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POPULATION TRANSFORMATIONS IN TRADITIONAL ECONOMIC REGIONS OF CENTRAL EUROPE. STRUCTURAL APPROACH

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ABSTRACT. The subject of the Author's interest are traditional social-economic regions of Central Europe, i.e. the Katowice and Rybnik conurbations in Poland, and the Ostrava-Karvina agglomeration in the Czech Republic. Despite their similar origin – connected mainly with the exploitation of mineral resources, coal in particular – the directions of transformations in these regions have hitherto run differently in different time periods. The aim of this paper is an attempt to show differences in spatial development of population, mainly in relation: centre of a settlement system and its surroundings. The use of archival statistical materials made it possible to study these transformations from the beginning of the 19th century until now.

KEY WORDS: Katowice and Rybnik conurbation, Ostrava-Karvina agglomeration, population transformation, settlement, investigated areas.

POPULATION CHARACTERISTICS OF THE INVESTIGATED AREAS

In the Katowice conurbation the outer zone was identified with those towns which in the regional plan of 1953 were included in zone B; in the Rybnik conurbation towns which directly or indirectly bordered with Jastrzębie Zdrój, Rybnik, Wodzisław Śląski and Żory; in the Ostrava-Karvina agglomeration towns which were located beyond the core of Ostrava.

Katowice conurbation. Analysis of spatial distribution of social-demographic features has here a long-term tradition. This concerns especially urbanisation processes in the surroundings of towns in this conurbation. Different studies

concerning the structural approach to the problem were influenced on the one hand by the plan of deglomeration of its central part in the first post-war regional plan (similar activities in the Ostrava agglomeration – Haviřov), and on the other hand by the occurrence and development of new economic areas beyond the centre. This approach was applied by such authors as Berezowski (1980), Grabania (1964), Kłosowski, Runge (1999), Krakowska (1983), Litewka (1971, 1979), Rajman (1969, 1977, 1997), Runge (1993, 1999), Runge, Zadrożny (1987). Especially the work by Kłosowski and Runge (1999) takes up the problems of consistency between the subsequent administration divisions of Katowice province and development of territorial social-demographic differentiations. A characteristic feature in this area was temporal-spatial changeability in population processes and structures, which was mainly a derivative of over-local economic investments.

Rybnik conurbation. Despite an eventful social-economic development of the Rybnik conurbation, research output on the post-war origin and development of this second in size settlement system is surprisingly inconspicuous (Dziadek, 1987; Runge, 1992). The processes of changes in this area were usually perceived as a part of all-Polish processes, emphasizing the main role of towns themselves in population concentration. The case of Jastrzębie Zdrój is a good example – the town with a health-resort function populated by several thousand inhabitants in the 1950s changed at the end of the 1970s and beginning of the 1980s into a mining town with an over 100 thousand population. This resulted for instance in intensive labour resource drainage of people living in surrounding towns and villages as well as those living in Podbeskidzie, the central part of Katowice (Silesia) province, and even from the former Częstochowa province (Runge, 1992). Paradoxically, the results of this process have not been described in scientific literature, which should be connected – similarly to the Katowice Steelworks case – with political reasons.

Ostrava-Karvina agglomeration. Still developing after 1945 the Ostrava agglomeration was luckier in recording the process of transformations. The most important are probably the works by Prokop (1968, 1980, 1993, 2003). The dynamics of population changes in the main towns of Moravian-Silesian country after 1950 was significantly differentiated. The decision on the location of a new town on a “coarse root” of Haviřov, as well as intensive development of coal mining in the area of Karvina means that by the 1970s, the population centre of gravity was shifted towards the south-east (Haviřov, Frydek-Mistek). In the period 1971–1991, Frydek-Mistek was a leader in population development, with the clearly weakening position of other urban centres. The reason is probably the fact that Frydek-Mistek was the second town with a residential function after Haviřov located in close neighbourhood to Ostrava. The attractiveness of the town, good transport connections with the regional capital and also the close distance to the

Moravian-Silesian Beskidy Mountains as a recreational area for the inhabitants of the Ostrava-Karvina agglomeration meant that suburbanisation processes were clearly directed to the south. After 1990, in nearly all urban centres the regress in population is visible. The exception is Petřvald and Rychvald, small towns connected with coal mining and located on the eastern side of the Ostrava sphere of influence.

LONG-TERM TRENDS OF POPULATION CHANGES

A systematic reflection of the structural approach to determine directions of transformations of the settlement systems studied and their spheres of influence are long-term changes in the population of individual towns included in these systems. Despite the fact that in the case of the territory of Poland, there are suitable records from as early as 1810 (Jelonek, 1956), many urban centres do not have reliable statistical data for the beginning of the 19th century. Therefore in this studies the Author applied data from Gawryszewski (2005) and from the Statistical Office in Ostrava (from 1869). Table 1 contains towns of the three settlement systems studied, leading in population structure in 16 comparable time intervals.

Table 1. Towns dominating in population structure in traditional regions in Central Europe (period 1869–2005)

Katowice conurbation		Rybnik conurbation		Silesian-Moravian Country	
Year	Towns dominating in population concentration of the area and their percentage share	Year	Towns dominating in population concentration of the area and their percentage share	Year	Towns dominating in population concentration of the area and their percentage share
–	–	–	–	1869	19.3 Ostrava 13.4 Opava 7.2 Novy Jičín 6.8 Frydek-Mistek 5.3 Krnov 4.9 Rymařov 4.4 Karvina 3.7 Třinec 3.7 Odry 3.4 Bruntal 3.2 Frenštát pod Radh. 3.2 Bilovec
–	–	–	–	1880	22.8 Ostrava 13.0 Opava 6.9 Novy Jičín 6.1 Frýdek-Mistek 5.8 Krnov 4.8 Karvina 4.0 Třinec 3.9 Rymařov 3.2 Bruntal 3.1 Český Tešín

Katowice conurbation		Rybnik conurbation		Silesian-Moravian Country	
Year	Towns dominating in population concentration of the area and their percentage share	Year	Towns dominating in population concentration of the area and their percentage share	Year	Towns dominating in population concentration of the area and their percentage share
-	-	-	-	1890	28.4 Ostrava 11.9 Opava 6.4 Nový Jičín 5.8 Krnov 5.8 Frýdek-Místek 5.4 Karviná 3.7 Třinec 3.3 Orlová 3.0 Rýmařov
1897/1900	14.9 Katowice 14.4 Bytom 12.9 Zabrze 12.5 Chorzów 9.9 Gliwice	1897/1900	50.7 Rybnik 30.3 Żory		36.3 Ostrava 10.5 Opava 6.0 Karviná 5.2 Frýdek-Místek 4.6 Krnov 3.9 Orlová 3.3 Bohumin 3.3 Třinec
1910	13.7 Zabrze 13.6 Katowice 12.2 Bytom 11.9 Sosnowiec 11.1 Chorzów 7.8 Gliwice 5.7 Będzin	1910	58.0 Rybnik 24.6 Żory	1910	38.8 Ostrava 9.9 Opava 6.2 Karviná 4.9 Nový Jičín 4.8 Frýdek-Místek 4.3 Krnov 4.1 Bohumin 4.0 Orlová
1921/1925	12.7 Katowice 11.9 Bytom 11.1 Zabrze 10.3 Chorzów 8.9 Sosnowiec 8.5 Gliwice 4.8 Ruda Śląska 4.1 Dąbrowa Górnicza 3.7 Siemianowice Śląskie	1921/1925	64.6 Rybnik	1921	39.2 Ostrava 9.7 Opava 7.0 Karviná 4.6 Bohumin 4.4 Frýdek-Místek 4.3 Nový Jičín 4.3 Krnov 4.2 Orlová
1931/1933	13.3 Katowice 13.3 Zabrze 12.2 Bytom 9.8 Gliwice 9.7 Sosnowiec 9.6 Chorzów 6.6 Ruda Śląska	1931/1933	68.1 Rybnik	1930	39.1 Ostrava 9.7 Opava 6.7 Karviná 4.7 Frýdek-Místek 4.5 Bohumin 4.3 Krnov 4.2 Nový Jičín 4.2 Orlová
1939	13.3 Katowice 12.2 Zabrze 11.7 Bytom 10.8 Sosnowiec 9.8 Gliwice 9.1 Chorzów 6.9 Ruda Śląska 4.2 Będzin	1939	71.4 Rybnik	-	-

Katowice conurbation		Rybnik conurbation		Silesian-Moravian Country	
Year	Towns dominating in population concentration of the area and their percentage share	Year	Towns dominating in population concentration of the area and their percentage share	Year	Towns dominating in population concentration of the area and their percentage share
1946	15.1 Katowice 11.1 Bytom 10.5 Zabrze 8.3 Gliwice 8.0 Chorzów 8.0 Sosnowiec 7.5 Ruda Śląska 3.6 Świętochłowice	1946	35.5 Wodzisław Śląski 35.2 Rybnik	-	-
1950	14.3 Katowice 11.1 Bytom 10.6 Zabrze 8.7 Gliwice 8.2 Sosnowiec 7.9 Chorzów 6.8 Ruda Śląska 4.1 Dąbrowa Górnicza 3.4 Świętochłowice	1950	31.5 Rybnik 27.3 Wodzisław Śląski 7.4 Czerwionka-Leszczyny	1950	41.3 Ostrava 7.8 Opava 7.4 Karviná 5.2 Frýdek-Místek 4.6 Orlová 4.1 Třinec
1960	14.4 Katowice 9.7 Bytom 9.6 Zabrze 8.4 Sosnowiec 8.0 Gliwice 7.4 Chorzów 6.6 Ruda Śląska 4.4 Dąbrowa Górnicza 3.3 Jaworzno 3.1 Siemianowice Śląskie	1960	33.8 Rybnik 27.4 Wodzisław Śląski 8.2 Czerwionka-Leszczyny	1961	39.4 Ostrava 7.9 Haviřov 7.7 Karviná 7.4 Opava 4.9 Frýdek-Místek 4.3 Třinec
1970	14.8 Katowice 9.5 Bytom 9.1 Zabrze 8.6 Sosnowiec 8.3 Gliwice 6.9 Chorzów 6.5 Ruda Śląska 4.3 Dąbrowa Górnicza 3.8 Tychy 3.6 Jaworzno 3.1 Siemianowice Śląskie	1970	29.1 Rybnik 25.8 Wodzisław Śląski 11.7 Jastrzębie Zdrój 8.6 Knurów	1970	37.7 Ostrava 10.4 Haviřov 10.0 Karviná 6.7 Opava 5.4 Frýdek-Místek
1978	14.5 Katowice 9.6 Sosnowiec 8.8 Bytom 8.1 Zabrze 8.0 Gliwice 6.4 Ruda Śląska 6.2 Chorzów 5.3 Dąbrowa Górnicza 5.3 Tychy 3.6 Jaworzno	1978	27.8 Rybnik 22.9 Jastrzębie Zdrój 11.7 Wodzisław Śląski 10.0 Knurów 9.7 Żory	1980	36.9 Ostrava 9.8 Haviřov 8.9 Karviná 6.7 Opava 6.3 Frýdek-Místek

Katowice conurbation		Rybnik conurbation		Silesian-Moravian Country	
Year	Towns dominating in population concentration of the area and their percentage share	Year	Towns dominating in population concentration of the area and their percentage share	Year	Towns dominating in population concentration of the area and their percentage share
1988	14.3 Katowice 10.1 Sosnowiec 8.3 Gliwice 8.2 Bytom 7.9 Zabrze 6.5 Ruda Śląska 5.4 Tychy 5.3 Dąbrowa Górnicza 5.2 Chorzów 3.8 Jaworzno 3.1 Siemianowice Śląskie	1988	28.8 Rybnik 21.0 Jastrzębie Zdrój 13.4 Żory 10.4 Wodzisław Śląski 9.3 Knurów	1991	36.0 Ostrava 9.5 Haviřov 7.5 Karviná 7.0 Frýdek-Místek 6.9 Opava 4.3 Třinec
2002	13.7 Katowice 9.8 Sosnowiec 8.6 Gliwice 8.2 Zabrze 8.1 Bytom 6.3 Ruda Śląska 5.5 Tychy 5.5 Dąbrowa Górnicza 4.9 Chorzów 4.1 Jaworzno 3.2 Myslowice	2002	29.9 Rybnik 20.4 Jastrzębie Zdrój 13.3 Żory 10.4 Wodzisław Śląski 8.5 Knurów	2001	35.7 Ostrava 9.7 Haviřov 7.3 Karviná 6.9 Frýdek-Místek 6.9 Opava 4.4 Třinec
2005	13.6 Katowice 9.7 Sosnowiec 8.5 Gliwice 8.2 Zabrze 8.0 Bytom 6.3 Ruda Śląska 5.6 Tychy 5.6 Dąbrowa Górnicza 4.9 Chorzów 4.1 Jaworzno 3.2 Myslowice	2005	30.0 Rybnik 20.3 Jastrzębie Zdrój 13.3 Żory 10.5 Wodzisław Śląski 8.5 Knurów	2005	24.8 Ostrava 6.7 Haviřov 5.1 Karviná 4.8 Frýdek-Místek 4.7 Opava 3.0 Třinec 2.7 Orlová 2.1 Novi Jičín 2.1 Český Tešín 2.0 Krnov 1.9 Kopřivnice 1.8 Bohumin 1.4 Bruntal

The Czech data show that since the 1860s, the leading role of the central town, i.e. Ostrava, in population distribution is clearly visible. On the other hand, Opava, the second large town in this area, does not differ much from Ostrava (only 6% less), but in the successive years, the predominance of Ostrava over other towns grew, reaching at the beginning of the 20th century 36.6% of the total population of the present territory of Moravian-Silesian country.

In the case of the towns of the Katowice conurbation, until the 1860s, the predominant role in population concentration was held by Gliwice (1810), Będzin (1825), Gliwice and Bytom (1843/1857), Chorzów, Zabrze, Bytom (1869, 1880, 1890, 1897). The process of evolution of the standing of towns in the Katowice conurbation and its reasons are discussed by Gwosdz (2004).

The third settlement system studied is the Rybnik conurbation. Until the 1890s, the leading but decreasing position in population concentration was held by Żory. In 1890 Rybnik (population –5.2 thousand) gained superiority over Żory (4.4 thousand).

At the beginning of the 20th century, the situation in population concentration of the three settlement systems studied was strongly differentiated. The agglomeration pattern, showing the largest population concentration in the centre and decreasing values towards the peripheries was typical only for the Ostrava region. In 1990, Ostrava was populated by 36.6% of the inhabitants of this region, with a large proportion of towns located almost concentrically in relation to Ostrava. In the Katowice conurbation as much as 65% of demographic potential was concentrated in the western and central part (Bytom, Chorzów, Gliwice, Katowice, Zabrze). Katowice itself only slightly predominated over other towns in population concentration, which resulted in the fact that in 1910 Zabrze overtook Katowice in population number. In the just industrialising Rybnik conurbation, only two towns showed predominating role in population concentration – Rybnik and Żory – creating a clear bipolar settlement system.

Until 1939, trends in population changes were as follow:

- In the Katowice conurbation there was an increase in the number of towns with large percentage of population. In this group towns from the former Russian sector appear such as Będzin, Dąbrowa Górnicza, Sosnowiec. This way a clear shift of the centre of gravity in the conurbation population occurs from the central-western part to the central-eastern part of the region. Intensification of this process appeared after 1945.
- In the Rybnik conurbation the increasing population supremacy of Rybnik over surrounding towns meant that this area in the period 1921–1939 may be considered as an agglomeration.
- In the Ostrava agglomeration a relative stabilisation of the dominating role of Ostrava as a centre of the demographic settlement system occurs. Population hierarchy of other towns is practically stable. The second position – since the beginning of this region development – is held by Opava.

The post-war period brings many changes, which are best visible in the territorially and demographically smallest area studied. As a result of hard coal mining development in the newly established Rybnik Coal Area, possibilities for rapid population increase were gained by: Czerwionka-Leszczyny, Jastrzębie Zdrój, Knurów and Wodzisław Śląski. From the position of over 70% population concentration (in 1939) Rybnik decreases its predominance to the level of 30% in 2005.

In the second position of the scale of qualitative changes was the Ostrava agglomeration. The development of Haviřov as a satellite town caused the shift

of the population centre of gravity towards the south-west. The leading hitherto towns such as Ostrava, Opava, Nový Jicin, Karviná, are replaced by Ostrava, Haviřov and Karviná, which gave the reason to change the name of this area – from the Ostrava agglomeration to the Ostrava-Karvina agglomeration.

In the Katowice agglomeration, a relative stabilisation of population level of Katowice was already seen in the inter-war period, oscillating between 13 and 15% of the total population in towns of this region. The consolidation of the process of shifting the population centre of gravity towards the towns of Zagłębie Dąbrowskie occurred in the late 1970s, when housing development was realised with vehemence for the labour force of Katowice Steelworks. Since 1978, Sosnowiec and Dąbrowa Górnicza have played a role of leading urban centres in this area.

It is very interesting to compare the population structure of dominating towns in the 21st century (2002, 2005). Urbanisation processes are mainly visible in the Ostrava-Karvina agglomeration, where the role of Ostrava decreases, whereas the increase occurs in such towns as Orlová, Nový Jičín, Český Tešín, Krnov, Kopřivnice, Bohumin, or Bruntal. These are mainly towns of a distant part of the influence sphere of the agglomeration, located partly near state boundaries of these areas. Therefore, the suburbanisation process among all the settlement systems studied is best advanced in the Ostrava-Karvina agglomeration.

INNER-URBAN CHANGES OF POPULATION

Similarly to the changeable role of individual urban centres in population concentration, there were also differences in this respect on the levels of town districts of the three settlement systems studied. Unfortunately, the Author had suitable data only for Ostrava for the period 1869–2001. It is assumed that changes in functional structure were accompanied by essential changes in population concentration. Table 2 shows information about the population of individual districts of Ostrava from the second part of the 19th century to the beginning of the 21st century. In 1869 the leading position was held by Slezska Ostrava. Together with the industrial development the role of Moravska Ostrava and Privoz increased. In the 1950s and 1960s, a socialistic housing district Poruba was built which concentrated most of the population until 1980. After 1990, this role was taken by Ostrava Jih (Ostrava South).

Table 2. Population in individual urban districts of Ostrava in the period 1869–2001

Town	Urban districts	Population in urban districts												
		1869	1880	1890	1900	1910	1921	1930	1950	1961	1970	1980	1991	2001
Ostrava	Hošťalkovice	626	641	626	766	915	1,156	1,352	1,456	1,634	1,620	1,611	1,538	1,511
	Hrabová	847	1,035	1,438	1,748	2,211	2,227	2,740	4,584	4,571	3,946	3,544	3,443	3,433
	Krásné Pole	497	553	645	816	1,032	1,076	1,274	1,289	1,643	1,762	1,966	1,898	2,101
	Lhotka	471	500	603	728	834	966	1,017	979	1,059	997	1,009	941	1,004
	Mariánské Hory a Hulváky	428	472	1,154	7,571	11,040	12,513	13,579	13,555	19,780	14,119	16,152	14,542	12,998
	Martinov	430	488	522	628	740	731	840	641	710	869	872	1,109	1,093
	Michálkovice	870	1,587	2,889	6,181	6,818	5,895	5,702	5,608	4,766	3,599	2,965	2,466	2,836
	Moravská Ostrava a Přívoz	9,333	17,146	24,493	40,989	53,216	59,116	64,429	63,641	59,319	51,242	50,395	46,379	43,428
	Nová Bělá	718	696	825	939	1,087	1,083	1,400	1,567	1,437	1,334	1,406	1,460	1,565
	Nová Ves	352	455	659	1,212	1,583	1,483	2,275	2,014	1,666	1,080	779	640	603
	Ostrava-Jih	2,129	2,672	5,165	10,515	13,433	13,806	19,999	22,532	33,413	70,748	90,109	118,806	118,094
	Petřkovice	920	998	1,107	1,509	2,159	2,609	3,206	3,865	3,236	2,891	2,846	2,659	2,783
	Plesná	629	729	728	911	996	919	997	813	992	979	996	1,001	1,098
Polanka nad Odrou	1,779	1,952	2,020	2,183	2,718	2,940	3,990	2,893	3,815	3,792	4,032	3,934	4,224	
Poruba	674	840	911	1,127	1,403	1,554	1,880	1,596	42,575	83,196	93,667	83,982	74,980	
Proskovice	423	419	503	529	574	575	708	679	775	775	954	1,052	1,125	
Pustkovec	372	396	495	647	759	787	833	706	697	653	824	999	1,115	
Radvanice a Bartovice	2,719	3,105	3,878	6,809	9,201	9,135	10,794	12,047	9,387	7,588	6,510	5,773	6,284	
Slezská Ostrava	9,910	15,590	21,736	34,453	45,754	45,191	46,680	44,703	36,731	27,537	23,534	19,466	19,484	
Stará Bělá	1,428	1,598	1,738	1,937	2,118	2,138	2,778	3,190	2,843	2,884	3,013	2,989	3,233	
Svinov	809	1,010	1,362	2,397	3,275	3,867	5,368	4,722	5,088	3,904	3,572	3,379	4,536	
Třebovice	557	655	701	832	1,067	1,263	1,867	1,937	1,253	1,540	1,762	1,620	1,698	
Vitkovice	1,677	2,591	10,294	19,123	23,151	27,358	25,820	20,774	16,907	10,116	9,555	7,292	7,518	
Total	38,598	56,128	84,492	144,550	186,084	198,388	219,528	215,791	254,297	297,171	322,073	327,368	316,744	

CONCLUSIONS

The presented in this work trends of population transformations in three traditional economic regions of Central Europe lead to the following conclusions:

- *firstly* – there is a clear disproportion in the range of investigations of the area studied, taking into account three applied approaches. Relatively, the largest amount of research work concerns the structural approach, slightly less – the hierarchical-functional approach, and the least amount of research concerns the network approach;
- *secondly* – irrespective of similar or close origin, the process of social-economic changes of the regions studied occurred differently, which is reflected in the advancement of urbanisation process phases;
- *thirdly* – both the spatial range and character of transformations of the constituents in the system centre – peripheries show clear differentiations on both Czech and Polish sides;
- *fourthly* – it is therefore difficult to assume that a traditional region in its historical and geographical transformations shows a model homogeneity.

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