DOES THE PROCESS OF SHRINKING CONCERN ALSO SMALL TOWNS? LESSONS FROM POLAND

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Abstract: The approach to the issue of shrinking cities is undergoing constant changes. Originally, this process was referred primarily to the progressing depopulation connected with a deteriorating economic situation. Presently, works on shrinking cities mainly focus on the challenges posed by the problem rather than the delimitation questions. Do the shrinking also apply to the situation of small towns, and if so, to what extent may small towns shrink? Being conscious of the multidimensional nature of the topic discussed, the authors took measures aimed at singling out a group of shrinking towns from the whole set of small towns in Poland. The identification of depopulating centres consisted in pointing to those shrinking both in terms of their demography and economy. This type of research gives rise to all types of methodological problems such as which tools should be used to measure town shrinking or which data should be selected for the research, an issue particularly important for small towns where the range of indicators available is rather limited. What conclusions may be drawn from the conducted analysis? Do small towns in Poland shrink? On the basis of the conducted research the answer is no. With regard to demography, the process of shrinking concerns only 30 towns (4.5%). And this group includes only four which additionally shrink in economic terms.

Key words: shrinking small towns, depopulation processes, demographic transformation of small towns

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Introduction and theoretical framework

Nowadays the problem of shrinking cities is widely discussed in public space. Governments and local authorities look for the solution how to cope with negative effects of demographic, social and economic changes in towns and cities. Also contemporary research into socio-economic transformations worldwide refers more and more often to the problem of shrinking cities (Bontje 2005; Sousa, Pinho 2015; Grossmann et al. 2013; Hollander 2011; Richardson, Nam 2014; Plöger 2012; Hasse et al. 2010; Alves at al. 2016; Stryjakiewicz at al. 2014). This issue is raised on different planes of reference, yet authors tend to focus their research on medium-sized and big cities. Some of them claim in their works that it is possible to talk about shrinking only in relation to towns with more than 10 thousand inhabitants (Harańczyk 2015).

The approach to the problem of shrinking cities is subject to constant changes. Originally, this process was referred primarily to the progressing depopulation connected with a deteriorating

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economic situation. The terms 'urban decline' and 'urban decay' used previously also have such negative overtones, alluding to the demise of a city caused by a crisis. These days works on shrinking cities mainly focus on the challenges posed by the problem of shrinking and policies leading to solutions to the problem (Steinfuhrer, Haase 2007; Cock, Couch 2012; Galjaard et al. 2012; Lauf et al. 2012; Krzysztofik et al. 2011, 2012; Pallagst 2013).

According to the Shrinking Cities International Research Network (SCIRN), a shrinking city is characterised by at least a 5-year long decline in the population of over 0.15% annually as well as economic transformation processes with some signs of a structural crisis. As early as in the late 1980s Hausermann and Siebel noticed that shrinking is a result of structural changes leading to a new type of city development rather than just another phase of development or a temporary problem (Hausermann, Siebel 1987). Therefore, a question arises whether the above issues also apply to the situation of small towns, and if so, to what extent may small towns shrink? Where is the border of small-town rationality or perhaps in the light of progressing degradation processes, cities should enter a hibernation phase (Krzysztofik et al. 2015)?

In Poland, the subject of a demographic transformation has been one of the social and economic issues which geographers tend to discuss most frequently. In recent years, research has often concerned the topic of depopulation of both rural (Bański 2008; Flaga 2018; Szmytkie, Tomczak 2018; Śleszyński 2016a) and urban areas. In turn, Kantor-Pietraga (2014) worked out a classification of the depopulation of urban centres in the long run. An essential element of her study consisted in indicating the types of depopulating towns defined on the basis of the criterion of demographic potential and the criterion of the relationship of the town towards its region. In the case of small towns, the main factor of depopulation which the author mentions is the adaptation of the local economic base to a free market economy and competition from larger centres and industrial areas. Besides that, she also distinguishes location factors (a small administrative area and no possibilities of further development) as well as spa and recreation functions which exclude some parts of a town area form the residential function. In turn, Krzysztofik and Szmytkie (2018) analyse processes of town depopulation in relation to changes in the economic base. In their analysis they leave out, however, the set of small towns of under 20 thousand inhabitants.

It should be stressed here that the problem of depopulation is relatively often discussed in Poland with regard to big and medium-sized urban centres (Musiał-Malago 2018), such as Bytom and Sosnowiec (Krzysztofik, Runge et al. 2012) or Łódź (Kryńska 2015). While Polish (Kwiatek-Sołtys 2015) as well as foreign (Domhardt 2009; Pirisi, Trócsányi 2015; Prasca et al. 2013; Manfred 2015) authors of studies on transformations of small towns do draw attention to the problem of their heavy depopulation, little attention is given to the process of small town shrinkage. However, some attempts have already been made by Kantor-Pietraga et al. (2012), Szmytkie (2015) and Bartosiewicz (2016). Kantor-Pietraga took two research approaches – the geographic and the functional ones in their study; however, the discussion based on population dynamics covered towns with the population number fewer than 10 thousand and located in southern Poland. In the above-mentioned works the authors do not analyse, however, the phenomenon of shrinking with regard to small towns in Poland in a comprehensive way. And this is a problem which seems to be vital in the case of Poland. Small towns represent nearly 700 of all 900 urban centres in Poland. They frequently play a very important role of service centres for rural areas which surround them or they are a key element in functional areas of larger urban centres. Being conscious of the multidimensional nature of the topic discussed, the authors of this work took measures aimed at singling out a group of shrinking towns from the whole set of small centres in Poland. The main aim of this work is to identify small towns in Poland whose populations are shrinking, using an original methodology. Subsequently, it will be checked how this process translates into the economic transformation which takes place in these centres. In the subject literature, the phenomenon of shrinking cities or towns tends to be perceived as negative, whereas in our opinion this process may have not only adverse consequences, but also some positive aspects connected with reduced population density, a possible

improvement in the standard of living or increased activity of local authorities.

The article consists of four parts. The first one includes the research design. The aim of the following part is to present and explain the demographic processes in small towns which have been taking place over the last few decades. The two subsequent parts are devoted to identifying small towns which are shrinking with regard to their population and economy. This is followed by the discussion and conclusions.

Research design

Methods and materials

In order to identify a group of shrinking small towns on the basis of statistical data, a set of small towns was subject to different processes of verification according to demographic and then economic criteria. At the first stage, it was necessary to exclude those who received the municipal rights already after 2002 from the whole big set of small towns in Poland which in 2014 comprised 691 centres. This decision results from inability to compare statistical materials from the period when they functioned as rural localities. Then, the authors conducted an analysis of changes in the population of small towns between 2002 and 2014 assuming that it was possible to talk about depopulation only when population dynamics fell below 98. The subsequent stage of identifying depopulating centres comprised checking which of them also faced the process of a population decrease in the surrounding area. To achieve this, an analysis of population dynamics for administrative units surrounding small towns in this period was conducted. Next, the annual population dynamics for the group of the selected towns was scrutinised so as to check to what extent the ongoing depopulation processes were permanent and in what proportion the negative population dynamics of a town was affected by an accidental decrease in the number of the population in a short period of time[1]. As a result, the authors singled out centres of permanent depopulation processes in which they observed a drop in the population for each researched time range. In order to show the transformation in the economies of depopulating small towns, the authors used data concerning business entities whose size and structure changes were investigated by means of a modified shift-and-share analysis. It enabled studying changes in the structure of a local economy against the background of ongoing economic changes on a broader scale: in the researched case, against the background of the set of all small towns in Poland (Blair 1991). It is commonly used due to its relatively simple construction and ease with which results are interpreted. In its construct it resembles classical localisation coefficients (utilised in measurements used to gauge the town's economic base (cf. Dziewoński, Jerczyński 1971). In the symbolic notation this method assumes the following shape (Blair 1991):

$$\Delta z_i = z_{ip} (Z_k / Z_p - 1) + z_{ip}(Z_{ik} / Z_{ip} - Z_k / Z_p) + (Z_{ik} / Z_{ip} - Z_{ik} / Z_{ip}),$$

where:

- Δz_i – change in the number of business entities in the economy of small towns in the 'i' branch;
- z_{ip} – number of business entities in the economy of small towns in the 'i' branch at the beginning of the period;
- z_{ik} – number of business entities in the economy of small towns in the 'i' branch at the end of the period;
- Z_k – total number of business entities in the economy of all small towns at the end of the period;
- Z_p – total number of business entities in the economy of all small towns at the beginning of the period;
- Z_{ik} – total employment in the branch and for all small towns at the end of the period;
- Z_{ip} – total employment in the branch for all small towns at the beginning of the period.

The first part of this formula indicates how much the number of business entities would increase in a given branch (the section of the Polish Classification of Activity – 'PKD'), if the economic growth of a given unit took place at the same rate as the development of the region, and includes a set of comparable units. Summing up the

[1] Due to the introduced change in the methodology and statistical data aggregation by Statistics Poland in 2010, the analysis of annual changes in the population was conducted for the years 2002 and 2009 as well as 2010 and 2014.

calculated increments we obtain the answer how the number of business entities in a given unit changes (how the economy develops) in relation to the whole. The second part of this method, in the case researched, allows calculating the change in the number of business entities in individual branches (sections of the Polish Classification of Activity) of the economy resulting from changes between growth dynamics of relevant branches of a comparable economy and general growth dynamics of business entities of this economy. This makes it possible to specify the impact of differences in the structure of the local economy on its development. If the structure of the local economy is the same as the structure of the economy to which it is compared, then the value of the component equals zero. If the given economy of a unit is dominated by business entities of a given branch whose increment is faster/slower, then the value of this component is positive (negative). The third part of this method in the case researched allows specifying if the increment in the number of business entities in a given branch is bigger/smaller than in the corresponding case in relation to a comparable whole.

In the article the method was used to scrutinise changes in the number of business entities in individual branches of small-town economies (calculations were made for each small town in Poland) on the basis of the classification of business entities into four sectors of the economy (I – agriculture, mining and related ones; II – manufacturing and construction; III – basic services; IV – specialised services) from 2002 (the starting year) and 2014 (the finishing year of the research).

Both demographic and economic data used in the paper are taken from the Local Data Bank of Statistics Poland (Polish GUS).

Study area

Towns and cities are currently populated by 60.3% of Poland's citizens, which is 23.2 million people (in small towns fewer than 5 million). The urban settlement network includes 911 centres, among which small towns (691 in total) represent the highest percentage (as at the end of 2014). Considering the demographic potential, the importance of small towns in the urban settlement network is relatively the lowest (from all city size groups). Small towns in Poland are characterised by a rather even distribution in the settlement network. Their number in individual voivodeships is proportional to the size and population of a given region. The density of the small-town network is relatively the highest in the western part of Poland. Small towns constitute a very diverse set of settlements. Due to their size (in terms of the number of inhabitants), small towns can be divided into three main groups. The first one, representing almost a half of the analysed set, includes towns whose number of inhabitants does not exceed 5 thousand people. The second one is populated by 5–10 thousand people, whereas the third one comprises the largest small towns. The number of the last two categories is similar, in both cases being at the level of 180 settlement units. Polish law defines cities using legal and administrative criteria (municipal rights). Cities are designated as such by Poland's government. Cities in Poland trace their roots back to the so-called German Law, which was used to establish cities in Poland starting in the 13th century. Today, settlements are designated as *cities* by a resolution of Poland's Council of Ministers. Formally, a small town may form a separate administrative unit (a so-called urban commune) or form a joint administrative unit with rural communes surrounding it. The research includes all small towns irrespective of their administrative affiliation.

Demographic changes in small towns in Poland

The demographic development of small towns in Poland since 1970 has not generally differed from general tendencies in the country. The intensive development of industrialisation as well as an increase in the birth rate connected with the echo of post-war baby boom of the late 1970s and early 1980s contributed to an increase in population dynamics also in small centres. After 1989, the period of social and economic transformations was accompanied by demographic changes characterised by a drop in the number of births and a lower birth rate, which was also reflected in the case of small towns. There was a rise in foreign emigration, which was most intensive after Poland's accession to the European Union. The aforementioned processes led to a decrease

in population dynamics and the intensification of the process of population ageing. Notable transformations also took place in the regional pattern and they consisted in changes in the spatial concentration of the population, being an effect of changes in the directions and intensity of internal migration. The authors also noticed a decrease in the intensity of migration from rural to urban areas with a simultaneous increase in migration from big cities to suburban areas, enhancing both demographic and economic suburbanisation processes connected with shifting the industrial and service activity outside the administrative borders of urban centres. On the other hand, one may observe a greater concentration of the population in metropolitan areas at the expense of peripheral areas situated far away from larger urban centres resulting from the situation on the labour and educational markets. Between 1970 and 1988, the population number in small towns noted growth of over 30% (from 3,533 to 4,632 thousand). In the late 1990s this trend slowed down and the number of people living in small towns shrank by almost 4% between 1998 and 2015. Considering the whole research period, an increase in the population was observed in the majority of small towns, yet, if about 3/4 units experienced a surge in the population between 1970 and 1978, or even almost 90% in the period between 1978 and 1988, then a mere 28% of small towns noted an increase in the number of their inhabitants between 2002 and 2014, while at the same time 42% suffered a drop in the population (the indicator of population dynamics below 98; see Table 1).

As the volume of depopulation processes is affected by relations between both the number of births and deaths (population growth) and in-migration and out-migration (migration balance), the analysis included relations between the main components of total population growth in small towns. According to Eberhardt (1989), the initial phase of depopulation is characterised by a situation when a low birth rate cannot balance a negative migration rate. Together with the intensification of depopulation processes, the given territory has not only a negative migration balance, but is also beginning to experience negative population growth. Around 1995 there was a significant drop in the number of births following the early stage of economic transition which lasted until 2003 (the lowest value of the birth rate). After that, between 2004 and 2009 it was moving upward, whereas in the recent years there has been a slight decrease. The death rate was slightly higher (between 1995 and 2014), noting the maximum value in 2009 (9.8 deaths per 1,000 population of the units analysed). In the corresponding period the population growth was low, whereas negative population growth prevailed between 2013 and 2014 (Fig. 1).

The influx of people to small towns in the late 1990s was characterised by a downward tendency, then there was an increase till the year 2007 (up to 14.4‰) which was again followed by a decline (up to 10.1‰ w 2014). As for out-migration from small towns, there were slight fluctuations between 1995 and 2001, whereas the 2002–2007 period marked a clear increase in the deregistering of the population. Small towns have been characterised by a negative migration balance since 1998. The main factors leading to contemporary demographic changes irrespective of the size of settlement units included social and economic transformation processes in Poland connected with political changes, the introduction of a free market economy and an increase in the unemployment rate. On the other hand, opening the borders facilitated the diffusion of changes connected with the second demographic transition, which consisted in a rise in the number of divorces, a decrease in the number of new marriages and their postponing, a lower fertility level below the replacement rate, an increase in the average age of mothers at the time of childbirth, changes in the household structure (an increase in the number of one-person households, families without children, informal relationships). These changes affected different size settlement units to varying degrees, permeating from big

Table 1. Population dynamics in small towns between 1970 and 2014.

Population dynamics (base year = 100)	1970–2014	1970–1978	1978–1988	1988–2002	2002–2014
102 and more	544	482	570	370	179
98–102	20	83	33	135	190
over 98	73	72	34	132	268

cities to smaller centres and rural areas. In accordance with the typology by Webb (1963), the most common town type between 2002 and 2014 was type H characterised by real population losses determined, most of all, by migration losses. Type H included almost 1/3 of all small towns analysed between 2002 and 2014. The second most numerous type was type G in which it was the natural loss that was of decisive importance for the decrease in the population (about ¼ of the

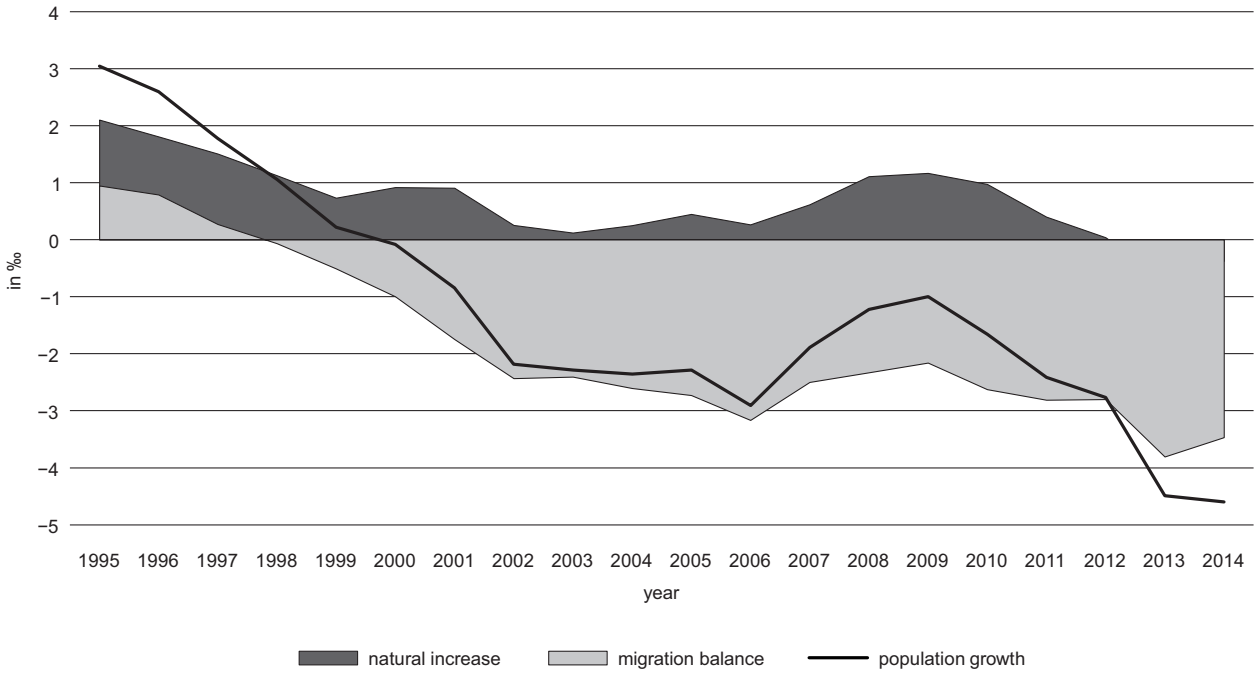

Fig. 1. Population growth in small towns and its components.

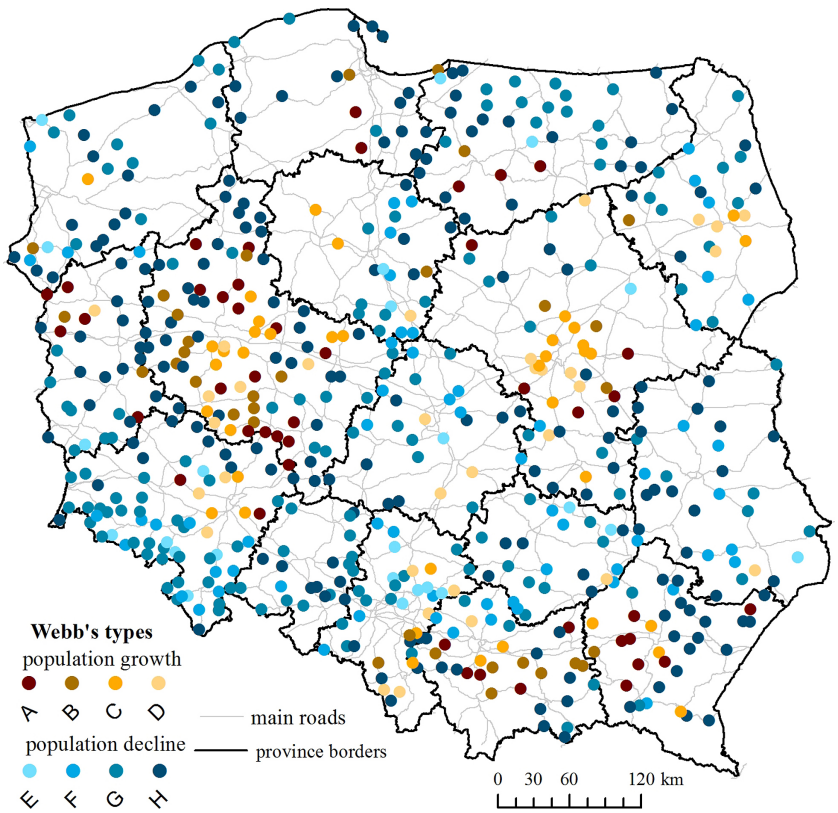

Fig. 2. Demographic types of population according to Webb in small towns in Poland between 2002 and 2014.

analysed units). Towns representing these types were located peripherally in relation to larger urban centres (Fig. 2). In turn, types C and D, where the migration balance was the main component of real population gains, remained within metropolitan areas.

Changes in the population and intensity of the main components of real gains affected, to a large extent, the transformation in the population age structure of small towns. The scale of changes in the participation of individual age groups leading to population ageing did not considerably divert from nationwide tendencies in Poland. In the years 1995–2015 the small urban centres under study noted in total a drop in the share of the pre-working age population and an increase in the percentage of the post-working age fraction. Unfavourable changes also occurred in the structure of the working-age population, that is, ageing of the labour force due to a decrease in the younger working group (mobile – aged 18–44) and a rise in the percentage of the immobile population (aged 45–59 for women and 45–64 for men). Comparing the relations between the older population and children, the authors observed an over 2.5-fold increase in the index of demographic old age (the number of people of 65 and more per 100 of those aged 0–14).

Identification of small towns with rapid depopulation processes

On the assumption that it is possible to talk about the processes of small town shrinkage only when, first, depopulation in the town is of a permanent (long-term) nature, secondly, when the depopulation of the town is followed by a decrease in the population of also its immediate vicinity and, thirdly, when depopulation is accompanied by negative economic processes, the authors singled out through elimination a group of towns which met the requirements of all the criteria set out in the methodological part. Subsequent approaches are, therefore, aimed at the elimination of towns in which shrinking processes do not take place or those which only display the symptoms of a shrinking town. The set

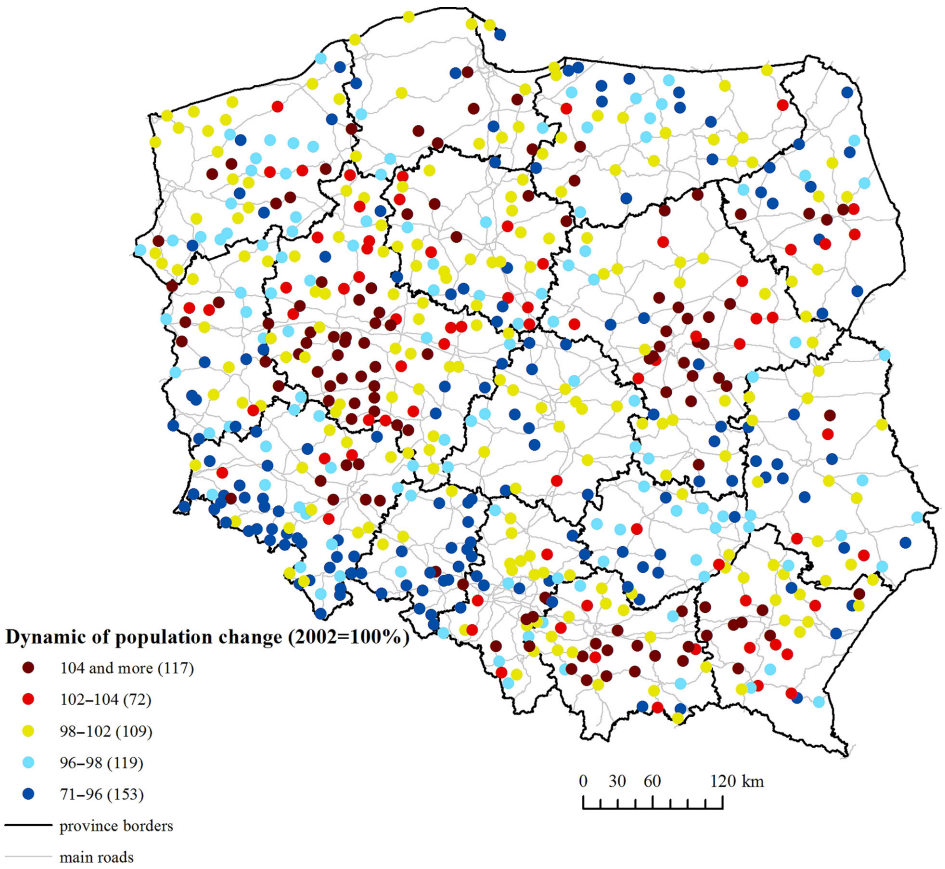

Fig. 3. Population dynamics in small towns between 2002 and 2014 (2002=100).

of small towns subject to further analysis includes 661 small centres whose population dynamics was very diversified in the period between 2002 and 2014 (Fig. 3).

Even though the analysis of changes in the population of small towns between 2002 and 2014 shows that nearly 60% of small towns reduced their population due to the fact that small towns are very sensitive to even small changes, it was decided that it was possible to talk about depopulation only when population dynamics was lower than 98. In the period of 2002–2014 population dynamics for 272 small towns was below 98, and consequently these centres were analysed further (they are marked blue and navy blue in Fig. 3).

The subsequent stage of identifying depopulating centres consisted in checking which of them also went through depopulation processes in the surrounding area. It is important because in Poland most small towns form one organisational unit, a commune, together with its rural surroundings (the rural part of an urban-rural commune) or surrounded by a rural commune which is closely connected structurally and functionally. Hence, the authors adopted the rural part of a commune in the case of urban-rural communes, whereas for those towns which constitute an urban commune it was decided that the rural commune of the same name would be verified as it represents (though not in administrative terms) and may be treated as a small-town zone of influence (this concerns 32 rural communes). Thus, the authors ignored positive or negative population dynamics in an urban-rural commune or another town, if such a town is adjacent to the aforementioned small town – an urban commune. A few towns lack a direct rural zone of influence as adjacent rural areas belong to a different commune, district or town. These towns were left for further analysis and the verification of processes which take place there without an analysis of their surroundings. The set constrained in this way contains, therefore, only 121 small towns, for which low population dynamics (below 98) was observed both in the town and the rural surrounding area between 2002 and 2014 (Fig. 4). As a result, it is possible to talk about apparent depopulation in the case of 151 small towns whose population is admittedly reduced, but at the same time there is population growth in its immediate surroundings, which is

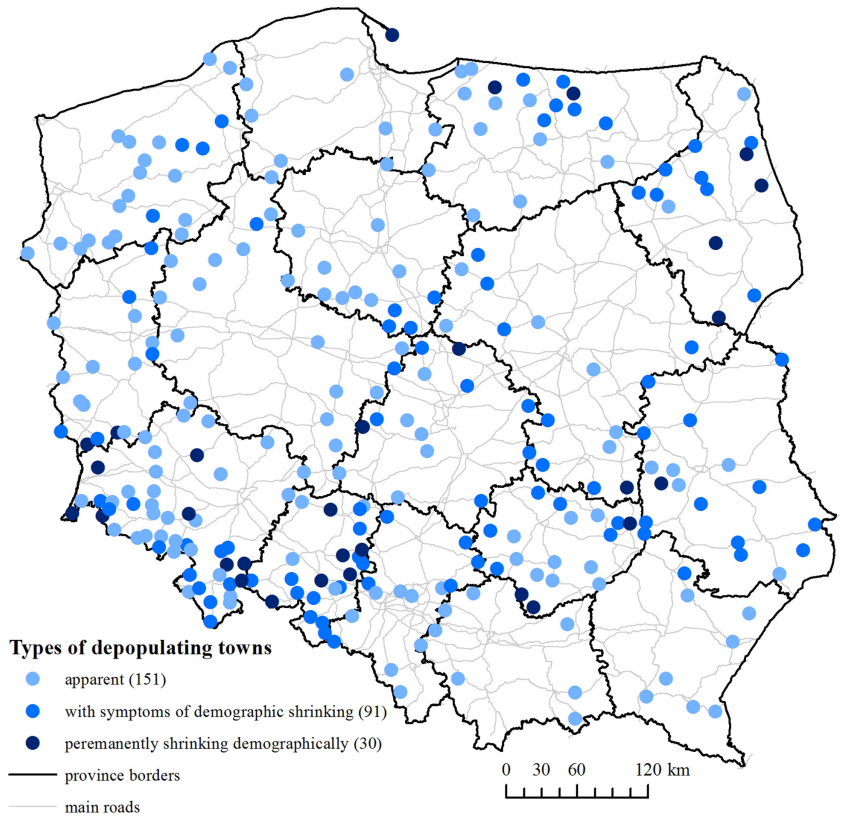

Fig. 4. Types of small depopulating towns.

not without an impact on social and economic as well as spatial processes taking place in the town. In many cases it is a consequence of suburbanisation processes; inhabitants moving from a big town are more willing to choose an area in the close vicinity of a small town, which makes it easier to satisfy their daily needs in a smaller centre equipped with all basic services.

It seems important to review to what extent the ongoing processes are permanent and how the negative town population dynamics is affected by accidental decreases in the population in merely a few years. Naturally, different towns were reported to act differently: some saw an increase in their population at the beginning of the research period only to record depopulation in the last years, others noted in turns periods of growth, stagnation and a decrease in the population in the whole research period. In some centres despite the population decline in the whole researched period the last years saw an increase in the number of inhabitants.

One may talk about permanent depopulation processes (or perhaps even shrinking small towns) when a decrease in the population was observed in each of the researched time ranges. It turns out that only 30 small towns experienced constant continual population losses in that period. Hence, it is possible to talk about demographic shrinking processes in only 30 out of 661 small towns in Poland, assuming the criterion of changes in the population of a town and the area surrounding it in an over 10-year period. They form over 5% of the entirety of small urban centres in Poland (Table 2). They represent different size types, but the largest small towns (over 15 thousand inhabitants) are over-represented in relation to size distribution: the population of one in every ten centres shrinks. At the same time there is no correlation between the degree of depopulation (measured by the size of dynamics of population changes) and the size of the centre (measured by the number of inhabitants).

At the subsequent stages of the research these selected centres were subject to a detailed analysis aimed at showing to what extent the progressing depopulation processes of the town and its surroundings were followed by negative economic changes.

Identification of shrinking small towns in economic terms

Although the process of depopulation requires close attention, it does not always have to lead to negative economic phenomena. This part of the research aims to identify the dynamics of and directions in the changes which take place in the broadly understood economic context of 30 demographically shrinking small towns. Regrettably, in Poland, information about employment in economic sectors is not disclosed, therefore the researchers resorted to a shift-and-share analysis with the use of data on the structure of business entities. The analysed group of depopulating towns is characterised by a considerable diversification of ongoing changes in the local economies. In 13 cases the pace of these changes is lower than for the entirety of small towns in Poland (the result – the first part of the method – see the description of the method in the second part of the paper). Analysing the dynamics of these changes, it is at least twice smaller in 5 of them than for the entirety of small towns. The values obtained in the third part of the method are much more diversified. What is particularly conspicuous is the strong correlation (the value of the Pearson correlation coefficient is 0.74) between the dynamics of changes in business entities (the first part of the method) and the increment in business entities in sector IV of the economy in relation to the entirety of small towns (the third part of the method). This points to the underlying role of specialised (exogenic) services in the contemporary dynamics of local economic

Table 2. Shrinking small towns in Poland: basic information.

Number of population	Number of small towns	Number of shrinking small towns	Share of shrinking small towns
up to 5,000	320 (47%)	11 (37%)	3.4%
5,000–10,000	177 (26%)	10 (33%)	5.6%
10,000–15,000	107 (15.5%)	2 (7%)	1.9%
15,000–20,000	79 (11.5%)	7 (23%)	8.9%
In total	683	30	4.4%

Table 3. Values of part I and III of the indicator calculated with a shift-and-share analysis for the selected 5 shrinking small towns.

Town	Values of part III of the method according to sectors				Real difference in the number of business entities in town between 2002 and 2014	Hypothetical increase in the number of business entities – part I of the method	Difference between real and hypothetical (part I) change in the number of business entities	Difference between real and hypothetical (part I) change in the number of business entities
	sector I	sector II	sector III	sector IV				
Błaszki	0.2	−0.3	−0.3	−0.5	−72	28.36	−100	−354
Ożarów	−0.2	−0.3	−0.3	−0.5	−112	50.17	−162	−323
Żychlin	0.2	−0.2	−0.2	−0.4	−97	72.49	−169	−234
Sokółka	−0.2	−0.1	−0.1	−0.3	−49	168.633	−218	−129
Dobrodzień	−0.2	0.0	−0.2	−0.1	−4	39.42	−43	−110

growth in given small towns. In the case of 5 centres with the lowest values of the indicator calculated on the basis of the measurement value for part I of the method, they are all characterised by a lower increment in business entities in individual sectors of the economy (except two towns where this increment oscillates slightly above 0 for sector I). This is reflected in the juxtaposition of the analysed group of towns on the basis of the sum of coefficients from part III.

Summing up, economically shrinking small towns are those whose increase in business entities is lower for the whole set of small towns (part I) and at the same time lower for individual sectors of the economy than the corresponding one for a given sector for the entirety of small towns (part III)[2]. Consequently, the obtained set includes five small towns in Poland: Błaszki, Dobrodzień, Ożarów, Sokółka and Żychlin (Table 3).

In order to verify the results obtained with the use of the above method, changes in the analysed small towns were investigated between 2002 and 2014 in terms of 9 features grouped into four categories which describe their economic situation[3]. The analyses conducted were twofold and they specify: 1) changes in the position of a given small town considering the level of economic development in the set of small towns in Poland between 2002 and 2014; 2) dynamics of selected features characterising the level of economic development in the set of small towns between 2002 and 2014. In the first case, as in Perkal's method, a simple synthetic indicator was calculated for the entirety of small towns on the basis of nine indicated features separately for 2002 and 2014. Subsequently, the small towns were classified into four categories, on the basis of the statistical measures of their position, separately for 2002 and 2014 (A, B, C and D)[4]. At the following stage 16 types were singled out, pointing to the type of change in the affiliation of a given small town in 2014 as compared to 2002 (Table 4).

Table 4. The way of singling out 16 types of development levels of small towns in Poland between 2002 and 2014.

Type 2002					
A	I	II	III	IV	
B	V	VI	VII	VIII	
C	IX	X	XI	XII	
D	XIII	XIV	XV	XVI	
	D	C	B	A	Type 2014

[2] The research does not account for the results obtained in part III of the method for sector I of the economy, which is connected with the specificity of running a business in the agricultural sector in Poland: there is no obligation to register this type of activity as it is required in the case of other sectors of the economy.

[3] I the labour market and business activity: 1) the number of employees per 1,000 town inhabitants; 2) an entrepreneurial activity rate (the number of entities per 1,000 town inhabitants); 3) the number of business entities in sector IV per 1,000 town inhabitants; II construction and housing: 4) the number of flats per 1,000 town inhabitants; 5) average flat floor space per 1,000 town inhabitants; III technical infrastructure: 6) accessibility to the sewage system (in %); 7) accessibility to the gas system (in %); IV social infrastructure: 8) the number of children in kindergartens per 1,000 children aged 3–5; 9) the number of inhabitants per one library unit in a town.

[4] The four types were singled out separately for 2002 and 2014, where type A includes those towns for which the values of the calculated synthetic indicator were lower than the value of the first quartile (calculated for the whole set in question), whereas type D includes the ones whose value of the indicator was higher than the third quartile. Then, each town was classified into one group (I-XVI), depending on the relation between the type in 2002 and that in 2014.

The results illustrate a change in the position of a given small town in the hierarchy of all small towns separately for 2002 and 2014, pointing to those which during 12 years maintained, improved or deteriorated their position with regard to their economic situation. Among small towns with a shrinking population, 15 noted a drop in their position, and in the case of 10, a decrease was accompanied by changing the affiliation of a given type (these small towns are in bold in Table 5; see also Fig. 5). In the other cases the drop was not connected with changing the affiliation of a given type. The indicated 10 small towns and those (6 small towns) which in both typologies were classified into groups C or D, and consequently did not change their affiliation, are treated as towns characterised by clear economic shrinking processes.

At the second stage, the authors analysed the dynamics of changes being part of individually researched features. The set of small towns with clear depopulation processes is generally characterised by positive dynamics of the features in question. The exception is the situation on the labour market of these towns, which tends to shrink in terms of the quantity (the number of employees).

Even though there is a clear increase in the economic level of the analysed towns for the research period, the pace of these changes seems much slower as compared to the set of all small towns or Polish towns in general. Of the analysed 30 centres, there is none in which all the researched features would show a negative dynamics of changes. At the same time, only as far as technical infrastructure or construction and housing are concerned, there is a growing tendency for the whole researched set, which comes as no surprise and fits in the general trend in Poland observed for over a dozen of years and resulting from massive backwardness in this respect dating back to the period before 1989.

The dynamics of changes in small towns is highly diversified in the case of the remaining analysed features. Can we point in such a situation to those towns which due to the unfavourable dynamics of changes may be treated as towns shrinking with regard to their economic growth? This is not possible, however, due to the aforementioned doubts. What is possible, though, is to use the results concerning the dynamics of change and combine them with the analysis carried out at the previous stage of the research. We obtain a set of four centres: Błaszki, Dobrodzień, Ożarów and Żychlin, upon confronting both research approaches (changes in affiliation to the type according to the conducted classification), treating those towns which are characterised by the negative dynamics of at least three features as shrinking with regard to their economic development. This set is almost identical to the one obtained with the use of the first method, namely a shift-and-share analysis. The towns in this relatively small group may be treated as shrinking in the light of definitions prevailing in the literature. Do the identified centres have any features in common?

They are distinguished by their peripheral position in the settlement network on the border of two voivodeships and at a distance from large urban centres. Three of them are towns with the population of up to 5,000, and only the population of Żychlin is larger (over 8,000). They are characterised by a significant drop in the number

Table 5. Affiliation of shrinking small towns to the appointed types of changes in the level of social and economic development (Table 4).

Type 2002					
A	–	Błaszki	Świeradów Zdrój	Strzegom, Ząbkowice Śląskie, Głuchołazy	
B	Dobrodzień	Lipsko, Kazimierza Wielka, Ożarów	Bogatynia, Wołczyn, Siemiatycze	Ziębice, Strzelce Opolskie, Krapkowice, Paczków, Hel	
C	Poniatowa, Żychlin, Działoszyce, Pieniężno	Węgliniec	Ozimek	–	
D	Gozdnica, Korsze, Dąbrowa Białostocka	Ścinawa, Małomice, Sokółka	Łapy	–	
	D	C	B	A	Type 2014

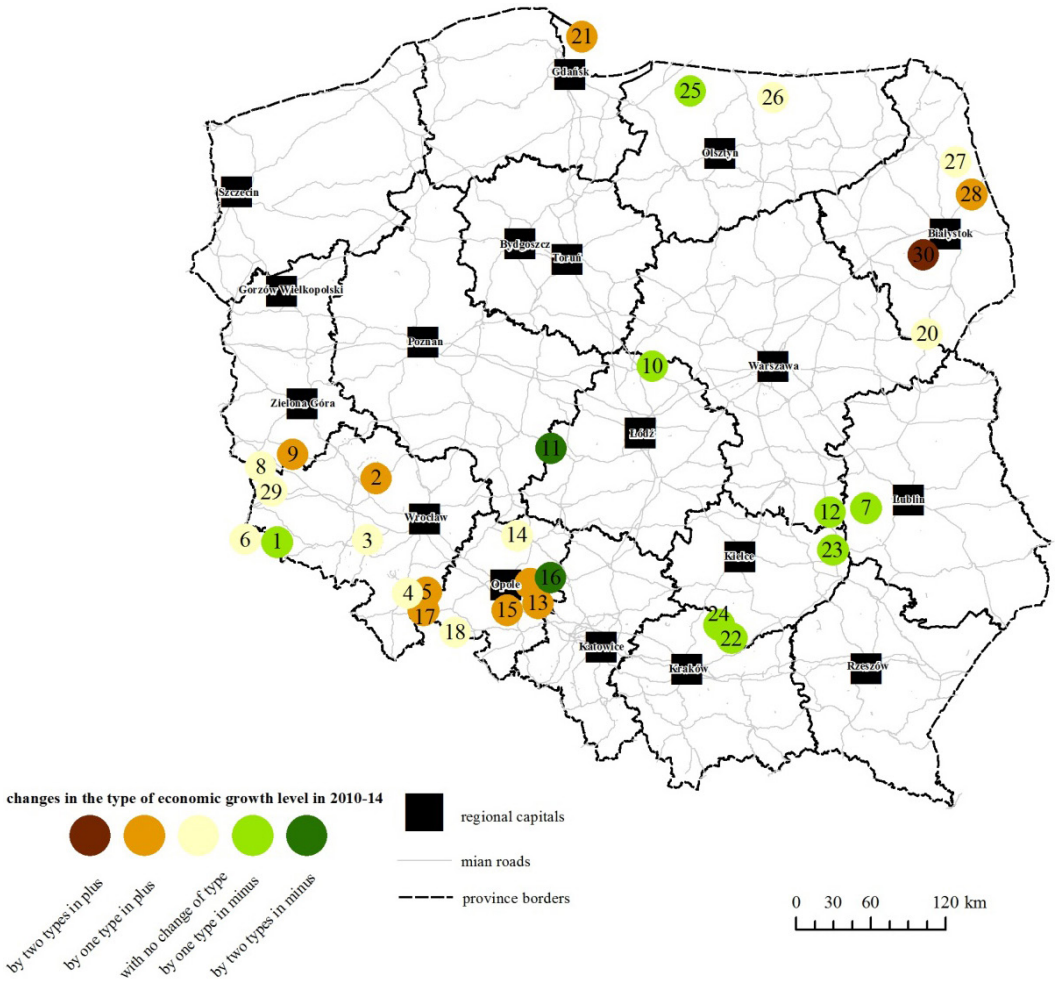

Fig. 5. Changes in the affiliation of depopulating small towns to the type of economic growth level (2002–2014). 1 – Świeradów Zdrój, 2 – Ścinawa, 3 – Strzegom, 4 – Ząbkowice Śląskie, 5 – Ziebice, 6 – Bogatynia, 7 – Poniatowa, 8 – Gozdnica, 9 – Małomice, 10 – Żychlin, 11 – Błaszki, 12 – Lipsko, 13 – Strzelce Opolskie, 14 – Wołczyn, 15 – Krapkowice, 16 – Dobrodzień, 17 – Paczków, 18 – Głuchołazy, 19 – Ozimek, 20 – Siematycze, 21 – Hel, 22 – Kazimierza Wielka, 23 – Ożarów, 24 – Działoszyce, 25 – Pieniężno, 26 – Korsze, 27 – Dąbrowa Białostocka, 28 – Sokółka, 29 – Węgliniec, 30 – Łapy.

of the employed and a reduction in entrepreneurship. The towns in question do not play any vital role in the settlement or economic pattern. They are towns of local importance whose reach is *de facto* limited to the administrative boundaries of the commune of which they are the seat.

Discussion

The presented research, as well as the conclusions arising from it, was conducted in the macro-scale and the identification of shrinking small towns took place on the basis of quantitative data, both demographic and economic. This research bridges the gap between the methodology isolating small towns which are going through the process of shrinking and the empirical analysis of the whole set of small towns in Poland, not only considering demographic changes, but also changes in their economic activity. Nevertheless, the authors are aware of the complexity of the topic. It has not been explored to the full. First, this research is conducted in a macroscale, which excludes the possibility of indicating individual features which may determine the ongoing demographic or economic processes. As a result, further research seems necessary, for instance in relation to changes in the lifestyle, human capital or a spatial structure in a selected group of small towns. New research fields may bring answers to questions concerning the border of depopulation processes for a small town, when it is possible to talk about its demise and what consequences

it brings. It seems of particular importance for small towns to ask a question about the opportunities for their economic activation in the era of the demographic crisis. One interesting thread of the research into shrinking towns should also be peripheralisation. Research shows that centres identified as shrinking with regard to their population and economy tend to be located peripherally in relation to large urban agglomerations.

This paper does not discuss the credibility of statistical data published by Statistics Poland, although some authors (Śleszyński 2016b) question it, drawing attention to a considerable underestimation of data in metropolitan centres and an appreciable overestimation in peripheral ones, nevertheless, according to the authors, this has no significant impact on the presented method or the research on shrinking towns, in which the authors do not negate depopulation processes, but clearly show that they are still not processes of full shrinking of small centres.

The research has shown no statistical significance of the problem of shrinking small towns, however the observed trends indicate that the shrinking process may occur particularly in depopulating regions in the future. In this situation it seems very important to devise policies for communes and regions in the area where this process takes place. The authorities should work out national or local strategies which would be directed at commune development in the conditions of small town shrinkage. It is necessary to create a long-term vision of development for small urban centres which are subject to shrinking processes in cooperation with the local community, considering an individual approach to each case.

Conclusions

The research into the economic transformation of small towns in Poland shows strong regional differences. There are small towns of considerable dynamics and population growth located within the impact area of cities as well as depopulating towns characteristic of almost the rest of Poland. Depopulation processes are affected by general demographic tendencies in the country, consisting in a drop in the birth rate and an outflow of the population from peripheral areas leading to the intensification of the phenomenon of population ageing. With regard to the title of this article, it is worth trying to answer the question whether it is possible to talk about the process of small town shrinkage? Formally, the answer is in the positive, as every entity separated functionally and administratively may reveal demographic as well as economic features which point to shrinking processes in progress. Unlike larger cities, small towns cannot be analysed without the area surrounding it, which is strongly connected not only functionally but also, in the majority of cases, administratively.

Furthermore, the process of depopulation in the whole set of small towns is not as common as in the case of large cities in Poland. While an absolute decrease in the population was recorded in 60% of towns between 2002 and 2014, it is only for slightly above 40% of small towns that the dynamics in the analysed period was below 98%. Moreover, for a mere 18.3% of small centres the low population dynamics concerns both the town within its administrative boundaries as well as the area surrounding it (a micro-region), and it is additionally accompanied by a permanent drop in the population for only 4.5% of small towns. From such a small group only four centres which deal with multi-faceted shrinking processes were singled out.

Finally, the conclusions of our paper seem to be important for local authorities. On the one hand, we offer ready-to-use and simple tools that measure shrinking processes on a local scale. On the other hand, we prove that a population decline does not always have to be a negative phenomenon for the general socio-economic position of a small town. In our opinion, local policy makers should be aware of this.

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