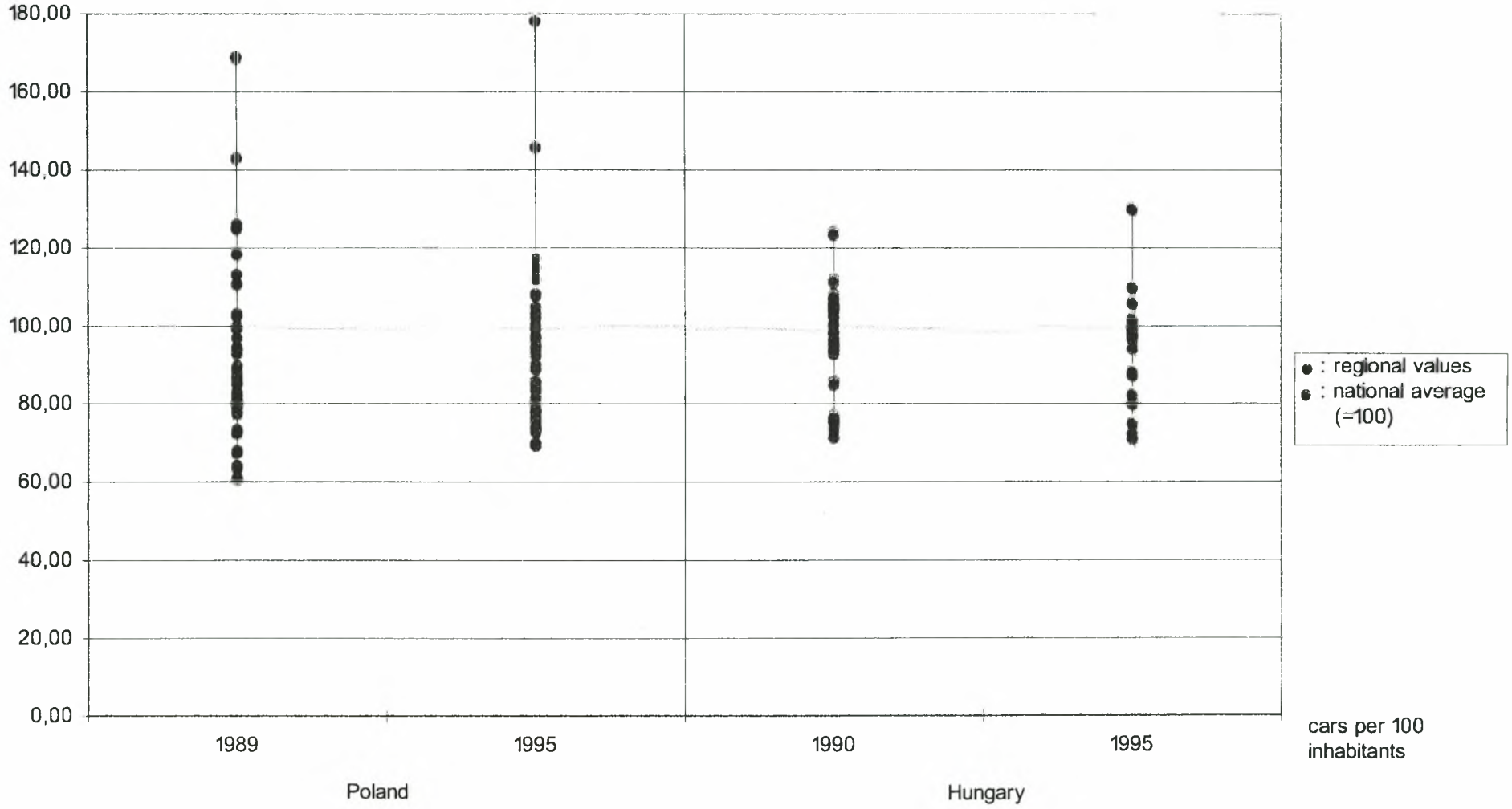


Figure 7. Regional disparities in number of TV sets per 100 inhabitants in Poland (1989,1995) and Romania (1989,1995). National average=100

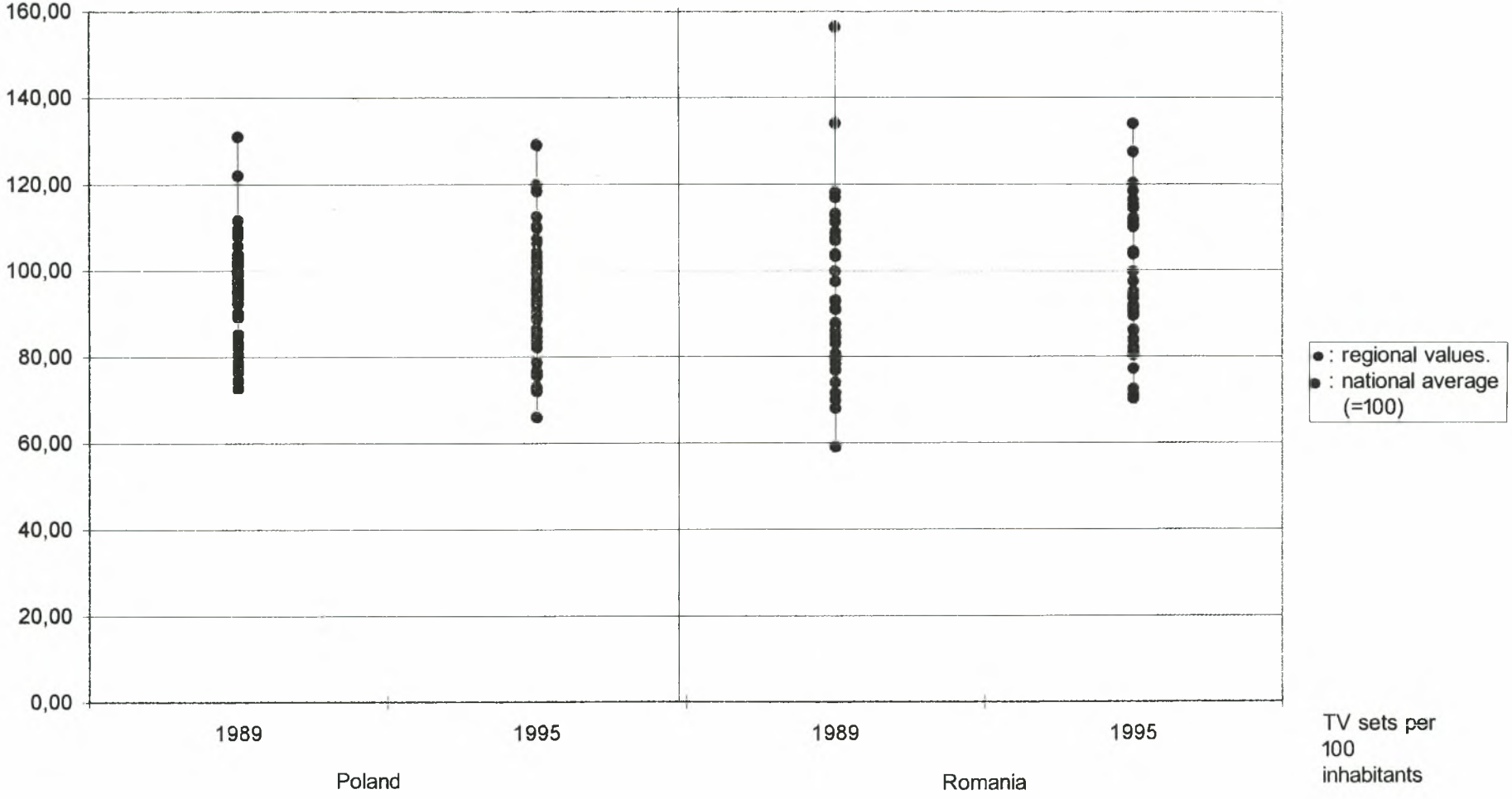


Figure 8. Regional disparities in telephone lines per 100 inhabitants in Poland (1989,1995), Hungary (1990,1994) and Romania (1989,1995)

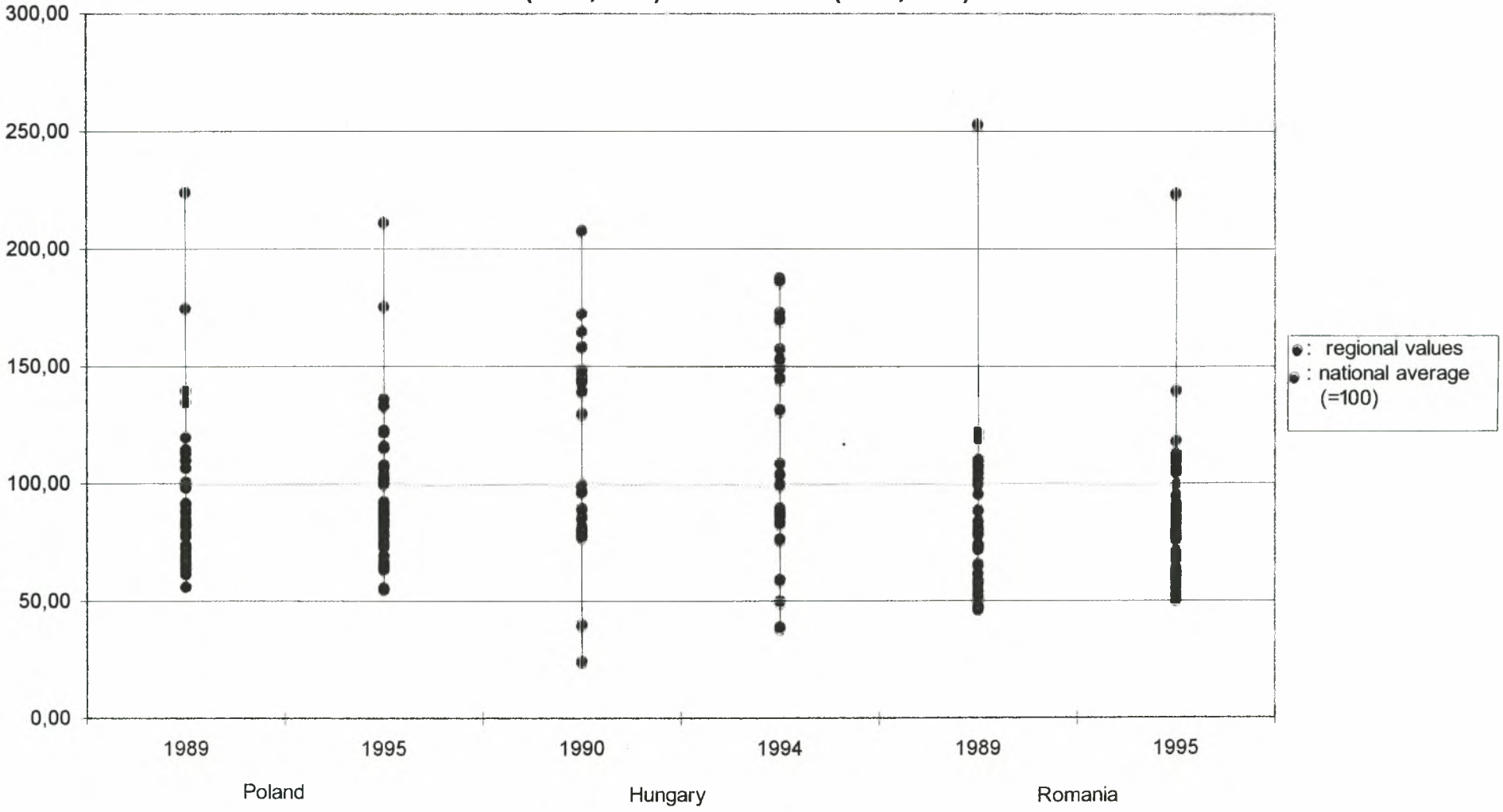


Figure 9. Regional disparities in road network per sq. km in Hungary (1990,1995) and Romania (1989,1995). National average=100

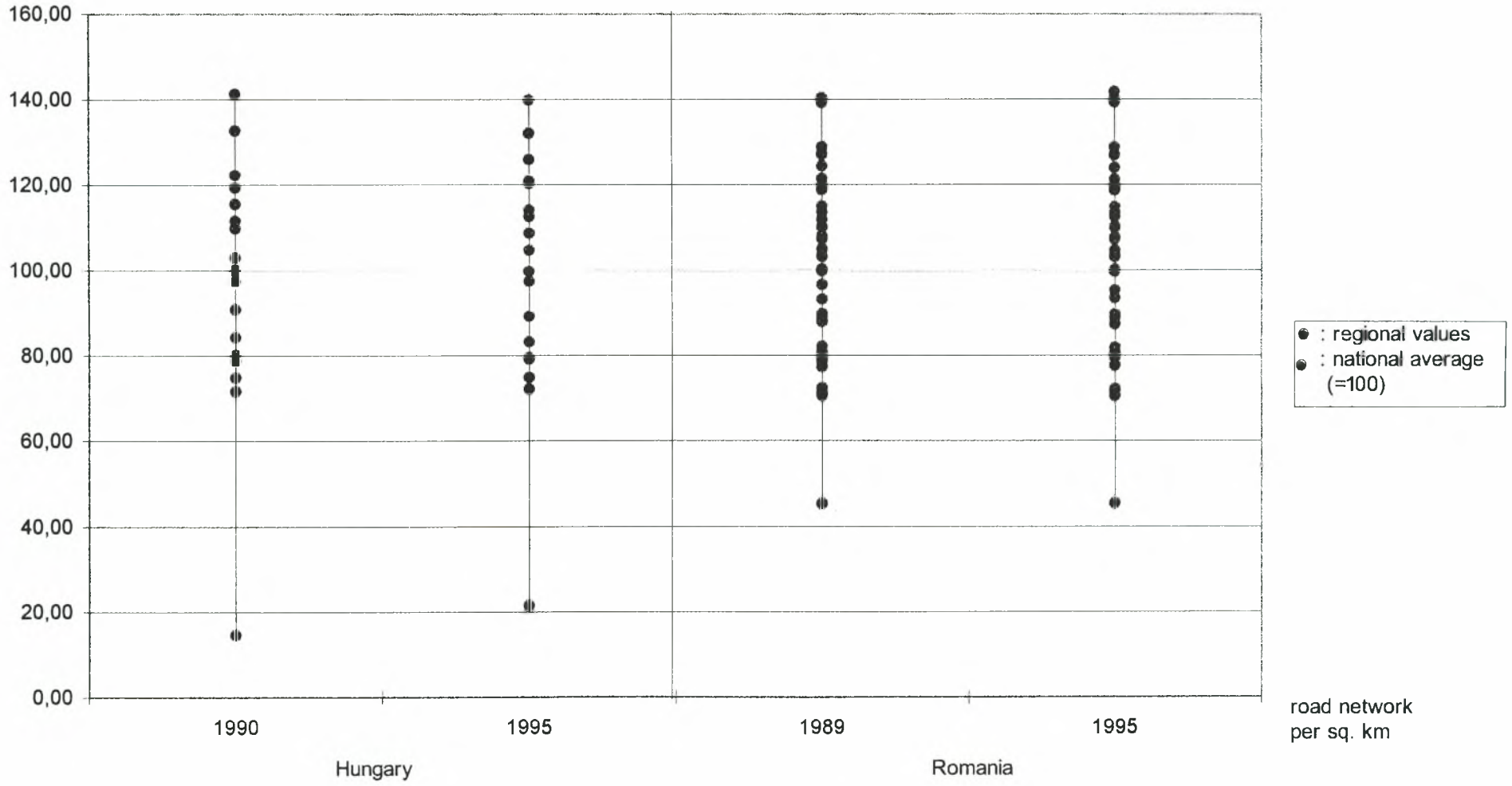


Figure 10. Regional disparities in hospital beds per 100 inhabitants in Poland (1989,1995), Hungary (1990,1995) and Romania (1989,1995). National average=100

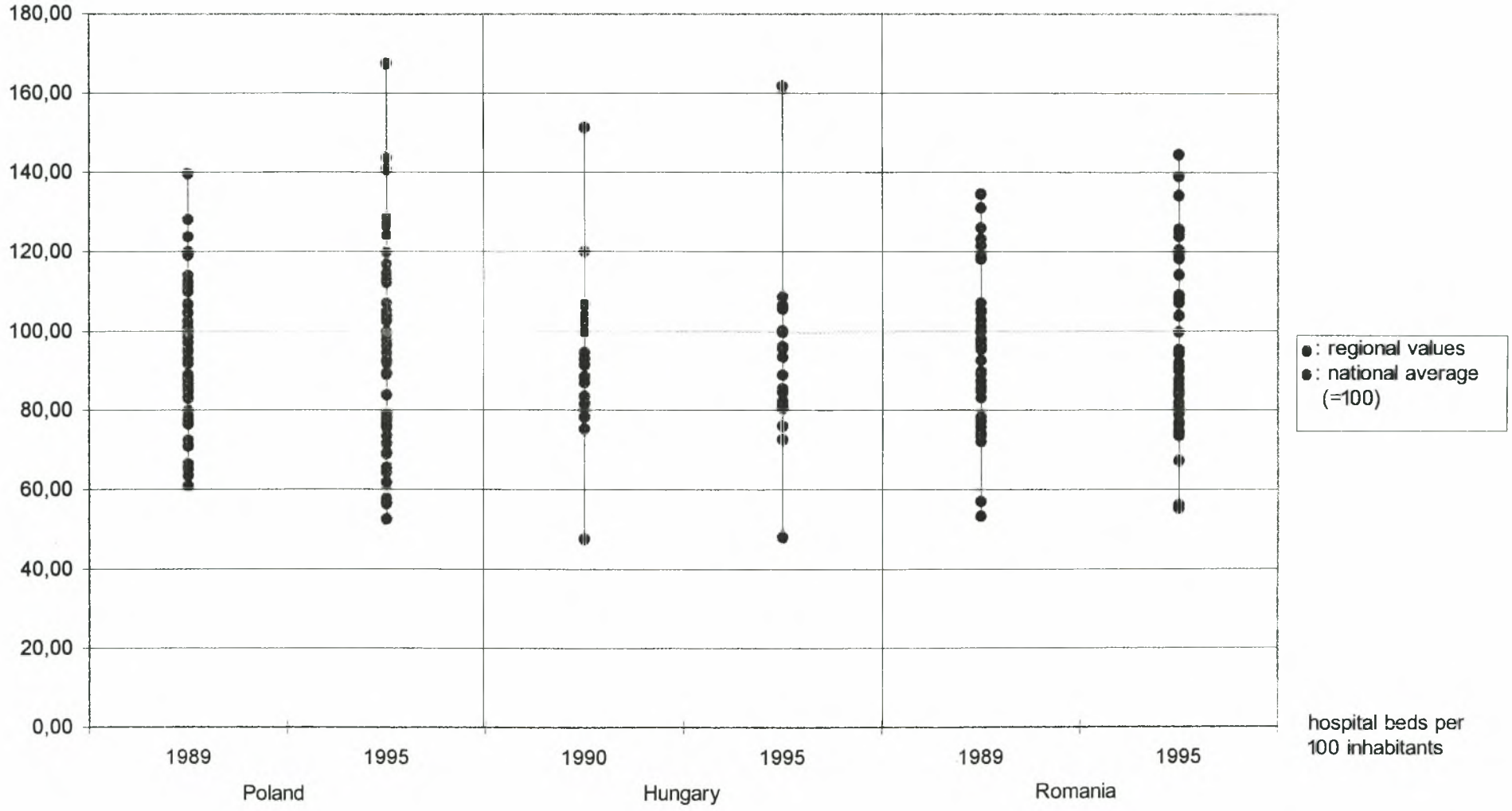
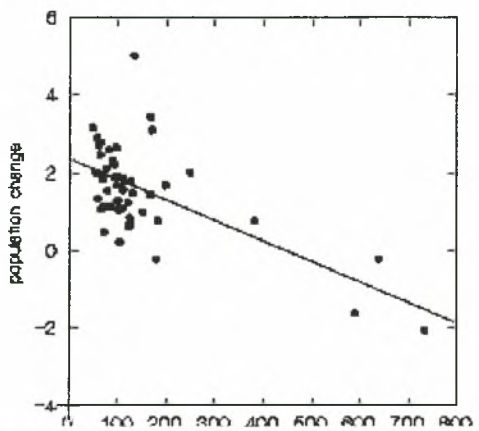
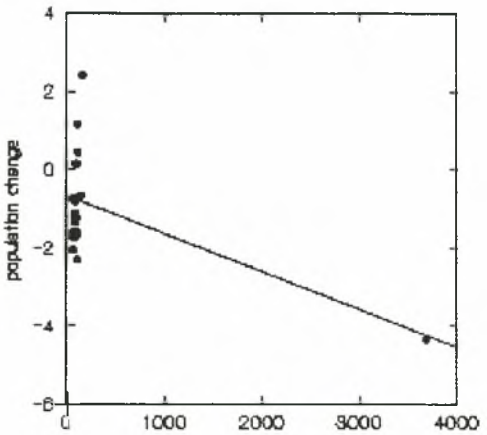


Diagram 1. Average annual population change (1990-95) and population density (1995) at the regional level in Poland, Hungary, Romania and Bulgaria



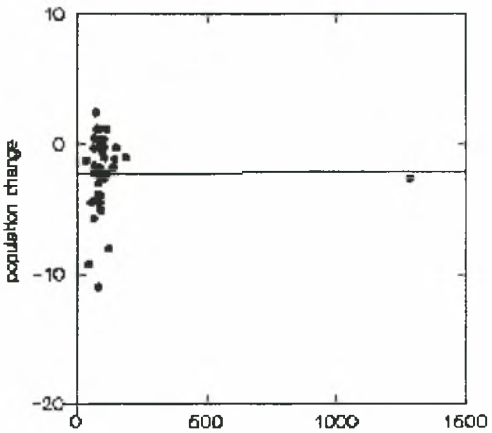
y=2.365-0.005x r=0.635

Poland



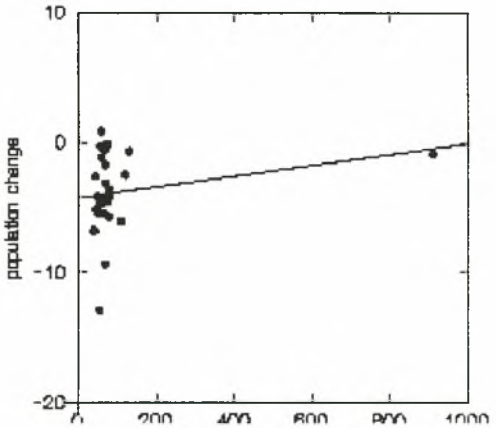
y=-0.661-0.001x r=0.556

Hungary



y=-2.299+0.000x r=0.010

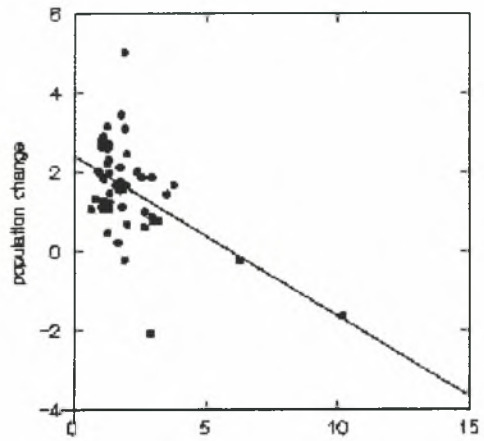
Romania



y=-4.242+0.004x r=0.226

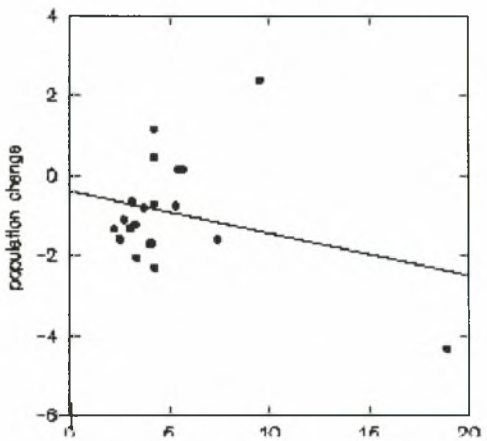
Bulgaria

Diagram 2. Average annual population change (1990-1995) and population share (1995) of the regions of Poland, Hungary, Romania and Bulgaria



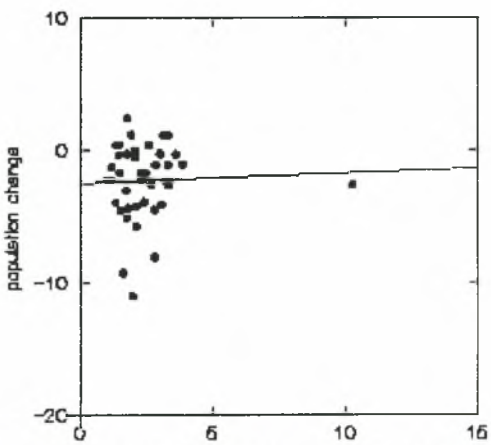
y=2.425-0.405x r=0.518

Poland



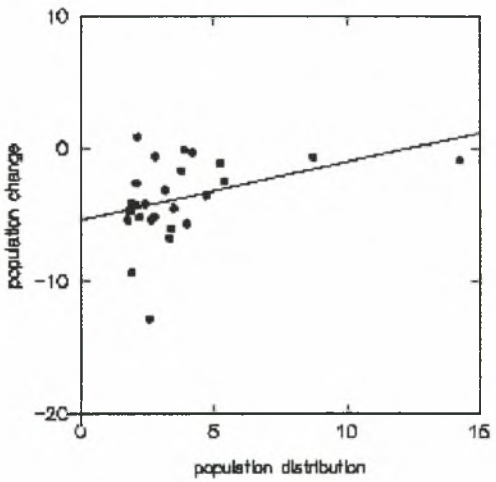
y=-0.397-0.105x r=0.277

Hungary



y=-2.471+0.078x r=0.040

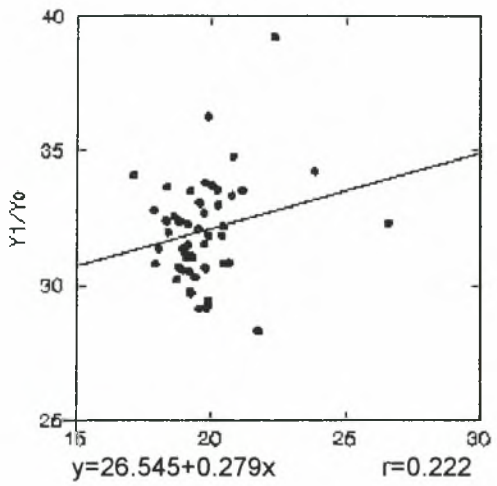
Romania



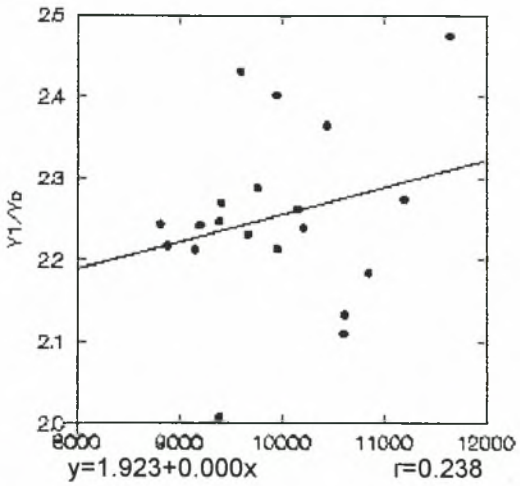
y=-5.408+0.438x r=0.385

Bulgaria

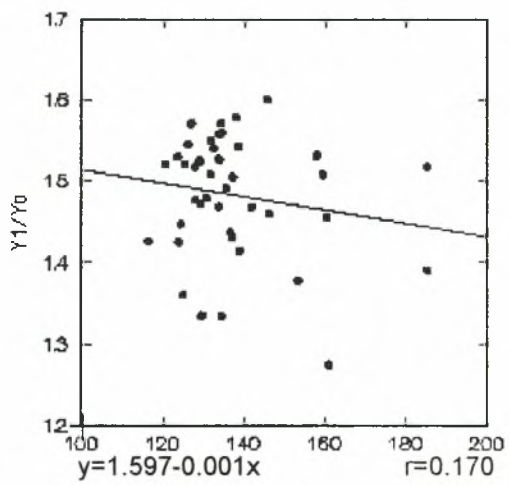
Diagram 3. Regional convergence/divergence in average wages in Poland (1989-1995), Hungary (1990-1994) and Bulgaria (1989-1995)



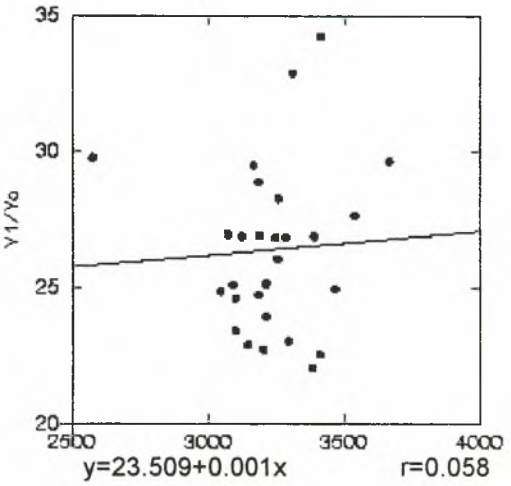
Poland



Hungary

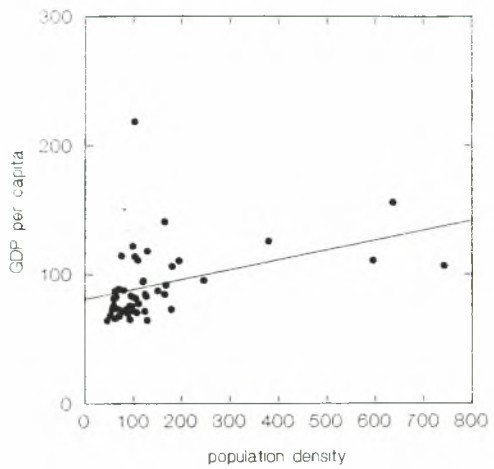


Romania



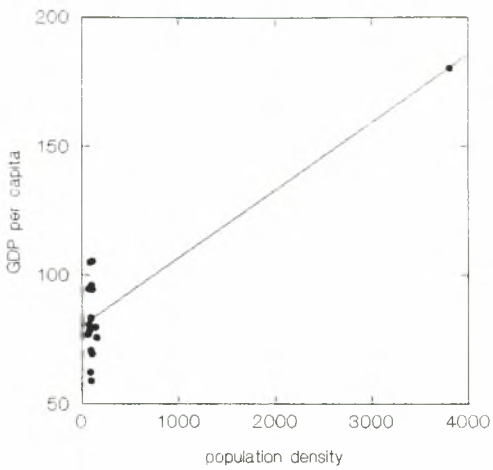
Bulgaria

Diagram 4. Regional GDP per capita and regional population density in Poland (1992), Hungary (1994) and Romania (1994)



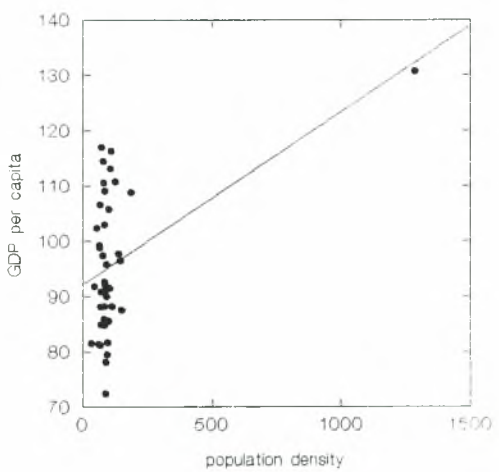
y=80.75+0.076x r=0.396

Poland



y=80.240+0.026x r=0.864

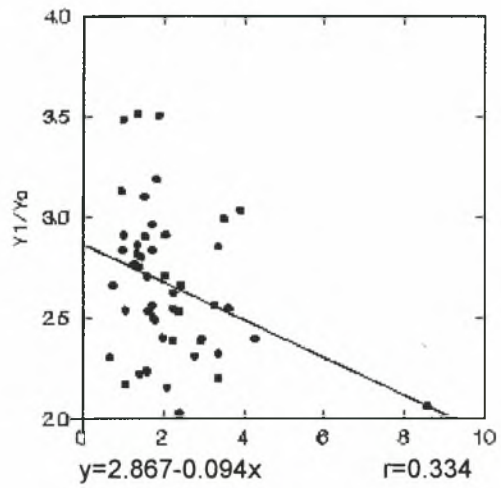
Hungary



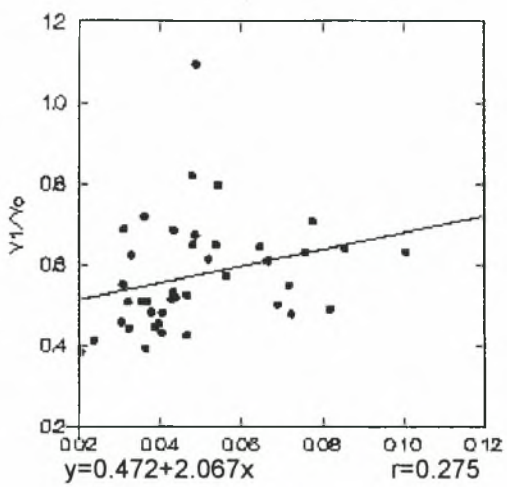
y=92.135+0.031x r=0.459

Romania

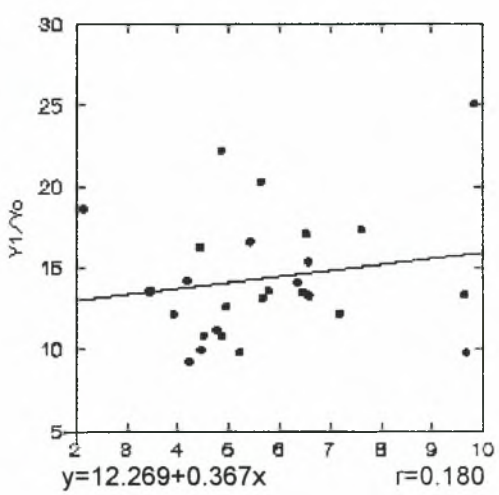
Diagram 5. Regional convergence/divergence in industrial production in Poland (1992-1995), Romania (1990-1994) and Bulgaria (1989-1995)



Poland

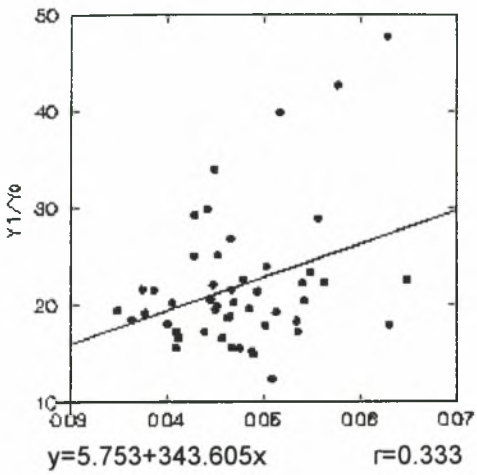


Romania

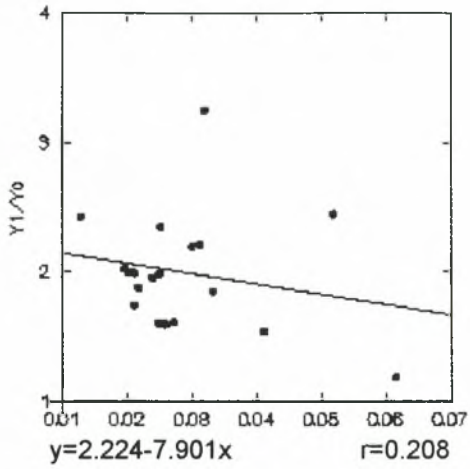


Bulgaria

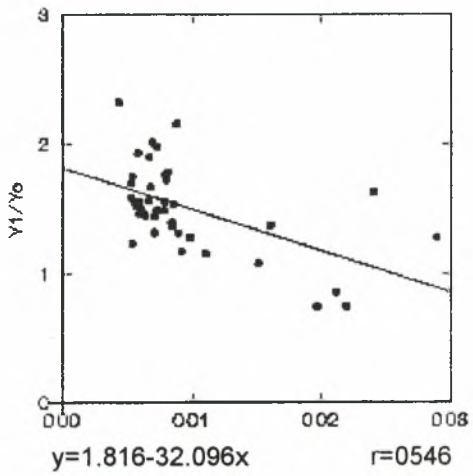
Diagram 6. Regional convergence/divergence in investment per capita in Poland (1989-1995), Hungary (1991-1994) and Romania (1989-1991)



Poland

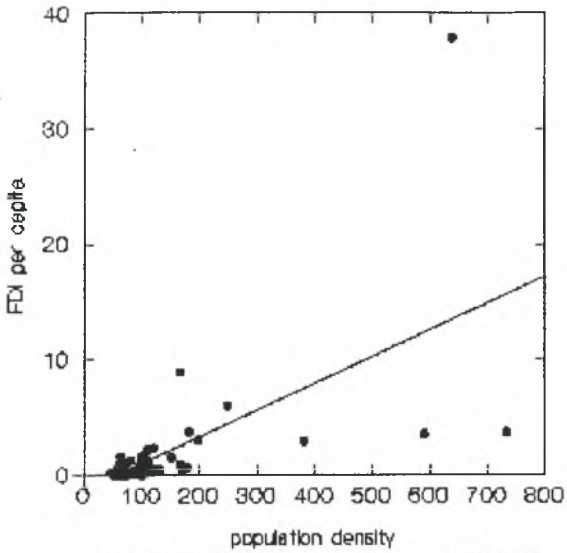


Hungary



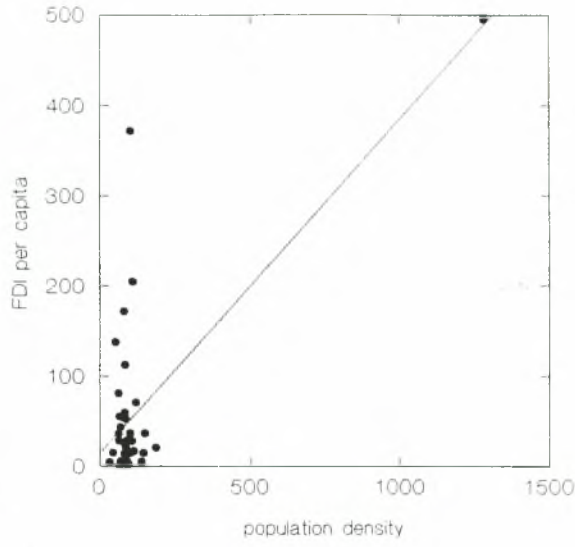
Romania

Diagram 7. Regional FDI per capita and regional population density or population distribution in Poland (1995) and Romania (1990-1996)



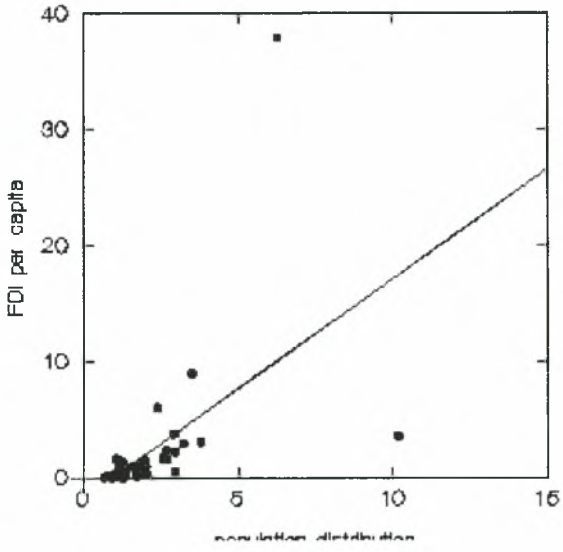
y=-1.334+0.023x r=0.607

Poland



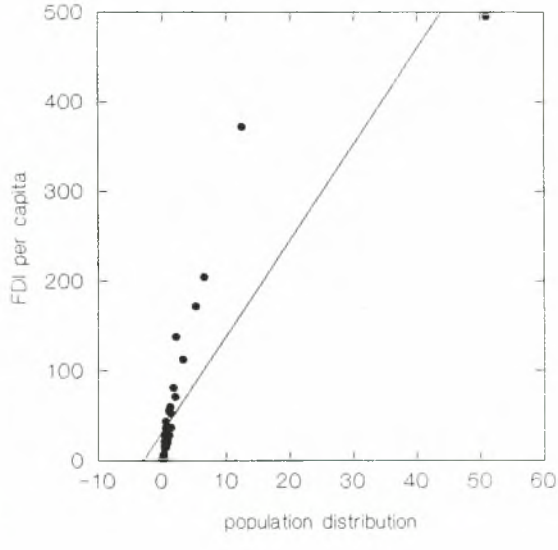
y=14.596+0.370x r=0.707

Romania



y=-1.820+1.892x r=0.529

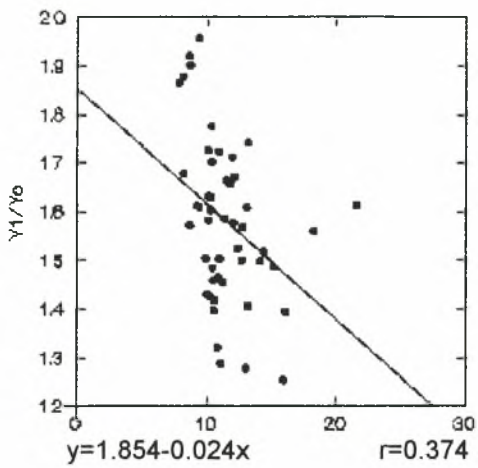
Poland



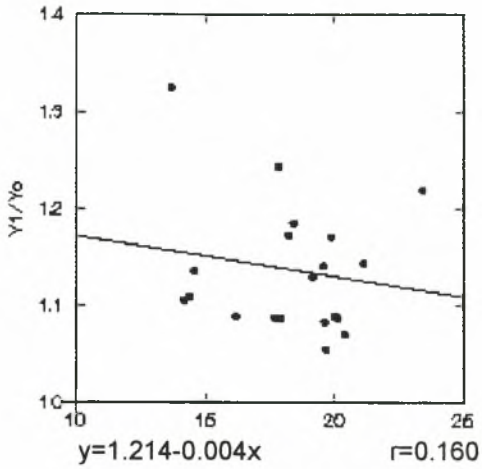
y=31.792+10.686x r=0.873

Romania

Diagram 8. Regional convergence/divergence in cars per 100 inhabitants in Poland (1989-1995) and Hungary (1990-1995)

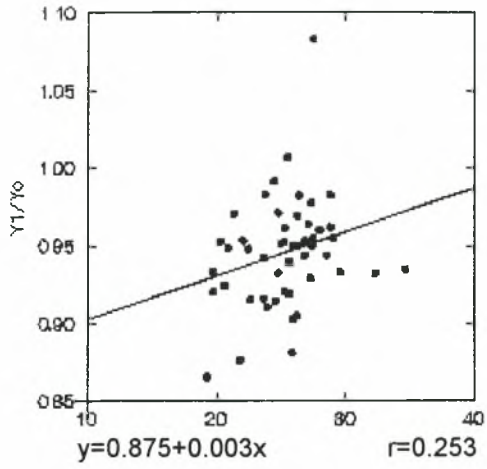


Poland

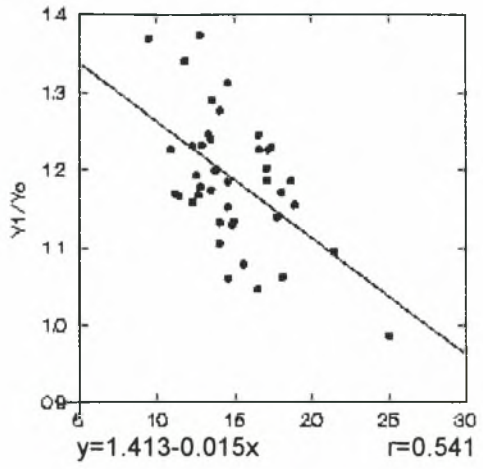


Hungary

Diagram 9. Regional convergence/divergence in number of TV sets per 100 inhabitants in Poland (1989-1995) and Romania (1989-1995)

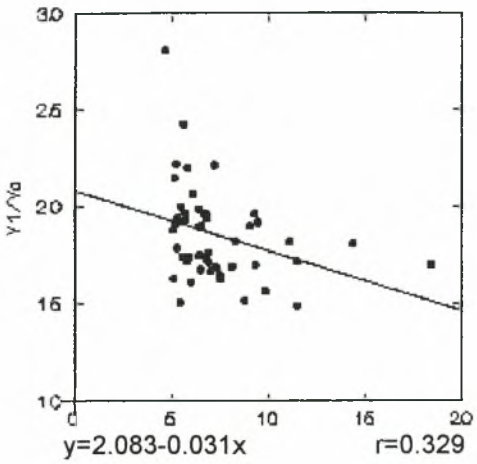


Poland

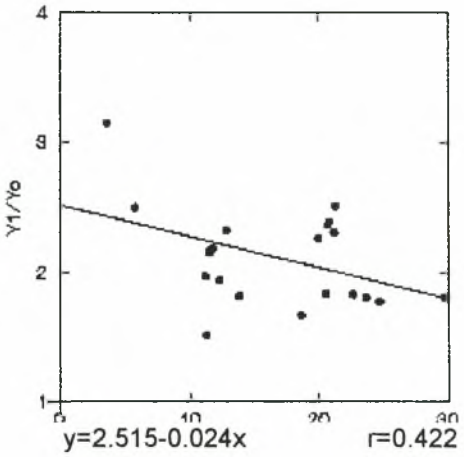


Romania

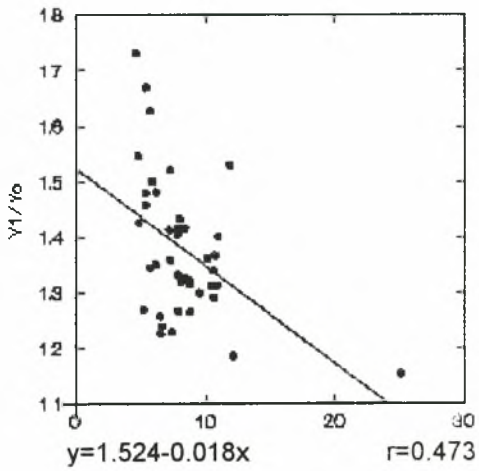
Diagram 10. Regional convergence/divergence in telephone lines per 100 inhabitants in Poland (1989-1995), Hungary (1990-1994) and Romania (1989-1995)



Poland

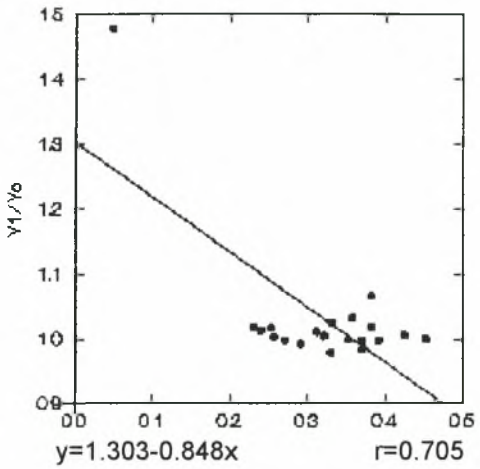


Hungary

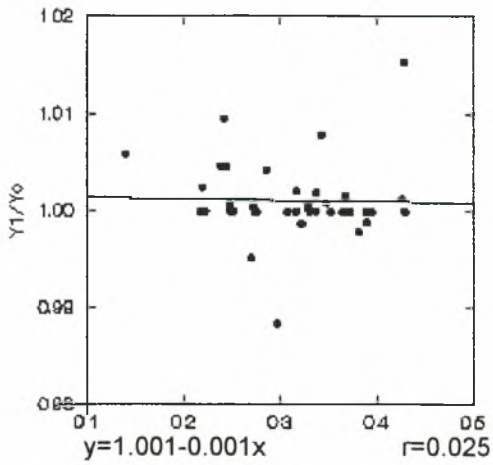


Romania

Diagram 11. Regional convergence/divergence in road network per sq. km in Hungary (1990-1995) and Romania (1989-1995)

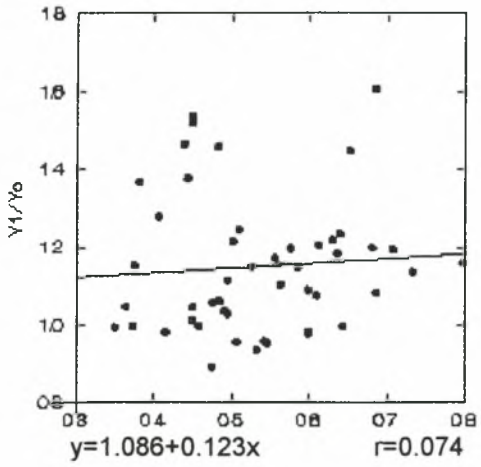


Hungary

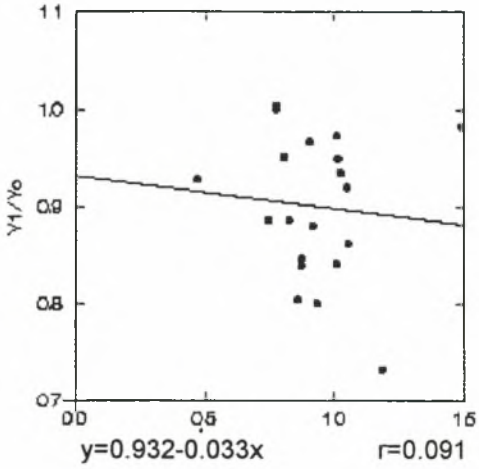


Romania

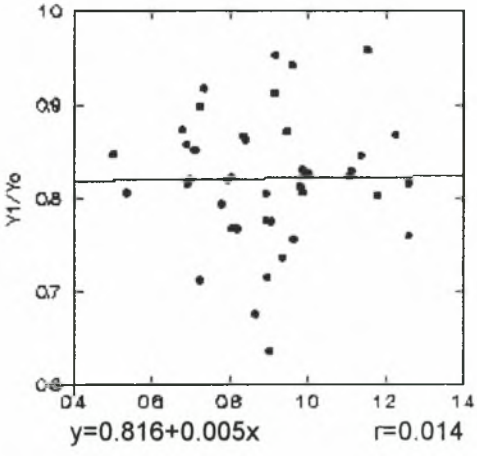
Diagram 12. Regional convergence/divergence in hospital beds per 100 inhabitants in Poland (1989-95), Hungary (1990-1995) and Romania (1989-1995)



Poland



Hungary



Romania

Table 1: Population at the regional level in Poland, Hungary, Romania and Bulgaria

Poland			**Hungury**			**Romania**			**Bulgaria**		
Voivodships	1990	1995	*Regions*	1990	1995	*Counties*	1990	1995	*Oblasti*	1990	1995
Warszawskie	2.421.594	2.416.580	Budapest	2.017.000	1.930.000	Alba	424.258	406.234	Gr. Sofia	1.202.877	1.192.735
Bialskopodlaskie	305.337	309.471	Baranya	419.000	412.000	Arad	508.302	479.575	Blagoevgrad	352.353	351.408
Bialostockie	692.821	700.726	Bacs-Kiskun	545.000	541.000	Arges	680.056	678.705	Burgaski	443.897	439.002
Bielskie	900.259	918.586	Bekes	412.000	405.000	Bacau	735.197	744.167	Varna	462.816	451.577
Bydgoskie	1.110.772	1.131.800	Borsod-Abaúj-Zemplen	762.000	750.000	Bihor	660.116	631.095	V.Tarnovo	321.068	315.682
Chelmskie	247.226	249.916	Csongrád	439.000	429.000	Bistrita-N.	329.259	328.436	Vidin	155.510	147.200
Ciechanowskie	428.361	436.365	Fejer	421.000	426.000	Botosani	464.839	462.792	Vrachanski	273.901	265.409
Chestochowskie	776.662	782.255	Gyor-Moson-Sopron	424.000	426.000	Brasov	696.441	640.943	Gabrovski	164.718	158.048
Elblaskie	478.865	491.426	Hajdu-Bihar	549.000	550.000	Braila	402.946	391.075	Kurdjali	245.171	213.761
Gdanskie	1.431.569	1.455.868	Heves	334.000	330.000	Buzau	521.334	512.849	Kiustendil	176.057	177.647
Grorzowskie	500.666	510.757	Szolnok	426.000	423.000	Caras-Severin	403.235	366.296	Lovetch	193.681	183.753
Jeleniogorskie	517.880	524.451	Komarom-Esztergom	315.000	313.000	Calarasi	341.631	336.176	Montana	211.802	203.020
Kaliskie	710.746	722.038	Nograd	227.000	224.000	Cluj	744.049	727.656	Pazardjik	324.944	324.683
Katowickie	3.988.831	3.924.813	Pest	950.000	973.000	Constanta	754.356	746.839	Pernoshki	175.614	159.274
Kieleckie	1.126.668	1.136.562	Somogy	345.000	338.000	Covasna	237.669	232.520	Plevenski	352.726	332.824
Koninskie	469.191	479.741	Szabolcs-Szatmar-Bereg	572.000	573.000	Dimbovita	566.509	557.125	Plovdivski	737.636	733.025
Koszalinskie	508.172	521.964	Tolna	254.000	250.000	Dolj	776.161	756.318	Razgradski	176.695	169.276
Krakowskie	1.231.636	1.241.423	Vas	276.000	273.000	Tecuci	649.880	643.017	Rusenski	300.847	282.792
Kroanienskie	495.011	506.575	Veszprem	382.000	379.000	Giurgiu	314.945	302.839	Silistrenski	166.810	158.992
Legnickie	515.859	523.566	Zala	306.000	302.000	Gorj	387.444	397.170	Slivenski	235.341	233.998
Leszczynskie	386.837	397.171				Harghita	361.856	345.860	Smolianski	162.959	156.258
Lubelskie	1.016.355	1.026.748				Hunedoara	567.754	546.163	Sofia	298.137	278.173
Lomzynskie	346.705	353.779				Ialomita	303.423	305.011	St. Zagora	406.977	392.579
Lodzkie	1.139.498	1.116.258				Iasi	815.142	813.345	Dobritch	241.915	229.434
Nowosadeckie	697.875	733.106				Maramures	559.393	537.477	Turgovishtki	156.257	148.969
Olsztynskie	753.032	771.714				Mehedinti	326.816	328.517	Haskovo	305.104	291.523
Opolskie	1.018.610	1.025.179				Tirgu Mures	621.445	605.773	Schumenski	232.629	220.149
Ostroieckie	397.276	408.445				Neamt	583.150	585.955	Iambol	178.099	173.524
Pilskie	480.745	493.960				Olt	530.425	519.030			
Piotrkowskie	642.625	644.213				Prahova	880.465	871.919			
Plockie	516.431	522.022				Satu Mare	416.576	395.696			
Poznanskie	1.334.091	1.353.708				Salaj	268.776	262.873			
Przemyskie	406.771	414.572				Sibiu	501.546	446.823			
Radomskie	751.126	763.761				Suceava	701.339	709.604			
Rzeszowskie	723.697	746.285				Teleorman	494.039	473.199			
Siedleckie	651.433	661.723				Timis	722.426	693.506			
Sieradzkie	408.142	412.873				Tulcea	270.886	267.671			
Skierniewickie	419.339	424.013				Vaslui	463.675	463.701			
Slupskie	413.820	425.948				Vilcea	430.656	436.144			
Suwalskie	470.623	485.574				Vrancea	394.021	393.237			
Szczecinskie	972.073	990.525				Bucuresti	2.394.284	2.332.620			
Tarnobrzeskie	599.061	609.267									
Tarnowskie	670.261	693.512									
Torunskie	659.117	671.075									
Walbrzyskie	740.898	739.459									
Wloclawskie	429.433	435.044									
Wroclawskie	1.128.791	1.137.655									
Zamojskie	490.396	492.829									
Zielonogrorskie	659.973	674.098									
Total	38.183.160	38.609.399	*Total*	10.375.000	10.247.000	*Total*	23.151.564	22.675.951	*Total*	8.754.587	8.384.715

Table 2: Average annual population change at the regional level in Poland, Hungary, Romania and Bulgaria

Poland		Hungury		Romania		Bulgaria	
Voivodships	1989-95	*Regions*	1990-95	*Counties*	1989-95	*Oblasti*	1989-95
Warszawskie	-0,017	Budapest	-0,878	Alba	-0,876	Gr. Sofia	-0,222
Bialskopodlaskie	0,269	Baranya	-0,336	Arad	-0,912	Blagoevgrad	-0,021
Bialostockie	0,248	Bacs-Kiskun	-0,147	Arges	0,049	Burgaski	-0,225
Bielskie	0,430	Bekes	-0,342	Bacau	0,297	Varna	-0,433
Bydgoskie	0,377	Borsod-Abaûj-Zemplen	-0,317	Bihor	-0,750	V.Tarnovo	-0,477
Chelmskie	0,253	Csongrád	-0,460	Bistrita-N.	0,046	Vidin	-1,095
Ciechanowskie	0,363	Fejer	0,236	Botosani	-0,170	Vrachanski	-0,676
Chestochowskie	0,131	Gyor-Moson-Sopron	0,094	Brasov	-1,329	Gabrovski	-0,861
Elblaskie	0,513	Hajdu-Bihar	0,036	Braila	-0,551	Kurdjali	-3,420
Gdanskie	0,378	Heves	-0,241	Buzau	-0,372	Kiustendil	-0,225
Grorzowskie	0,413	Szolnok	-0,141	Caras-Severin	-1,779	Lovetch	-1,023
Jeleniogorskie	0,237	Komarom-Esztergom	-0,127	Calarasi	-0,725	Montana	-0,900
Kaliskie	0,321	Nograd	-0,266	Cluj	-0,342	Pazardjik	-0,042
Katowickie	-0,184	Pest	0,480	Constanta	0,224	Pernoshki	-1,577
Kieleckie	0,156	Somogy	-0,409	Covasna	-0,382	Plevenski	-1,094
Koninskie	0,427	Szabolcs-Szatmar-Bereg	0,035	Dimbovita	-0,373	Plovdivski	-0,206
Koszalinskie	0,577	Tolna	-0,317	Dolj	-0,351	Razgradski	-1,324
Krakowskie	0,184	Vas	-0,218	Tecuci	0,021	Rusenski	-1,329
Kroanienskie	0,493	Veszprem	-0,158	Giurgiu	-1,166	Silistrenski	-1,068
Legnickie	0,372	Zala	-0,263	Gorj	0,410	Slivenski	-0,229
Leszczynskie	0,542			Harghita	-0,801	Smolianski	-0,831
Lubelskie	0,219			Hunedoara	-0,635	Sofia	-1,282
Lomzynskie	0,393			Ialomita	-0,227	St. Zagora	-0,675
Lodzkie	-0,389			Iasi	0,071	Dobritch	-1,199
Nowosadeckie	0,961			Maramures	-0,565	Turgovishtki	-1,096
Olsztynskie	0,509			Mehedinti	-0,008	Haskovo	-1,151
Opolskie	0,168			Tirgu Mures	-0,419	Schumenski	-1,422
Ostroieckie	0,560			Neamt	0,164	Iambol	-0,645
Pilskie	0,551			Olt	-0,498		
Piotrkowskie	0,057			Prahova	-0,104		
Plockie	0,213			Satu Mare	-0,859		
Poznanskie	0,322			Salaj	-0,389		
Przemyskie	0,387			Sibiu	-2,137		
Radomskie	0,340			Suceava	0,258		
Rzeszowskie	0,660			Teleorman	-1,038		
Siedleckie	0,317			Timis	-0,751		
Sieradzkie	0,197			Tulcea	-0,454		
Skierniewickie	0,232			Vaslui	-0,168		
Slupskie	0,622			Vilcea	0,227		
Suwalskie	0,677			Vrancea	-0,020		
Szczecinskie	0,396			Bucuresti	0,098		
Tarnobrzeskie	0,355						
Tarnowskie	0,678						
Torunskie	0,387						
Walbrzyskie	-0,040						
Wloclawskie	0,238						
Wroclawskie	0,167						
Zamojskie	0,104						
Zielonogrorskie	0,420						
Total	0,249	*Total*	-0,248	*Total*	-0,345	*Total*	-0,717

Table 3: Population share at the regional level in Poland, Hungary, Romania and Bulgaria

Poland			Hungury			Romania			Bulgaria		
Voivodships	1990	1995	*Regions*	1990	1995	*Counties*	1990	1995	*Oblasti*	1990	1995
Warszawskie	6,34	6,26	Budapest	19,44	18,83	Alba	1,83	1,79	Gr. Sofia	13,90	14,23
Bialskopodlaskie	0,80	0,80	Baranya	4,04	4,02	Arad	2,19	2,11	Blagoevgrad	4,07	4,19
Bialostockie	1,81	1,81	Bacs-Kiskun	5,25	5,28	Arges	2,93	2,99	Burgaski	5,13	5,24
Bielskie	2,36	2,38	Bekes	3,97	3,95	Bacau	3,17	3,28	Varna	5,35	5,39
Bydgoskie	2,91	2,93	Borsod-Abaúj-Zemplen	7,34	7,32	Bihor	2,84	2,78	V.Tarnovo	3,71	3,76
Chelmskie	0,65	0,65	Csongrád	4,23	4,19	Bistrita-N.	1,42	1,45	Vidin	1,80	1,76
Ciechanowskie	1,12	1,13	Fejer	4,06	4,16	Botosani	2,00	2,04	Vrachanski	3,16	3,17
Chestochowskie	2,03	2,03	Gyor-Moson-Sopron	4,09	4,16	Brasov	3,00	2,83	Gabrovski	1,90	1,88
Elblaskie	1,25	1,27	Hajdu-Bihar	5,29	5,37	Braila	1,74	1,72	Kurdjali	2,83	2,55
Gdanskie	3,75	3,77	Heves	3,22	3,22	Buzau	2,25	2,26	Kiustendil	2,03	2,12
Grorzowskie	1,31	1,32	Szolnok	4,11	4,13	Caras-Severin	1,74	1,62	Lovetch	2,24	2,19
Jeleniogorskie	1,36	1,36	Komarom-Esztergom	3,04	3,05	Calarasi	1,47	1,48	Montana	2,45	2,42
Kaliskie	1,86	1,87	Nograd	2,19	2,19	Cluj	3,21	3,21	Pazardjik	3,75	3,87
Katowickie	10,45	10,17	Pest	9,16	9,50	Constanta	3,25	3,29	Pernoshki	2,03	1,90
Kieleckie	2,95	2,94	Somogy	3,33	3,30	Covasna	1,02	1,03	Plevenski	4,07	3,97
Koninskie	1,23	1,24	Szabolcs-Szatmar-Bereg	5,51	5,59	Dimbovita	2,44	2,46	Plovdivski	8,52	8,74
Koszaiinskie	1,33	1,35	Tolna	2,45	2,44	Dolj	3,34	3,34	Razgradski	2,04	2,02
Krakowskie	3,23	3,22	Vas	2,66	2,66	Tecuci	2,80	2,84	Rusenski	3,48	3,37
Kroanienskie	1,30	1,31	Veszprem	3,68	3,70	Giurgiu	1,36	1,34	Silistrenski	1,93	1,90
Legnickie	1,35	1,36	Zala	2,95	2,95	Gorj	1,67	1,75	Slivenski	2,72	2,79
Leszczynskie	1,01	1,03				Harghita	1,56	1,53	Smolianski	1,88	1,86
Lubelskie	2,66	2,66				Hunedoara	2,45	2,41	Sofia	3,44	3,32
Lomzynskie	0,91	0,92				Ialomita	1,31	1,35	St. Zagora	4,70	4,68
Lodzkie	2,98	2,89				Iasi	3,51	3,59	Dobritch	2,79	2,74
Nowosadeckie	1,83	1,90				Maramures	2,41	2,37	Turgovishtki	1,81	1,78
Olsztynskie	1,97	2,00				Mehedinti	1,41	1,45	Haskovo	3,52	3,48
Opolskie	2,67	2,66				Tirgu Mures	2,68	2,67	Schumenski	2,69	2,63
Ostroieckie	1,04	1,06				Neamt	2,51	2,58	Iambol	2,06	2,07
Pilskie	1,26	1,28				Olt	2,29	2,29			
Piotrkowskie	1,68	1,67				Prahova	3,79	3,85			
Plockie	1,35	1,35				Satu Mare	1,80	1,75			
Poznanskie	3,49	3,51				Salaj	1,16	1,16			
Przemyskie	1,07	1,07				Sibiu	2,16	1,97			
Radomskie	1,97	1,98				Suceava	3,02	3,13			
Rzeszowskie	1,90	1,93				Teleorman	2,13	2,09			
Siedleckie	1,71	1,71				Timis	3,11	3,06			
Sieradzkie	1,07	1,07				Tulcea	1,17	1,18			
Skierniewickie	1,10	1,10				Vaslui	2,00	2,04			
Slupskie	1,08	1,10				Vilcea	1,86	1,92			
Suwalskie	1,23	1,26				Vrancea	1,70	1,73			
Szczecinskie	2,55	2,57				Bucuresti	10,32	10,29			
Tarnobrzeskie	1,57	1,58									
Tarnowskie	1,76	1,80									
Torunskie	1,73	1,74									
Walbrzyskie	1,94	1,92									
Wloclawskie	1,12	1,13									
Wroclawskie	2,96	2,95									
Zamojskie	1,28	1,28									
Zielonogrorskie	1,73	1,75									
Total	100,00	100,00	*Total*	100,00	100,00	*Total*	100,00	100,00	*Total*	100,00	100,00

Table 4: Population density at the regional level in Poland, Hungary, Romania and Bulgaria

Poland			Hungury			Romania			Bulgaria		
Voivodships	1990	1995	*Regions*	1990	1995	*Counties*	1990	1995	*Oblasti*	1990	1995
Warszawskie	639,28	637,96	Budapest	3.841,90	3.676,19	Alba	67,97	65,08	Gr. Sofia	917,67	909,93
Bialskopodlaskie	57,09	57,87	Baranya	94,58	93,00	Arad	65,55	61,85	Blagoevgrad	54,34	54,19
Bialostockie	68,90	69,69	Bacs-Kiskun	64,73	64,25	Arges	99,63	99,43	Burgaski	57,64	57,00
Bielskie	243,05	248,00	Bekes	73,17	71,92	Bacau	111,04	112,39	Varna	120,78	117,85
Bydgoskie	107,33	109,36	Borsod-Abaúj-Zemplen	105,15	103,49	Bihor	87,50	83,66	V.Tarnovo	69,11	67,95
Chelmskie	63,95	64,64	Csongrád	102,98	100,63	Bistrita-N.	61,49	61,33	Vidin	51,13	48,40
Ciechanowskie	67,33	68,59	Fejer	96,27	97,42	Botosani	93,23	92,82	Vrachanski	69,47	67,31
Chestochowskie	125,63	126,54	Gyor-Moson-Sopron	104,38	104,87	Brasov	129,86	119,51	Gabrovski	80,98	77,70
Elblaskie	78,46	80,52	Hajdu-Bihar	88,39	88,55	Braila	84,55	82,06	Kurdjali	60,87	53,08
Gdanskie	193,61	196,90	Heves	91,83	90,73	Buzau	85,42	84,03	Kiustendil	57,63	58,15
Grorzowskie	59,01	60,20	Szolnok	75,98	75,44	Caras-Severin	47,33	42,99	Lovetch	46,83	44,43
Jeleniogorskie	118,26	119,77	Komarom-Esztergom	139,94	139,05	Calarasi	67,14	66,07	Montana	58,47	56,04
Kaliskie	109,14	110,88	Nograd	89,23	88,05	Cluj	111,48	109,03	Pazardjik	72,90	72,84
Katowickie	599,82	590,20	Pest	148,60	152,20	Constanta	106,68	105,62	Pernoshki	73,46	66,63
Kieleckie	122,32	123,39	Somogy	57,16	56,00	Covasna	64,06	62,67	Plevenski	81,37	76,78
Koninskie	91,30	93,35	Szabolcs-Szatmar-Bereg	96,34	96,51	Dimbovita	139,74	137,43	Plovdivski	130,75	129,93
Koszalinskie	60,00	61,63	Toina	68,59	67,51	Dolj	104,69	102,01	Razgradski	66,58	63,79
Krakowskie	378,50	381,51	Vas	82,71	81,81	Tecuci	145,52	143,98	Rusenski	114,91	108,01
Kroanienskie	86,81	88,84	Veszprem	82,35	81,70	Giurgiu	89,32	85,89	Silistrenski	58,45	55,71
Legnickie	127,78	129,69	Zala	80,87	79,81	Gorj	69,16	70,90	Slivenski	65,01	64,63
Leszczynskie	93,12	95,61				Harghita	54,50	52,10	Smolianski	46,74	44,82
Lubelskie	149,64	151,17				Hunedoara	80,38	77,33	Sofia	42,04	39,23
Lomzynskie	51,87	52,93				Ialomita	68,14	68,50	St. Zagora	80,15	77,32
Lodzkie	748,19	732,93				Iasi	148,86	148,53	Dobritch	51,40	48,75
Nowosadeckie	125,16	131,48				Maramures	88,74	85,26	Turgovishtki	57,52	54,84
Olsztynskie	61,09	62,60				Mehedinti	66,25	66,60	Haskovo	76,12	72,73
Opolskie	119,35	120,11				Tirgu Mures	92,56	90,23	Schumenski	68,62	64,94
Ostroieckie	61,14	62,86				Neamt	98,91	99,38	Iambol	43,30	42,19
Pilskie	58,59	60,20				Olt	96,48	94,40			
Piotrkowskie	102,56	102,81				Prahova	186,70	184,89			
Plockie	100,92	102,02				Satu Mare	94,29	89,56			
Poznanskie	163,67	166,08				Salaj	69,56	68,03			
Przemyskie	91,68	93,44				Sibiu	92,33	82,26			
Radomskie	102,98	104,71				Suceava	82,00	82,97			
Rzeszowskie	164,59	169,73				Teleorman	85,33	81,73			
Siedleckie	76,65	77,86				Timis	83,07	79,74			
Sieradzkie	83,82	84,80				Tulcea	31,87	31,49			
Skierniewickie	105,89	107,07				Vaslui	87,19	87,19			
Slupskie	55,52	57,15				Vilcea	74,70	75,65			
Suwalskie	44,86	46,29				Vrancea	81,12	80,96			
Szczecinskie	97,38	99,23				Bucuresti	1314,82	1280,96			
Tarnobrzeskie	95,35	96,97									
Tarnowskie	161,47	167,07									
Torunskie	123,25	125,48									
Walbrzyskie	177,76	177,41									
Wloclawskie	97,55	98,83									
Wroclawskie	179,54	180,95									
Zamojskie	70,26	70,61									
Zielonogrorskie	74,42	76,01									
Total	122,11	123,48	*Total*	111,52	110,15	*Total*	97,35	95,12	*Total*	77,99	75,54

Table 5: Average wage at the regional level in Poland, Hungary, Romania and Bulgaria

Poland	Gross average monthly wage (in PLN) (in public sector)		Hungury	Net monthly wages (in industry) (th. Ft)		Romania	Average net nominal monthly salary earnings (thou.lei)		Bulgaria	Average annual wages of the employees in the public sector (th.levs)	
Voivodships	1989	1995	*Regions*	1990	1994	*Counties*	1994	1995	*Oblasti*	1989	1995
Warszawskie	22,33	876,71	Budapest	11,64	28,81	Alba	132,3	203,9	Gr. Sofia	3,67	108,66
Bialskopodlaskie	17,85	585,95	Baranya	10,61	22,65	Arad	124,9	170,1	Blagoevgrad	3,09	77,51
Bialostockie	19,53	627,62	Bacs-Kiskun	9,19	20,62	Arges	137,8	217,7	Burgaski	3,41	116,76
Bielskie	19,73	645,72	Bekes	9,38	21,09	Bacau	160,8	205,1	Varna	3,31	108,76
Bydgoskie	19,89	634,39	Borsod-Abaúj-Zemplen	10,21	22,86	Bihor	134	210,7	V.Tarnovo	3,21	80,72
Chelmskie	18,30	593,47	Csongrád	9,95	22,03	Bistrita-N.	125,3	190,7	Vidin	3,29	75,84
Ciechanowskie	18,72	566,27	Fejer	11,19	25,47	Botosani	116,2	165,9	Vrachanski	3,18	91,81
Chestochowskie	19,87	585,26	Gyor-Moson-Sopron	9,76	22,34	Brasov	145,6	233,2	Gabrovski	3,38	74,60
Elblaskie	19,74	623,43	Hajdu-Bihar	9,66	21,57	Braila	131,5	198,5	Kurdjali	2,57	76,60
Gdanskie	20,75	692,43	Heves	9,59	23,33	Buzau	126	194,9	Kiustendil	3,16	93,22
Grorzowskie	19,76	606,16	Szolnok	9,40	21,34	Caras-Severin	133,7	204,3	Lovetch	3,18	78,74
Jeleniogorskie	20,21	678,36	Komarom-Esztergom	10,85	23,70	Calarasi	129,2	190,4	Montana	3,14	72,01
Kaliskie	18,78	576,96	Nograd	9,38	18,84	Cluj	137,1	206,5	Pazardjik	3,07	82,69
Katowickie	26,58	859,57	Pest	9,94	23,89	Constanta	159,1	240,1	Pernoshki	3,54	97,80
Kieleckie	18,60	606,46	Somogy	8,87	19,69	Covasna	130,5	193,2	Plevenski	3,19	85,73
Koninskie	20,80	724,37	Szabolcs-Szatmar-Bereg	8,80	19,76	Dimbovita	134,2	209,4	Plovdivski	3,26	92,00
Koszalinskie	19,30	600,28	Tolna	10,44	24,69	Dolj	138,4	213,7	Razgradski	3,10	76,21
Krakowskie	19,76	668,50	Vas	9,14	20,24	Tecuci	157,6	241,6	Rusenski	3,24	87,03
Kroanienskie	19,00	594,53	Veszprem	10,60	22,38	Giurgiu	138,7	196,4	Silistrenski	3,04	75,58
Legnickie	23,82	816,22	Zala	10,15	22,98	Gorj	185,1	257,5	Slivenski	3,21	76,87
Leszczynskie	19,54	570,43				Harghita	123,6	176,3	Smolianski	3,41	76,88
Lubelskie	19,54	646,57				Hunedoara	185	280,9	Sofia	3,46	86,47
Lomzynskie	18,38	588,10				Ialomita	128,9	196,7	St. Zagora	3,39	91,01
Lodzkie	20,44	630,90				Iasi	127,8	188,9	Dobritch	3,25	84,80
Nowosadeckie	17,92	552,55				Maramures	131,6	204,1	Turgovishtki	3,10	72,52
Olsztynskie	19,12	617,83				Mehedinti	153,1	211,1	Haskovo	3,28	88,10
Opolskie	20,40	650,38				Tirgu Mures	123,5	189,1	Schumenski	3,12	83,82
Ostroieckie	19,23	645,36				Neamt	127,6	193,8	Iambol	3,20	72,73
Pilskie	19,83	579,30				Olt	133,6	208,3			
Piotrkowskie	20,04	676,13				Prahova	141,7	208,2			
Plockie	19,85	720,59				Satu Mare	124,2	179,9			
Poznanskie	20,25	668,64				Salaj	133,5	196,2			
Przemyskie	17,09	583,31				Sibiu	135,3	201,9			
Radomskie	19,39	588,76				Suceava	126,9	199,5			
Rzeszowskie	18,35	618,08				Teleorman	136,3	196,1			
Siedleckie	19,06	592,16				Timis	136,9	196,1			
Sieradzkie	19,19	572,57				Tulcea	129,4	172,9			
Skierniewickie	18,92	594,42				Vaslui	120,4	183,3			
Slupskie	19,24	571,95				Vilcea	146	213,3			
Suwalskie	18,92	579,12				Vrancea	134,3	179,4			
Szczecinskie	21,15	709,84				Bucuresti	160,2	233,4			
Tarnobrzeskie	20,65	637,73									
Tarnowskie	18,81	609,79									
Torunskie	19,15	604,16									
Walbrzyskie	21,74	616,30									
Wloclawskie	19,18	586,42									
Wroclawskie	20,45	658,93									
Zamojskie	18,05	566,77									
Zielonogrorskie	19,20	597,49									
Total	20,68	690,92	*Total*	10,27	23,39	*Total*	141,9	211,4	*Total*	3,29	91,17

Table 6: Gross Regional Product per capita at the regional level in Poland, Hungary and Romania

Poland	(in PLN)	**Hungury**	(in Ft)	**Romania**	(in Lei)
Voivodships	1992	*Regions*	1994	*Counties*	1994
Warszawskie	4.643	Budapest	76.700	Alba	2.333
Bialskopodlaskie	2.219	Baranya	35.600	Arad	2.174
Bialostockie	2.656	Bacs-Kiskun	32.800	Arges	2.315
Bielskie	2.850	Bekes	34.400	Bacau	1.932
Bydgoskie	3.321	Borsod-Abaůj-Zemplen	29.600	Bihor	2.388
Chelmskie	2.478	Csongrád	40.200	Bistrita-N.	1.782
Ciechanowskie	2.194	Fejer	40.900	Botosani	1.741
Chestochowskie	2.489	Gyor-Moson-Sopron	44.900	Brasov	2.424
Elblaskie	2.628	Hajdu-Bihar	35.400	Braila	2.028
Gdanskie	3.305	Heves	30.200	Buzau	1.990
Grorzowskie	2.425	Szolnok	33.500	Caras-Severin	2.010
Jeleniogorskie	2.826	Komarom-Esztergom	34.000	Calarasi	1.779
Kaliskie	2.319	Nograd	26.600	Cluj	2.546
Katowickie	3.308	Pest	32.300	Constanta	2.476
Kieleckie	2.145	Somogy	32.800	Covasna	2.164
Koninskie	2.270	Szabolcs-Szatmar-Bereg	25.200	Dimbovita	2.140
Koszalinskie	2.450	Tolna	40.300	Dolj	2.004
Krakowskie	3.752	Vas	44.700	Tecuci	2.112
Kroanienskie	2.096	Veszprem	33.500	Giurgiu	1.587
Legnickie	3.531	Zala	40.300	Gorj	2.561
Leszczynskie	2.493			Harghita	2.241
Lubelskie	2.614			Hunedoara	2.506
Lomzynskie	2.051			Ialomita	1.860
Lodzkie	3.181			Iasi	1.917
Nowosadeckie	1.938			Maramures	2.014
Olsztynskie	2.604			Mehedinti	1.930
Opolskie	2.841			Tirgu Mures	2.098
Ostroieckie	1.977			Neamt	1.874
Pilskie	2.276			Olt	1.789
Piotrkowskie	3.404			Prahova	2.382
Plockie	6.515			Satu Mare	1.970
Poznanskie	4.206			Salaj	1.989
Przemyskie	1.954			Sibiu	2.254
Radomskie	2.444			Suceava	1.932
Rzeszowskie	2.745			Teleorman	1.857
Siedleckie	2.144			Timis	2.420
Sieradzkie	2.185			Tulcea	1.786
Skierniewickie	2.112			Vaslui	1.712
Slupskie	2.177			Vilcea	2.133
Suwalskie	1.928			Vrancea	1.882
Szczecinskie	3.647			Bucuresti	2.861
Tarnobrzeskie	2.263				
Tarnowskie	2.532				
Torunskie	2.536				
Walbrzyskie	2.184				
Wloclawskie	2.161				
Wroclawskie	3.179				
Zamojskie	2.032				
Zielonogrorskie	3.424				
Total	2.974	*Total*	42.500	*Total*	2.187

Table 7: Industrial production per 1000 inhabitants at the regional level in Poland, Romania and Bulgaria

Poland	sold production in industry (KGN classification) in mln PLN		**Romania**	Industrial output (mld.lei)		**Bulgaria**	Industrial production (millions levs)	
Voivodships	1992	1995	*Counties*	1990	1994	*Oblasti*	1989	1995
Warszawskie	3,911	11,889	Alba	0,046	0,020	Gr. Sofia	5,418	90,199
Bialskopodlaskie	0,672	1,552	Arad	0,040	0,018	Blagoevgrad	4,758	53,619
Bialostockie	1,589	3,562	Arges	0,085	0,055	Burgaski	9,830	247,236
Bielskie	3,506	10,505	Bacau	0,067	0,041	Varna	4,850	108,143
Bydgoskie	3,368	7,848	Bihor	0,043	0,030	V.Tarnovo	6,446	87,344
Chelmskie	1,059	2,695	Bistrita-N.	0,038	0,018	Vidin	5,208	51,488
Ciechanowskie	0,995	2,827	Botosani	0,023	0,010	Vrachanski	6,522	111,801
Chestochowskie	2,233	5,344	Brasov	0,077	0,055	Gabrovski	9,666	95,363
Elblaskie	1,893	6,646	Braila	0,052	0,032	Kurdjali	2,156	40,311
Gdanskie	3,370	7,435	Buzau	0,043	0,022	Kiustendil	5,659	74,783
Grorzowskie	1,543	4,489	Caras-Severin	0,036	0,014	Lovetch	6,554	101,070
Jeleniogorskie	2,434	6,494	Calarasi	0,033	0,020	Montana	4,451	44,670
Kaliskie	1,824	5,821	Cluj	0,048	0,031	Pazardjik	5,779	78,892
Katowickie	4,267	10,242	Constanta	0,048	0,039	Pernoshki	5,627	114,582
Kieleckie	1,368	3,921	Covasna	0,044	0,023	Plevenski	6,576	87,830
Koninskie	2,389	6,062	Dimbovita	0,054	0,035	Plovdivski	6,346	89,811
Koszalinskie	1,350	4,749	Dolj	0,040	0,018	Razgradski	4,177	59,678
Krakowskie	3,259	8,376	Tecuci	0,072	0,039	Rusenski	7,170	87,609
Kroanienskie	1,626	4,130	Giurgiu	0,020	0,008	Silistrenski	4,222	39.417
Legnickie	3,630	9,270	Gorj	0,072	0,035	Slivenski	4,860	52,919
Leszczynskie	1,725	5,124	Harghita	0,039	0,017	Smolianski	3,433	46,660
Lubelskie	1,729	4,914	Hunedoara	0,054	0,043	Sofia	7,599	132,317
Lomzynskie	0,957	3,000	Ialomita	0,036	0,026	St. Zagora	9,627	129,014
Lodzkie	2,775	6,429	Iasi	0,040	0,020	Dobritch	4,496	48,999
Nowosadeckie	1,008	3,517	Maramures	0,032	0,016	Turgovishtki	3,475	47,527
Olsztynskie	1,590	4,311	Mehedinti	0,030	0,014	Haskovo	4,429	72,351
Opolskie	2,061	6,015	Tirgu Mures	0,082	0,040	Schumenski	4,944	62,676
Ostroieckie	1,395	3,847	Neamt	0,046	0,024	Iambol	3,919	47,878
Pilskie	1,525	4,738	Olt	0,049	0,053			
Piotrkowskie	2,942	7,064	Prahova	0,101	0,064			
Plockie	8,560	17,698	Satu Mare	0,037	0,019			
Poznanskie	3,362	9,613	Salaj	0,043	0,023			
Przemyskie	1,072	2,334	Sibiu	0,069	0,035			
Radomskie	1,807	4,511	Suceava	0,031	0,017			
Rzeszowskie	1,736	4,356	Teleorman	0,031	0,021			
Siedleckie	1,409	3,140	Timis	0,056	0,032			
Sieradzkie	1,463	4,111	Tulcea	0,076	0,048			
Skierniewickie	1,281	3,556	Vaslui	0,032	0,014			
Slupskie	1,347	3,801	Vilcea	0,049	0,033			
Suwalskie	1,008	2,939	Vrancea	0,035	0,018			
Szczecinskie	2,936	7,017	Bucuresti	0,065	0,042			
Tarnobrzeskie	1,990	4,788						
Tarnowskie	2,037	5,529						
Torunskie	2,241	5,721						
Walbrzyskie	2,091	4,519						
Wloclawskie	1,724	4,424						
Wroclawskie	2,256	5,933						
Zamojskie	0,740	1,974						
Zielonogrorskie	2,403	4,889						
Total	2,561	6,621	*Total*	0,053	0,032	*Total*	5,878	90,875

Table 8: Investments per 1000 inhabitants (current prices) at the regional level in Poland, Hungary, Romania and Bulgaria

Poland	(in mln PLN)		percentage distribution		**Hungury**	(in mln Ft)		percentage distribution		**Romania**	(in mld lei)		percentage distribution	
Voivodships	1989	1995	1989	1995	*Regions*	1991	1994	1991	1994	*Counties*	1989	1991	1989	1991
Warszawskie	0,063	2,996	8,04	15,36	Budapest	51,83	127,05	31,80	36,71	Alba	0,007	0,011	1,23	1,50
Bialskopodlaskie	0,044	0,762	0,71	0,50	Baranya	27,03	43,75	3,44	2,63	Arad	0,006	0,009	1,27	1,43
Bialostockie	0,047	0,959	1,72	1,43	Bacs-Kiskun	20,97	36,74	3,48	2,87	Arges	0,008	0,015	2,33	3,16
Bielskie	0,050	1,212	2,38	2,36	Bekes	24,71	39,80	3,07	2,31	Bacau	0,007	0,014	2,25	3,38
Bydgoskie	0,051	0,992	3,00	2,38	Borsod-Abaúj-Zemplen	25,02	50,04	5,76	5,39	Bihor	0,007	0,011	2,03	2,20
Chelmskie	0,045	0,906	0,59	0,48	Csongrád	23,81	46,66	3,17	2,95	Bistrita-N.	0,005	0,009	0,76	0,89
Ciechanowskie	0,041	0,691	0,93	0,64	Fejer	31,16	69,02	4,00	4,22	Botosani	0,005	0,009	1,06	1,37
Chestochowskie	0,039	0,837	1,59	1,39	Gyor-Moson-Sopron	31,93	103,88	4,12	6,42	Brasov	0,009	0,019	2,58	3,89
Elblaskie	0,047	1,257	1,18	1,31	Hajdu-Bihar	21,70	40,94	3,62	3,25	Braila	0,009	0,012	1,53	1,47
Gdanskie	0,055	1,287	4,13	3,98	Heves	21,10	42,15	2,14	2,01	Buzau	0,007	0,010	1,48	1,72
Grorzowskie	0,048	1,089	1,26	1,18	Szolnok	19,54	39,67	2,52	2,41	Caras-Severin	0,011	0,013	1,91	1,53
Jeleniogorskie	0,044	1,326	1,21	1,48	Komarom-Esztergom	61,45	73,41	5,87	3,33	Calarasi	0,020	0,015	2,92	1,59
Kaliskie	0,046	0,765	1,71	1,17	Nograd	12,73	30,97	0,88	0,99	Cluj	0,006	0,009	1,95	2,14
Katowickie	0,056	1,264	11,82	10,52	Pest	29,94	65,88	8,66	9,20	Constanta	0,029	0,037	9,03	8,86
Kieleckie	0,049	0,747	2,91	1,80	Somogy	25,76	41,28	2,69	2,02	Covasna	0,007	0,010	0,72	0,77
Koninskie	0,047	1,014	1,16	1,03	Szabolcs-Szatmar-Bereg	20,08	40,22	3,48	3,27	Dimbovita	0,008	0,012	1,91	2,20
Koszalinskie	0,053	0,990	1,43	1,10	Tolna	25,06	58,96	1,93	2,13	Dolj	0,006	0,009	2,08	2,23
Krakowskie	0,045	1,533	2,92	4,04	Vas	41,06	63,53	3,43	2,51	Tecuci	0,008	0,014	2,16	2,81
Kroanienskie	0,041	0,714	1,07	0,77	Veszprem	24,83	49,51	2,88	2,71	Giurgiu	0,015	0,016	2,08	1,63
Legnickie	0,065	1,470	1,76	1,63	Zala	33,16	61,58	3,08	2,68	Gorj	0,024	0,039	3,94	5,00
Leszczynskie	0,050	0,905	1,02	0,76						Harghita	0,005	0,008	0,81	0,92
Lubelskie	0,054	1,115	2,91	2,43						Hunedoara	0,016	0,022	3,86	3,86
Lomzynskie	0,049	0,738	0,90	0,55						Ialomita	0,008	0,012	1,10	1,12
Lodzkie	0,043	1,077	2,59	2,55						Iasi	0,007	0,009	2,42	2,39
Nowosadeckie	0,035	0,683	1,28	1,06						Maramures	0,006	0,009	1,40	1,50
Olsztynskie	0,047	0,882	1,84	1,44						Mehedinti	0,022	0,017	3,05	1,75
Opolskie	0,058	2,461	3,10	5,35						Tirgu Mures	0,006	0,011	1,53	2,17
Ostroieckie	0,046	0,870	0,97	0,75						Neamt	0,004	0,010	1,06	1,85
Pilskie	0,053	0,933	1,36	0,98						Olt	0,009	0,011	2,08	1,79
Piotrkowskie	0,054	1,210	1,84	1,65						Prahova	0,009	0,013	3,18	3,67
Plockie	0,052	2,068	1,41	2,29						Satu Mare	0,005	0,009	0,93	1,15
Poznanskie	0,056	1,618	3,91	4,65						Salaj	0,007	0,013	0,76	1,08
Przemyskie	0,037	0,815	0,80	0,72						Sibiu	0,007	0,014	1,48	2,01
Radomskie	0,048	0,958	1,92	1,55						Suceava	0,006	0,009	1,69	1,94
Rzeszowskie	0,045	0,886	1,71	1,40						Teleorman	0,005	0,007	1,14	1,02
Siedleckie	0,038	0,729	1,30	1,02						Timis	0,008	0,012	2,42	2,64
Sieradzkie	0,047	0,735	1,01	0,64						Tulcea	0,010	0,013	1,14	1,08
Skierniewickie	0,045	0,993	0,99	0,89						Vaslui	0,006	0,009	1,19	1,31
Slupskie	0,048	0,745	1,03	0,67						Vilcea	0,008	0,014	1,44	1,94
Suwalskie	0,051	0,639	1,26	0,66						Vrancea	0,008	0,012	1,40	1,47
Szczecinskie	0,063	1,139	3,23	2,39						Bucuresti	0,021	0,018	20,72	13,61
Tarnobrzeskie	0,049	1,064	1,56	1,37										
Tarnowskie	0,041	0,827	1,43	1,22										
Torunskie	0,045	0,923	1,55	1,31										
Walbrzyskie	0,040	0,728	1,57	1,14										
Wloclawskie	0,041	0,644	0,93	0,59										
Wroclawskie	0,043	1,263	2,56	3,05										
Zamojskie	0,036	0,677	0,94	0,71										
Zielonogrorskie	0,045	1,143	1,58	1,63										
Total	0,050	1,221	*100,00*	*100,00*	*Total*	31,76	67,21	*100,00*	*100,00*	*Total*	0,010	0,014	*100,00*	*100,00*

Table 9: Foreign Direct Investments (FDI) per 1000 inhabitants at the regional level in Poland and Romania

Poland	Equity capital of foreign sharing companies (in mln PLN)		percentage distribution		Romania	Value of subscribed capital	percentage distribution
Voivodships	1993	1995	1993	1995	*Counties*	1990-1996[a]	1990-1996
Warszawskie	0,570	2,032	28,3	38,0	Alba	111,819	1,0
Bialskopodlaskie	0,036	0,110	0,2	0,3	Arad	162,831	1,7
Bialostockie	0,026	0,047	0,4	0,3	Arges	74,824	1,1
Bielskie	0,684	0,856	12,8	6,1	Bacau	35,767	0,6
Bydgoskie	0,102	0,258	2,4	2,3	Bihor	225,509	3,2
Chelmskie	0,008	0,008	0,0	0,0	Bistrita-N.	73,746	0,5
Ciechanowskie	0,020	0,241	0,2	0,8	Botosani	7,857	0,1
Chestochowskie	0,015	0,060	0,2	0,4	Brasov	142,543	2,0
Elblaskie	0,240	0,344	2,4	1,3	Braila	52,019	0,5
Gdanskie	0,071	0,275	2,1	3,1	Buzau	16,312	0,2
Grorzowskie	0,093	0,213	1,0	0,8	Caras-Severin	32,189	0,3
Jeleniogorskie	0,052	0,105	0,6	0,4	Calarasi	4,686	0,0
Kaliskie	0,043	0,193	0,6	1,1	Cluj	407,741	6,5
Katowickie	0,148	0,119	12,1	3,6	Constanta	57,854	1,0
Kieleckie	0,033	0,068	0,8	0,6	Covasna	58,662	0,3
Koninskie	0,009	0,036	0,1	0,1	Dimbovita	12,479	0,2
Koszalinskie	0,029	0,098	0,3	0,4	Dolj	739,918	12,4
Krakowskie	0,094	0,309	2,4	3,0	Tecuci	31,509	0,5
Kroanienskie	0,008	0,058	0,1	0,2	Giurgiu	43,359	0,3
Legnickie	0,077	0,138	0,8	0,6	Gorj	7,438	0,1
Leszczynskie	0,035	0,098	0,3	0,3	Harghita	275,773	2,1
Lubelskie	0,022	0,202	0,5	1,6	Hunedoara	14,742	0,2
Lomzynskie	0,004	0,016	0,0	0,0	Ialomita	13,532	0,1
Lodzkie	0,154	0,437	3,6	3,8	Iasi	74,822	1,3
Nowosadeckie	0,011	0,086	0,2	0,5	Maramures	106,126	1,3
Olsztynskie	0,054	0,176	0,9	1,0	Mehedinti	5,839	0,0
Opolskie	0,177	0,301	3,7	2,4	Tirgu Mures	58,971	0,8
Ostroieckie	0,065	0,526	0,5	1,7	Neamt	31,386	0,4
Pilskie	0,068	0,100	0,7	0,4	Olt	7,443	0,1
Piotrkowskie	0,010	0,052	0,1	0,3	Prahova	43,301	0,8
Plockie	0,014	0,084	0,1	0,3	Satu Mare	12,754	0,1
Poznanskie	0,202	0,860	5,6	9,0	Salaj	88,467	0,5
Przemyskie	0,099	0,179	0,8	0,6	Sibiu	120,548	1,2
Radomskie	0,053	0,261	0,8	1,5	Suceava	54,609	0,9
Rzeszowskie	0,205	0,089	3,1	0,5	Teleorman	8,420	0,1
Siedleckie	0,014	0,036	0,2	0,2	Timis	343,213	5,2
Sieradzkie	0,009	0,077	0,1	0,2	Tulcea	11,684	0,1
Skierniewickie	0,021	0,438	0,2	1,4	Vaslui	14,697	0,2
Slupskie	0,029	0,202	0,3	0,7	Vilcea	109,277	1,1
Suwalskie	0,008	0,076	0,1	0,3	Vrancea	30,149	0,3
Szczecinskie	0,118	0,222	2,4	1,7	Bucuresti	984,798	50,9
Tarnobrzeskie	0,005	0,210	0,1	1,0			
Tarnowskie	0,039	0,183	0,5	1,0			
Torunskie	0,059	0,112	0,8	0,6			
Walbrzyskie	0,078	0,128	1,2	0,7			
Wloclawskie	0,022	0,025	0,2	0,1			
Wroclawskie	0,169	0,433	4,0	3,8			
Zamojskie	0,001	0,001	0,0	0,0			
Zielonogrorskie	0,090	0,222	1,2	1,2			
Total	0,126	0,335	*100,0*	*100,0*	*Total*	198,365	*100,0*

a: is estimated by the population of '93

Table 10: Cars per 100 inhabitants at the regional level in Poland and Hungary

Poland			**Hungury**		
Voivodships	1990	1995	*Regions*	1990	1995
Warszawskie	24,77	34,79	Budapest	23,39	28,53
Bialskopodlaskie	9,79	16,54	Baranya	20,37	21,81
Bialostockie	10,32	14,73	Bacs-Kiskun	21,10	24,15
Bielskie	14,11	21,08	Bekes	16,17	17,62
Bydgoskie	13,56	20,01	Borsod-Abaúj-Zemplen	14,39	15,98
Chelmskie	9,02	14,56	Csongrád	18,20	21,36
Ciechanowskie	11,46	16,61	Fejer	18,38	21,80
Chestochowskie	14,02	18,56	Gyor-Moson-Sopron	19,85	23,26
Elblaskie	11,72	16,52	Hajdu-Bihar	14,56	16,55
Gdanskie	13,43	18,89	Heves	17,88	19,44
Grorzowskie	11,32	17,66	Szolnok	14,17	15,67
Jeleniogorskie	11,57	16,49	Komarom-Esztergom	19,64	20,73
Kaliskie	14,84	22,98	Nograd	17,65	19,21
Katowickie	15,65	20,04	Pest	17,81	22,16
Kieleckie	9,95	16,53	Somogy	19,60	21,25
Koninskie	12,62	19,09	Szabolcs-Szatmar-Bereg	13,67	18,12
Koszalinskie	11,12	15,92	Tolna	20,10	21,87
Krakowskie	16,16	22,47	Vas	19,14	21,64
Kroanienskie	10,83	14,92	Veszprem	19,56	22,34
Legnickie	14,13	16,75	Zala	20,01	21,81
Leszczynskie	16,88	22,48			
Lubelskie	12,16	16,35			
Lomzynskie	11,36	14,30			
Lodzkie	15,05	21,20			
Nowosadeckie	8,60	13,76			
Olsztynskie	11,09	14,56			
Opolskie	14,65	19,03			
Ostroieckie	12,03	17,41			
Pilskie	13,06	19,68			
Piotrkowskie	11,11	15,99			
Plockie	13,85	20,55			
Poznanskie	19,57	28,49			
Przemyskie	9,44	15,27			
Radomskie	9,35	13,64			
Rzeszowskie	12,74	19,00			
Siedleckie	11,08	18,32			
Sieradzkie	12,03	18,38			
Skierniewickie	13,71	20,21			
Slupskie	11,29	14,34			
Suwalskie	11,24	15,34			
Szczecinskie	12,05	18,09			
Tarnobrzeskie	10,90	14,41			
Tarnowskie	10,16	14,92			
Torunskie	11,49	18,82			
Walbrzyskie	11,04	15,04			
Wloclawskie	11,55	15,49			
Wroclawskie	16,13	21,94			
Zamojskie	10,56	15,14			
Zielonogrorskie	11,44	16,82			
Total	13,78	19,47	*Total*	18,76	21,83

Table 11: TV sets per 100 inhabitants at the regional level in Poland, Romania and Bulgaria

Poland			**Romania**			**Bulgaria**	
Voivodships	1989	1995	*Counties*	1989	1995	*Regions*	1995
Warszawskie	32,29	30,13	Alba	13,49	16,74	Sofia	18,11
Bialskopodlaskie	23,64	22,30	Arad	18,88	21,82	Bourgas	18,29
Bialostockie	24,77	23,12	Arges	14,54	17,25	Varna	14,64
Bielskie	25,24	24,28	Bacau	14,57	15,47	Lovech	21,65
Bydgoskie	27,47	29,78	Bihor	18,09	19,25	Montana	18,37
Chelmskie	25,19	24,01	Bistrita-N.	9,46	12,96	Plovdiv	15,43
Ciechanowskie	23,89	21,77	Botosani	10,89	13,37	Rousse	18,78
Chestochowskie	25,90	23,39	Brasov	18,69	22,18	Haskovo	10,73
Elblaskie	26,23	25,44	Braila	17,79	20,29		
Gdanskie	27,96	26,86	Buzau	14,06	17,97		
Grorzowskie	26,89	25,65	Caras-Severin	13,50	15,87		
Jeleniogorskie	27,27	25,36	Calarasi	13,76	16,51		
Kaliskie	24,43	24,24	Cluj	17,09	20,56		
Katowickie	29,00	27,72	Constanta	17,42	21,44		
Kieleckie	24,51	22,44	Covasna	17,11	20,31		
Koninskie	23,74	23,35	Dimbovita	13,29	16,57		
Koszalinskie	26,77	25,29	Dolj	15,57	16,81		
Krakowskie	27,37	26,02	Tecuci	14,04	15,90		
Kroanienskie	19,72	18,16	Giurgiu	14,02	15,52		
Legnickie	27,34	26,74	Gorj	12,30	15,16		
Leszczynskie	25,49	25,68	Harghita	13,56	17,51		
Lubelskie	24,97	23,76	Hunedoara	16,59	20,67		
Lomzynskie	20,84	19,79	Ialomita	14,57	19,13		
Lodzkie	34,66	32,43	Iasi	11,83	15,87		
Nowosadeckie	19,21	16,64	Maramures	11,45	13,37		
Olsztynskie	26,18	23,71	Mehedinti	12,28	14,24		
Opolskie	25,62	24,09	Tirgu Mures	16,59	20,35		
Ostroieckie	21,77	19,10	Neamt	14,85	16,78		
Pilskie	26,36	25,91	Olt	12,69	14,83		
Piotrkowskie	24,77	24,06	Prahova	18,06	21,18		
Plockie	25,61	23,56	Satu Mare	16,52	17,30		
Poznanskie	28,77	28,29	Salaj	14,55	16,78		
Przemyskie	20,24	19,30	Sibiu	17,19	21,09		
Radomskie	22,58	20,69	Suceava	11,19	13,10		
Rzeszowskie	19,65	18,36	Teleorman	12,76	17,54		
Siedleckie	22,02	21,01	Timis	21,43	23,49		
Sieradzkie	25,24	23,25	Tulcea	14,91	16,92		
Skierniewickie	26,31	25,00	Vaslui	12,52	14,95		
Slupskie	25,83	22,77	Vilcea	12,89	15,89		
Suwalskie	23,59	21,62	Vrancea	12,80	15,09		
Szczecinskie	28,53	26,96	Bucuresti	25,00	24,69		
Tarnobrzeskie	21,29	20,68					
Tarnowskie	20,57	19,03					
Torunskie	27,45	26,23					
Walbrzyskie	29,55	27,59					
Wloclawskie	25,88	24,60					
Wroclawskie	28,77	27,69					
Zamojskie	22,46	21,31					
Zielonogrorskie	27,08	26,11					
Total	26,43	25,06	*Total*	15,97	18,40	*Total*	16,76

Table 12: Telephones per 100 inhabitants at the regional level in Poland, Hungary, Romania and Bulgaria

Poland			**Hungury**			**Romania**			**Bulgaria**	
Voivodships	1989	1995	*Regions*	1990	1994	*Counties*	1989	1995	*Regions*	1995
Warszawskie	18,40	31,37	Budapest	11,25	17,08	Alba	7,90	10,02	Sofia	26,55
Bialskopodlaskie	5,58	13,57	Baranya	22,67	41,59	Arad	10,67	14,61	Bourgas	23,95
Bialostockie	9,42	18,12	Bacs-Kiskun	12,29	23,93	Arges	7,85	11,12	Varna	26,34
Bielskie	6,48	10,89	Bekes	13,83	25,19	Bacau	10,37	13,62	Lovech	31,02
Bydgoskie	9,04	17,23	Borsod-Abaúj-Zemplen	11,15	22,04	Bihor	9,49	12,34	Montana	25,11
Chelmskie	6,50	12,40	Csongrád	20,50	37,76	Bistrita-N.	5,40	9,03	Plovdiv	23,86
Ciechanowskie	5,15	9,85	Fejer	12,83	29,86	Botosani	5,37	7,84	Rousse	26,09
Chestochowskie	4,64	13,04	Gyor-Moson-Sopron	20,75	49,65	Brasov	10,87	14,30	Haskovo	14,97
Elblaskie	6,09	12,62	Hajdu-Bihar	11,48	24,77	Braila	7,81	10,99		
Gdanskie	9,84	15,45	Heves	21,26	53,50	Buzau	8,11	10,72		
Grorzowskie	7,02	11,75	Szolnok	11,74	25,78	Caras-Severin	7,17	10,15		
Jeleniogorskie	6,77	11,82	Komarom-Esztergom	20,63	48,88	Calarasi	5,36	7,94		
Kaliskie	6,78	11,77	Nograd	24,67	43,89	Cluj	12,12	14,39		
Katowickie	6,43	12,82	Pest	3,58	11,30	Constanta	10,94	15,34		
Kieleckie	7,55	12,32	Somogy	21,16	48,82	Covasna	7,97	11,43		
Koninskie	5,13	11,05	Szabolcs-Szatmar-Bereg	5,77	14,44	Dimbovita	6,49	8,17		
Koszalinskie	9,32	15,90	Tolna	23,62	42,80	Dolj	8,34	11,08		
Krakowskie	11,08	20,22	Vas	29,71	53,85	Tecuci	8,79	11,58		
Kroanienskie	5,29	9,48	Veszprem	18,59	31,22	Giurgiu	4,62	8,00		
Legnickie	7,23	16,04	Zala	19,93	45,18	Gorj	5,68	7,65		
Leszczynskie	7,28	12,34				Harghita	7,39	9,10		
Lubelskie	8,09	13,73				Hunedoara	7,78	10,38		
Lomzynskie	5,50	11,02				Ialomita	6,16	9,13		
Lodzkie	14,35	26,07				Iasi	8,37	11,87		
Nowosadeckie	5,78	9,96				Maramures	8,80	11,15		
Olsztynskie	8,28	15,16				Mehedinti	6,54	8,03		
Opolskie	5,22	11,61				Tirgu Mures	10,58	14,19		
Ostroieckie	5,06	9,55				Neamt	7,27	9,89		
Pilskie	6,70	13,16				Olt	5,19	6,59		
Piotrkowskie	6,85	11,80				Prahova	10,13	13,82		
Plockie	6,79	13,22				Satu Mare	8,79	11,63		
Poznanskie	9,26	18,25				Salaj	7,19	10,95		
Przemyskie	5,43	8,20				Sibiu	11,83	18,11		
Radomskie	6,41	11,26				Suceava	6,16	8,33		
Rzeszowskie	5,30	10,32				Teleorman	4,82	6,88		
Siedleckie	5,08	8,31				Timis	10,61	13,72		
Sieradzkie	5,64	10,90				Tulcea	5,69	9,27		
Skierniewickie	5,98	9,67				Vaslui	4,74	7,33		
Slupskie	8,77	13,38				Vilcea	6,58	8,16		
Suwalskie	5,79	12,77				Vrancea	5,88	8,84		
Szczecinskie	11,48	19,79				Bucuresti	25,05	28,96		
Tarnobrzeskie	5,53	9,68								
Tarnowskie	5,71	11,25								
Torunskie	7,47	12,37								
Walbrzyskie	6,88	12,17								
Wloclawskie	6,76	13,33								
Wroclawskie	11,45	17,14								
Zamojskie	5,92	10,35								
Zielonogrorskie	6,39	12,16								
Total	8,20	14,84	*Total*	14,28	28,64	*Total*	9,88	12,94	*Total*	0,25

Table 13: Road network per sq. km at the regional level in Hungary, Romania and Bulgaria

Hungury			**Romania**			**Bulgaria**	
Regions	1990	1995	*Counties*	1989	1995	*Regions*	1995
Budapest	0,048	0,070	Alba	0,316	0,316	Sofia	0,512
Baranya	0,357	0,369	Arad	0,269	0,268	Bourgas	0,263
Bacs-Kiskun	0,257	0,257	Arges	0,390	0,389	Varna	0,162
Bekes	0,252	0,257	Bacau	0,348	0,348	Lovech	0,270
Borsod-Abaúj-Zemplen	0,330	0,339	Bihor	0,330	0,330	Montana	0,232
Csongrád	0,312	0,316	Bistrita-N.	0,244	0,245	Plovdiv	0,417
Fejer	0,330	0,323	Botosani	0,366	0,366	Rousse	0,224
Gyor-Moson-Sopron	0,382	0,408	Brasov	0,251	0,251	Haskovo	0,381
Hajdu-Bihar	0,240	0,243	Braila	0,241	0,244		
Heves	0,321	0,323	Buzau	0,337	0,338		
Szolnok	0,230	0,234	Caras-Severin	0,222	0,222		
Komarom-Esztergom	0,392	0,391	Calarasi	0,217	0,217		
Nograd	0,370	0,369	Cluj	0,367	0,367		
Pest	0,382	0,390	Constanta	0,321	0,321		
Somogy	0,270	0,270	Covasna	0,218	0,219		
Szabolcs-Szatmar-Bereg	0,352	0,352	Dimbovita	0,428	0,428		
Tolna	0,291	0,289	Dolj	0,285	0,287		
Vas	0,453	0,453	Tecuci	0,316	0,317		
Veszprem	0,370	0,365	Giurgiu	0,296	0,292		
Zala	0,425	0,428	Gorj	0,337	0,337		
			Harghita	0,218	0,218		
			Hunedoara	0,274	0,274		
			Ialomita	0,247	0,247		
			Iasi	0,426	0,427		
			Maramures	0,237	0,238		
			Mehedinti	0,381	0,380		
			Tirgu Mures	0,275	0,275		
			Neamt	0,307	0,307		
			Olt	0,372	0,372		
			Prahova	0,429	0,429		
			Satu Mare	0,342	0,345		
			Salaj	0,364	0,364		
			Sibiu	0,273	0,273		
			Suceava	0,272	0,272		
			Teleorman	0,247	0,247		
			Timis	0,329	0,329		
			Tulcea	0,139	0,140		
			Vaslui	0,395	0,395		
			Vilcea	0,352	0,352		
			Vrancea	0,389	0,389		
			Bucuresti	0,428	0,434		
Total	0,320	0,323	*Total*	0,305	0,306	*Total*	0,288

Table 14: Hospital beds per 100 inhabitants at the regional level in Poland, Hungary and Romania

Poland			**Hungury**			**Romania**		
Voivodships	1989	1995	*Regions*	1990	1995	*Counties*	1989	1995
Warszawskie	0,707	0,846	Budapest	1,490	1,465	Alba	1,002	0,829
Bialskopodlaskie	0,562	0,622	Baranya	1,013	0,963	Arad	0,947	0,826
Bialostockie	0,629	0,768	Bacs-Kiskun	0,804	0,766	Arges	0,804	0,618
Bielskie	0,482	0,704	Bekes	0,772	0,774	Bacau	0,691	0,564
Bydgoskie	0,494	0,552	Borsod-Abaúj-Zemplen	0,915	0,806	Bihor	1,111	0,922
Chelmskie	0,598	0,588	Csongrád	1,023	0,957	Bistrita-N.	0,696	0,571
Ciechanowskie	0,474	0,424	Fejer	0,743	0,659	Botosani	0,987	0,820
Chestochowskie	0,442	0,610	Gyor-Moson-Sopron	1,053	0,908	Brasov	0,835	0,724
Elblaskie	0,508	0,634	Hajdu-Bihar	0,771	0,775	Braila	0,840	0,725
Gdanskie	0,555	0,652	Heves	1,182	0,867	Buzau	0,794	0,651
Grorzowskie	0,651	0,944	Szolnok	0,869	0,730	Caras-Severin	0,980	0,796
Jeleniogorskie	0,684	1,101	Komarom-Esztergom	0,872	0,739	Calarasi	0,675	0,590
Kaliskie	0,475	0,503	Nograd	0,931	0,746	Cluj	1,259	1,028
Katowickie	0,685	0,744	Pest	0,470	0,436	Constanta	0,897	0,643
Kieleckie	0,524	0,605	Somogy	0,901	0,872	Covasna	1,137	0,962
Koninskie	0,373	0,372	Szabolcs-Szatmar-Bereg	0,823	0,731	Dimbovita	0,902	0,574
Koszalinskie	0,501	0,609	Tolna	0,857	0,690	Dolj	0,935	0,689
Krakowskie	0,611	0,739	Vas	1,006	0,847	Tecuci	0,778	0,618
Kroanienskie	0,449	0,471	Veszprem	1,010	0,984	Giurgiu	0,534	0,43[illegible]
Legnickie	0,505	0,485	Zala	1,049	0,966	Gorj	0,985	0,795
Leszczynskie	0,438	0,642				Harghita	0,960	0,906
Lubelskie	0,638	0,788				Hunedoara	1,259	0,958
Lomzynskie	0,414	0,407				Ialomita	0,500	0,424
Lodzkie	0,732	0,833				Iasi	1,227	1,065
Nowosadeckie	0,575	0,690				Maramures	0,915	0,835
Olsztynskie	0,598	0,586				Mehedinti	0,893	0,720
Opolskie	0,598	0,653				Tirgu Mures	1,106	0,911
Ostroieckie	0,349	0,347				Neamt	0,866	0,586
Pilskie	0,491	0,510				Olt	0,710	0,605
Piotrkowskie	0,541	0,520				Prahova	0,893	0,694
Plockie	0,585	0,674				Satu Mare	0,688	0,591
Poznanskie	0,635	0,753				Salaj	0,906	0,703
Przemyskie	0,449	0,683				Sibiu	0,917	0,874
Radomskie	0,381	0,521				Suceava	0,733	0,673
Rzeszowskie	0,489	0,508				Teleorman	0,722	0,649
Siedleckie	0,363	0,381				Timis	1,153	1,106
Sieradzkie	0,449	0,691				Tulcea	0,818	0,628
Skierniewickie	0,484	0,515				Vaslui	0,964	0,730
Slupskie	0,531	0,498				Vilcea	0,803	0,661
Suwalskie	0,545	0,521				Vrancea	0,724	0,516
Szczecinskie	0,642	0,641				Bucuresti	1,180	0,948
Tarnobrzeskie	0,448	0,455						
Tarnowskie	0,374	0,432						
Torunskie	0,494	0,510						
Walbrzyskie	0,681	0,817						
Wloclawskie	0,457	0,457						
Wroclawskie	0,797	0,925						
Zamojskie	0,406	0,519						
Zielonogrorskie	0,609	0,657						
Total	0,570	0,655	*Total*	0,983	0,904	*Total*	0,934	0,764

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