

Multi-scalar geographies of polarisation and peripheralisation: A case study of Czechia

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Abstract. A key issue in socio-economic geography is to understand how regional and social polarisation shapes the territorial organisation of society. We argue that effects of polarisation are not translated simply and straightforwardly in a whole region, but vary to a large extent with respect to different types of accessibility areas. We applied the time-accessibility framework to classify a territory into urban, peri-urban, rural, and remote rural areas at a national and regional scale. Subsequently, we computed comparative indicators for this territorial classification, measuring three dimensions of peripherality for a period of thirty years. The analysis illustrates how polarisation and peripheralisation works at a detailed spatial level. A case study of the Ústí region shows re-polarisation and bi-polarisation of the region in its path from socialist urbanisation in the 1980s to regional peripheralisation in 2011. The use of the time-accessibility framework allows to assess regional changes within long-term and broader changes of core-periphery relations at national level and thus allows for a better understanding of the different nature of socialist and post-socialist peripheries. Finally, the article offers methodical procedures and tools allowing for a comparable research of polarisation and peripheralisation. Thus, it is responding to the call for more comparative research of peripheral areas in Europe.

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1. Introduction

Research on the spatial organisation of society has been a perennial topic in Czech geography and related disciplines (Illner, Andrlé, 1994; Hampl, 2001). This research as such reflects broader changes in research orientation shared within post-communist, Central and Eastern European (Barjak, 2001; Sokol, 2001; Sawers, 2006; Mykhnenko, Swain, 2010) and Visegrad countries in recent decades (Gajdoš, Pašiak, 2006; Péntzes, 2013; Benedek, Kocziszky, 2015). In the socialist period, the regional distribution of population and its activities were closely monitored in order to develop an egalitarian society through the means of centrally planned economy. Differences among regions diminished due to use of non-market economic principles and extensive redistributive mechanisms of shared assets (Kára, 1999). Similarly, the changing regional patterns of growth and decline have been studied closely in the post-socialist period (Domański, 2005; Czyż, Hauke, 2011). The application of market principles in decision-making and the opening of new economies led to the emergence of spatially unequal processes shaping the geography of regions (Smętkowski, Wójcik, 2012). The new differentiation processes led to the rearrangement of growing and lagging regions in all post-communist countries (Blažek, Csank, 2007; Ezcurra, Pascual, Rapún, 2007). From the theoretical point of view, the change was interpreted as an interplay between post-industrial transition and post-socialist transition, which occur simultaneously in Czechia (Dostál, Hampl, 1993).

The long-term development of socio-spatial differentiation has been shaped by two key trends in past few decades. Firstly, a trend of spatial polarisation as the growth of inequalities both in spatial and social sense has been extensively documented in CEE after the fall of socialism (Rykiel, 1995; Hampl et al., 1999; Székely, 2006; Temelová et al., 2012; Lang, 2015). Although some changes go in a similar direction, there are clear differences between in-

dividual countries, shaping the extent and intensity of polarisation and peripheralisation. For example, countries like Bulgaria or Lithuania lost a third of their populations in the past three decades whereas Czechia had an overall population growth. The general evaluation of polarisation and peripheralisation in CEE, thus, needs to be sensitive to the diverging trajectories of individual countries. Secondly, there is a so-called post-socialist decentralisation, which is changing spatial patterns of population distribution and related human activities in localities and regions (Čermák, Hampl, Müller, 2009; Smetkovski, 2013). The accessibility of metropolitan areas and functional relation to metropolitan areas is becoming one of the key development factors (e.g. ESPON TRACC project). The research of inner peripheries emerged as an important insight into intrastate differentiation (Musil, Müller, 2008; Péntzes, 2013). These developments were also reflected in the understanding of regional polarisation and peripheralisation as a process changing the spatial differentiation of society (Kühn, 2015). The polarisation of a national metropolis leads to its exceptional position as a gateway city and leads to its disjuncture from the other regions (Drbohlav, Sykora, 1997). The other, non-metropolitan regions are thus more commensurable and comparable. In general, there has been a shift in understanding polarisation from 'a process of urban growth and rural decline' towards 'a process of differentiation between micro-regions'. The patterns of peripheralisation changed significantly due to residential decentralisation and labour market development in Czechia (cf. Péntzes, 2013; Šimon, Bernard, 2016). The urban-to-rural population shift reduced the share of areas with population decline (Šimon, Mikešová, 2014). The introduction and spread of market-driven economies exploited economic specialisations in individual regions and created new pockets of unemployment (Blažek, Nestrková, 2012). Peripheries are thus perceived as areas with disadvantaged populations, and the spatial scope is less extensive but more pronounced.

The interest in the development of peripheries is motivated by several different factors (Myrdal, 1957; Musil, Müller, 2008; Nagy, 2015). Peripheral regions are usually less competitive in comparison with other regions, and they often need to be supported by various policy tools and funding schemes (e.g. the whole EU cohesion policy). The excessive differences between regions are considered a threat to economic growth. The multi-faceted nature of a periphery (in a social, cultural, political, and economic sense) is often mutually related and the negative effect of a peripheral position accumulates with respect to its impact on local inhabitants. A periphery can be seen as a social space where the social cohesion of its inhabitants is permanently contested. On the other hand, it is noted that a purely spatial analysis of peripheries is the subject of geographical fallacy. The regional approach to peripheries implies that their 'shrinking numbers' somehow automatically translate do the daily lives of their inhabitants. The assumption might be true in most cases, but an actual measurement of the real disadvantages occurring in peripheries using survey data is often missing in geographical research. Geographical periphery simply does not matter for the life opportunities of its inhabitants if policy tools balance the negative aspects of peripheralness.

The contemporary research on polarisation and peripheralisation in Czechia draws from four main traditions: regionalisation research (Hampl, Gardavský, Kühnl 1987; Hampl 2005), rural studies (Havlíček, Chromý, 2001; Perlín, Kučerová, Kučera, 2010), borderland research (Vaishar, Zapletalová, 2005; Halás, Řehák, 2008), and inner peripheries research (Musil, Müller, 2008; Bernard, Šimon, 2017). From a methodological perspective, it uses predominantly two main conventional approaches. Firstly, the studies at national level are usually based on statistical approach utilising census- or register-based data with clustering techniques and regression methods. The outcomes of such analysis are maps delimitating peripheral regions at certain times or typologies of a rural space as a basis for further research in selected rural areas of interest (Perlín, Kučerová, Kučera, 2010; Kubeš, Kraft, 2011). Secondly, the studies at regional or local level are commonly conducted as a case study research. The particular micro-regions or municipalities are explored through a small survey research or inter-

views with local inhabitants or stakeholders. The outputs of such investigations are idiographic studies describing various aspects of peripheries in particular regions stressing local situation and specific development (Jančák, 2001; Novotná, 2005).

Among the areas that gain attention of researchers are, for example:

- areas with specific local culture or institutions, for example resettled areas,
- former military areas,
- areas with significant share of second housing,
- long-term peripheral regions, both inner and outer borders
- suburban areas as a space between urban and rural.

In contrast with previous research, the present study applies an alternative approach utilising time accessibility regionalisation. The main aim of this article is to understand similarities and differences of spatial polarisation at multiple spatial levels within the four-census period. The spatial framework of the analysis is utilized at two scales: at the country level and at the regional level using the Ústí region as an example. The spatial classification of a territory into Urban, Peri-urban, Rural, and Remote rural areas based on detailed functional and time-accessibility modelling¹ is used as the input for analysis at both scales. The study shows the transformation of the Ústí region from a leading region with a high level of internal unevenness in the 1980s towards a lagging region with a low level of internal unevenness in the last decade. The need to understand polarisation and peripheralisation in a multi-scalar and multi-conceptual perspective is highlighted in the conclusion.

The basic assumption of this approach implies that a periphery in the spatial sense is also a periphery in social and socio-economic terms due to the long-term functioning of various selective mechanisms such as age-selective migration, friction of distance, economies of scale, etc. The time-accessibility model captures different types of spatial peripheries such as border regions or periphery between and within socio-geographic regions. Such approach allows comparing peripheries under socialism and peripheries under post-socialism and distinguishing general and specific characteristics of peripheries in Czechia and in the Ústí region.

Polarisation and peripheralisation of the Czech territory in the late-socialist period (1980–91) and post-socialist period (2001–11) is explored in the article. Firstly, main topics and approaches used in research of socio-spatial differentiation in Czechia are discussed. Secondly, a method of analysis using the time-accessibility model of territory and detailed data from four censuses between 1980 and 2011 is presented. Thirdly, the long-term demographic and socio-economic development of Urban, Peri-urban, Rural, and Remote-rural areas is presented. Special attention is devoted to the Ústí region as an example of a region under rapid change. A comparison within and between different types of territories is elaborated. In conclusion, the key findings grasping the changing nature of periphery in Czechia are summarised and the importance of detailed measurement of re-polarisation and bi-polarisation for understanding peripheralisation is highlighted.

2. Case study region

The Ústí region is a little specific in comparison with other Czech regions. Ústí as a region with rich natural resources of coal was heavily supported during socialism. The development of mining and heavy industry led to rapid late urbanisation, which was mostly facilitated by the creation of large housing estates for workers. The concentration of investment in the region, the above-standard quality of housing together with very high income levels in mining and in industry made Ústí one of the core regions in former Czechoslovakia. The only disadvantage was the lower environmental quality of the region. These circumstances changed significantly after the Velvet revolution. The position of the region and its urban cores has begun to sink in comparison with other Czech regions and cities. Several factors can be identified behind this downward trend.

Firstly, the inherited economic structures were not competitive in the European economic space. Closures of heavy industry factories led to the rise of structural unemployment, which became a distinctive feature of the Ústí region. Secondly, the decline of income levels together with a rise of unemployment and low environmental quality in the region reversed the migration patterns and the Ústí

region began to lose population by out-migration. Thirdly, the tradition of top-down approaches from socialism and lack of entrepreneurial traditions in the region led to an institutional lock-in. The local population was less able to cope with the changing conditions than population in other Czech regions (Vajdová, Kostelecký, 1997). Finally, the large generations of poorly educated factory workers and miners became a problem for the local labour market in the long-term perspective. This pool of labour force attracts only low-cost investments with a demand for low-skilled labour force, which restricts possible changes in economic specialisation of the region. The development of the Ústí region in the past 30 years makes it an interesting example for the analysis of the changing core-periphery relations and peripheralisation. The conclusion drawn from its analysis might be applied to similar 'regions in transition' throughout CEE countries.

3. Methodological framework

The research on periphery in a long-term perspective requires data, which are available within such period, and which are at the same time able to capture the key features of peripheral regions; therefore, the data sources might be limited. Suitable data are available only from population censuses in the Czech context. The main advantage of census data is that they are reliable, they cover the whole territory of the country, and they are available at a very detailed spatial level. Other data sources usually do not cover the whole period of an analysis or are not suitable for analysis. For example, some of the commonly used indicators of periphery used in research cannot be utilised: the unemployment data cannot be used since all working-age population was 'employed' during socialism, or data on electoral turnout in national elections cannot be used since everyone was 'participating' in election during socialism.

In this article, newly available historical data from Czechoslovakian socialist census 1980, Czechoslovakian federative census 1991, Czech census 2001 and 2011 are utilised. The census data are available at the level of municipalities valid during on a particular census date (1980: $n = 4398$; 1991: $n = 5777$;

2001: $n = 6248$; 2011: $n = 6249$). The spatial framework for the analysis is stable over the four-census period with minor changes due to the integration of municipalities in the 1980s and the disintegration of municipalities in 1990s. In short, the model classified the territory of Czechia into four types of regions (Fig. 1):

- 1) Urban regions, which are defined as cities with more than ten thousand inhabitants.
- 2) Peri-urban regions around regional centres include municipalities with more than 30 per cent

of daily commuters to the central city (in 2001); this is a strong metropolitan link.

- 3) Rural regions are delimited as a territory between Peri-urban regions and Remote rural regions.
- 4) Remote rural regions are defined as zones beyond the 'normal' commuting distance, it is assumed that it is more than 25 minutes of driving time to the nearest urban centre that means that approximately 10 per cent or more of working day hours is spent on commuting.

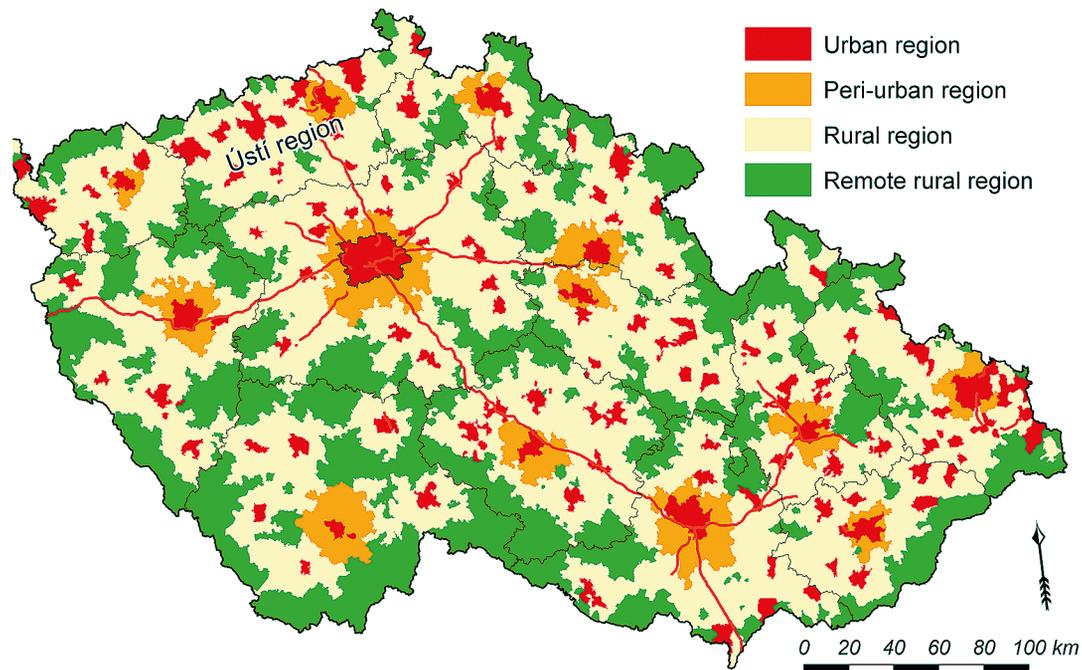


Fig. 1. Core-periphery typology of Czechia

Source: Author's elaboration

The data was recalculated in order to work with the census data in a comparative perspective within a time-accessibility framework defined a priori. All municipalities existing in particular census years were classified into stable spatial zones (Urban, Peri-urban, Rural, and Remote rural). The output of the recalculation is a database of selected indicators available comparably in all four censuses, which are joined with spatial data at a detailed municipal level.

For the evaluation of spatial polarisation, indicators of periphery can be divided into two groups: 'temporary' indicators and 'permanent' indicators. Temporary indicators of periphery often refer to a

lower share or a lack of certain innovations, which are spreading in a hierarchical way away from the core to peripheries. Cell phone or Internet signal coverage can be considered as an example. Permanent indicators are usually framed in contrast to the characteristics of the cores, which are related to a bigger population size of settlements, higher densities, and concentration of control and command functions. Indicators of periphery can be also interpreted in a twofold perspective (Musil, Müller, 2008). In socio-geographical research, peripheries are understood as territories, which face negative consequences of asymmetry in the spatial organisation of society (Havlíček, Chromý, 2001). With-

in this approach, the delimitation of peripheries is a by-product of the delimitation of centres. Certain characteristics are chosen as typically present in centres and therefore, in contrast, typically absent from peripheries. Within the socio-geographic perspective, peripheries are defined as areas, which are different from centres, but not necessary disadvantaged. In sociological research, peripheries are understood as spaces with specific life conditions/circumstances. The key question is not whether a particular region is peripheral in the socio-geographical sense but whether living in peripheral regions results in social/economic/another disadvantage. The value of census data for this task is limited. On the other hand, various aspects of peripheral regions such as worse accessibility to services, outmigration of younger and more educated population or lack of services of general interest can be interpreted as mechanisms leading to social exclusion (Musil, Müller, 2008; Ouředníček et al., 2011). In general, peripheries are commonly associated with lower population density, a decreasing number of population, a high share of commuting out of a region, out-migration, higher-than-average share of employment in agriculture and forestry and higher housing vacancy rate in the Czech context. Most of these characteristics can be considered as 'permanent' features of peripheries in Czechia.

For analytical reasons, a periphery is understood in this article in a threefold perspective. In the demographic sense, a periphery is defined as an area with depopulation and 'worsening' of age structure. Changes in population density and age structure of population allow us to evaluate the general attractiveness of a territory for living and dwelling. From the human resources perspective, a periphery is seen as an area with lower education levels of the population. Information about education levels provides basic knowledge with regard to the social and human capital. It is expected that regions with a higher social and human capital are more resilient and have a higher capacity to adapt to changing demographic conditions and economic circumstances. In terms of the employment structure, a periphery is an area with less advanced economic opportunities. The structure of economic activity and inactivity reflects the basic economic performance of a region. The combination of these three perspectives can capture the main features of peripheral regions.

The classification of a territory into four spatial zones allows us to analyse the development of peripheral areas in comparison with other types of territories. The following list of indicators is available in comparable form in all four censuses and it was selected for the analysis:

Indicators selected for the analysis:

- i. Demography
 - a. Total population
 - b. Population aged from 0 to 24
 - c. Population aged 65 and more
- ii. Human resources
 - a. People with low education (vocational training and lower)
 - b. People with high education (university education and higher)
- iii. Economy
 - a. Active population
 - b. Active population in agriculture and forestry
 - c. Active population in manufacturing

The analysis itself is elaborated at two levels. Firstly, inter-census differences between four spatial zones are shown using several indicators of population and economy developments for both Czechia and the Ústí region. The inter-census differences for the four spatial zones are weighted by the total change of a particular indicator between censuses in order to ensure better comparability. This overview provides general knowledge about the changing core-periphery relations as reflected within the time-accessibility framework. In general, Peri-urban areas are the most accessible, Rural areas have average levels of accessibility and Remote rural areas are the least accessible territories; therefore, from a theoretical point of view, Remote rural areas are the most disadvantaged. Secondly, a concentration of particular phenomena in the spatial zones is discussed for all four censuses in order to illustrate the changing importance of indicators of periphery within the time-accessibility framework. Due to space limitation, only selected outputs are presented as figures.

4. Results

In this section a comparison within and between different types of territories (Urban, Peri-urban, Ru-

ral, and Remote rural) is elaborated (Table 1). The broader pattern of polarisation and peripheralisation in Czechia is compared with the case study of the Ústí region. In general, the main trend of population development in the last decades can be described as a shift from a period of centralisation towards a period of de-centralisation; urban areas are losing population whereas rural areas are gaining it. More specifically, Urban and Remote rural areas are losing population whereas Peri-urban and Rural areas are growing. The last period of industrial urbanisation, when cities grew and the rest of territory shrunk, is the decade between 1980 and 1991. Polarisation reversal occurred and cities began to lose population in the next decade between 1991 and 2001. The inflow of population due to population decentralisation occurred not only in Peri-urban areas, but also in Rural areas and even in Remote rural areas. Residential decentralisation became more spatially selective and population growth was more concentrated in larger metropolitan areas in the last decade between 2001 and 2011.

The Ústí region is more urbanised than average in Czechia and it shows higher core-periphery dif-

ferences, which are framed in the context of overall decline at the regional level. Delayed residential de-centralisation together with a troubled economic transformation created a mixed pattern of urban to rural migration, which is driven by both urban push and rural pull factors. The Ústí region is more rapidly ageing; it has higher regional differences and higher decline in economic activity in comparison with other Czech regions. Rapid polarisation and peripheralisation of the Ústí region occur despite a relatively better initial position of the region. The Ústí region inherited a younger age structure developed in times of socialist urbanisation. The Ústí region also inherited a densely populated settlement structure, which shows a higher degree of resilience due to its size and thus delays and mitigates changes in the spatial distribution of population. Another element of population stability is the low residential mobility in the region. It is determined by limited housing market opportunities and by high unemployment in the region, which results in retaining poorer and less mobile populations.

Table 1. Population, employment, and education change in spatial zones 1980-2011

Population change in spatial zones		Remote rural			Rural			Peri-urban			Urban						
		1980-1991	1991-2001	2001-2011	1980-2011	1980-1991	1991-2001	2001-2011	1980-2011	1980-1991	1991-2001	2001-2011	1980-2011				
Total popul.	Ústí	87	105	95	86	72	104	107	80	82	157	94	121	121	96	97	114
	CR	93	101	95	89	94	103	102	98	94	107	124	125	106	98	97	100
Aged less than 24	Ústí	85	104	92	82	70	108	108	82	81	164	94	125	122	95	97	113
	CR	92	102	92	86	93	105	102	99	95	109	132	137	107	96	97	99
Aged 65 and more	Ústí	81	98	98	77	69	96	99	66	75	130	94	92	132	101	101	135
	CR	89	96	97	83	92	97	99	89	92	99	107	97	109	102	100	112
Active popul.	Ústí	92	98	93	85	56	133	109	81	94	141	93	123	129	90	97	112
	CR	93	99	96	88	92	105	103	99	97	104	127	129	106	97	96	100
AP in agricult.	Ústí	92	99	100	90	82	103	100	84	72	92	115	76	177	96	100	170
	CR	94	108	100	100	95	104	100	99	94	90	103	87	130	85	99	110
AP in industry	Ústí	84	125	90	94	74	117	105	91	84	138	93	109	117	91	98	105
	CR	94	121	98	112	95	116	105	115	95	108	119	122	105	87	94	86
Low educated	Ústí	90	105	100	95	77	103	106	84	84	148	91	113	119	97	98	112
	CR	95	102	101	98	97	103	104	104	96	103	111	109	104	97	95	96
High Educated	Ústí	95	115	100	109	48	118	129	73	86	218	116	218	124	95	93	110
	CR	105	108	106	120	101	113	117	134	110	128	166	235	99	96	91	86

Source: Author's calculations

Note: The inter-census differences for four spatial zones are weighted by the total change of a particular indicator between censuses

The development of the age structure clearly depicts a broad trend of population ageing, but the spatial impact of ageing is different between spatial zones. The development of peripheries in the demographic sense is that areas with depopulation and worsening of the age structure reflect in general the expected urban–rural, and metropolitan–non-metropolitan polarisation in Czechia and in the Ústí region (Table 1). On the other hand, there are several deviations from this pattern. Firstly, the suburbanisation process was almost non-existent in the 1980–91 period. Even Remote rural areas were losing population less than Peri-urban areas in the case of the Ústí region. Secondly, there was a short period of counterurbanization in the period of 1991–2001 when Rural areas and even Remote rural areas gained population. Thirdly, the metropolitanisation process is different in the Ústí region and in Czechia. Quite surprisingly, the growth of Peri urban areas slowed down significantly between the 1991–2001 period and the 2001–11 period, which suggests a sign of decay of the Ústí metropolitan area as a whole.

In the second perspective (human resources), a periphery is seen as an area with lower education levels of population. The general trend of growing education level due to increasing supply from universities is notable in Czechia and in the Ústí region, but it is spatially selective. The share of university-educated population in Czechia almost doubled in the Remote rural zone and in the Urban zone, more than doubled in the Rural zone and tripled in the Peri-urban zone. The highly educated population is more concentrated in Urban areas of the Ústí region in comparison with the Urban areas of Czechia. Growing education levels in general have been causing a spread effect to other regions in Czechia, but this effect is much less valid in the Ústí region. The poorly educated population is still significantly overrepresented in non-urban areas in the Ústí region. This development poses a serious challenge to the regional authorities and limits employment opportunities on the local labour market.

In the third perspective (employment structure), a periphery is an area with less advanced economic opportunities, which stems from the structure of economic activity and inactivity and thus reflects the basic economic performance of a region. Eco-

nomonic activity follows to a certain extent the population development described above, but several remarks should be added. Firstly, a medium decline of economic activity is common for all spatial zones. It stems from generation shifts in the population structure of the country. Secondly, a decline of economic activity is least pronounced in Peri-urban areas; they had even a higher level of economic activity than urban areas in 2011. This is in sharp contrast with 1980, when the Urban zone showed significantly higher values than the three other spatial zones. Thirdly, Remote rural areas had a more economically active population than Rural areas in the 1980s; this pattern illustrates aptly the socialist labour market policy, which supported the remote regions heavily. Fourthly, the level of employment in agriculture, which was settled during socialism, has been very stable since then. Fifthly, economic activity in manufacturing also declined significantly in all four spatial zones, but the pattern between zones changed in line with new socio-economic circumstances. Differences between zones were very small during socialism; slightly lower values were noted in the Peri-urban and the Remote rural zone. This finding is in accordance with the aim of the socialist state policy: to have the whole country equally industrialized. After 1989, Czechia as an over-industrialized socialist country followed the post-industrial shift and employment in manufacturing declined. Development in this respect is delayed in the Ústí region. Manufacturing is still an urban phenomenon in the Ústí region, whereas it has been mostly displaced to non-urban areas in other regions. The current trend in the development of the employment structure is characterised by polarisation between service-based (Urban, Peri-urban) and other areas (Rural, Remote rural). The differences between the spatial zones in less advanced employment sectors are diminishing due to the increasing employment in advanced services in metropolitan areas.

Another perspective drawn on same data input is elaborated by using a concentration of particular phenomena in spatial zones (Figure not shown here.). The changing concentration of particular phenomena is getting more important in cases where shifts in urbanisation processes expressed at the national and regional level are resulting in the stabilisation of population distribution. There-

fore, structural and relational changes in local populations are gaining more importance. In the case of population age structure, the Ústí region underwent bi-polarisation of age-defined cores and peripheries between 1980 and 2011. It shifted from younger Urban and Remote rural regions and older Peri-urban and Rural areas in 1980 towards older Urban and Remote rural regions and younger Peri-urban and Rural areas in 2011. In comparison with the national level, the spatial zones in the Ústí region did not differ significantly. The development of employment patterns shows a notable degree of stability of employment in agriculture and changing patterns of employment in manufacturing. A high level of employment in manufacturing was a definitional characteristic of core areas in the 1980s but since then the situation rapidly changed. The data shows a slow decline of urban industry in the 1990s and a slow recovery in the next decade. The decline is driven not only by a lack of competitiveness but also by a shift of industries towards Rural and Remote rural areas and a shift of population due to residential decentralisation.

The analysis of the human capital of population as expressed in education levels provides an interesting view of how centrality and peripherality was organized in socialism and how it developed in the course of the post-socialist transformation. Peri-urban areas and Remote rural areas had a similar share of the poorly-educated population in the 1980s, which was significantly lower than in the case of Rural areas and Urban areas; Remote rural areas and Peri-urban areas was therefore more peripheral. These patterns were not in line with the usual friction of distance rule. The logic of socialist state redistribution system resulted in a creation of two axes of polarisation: firstly, between urban cores and their adjacent areas, secondly between close and remote rural areas. A similar observation is valid for the spatial distribution of the highly educated population. Peripheries with a low share of highly educated population were in Peri-urban areas and in Remote rural areas. These two axes of polarisation have been merged into one core–periphery polarisation during the post-socialist transformation, but the absolute difference between the urban core and the rural periphery declined due to the overall growth of education levels.

5. Discussion

The broader pattern of polarisation and peripheralisation of territory (Fig. 1) shows the main shifts from classical urbanisation in the 1980s towards more advanced modes of urbanisation processes such as metropolisation in the case of Czechia and peripheralization in case of the Ústí region. Figure 1 shows different population sizes of the particular spatial zones (see the length of bars) and their development in the 1980s and in 2011 (see growth and decline arrows). Employment-driven urbanisation of industrial regions such as the Ústí region was more pronounced than urbanisation in Czechoslovakia as a whole in the 1980s. The pattern of regional polarisation changed significantly in the transition period, although it is worthy to note that spatial polarisation was more intensive before the shift to a market-driven economy. The stability or small decline of Urban areas together with the rapid growth of Peri-urban areas indicate a successful creation of metropolitan regions after the end of the millennium. In contrast, the rapid Urban decline of the Ústí region, which is not balanced enough by Peri-urban growth, evinces a less successful creation of a metropolitan area and thus the peripheralisation of the Ústí region as a whole.

Peripheralisation at larger spatial scales is in line with the broad development of the hierarchically arranged geographical organisation of society. The concentration of advanced functions in less and less core regions within the settlement hierarchy leads to a partial decline of centrality of other regions, which is called “regional shrinkage”. Peripheralisation is an intrinsically uneven process but it does not implicitly lead to the growth of inequalities or regional economic decline. Even in a region, which has been experiencing peripheralization, such as in the Ústí region, there might be a growth of education levels or a growth of employment in services at the same time. Relational perspectives used in the regional comparison should be applied in a cautious way not to confuse a spatially uneven geographical organisation with regional inequality.

In general, the trend of the polarisation of territory is well documented in the data. An evaluation of trends in the polarisation of rural space stresses two important aspects. The first aspect is

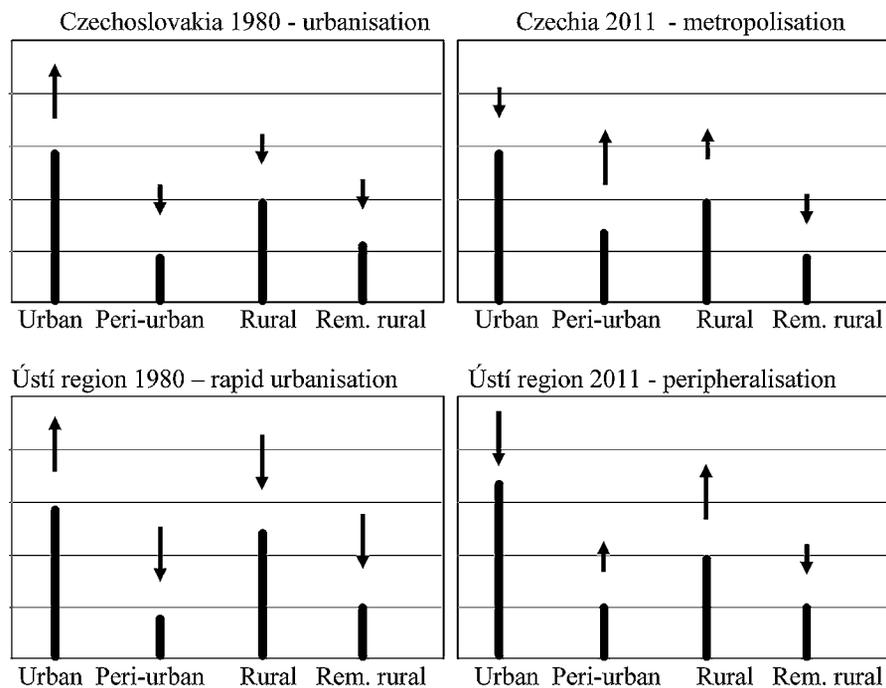


Fig. 2. Changing core-periphery relations 1980-2011

Source: Author's elaboration

the changing importance of indicators used for delimitating and describing peripheral regions. For example, higher-than-average economic activity in manufacturing indicated peripheral regions in 2011, but it did not indicate it in 1980 when the regional differences were very small. On the other hand, higher-than-average economic activity in agriculture indicates peripheral regions in all of the observed years. The second and more specific aspect is the role of the inherited socio-spatial structures and their dynamics. Taking age structure of the population as an example it can be illustrated that the position of a periphery defined by an older and more ageing population changed between 1980 and 2011. Peri-urban regions had a higher-than-average share of people aged 65 and more and lower-than-average share of people aged 0 to 25 in 1980, the situation changed dramatically in 2011. Age-defined periphery has shifted to the previously youngest Remote rural zone, which is now a region with a higher share of old people and a lower share of young people in comparison with other rural areas.

6. Conclusion

The study of changing core-periphery relations in Czechia and in the Ústí region illustrates the general trends in the change of the geographical organisation of society as a framework for evaluation of the development in a particular region. The case study of the Ústí region shows a set of changes, which accompanied re-polarisation of the formerly leading region with sharp internal polarisation to a lagging region with mild internal polarisation. This conclusion provides clear evidence that the effects of polarisation are not translated simply and straightforwardly in a whole region (compare the review for CEE countries by Péntzes, 2013), but vary with respect to different types of accessibility areas. Even though there is a trend of peripheralisation of a region per se, the particular indicators of peripherality such as changes in the education structure or in the employment structure might have developed conversely. This underlines the neutral tone of the term peripheralisation. In the case of the Ústí region, the crucial impact of the inherited socio-spatial structures and institutional legacies in the sense of path-dependencies and regional

lock-ins on the results of regional transformation is highlighted. The functional and time-accessibility classification of territory into Urban – Peri-urban – Rural – Remote rural areas is considered as a useful tool for analysing polarisation and peripheralisation of regions and thus it might be a useful tool for a broader international audience and policy makers. It allows us to analyse multiple spatial scales in the comparative perspective and take different dimensions of peripheralisation into account. The methodological procedures of the article are readily transferable; therefore, the findings from Czechia and the Ústí region might be relevant also in other CEE countries. To sum up, the article describes an elaborate insight into how exactly peripheralisation works at a detailed spatial level within the time-accessibility framework. It highlights the importance of re-polarisation and bi-polarisation driven by broader societal changes and occurring at a local spatial level. These complex changes shaping the daily life in regions are sometimes neglected. Diverse development paths of regions are just simplified to a change from a relatively straightforward system of urban growth and rural decline to a more complex system of growing metropolitan and shrinking non-metropolitan regions.

Notes

¹ The motivation for selecting a time-accessibility model classifying the whole territory of Czechia into four zones resulted from its useful application in the previous research (Šimon 2011, 2014). The model was used for analysing domestic migration patterns shortly after the end of the socialist period (1992–94) and 15 years later (2005–07) when the transition process was already advanced. The values of age-specific migration did not differ in the first period between the four defined zones. After 15 years of transformation, the values of age-specific migration differ markedly for the same spatial delimitation. Such shift suggests that there has been an increase of socio-economic differences. By using data about migration within the time-accessibility framework it can be claimed that 'location in space matters more' after socialism.

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