Shrinking Cities in Poland: Demographic Perspective

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Abstract

Shrinking cities can be found more and more often in many places around the world. This is the result of many interrelated processes, including demographic changes, uneven and irregular economic development, changes in urban development and in the ways of using the land. The effects of these changes are reinforced by the processes of globalisation, European integration and related restructuring of local economies.

This paper purports to present the issue of "shrinking" cities in Poland. The author has included a general characteristics of the process, considering only the aspect of changes in the population. A typology of population movements was introduced on the basis of a relation between the actual birth rate and the migration balance, whereas the typology was based on Webb's procedure. The author has also made an attempt to classify the shrinking cities based on the definition adopted by the Shrinking Cities International Research Network (SCIRN). A detailed analysis was conducted on large cities with more than 100 thousand inhabitants and covered the period from 2000 to 2016.

Key words: cities, shrinking cities, Poland
J.E.L. classification: J10, J11, R23

1. Introduction

Shrinking cities are one of the key problems that currently exist in urban areas. Globalisation, integration with the European Union, system changes, restructuring of post-Communist countries or changes in demographic patterns and behaviours have impacted the structure and dynamics of the changes in the population of specific countries, also in the cities.

Shrinking cities are characteristic of many urban centres in the world. A know example of a shrinking city is Detroit in the United States. The effects of the crisis in the automotive industry, which was the basis of the local economy, contributed to the regression of the city (Kowalewski, 2013, p. 110-113). Similar problems affected many other American cities, such as for example Baltimore, where the crisis was due to the collapse of the local harbour. There is also Flint, whose adverse demographic situation was the result of the collapse of the automotive industry, St. Louis, Memphis or Cleveland. The process of shrinking cities can be observed in many European cities as well, e.g. in Germany (Leipzig-Halle), the United Kindgom (Liverpool), Czech Republic (Ostrava), Italy (Genoa), Spain (Bilbao), France (Saint-Etienne), Romania (Timișoara), and Poland as well (Łódź, Katowice, Wałbrzych). It should be noted that this process may also affect whole regions (e.g. cities in eastern Germany or in the Silesian voivodeship in Poland).

This paper purports to present the issue of shrinking cities in Poland. The author has characterised the current situation in Polish cities in the context of the depopulation phenomena and presented the differentiation of the demographic dynamics with regard to the processes observed in this respect. In this paper, the process has been narrowed down to population changes, since this is one of the most significant indicators on the basis of which the scale of the discussed phenomenon may be identified. A detailed analysis was conducted on large cities with more than 100 thousand inhabitants and covered the period of 16 years, i.e. from 2000 to 2016.

2. Theoretical background of the shrinking cities process

One of the problems of the modern city development includes adverse demographic changes. In many cities one can observe the tendency for depopulation, often related to the crisis in local economy. This process is referred to as city shrinking (Stryjakiewicz, 2014, p. 9).

In the literature on the subject, one can find two ways of defining the process. According to the traditional approach, the process is defined as progressing depopulation related to the deteriorating economic situation of the city. The other approach is multifaceted and treats this term as a process composed of social, economic and spatial transformations within a city, combined with constant reduction in the urban population (Zborowski et al. 2012; Stryjakiewicz,2014, p.8).

According to the definition formulated by Shrinking Cities International Research Network (SCIRN), a shrinking city is an urbanised area with large population density, where the population decrease has been observed for more than 5 years, with the intensity of more than 0.15% per year. A shrinking city is also such an urban area which has been affected by a structural crisis as a result of the progressing economic transformation process (Stryjakiewicz, 2014, p. 11-12).

The term "shrinking city" is a complex and multifaceted notion. It should be analysed as a system of complex determinants conditioning both the process itself and its consequences, subject to multiple criteria. The determinants that have the greatest impact on the process of shrinking cities are those related to economic transformation, de-industrialisation, global economic transformations and consequences of the second demographic transition (Haase, 2013, p.32). Industrial plants located in such cities collapsed or underwent a serious crisis after 1990, which resulted in changes in the employment structure, unemployment experienced by a large portion of the population and consequently, mass migrations of the inhabitants, especially those young and well-educated, to those cities which could offer jobs and better living conditions (Stryjakiewicz, 2014, p.80; Musiał-Malago', 2015, p.147; Musiał-Malago', 2016, p. 92-94; Musiał-Malago', 2017, p. 72).

The phenomenon of shrinking cities therefore refers to those cities where we can observe a reduction in population, decreased employment and prolonged economic crisis. Furthermore, cities affected by this process usually have negative population growth rate and migration balance. The effects of these transformations have affected the change in the economic function of the cities and in their previous functional, spatial, social and demographic structure. In the cities which did not have differentiated and diverse functions and their dominant branch of economy was industry, one could observe a particularly difficult process of adaptation to the new market situation. The cities that did not manage to develop any modern industry or transform into modern service centres during the period of intense transformation, are now experiencing a crisis. The result of such changes is bad situation on the local job market and consequently, poverty, social polarisation and housing-related segregation.

What is important in the research related to the process of shrinking cities is distinguishing between the actual and ostensible shrinking. Actual shrinking means that depopulation affects both the city and its surroundings at a given point in time. The city experiences high unemployment rates and outflow of inhabitants, especially young and educated ones. The other aspect is when the city loses its inhabitants within its administrative borders, but the people go to the areas surrounding the city and functionally related to it. This is when a city loses its inhabitants in the process of suburbanisation. It should be noted, though, that ostensible depopulation is not tantamount to economic regression of a city (Kantor-Pietraga, 2014, p.63-64). Large cities that experience strong suburbanisation processes may still keep the role of important economic development centres.

3. Trends in the changes in the demographic situation of the Polish cities

The settlement structure in Poland in 1990-2016 was transformed in the demographic, social and economic context. A particular exponent of those transformations was a change in the number of cities in individual categories on the basis of size and demographic potential. Generally speaking, in Poland there was an increase in the number of cities from 830 in 1990 to 919 in 2016, which spells an increase by 10.7%. Over 26 years, the number of cities in Poland increased by 89.

Although the number of cities increased, urban population actually dropped in the same period from 23 546 people to 23 130 (the whole population of Poland slightly dropped in this period (by 1.0%), and similarly in urban areas (i.e. by ca.1.8%), whereas the number of people in rural areas dropped by ca. 5.3%).

In 1990 small cities constituted 73.6% of all urban centres and nearly 19.5% of the urban population lived there. In the next periods, the number systematically increased. In 2016, such cities constituted 76.2% of all the cities and they were the home of ca. 21.6% of the urban population. At the same time, the number of medium-sized cities also increased, as well as their population. After 26 years, the number of the largest cities reduced by 4 and the number of population - by 963 thousand (i.e. by 8.2%).

After World War II, until the 1990s, the population of the cities in Poland kept growing steadily. It was a result of intense demographic growth of the cities, due to the increasing level of urbanisation, considerable migration from the countryside to the city because of the intense industrialisation of the urban areas (Szymańska, 2007, p.62). The intensity of the industrialisation process and numerous investments contributed to the growth of industry and the development of cities, thus resulting in intense migration from the rural areas to the cities; this is where people found their chance for a "better life." Since the beginning of the 1990s, we have clearly seen a drop in the demographic dynamics in nearly all the cities. Two characteristic periods may be distinguished: 1990-2000 and after 2000. While the last decade of the 20th century saw a slight, yet positive demographic dynamics, after 2000 we have seen a marked tendency for depopulation. Among the key reasons behind the current demographic condition of Poland we have to mention migration and reduced birth-rates (Harańczyk, 2015, p. 46). It should be noted, though, that higher decrease in population follows from migration. In Poland, until the end of the 1990s more people came to the cities than left, which meant that migration cause an increase in the number of urban population. After 2000 this positive migration balance in the cities changed to negative. Since then, more people have been leaving the cities than arriving. Cities started losing their population and rural areas started growing. In the future, this trend will be even more noticeable. At the moment, 23.2 million people live in the cities while ca. 15.2 million live in the countryside. As follows from demographic forecasts produced by the Main Statistical Office, by 2050 the number of people in the countryside will increase (more than 15.1 Poles), while in the cities it will drop (18.8 million). Therefore, in the next decades, the percentage of Poles living in the cities will considerably reduce from 60.2% in 2016 to 55.5% in 2050. This will be the result of the uneven rate of dying out. The reasons behind this situation include: ageing cities, lower birth rate in cities and intensifying suburbanisation processes.

As a result of changes in demographic processes, the structure of population, according to economic age groups, changes as well. There is a reduction in the number and percentage of children and adolescents (0-17 years). It is also noted that the society is ageing and there is a constant growth in the number of pensioners.

4. Analysis of the demographic aspect of the shrinking cities process in Poland

The study group included large cities with more than 100 thousand inhabitants (39 cities). In 2016 there were a total of 10816 inhabitants of such cities, which constitutes 46.8 % of the urban population and 28.1 % of the population of the whole country.

Among the studied cities we can distinguish:

- ✓ 5 cities with more than 500 thousand inhabitants (Warsaw, Cracow, Łódź, Wrocław, Poznań),
- ✓ 4 cities with 300 - 500 thousand inhabitants (Gdańsk, Szczecin, Bydgoszcz, Lublin),
- ✓ 7 cities with 200 - 300 thousand inhabitants (Białystok, Częstochowa, Gdynia, Katowice, Radom, Sosnowiec, Toruń),
- ✓ 23 remaining cities have 100 - 200 thousand inhabitants.

As was already mentioned before, since 2000 a large number of cities have experienced depopulation. In 2000 the number of people in the studied cities was 11204 people and systematically decreased over the next years - in 2016 it was 10816 (a drop in the number of urban population by 3.5%). In 2000-2016, in 32 of the studied cities there was a drop in the number of

population. The largest decrease (more than 10% inhabitants) was observed in 7 cities, i.e. Bytom (-13.4%), Wałbrzych (-13.0 %), Łódź (-12.8%), Sosnowiec (-12.2%), Gliwice (-11.2%), Zabrze (-11.0), Częstochowa (-10.6%). These cities experienced a serious social and economic crisis as a result of the restructuring of the so called traditional industry and the collapse of giant industrial plants.

According to the typology of shrinking cities adopted by SCiRN, 30 out of the 39 analysed cities can be described as shrinking. In the period covered with the research, the shrinking process in the majority of the studied cities was a long-term phenomenon[1]. Only in 3 cities (Gdynia, Koszalin and Tychy) there was a five-year period in which the average annual pace of changes in the population was between -0.15% and +0,15% or there was a slight increase in the population, by more than 0.15% (Table 1, Table 2).

Table no.1.Shrinking cities broken down by size - attempt at classification

Size of city	Cities with more than 100 thousand inhabitants		
	Shrinking	Stable	Growing
Characteristic of group	Decrease in the number of population by more than 0.15% per year in the studied period	Change in the number of population between -0.15% and 0.15% per year in the studied period	Increase in the number of population by more than 0.15% per year in the studied period
100 000-199 999	Bielsko Biała, Bytom, Chorzów, Dąbrowa Górnicza, Elbląg, Gliwice, Kalisz, Kielce, Koszalin, Legnica, Opole, Płock, Ruda Śląska, Rybnik, Tarnów, Tychy, Wałbrzych, Włocławek, Zabrze	Zielona Góra, Gorzów Wielkopolski, Olsztyn	Rzeszów
200 000-299 999	Czestochowa, Gdynia, Katowice, Radom, Sosnowiec, Toruń	Białystok	
300 000-499 999	Bydgoszcz, Lublin, Szczecin	Gdańsk	
500 000 and more	Łódź, Poznań	Kraków, Wrocław	Warszawa

Sources: own completion

In the next section of the paper, the author attempted to answer the question which component of the actual population growth rate (birth rate or migration balance) was dominant and whether there were any changes in the relation between these components of population growth in the studied period. Based on the birth rate and migration balance, a demographic typology was created for the studied cities, according to Webb's procedure. Depending on the intensity and shape of both features, we can distinguish eight main classes for the classification of spatial units (Kurek, 2013, p.60, 66; Dziewoński, Kosiński, 1967, p. 32; Runge, 2007):

Type A – positive birth rate outweighs the negative migration balance
Type B – positive birth rate is higher than the positive migration balance
Type C – positive birth rate is lower than the positive migration balance
Type D – positive migration balance considerably offsets the negative birth rate
Type E – negative birth rate is not offset by the positive migration balance
Type F – negative birth rate paired with negative, but not lower (in absolute value) migration balance
Type G – negative birth rate and negative, but not higher (in absolute value) migration balance
Type H – negative migration balance is not offset by the positive birth rate

[1] In the cities that experience long-term (lasting) shrinking the number of population drops by more than 0.15% per year over the whole analysed period

The types from A to D are characteristic of the units with positive population balance, i.e. demographically active centres (developing potential), whereas types from E to H stand for units with negative population balance, inactive, .i.e. those where the population is decreasing.

Table no.2. The elements of factual rate in the seleted Polish cities in 2000 and 2016

Cities with more than 100 000 inhabitants	**Population in cities**			**birth rate**		**migration balance**		**demographic typology of Webb**	
	2000	**2016**	**decrease/ increase in population**	**2000**	**2016**	**2000**	**2016**	**2000**	**2016**
łódzkie									
Łódź	798418	696503	-12,8	-6,93	-5,04	-0,60	-1,2	F	F
mazowieckie									
Radom	230492	215020	-6,7	1,45	-0,99	-1,90	-3,8	H	G
Płock	128580	121295	-5,7	1,16	-0,76	-1,20	-3,1	H	G
Warszawa	1672418	1753977	4,9	-3,56	1,41	1,90	3,8	E	C
małopolskie									
Kraków	758715	765320	0,9	-1,45	2,18	1,50	1,9	D	B
Tarnów	120822	110110	-8,9	1,90	-0,57	-1,00	-1,9	A	G
śląskie									
Bielsko-Biała	178611	172030	-3,7	0,30	-0,49	-1,00	-1,8	H	G
Bytom	195807	169617	-13,4	-1,45	-3,29	-1,20	-3,4	F	G
Częstochowa	253133	226225	-10,6	-2,14	-4,39	-1,40	-2,9	F	F
Gliwice	205092	182156	-11,2	-1,80	-1,03	-1,80	-2,8	F	G
Zabrze	197111	175459	-11,0	-0,20	-1,42	0,30	-3,2	D	G
Chorzów	118708	109398	-7,8	-4,37	-3,17	2,30	-0,6	E	F
Katowice	330625	298111	-9,8	-2,87	-2,51	-2,40	-2,8	F	G
Ruda Śląska	152280	139125	-8,6	-1,18	-1,74	-1,50	-1,7	G	F
Rybnik	143218	139252	-2,8	1,31	1,46	-1,20	-2,2	A	H
Dąbrowa Górnicza	132858	121802	-8,3	-2,39	-2,47	0,20	-2,1	E	F
Sosnowiec	234486	205873	-12,2	-2,67	-4,64	-2,60	-3,5	F	F
Tychy	133463	128351	-3,8	0,85	0,85	-2,40	-1,5	H	H
lubelskie									
Lublin	358933	340466	-5,1	0,03	0,43	0,30	-1,2	C	H
podkarpackie									
Rzeszów	160779	187422	16,6	1,86	3,73	-1,00	6	A	C
podlaskie									
Białystok	289233	296628	2,6	0,55	2,53	3,00	-0,5	C	A
świętokrzyskie									
Kielce	213469	197704	-7,4	-0,15	-1,41	-2,50	-1,6	G	G
lubuskie									
Gorzów Wielkopolski	125767	123995	-1,4	0,62	-0,04	0,10	1	B	
Zielona Góra	118103	139330	18,0	0,07	0,51	1,30	3,3	C	C
wielkopolskie									
Kalisz	110104	102249	-7,1	-0,54	-2,56	0,70	-2,8	D	G
Poznań	582254	540372	-7,2	-2,22	1	-0,60	-3,6	F	H
zachodniopomorskie									

Koszalin	108899	107680	-1,1	0,16	-1,2	0,20	1,3	C	D
Szczecin	416657	404878	-2,8	-1,59	-1,38	1,60	0,7	D	E
dolnośląskie									
Legnica	107416	100718	-6,2	-0,12	-0,95	0,90	-1,7	D	G
Wałbrzych	131675	114568	-13,0	-3,60	-6,41	-2,90	-2,8	F	F
Wrocław	640614	637683	-0,5	-2,54	1,01	0,90	2,5	E	C
opolskie									
Opole	130427	118722	-9,0	-0,70	0,60	1,00	0,60	D	
kujawsko-pomorskie									
Bydgoszcz	375676	353938	-5,8	-1,15	-1,3	-0,40	-2,4	F	G
Toruń	210194	202521	-3,7	1,08	0,91	-0,70	-1,3	A	H
Włocławek	121833	112483	-7,7	-0,26	-2,63	-1,10	-3,2	G	G
pomorskie									
Gdańsk	462995	463754	0,2	-1,23	1,44	-0,60	2,7	F	C
Gdynia	253387	246991	-2,5	0,16	-1,07	3,10	-0,3	C	F
wamińsko-mazurskie									
Elbląg	128305	121191	-5,5	0,82	-2,54	-0,30	-1,5	A	F
Olsztyn	172843	172993	0,1	1,39	0,82	3,80	0,1	C	B

Source: own elaboration based on data provided by the Main Statistical Office, www.stat.gov.pl (Accessed 20 October 2017)

Table no.3.Cities broken down by demographic typology of Webb

Demographic typology of Webb	**Characteristic of demographic typology of Webb**	**Number of cities**	
		2000	**2016**
A	+BR>-MS	5	1
B	+BR>+MS	1	2
C	+BR<+MS	6	6
D	-BR<+MS	6	2
E	-BR>+MS	4	1
F	-BR>-MS	10	9
G	-BR>-MS	3	13
H	+BR<-MS	4	5

Sources: own completion

Among the studied cities all of the eight basic types can be identified. In 2000, 18 of the studied cities were classified as developing types with positive population balance. In the case of cities with developing potential, two types were dominant – C and D (6 cities in each group). In both these types the development of a city was influenced by the positive migration balance. In type C, birth rate was positive, but its value was not high enough to exceed the positive migration balance. 6 cities were also classified as type D, with positive migration balance and negative birth rate. It was therefore positive migration rate that determined the development of these cities. Among the depopulating cities, type F was dominant (10 cities), with negative birth rate compounded by a high negative migration balance.

In 2016 the demographic situation of the studied cities changed. 11 cities were classified as types A-D according to Webb's typology, which means they were developing, whereas depopulation was observed in 28 of the cities. Considerable shift was observed towards depopulating cities: in 2000 these types of cities constituted 54% of the studied units, whereas in 2016 they constituted 72%. It was discovered that in 2016 the most significant demographic type was G, as more than 30% of the cities had high negative birth rate and even higher negative migration balance. The study conducted with Webb's method allowed the author to find out that among the studied cities, the dominant type is negative migration balance and negative birth rate,

whereas emigration exceeds natural decline in population, which points to intense population migration.

The spatial analysis showed that in the studied cities, the depopulation process is diversified and that it has also changed over time. The typology applied to classify the cities points to the dynamics of the discussed phenomenon and to the urban areas which are at the greatest risk of progressing depopulation and, consequently, shrinking.

5. Conclusions

The tendencies of the changes observed in the cities in the studied period prove the adverse demographic situation of these areas. In 2000 the studied units entered the depopulation phase caused i.a. by natural decline in population and intense migrations. This depopulation is constantly growing and according to the forecasts formulated by the Main Statistical Office, this phenomenon will continue to intensify.

The process of shrinking cities is going to proceed and progress, thus considerably affecting the development of urban areas. The effects of this process are diverse and mostly negative. A particularly difficult situation is observed in the cities, where the reduction in the number of inhabitants causes adverse phenomena in the local social, economic or spatial structures. An individual or multifaceted process of shrinking requires that the authorities adopt a new perspective on the urban policy, the principles of urban economy and a relevant strategy to match this phenomenon (Harańczyk, 2014). It is therefore vital that the public authorities and local communities cooperate and act together on many levels, so as to make well-informed decisions and effective actions to counteract the adverse effects of this process.

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