GEODEMOGRAPHIC TRANSFORMATIONS OF THE RURAL AREA IN THE HISTORIC REGION OF MOLDOVA IN POSTCOMMUNIST PERIOD

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Abstract

This paper examines geodemographic transformations of the rural area in the historic region of Moldova in postcommunism. The population of a territory, with its characteristics (number, natality, mortality, education and occupation) influences the economic, social, cultural aspects. All these characteristics are closely related and lead to the highlighting of positive or negative changes. During the communist period and after, Romanian village has undergone major transformations, being in a continuous process of change, which led to change of the localities specific, disrupting demographic, economic and social balance. First major changes in the traditional village appeared in the communist era, when massive processes of collectivization and industrialization from ‘50 - ‘70 led to change related to lifestyle habits and local economic activity. Thus the aim of this article is to identify the significant geodemographic changes occurring in the rural area during 1990 - 2011 in the historical region of Moldova. The study takes into account the region because, it has been highlighted in the communist period by the highest values of average annual growth rate compared to the rest of the country. Currently this area shows some demographic problems such as low birth rate, high mortality, aging and positive migratory balance. Also the paper highlights a number of classifications of rural area in this field as a result of geodemographic transformations occurring during that period.

Keywords: demography, rural area, geodemographic transformations, Moldova.

JEL Classification: J , R .
1. Introduction

After the change of political and administrative regime in 1989, Romanian society enters in a complex process of transition from a communist country to a European one. A series of changes have place in all components of Romanian society, and the rural space which represents one of the main administrative component is a subject of those changes. So, the aim of this paper is to examine geodemographic transformations in the rural area in the historic region of Moldova in post communist period.

Also this article aims at presenting geodemographic rural issues which are conditioned by national demographic processes. The idea of the article started from the consideration that tracking demographic changes appeared after the fall of the communist regime in 1989, is an actual topic that deserves treated carefully.

The main problem that will be tracked refers to the impact of geodemographic transformation of rural space in Moldova. Therefore, one of the major transformations, which must be given importance, is the demographic evolution in the rural area and the effects of these processes in different areas of socio-economic life. Geodemographic trends affecting rural areas in Moldova region, highlighted in demographic forecasts are discussed in detail in this article.

In order to classify geodemographic transformations in the rural area from Moldova I have highlighted demographic and administrative changes presenting the consequences of regional development with influences over the community and space.

The study has three main objectives: first, is to identify the main transformations underlying demographic changes appeared in rural areas of the historical region of Moldavia, the second is to identify the factors that led to these changes, and the third is the development of a classification typologies in rural communities by major demographic changes.

2. Theory and Methodology

2.1. Rural space

Any analysis of the rural area, designed to highlight the features and functions of defining involves - first - outlining the concept of rural space. (Mathieu, 2006)

The current notion of rural area (rural, rural population, rural areas) characterizes an ensemble that is clearly differentiated from urban areas and also delimited conventional statistical and administrative units. Of course, the
criteria for defining urban or rural character of a community or space that reveals various concepts adopted synthetic, can be summarized in three categories: economic, sociological and geographical. (Otiman Păun Ioan, 2010)

Many specialists (Lemoine F.; Pierre George, Ioanid; I.Bold etc.) define rural as opposed to urban areas as “area characterized by a popular and relatively low density and prevalence of farming”.

“As defined in the European Charter of Rural Area, covers an area rural or coastal interior is filled with villages and small towns, where most part of the land is used for:

a) agriculture, forestry, aquaculture and fisheries;

b) economic and cultural activities of the inhabitants of these areas (crafts, industry, services);

c) arrangements for non-urban areas for leisure and fun (or natural reserves);

d) other uses (excluding housing).”

At European level, rural occupies 85% of the territory, with pronounced gap in relation with urban environment relatively to quality of life. In the European vision the village has three main functions: economic (agriculture, forestry, forestry, handicrafts etc.), ecological function (aimed at the conservation of natural resources, green spaces, environmental, landscape and biodiversity) and socio-cultural function designed to ensure and broaden local associative life. (Hoggart, 2014)

2.2. Methodology – geodemographic analysis

Geodemography can be defined as a classification of the entire population, depending on the type of area where they live. Brown defines geodemography as follows: “Analysis of spatial and socio-economic aspects of structure of towns and cities, facilitating the development and implementation of typologies in an area that proved to be useful descriptors of the behavior of people and for future analysis”. (Otiman Păun Ioan, 2010)

Geodemographic analysis involves several major steps aimed at first, the space on which the analysis is done, the timeframe, and demographic phenomena facing society today. Thus, starting from the presentation of space and period, applying a multivariate analysis of demographic variables results a hierarchy of zones, highlighting both the risks and prospects. (Tonks, 1990)

For a complete characterization of the countryside in the historical region of Moldavia, the analysis included a set of relevant indicators to highlight the geodemographic transformation of post-communist period.

Working methodology has started with geodemographic analysis by collecting data from demographic and Statistical Yearbooks, Tempo Database,
and then cleaning of data with statistical methods using different tools such as SPSS, FoxPro and Excel. Then I calculated the representative demographic indicators in order to highlight the transformation in the rural space of historical region of Moldova. The transformations were revealed by GIS techniques, using cartographic methods to more easily highlight the main geodemographic changes during the analyzed period. Another method of presenting the results was using diagrams and cartodiagrams.

Article contains statistical data about the administrative-territorial division of the region and statistical data regarding number, demographic structure (births, deaths, marriages, divorces) and also, its natural movement between 1994 - 2009.

Analysis of the rural areas with these indicators is intended to have a higher degree of objectivity and to provide a picture of the post-communist period for the demographic situation. The prerequisite in the selection of indicators was that they express major transformations facing rural areas in the area.

Analysis of demographic change in rural areas has led to the realization of topologies and their classification being determined using geographic and cartographic methods depending on demographic factors that were taken into account. Therefore, in the study were performed the following steps: collecting statistical data, data processing by multivariate statistical methods such as indicators method and then mapping the results obtained, following then interpretation of the results in order to create typologies of geodemographic map area.

Furthermore the study was based on quantitative statistical data from the last three censuses, for the period 1990-2011. Also for this data have been applied indicator method in order to classify the rural area for every calculated indicator such as population dynamics, population density, and fertility rate. Ascending hierarchical classification method has been used as well for several indicators; in this way typologies being made that were based on variables. We chose relevant demographic variables in order to highlight transformations in rural areas according to the type of population, population density, depopulation aging of population. Thus, I classify areas accordind to the demographic transformation where is noticeable vulnerable areas with an aging population, low birth rates and low educational level, and areas where they are less vulnerable villages where demographic variables are balanced.

To evidentiate the geodemographic characteristics were calculated following indicators (rate of natural increase, net migration rate, the intensity of depopulation, the ratio of elderly people in the population, the aging index, the index of demographic potential, and the total dependency ratio for old people)
for each of the 635 municipalities in the region. Then, based on standardized values of the variables was calculated a global indicator (the demographic index), which allows the classification of settlements in a hierarchy in terms of the demographic factor.

2.3. Rural areas, in the historical region of Moldova

In this article, as can be seen in Fig 1, I considered that the present counties of Bacau, Botosani, Galati, Iasi, Neamt, Suceava, Vaslui and Vrancea form the historical region of Moldavia. The region is located in the North-East of Romania, fully occupying the North-East development region and in the Southeast Region are just Galati and Vrancea counties.

Analysis of this space was made for the period 1990-2013. With an area of 46,173 km², Moldavia region represents 19.4% of the country. From the administrative point of view in 1990 was 578 common, 29 cities and 12 municipalities, and in 2011 there were 635 communes, 34 cities and 21 municipalities. In this period territorial organization changed significantly in the number of rural municipalities increased by 57 common compared to 1990. The county with the largest difference is Vaslui where have been formed a number of ten new communes, followed by Vrancea with nine newly created commune, followed by Suceava and Neamt each with 8 communities. The country where administrative organization had suffered very little, is Botosani, where created only 3 communes.

The counties of historical region of Moldova

Fig. 1.
In the year 2013 rural areas of Moldova region comprised total of 635 communes and a total of 2925 villages.

3. Results and Discussion

3.1. Geodemographic transformations

The term “geodemographic transformations” is currently used to signal changes in the demographic processes with implications for the geographic areas (with reference to the overcrowding and underpopulation) in welfare (decreased fertility and aging), and economic development (unemployment) applied to a territory. Transformations are always measured against a baseline; in fact they represent a deviation with respect to a normal situation.

Geodemographic transformations are determined by the social conditions of the population in a region. These conditions relate to: the relationship between the population and the other social organizations (the accessibility to social services educational institutions, training and local infrastructure), functionality and economic situation in that space. Social conditions are closely related to all territorial bodies (economic, cultural, political and ideological). (Bar, 2010)

There are many types of geodemographic transformations such as:
- Local Transformations on territory - extending space for buildings on the expense of agricultural areas.
- Social transformations related to local infrastructure and living conditions in the space (transport infrastructure, healthcare and education).
- Economic transformations related to the dissolution of areas where people could carry out income generating economic activities (abolition of local enterprises of reduction only in the subsistence agricultural activities).
- Transformations related demographic decline and its consequences dynamics and social structures. These transformations are accompanied by other phenomena such as increasing inequality, the spread of the region’s population; increase in migratory movements; changing demographic structures of the population in the countries of Moldova.

First we wanted to achieve a geodemographic sketches for the transformations that occurred after the communist, they were divided into four categories:
- Administrative transformations;
- Transformations in the number and structure of population;
- Transformations on natural movement and migration;
- Transformations in demographic behavior
- Transformation in demographic communities at the level of the territory

Within each category of transformation are analyzed triggers, progress of transformations, the effects of these changes, as well as highlighting areas where impact was major by creating typologies with favored or disfavored demographic areas.

3.2. Administrative transformations

During the communist period and after, Romanian village experienced major transformations, being in a continuous process of changes that are altering the specificity of rural areas, disrupting the demographic, economic and social balance. The first significant changes of traditional village emerged during communist period, with processes of collectivization and mass industrialization in 50s and 70s, which led to changes related to lifestyle, local customs and business. In Fig 2 and Fig 3 is represented the evolution of communes and villages between 1990 and 2012. As can we see a special year was 2004 when a significant number of villages where transformed into communes.

**Evolution in number of communes**

*Fig. 2*
Since 1990, the rural area has entered a new phase, characterized by economic problems and major rural changes. Economic transformations of this period determined, at least for the period 1990-2000, an increase of process of ruralization, so rural and agriculture played an important role for the population affected by economic changes (Raluca-Ioana Horea-Şerban, 2013). To note, are a number of demographic processes occurring with the new period: enhancing urban-rural migration, deindustrialization areas, occupying the majority of the rural population rural, subsistence farming on a large scale (Brockerhoff, 1993).

In the rural communities are important natural factors and economic and historical conditions that favored the emergence of localities and changes in their territorial administrative organization during post-communism (Blaga, 2008). The comparative evolution of settlements after 1989 and their transformation trends are due primarily to demographic policies supported by the new regime in 1990. In Table is presented the administrative organization of historical region of Moldova in the year 2012.

For this period, 1990-2011, can be seen physiognomy of localities (and therefore their progress, locate areas with significant changes and creating typology of communes affectation geodemographic processes) and localities, main tasks were seriously disrupted by social, economic and political changes occurred.

In terms of the administration, region of Moldova has changed the territorial organization so were newly created a number of:
- 9 municipalities;
- 5 cities
- 57 communes (of which 28 villages were converted into communes)
- a total of 71 villages appeared
Administrative organisation of Moldova territory, on December 31, 2012

Table 1

<table>
<thead>
<tr>
<th>Moldova region</th>
<th>Total area (km²)</th>
<th>Number of towns and municipalities</th>
<th>Number of which: municipalities</th>
<th>Number of communes</th>
<th>Number of villages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>23,8391</td>
<td>320</td>
<td>103</td>
<td>2,861</td>
<td>12,957</td>
</tr>
<tr>
<td>Moldova</td>
<td>46,173</td>
<td>80</td>
<td>21</td>
<td>85</td>
<td>4,295</td>
</tr>
<tr>
<td>Bacău</td>
<td>66,21</td>
<td>7</td>
<td>2</td>
<td>71</td>
<td>3,333</td>
</tr>
<tr>
<td>Botoșani</td>
<td>498,6</td>
<td>5</td>
<td>2</td>
<td>78</td>
<td>3,444</td>
</tr>
<tr>
<td>Iași</td>
<td>54,76</td>
<td>16</td>
<td>5</td>
<td>93</td>
<td>4,18</td>
</tr>
<tr>
<td>Neamț</td>
<td>58,96</td>
<td>5</td>
<td>2</td>
<td>78</td>
<td>3,444</td>
</tr>
<tr>
<td>Suceava</td>
<td>84,53</td>
<td>3</td>
<td>5</td>
<td>98</td>
<td>3,79</td>
</tr>
<tr>
<td>Vaslui</td>
<td>53,18</td>
<td>5</td>
<td>3</td>
<td>81</td>
<td>4,49</td>
</tr>
<tr>
<td>Galați</td>
<td>41,66</td>
<td>4</td>
<td>2</td>
<td>61</td>
<td>1,80</td>
</tr>
<tr>
<td>Vrancea</td>
<td>48,57</td>
<td>5</td>
<td>2</td>
<td>68</td>
<td>3,31</td>
</tr>
</tbody>
</table>

Administrative and territorial organization

The changes in the organization of territorial administration historical regions of Moldova are obvious. These transformations are clear, not only because of changes in the territorial organization of administrative units, but also by observing the changes in the dynamics and structure in the population of Moldova, during 1948-2011 Censuses. In 1948, urban and rural distribution was unbalanced; the urban population was only 19.5%, while in rural areas being more than 80% of population. However, these values were not maintained in this way, as towns and cities after 1990 has received a big stream of people from nearby villages or even distanced, so at the census of 1992, there were 45% people in urban and 54.3% rural population. This balance, was possible due to new policies issued after 1990, when freedom of movement was possible and people was driven to seek a better life in towns and cities. Therefore these geographical mutations of inhabitants have entailed overpopulation and depopulation of some areas related to others.

3.3. Transformations in the number and structure of population

Historical development, social and economic transformations that Moldova historical region has experienced in recent years, led naturally to evolution of population structure and its characteristics.

It is important to highlight significant changes that occur between population and economy, and how the population size and demographic...
structure and socio-economic causes an efficient development of the economy. The ratio of these two categories, is very important, and must be determined, namely how growth and material wealth increases/decrease in population and its spatial distribution.

**Distribution of population by area**

*Fig 4*

The population of a territory by its characteristics (number, natality,
mortality, education and occupation) influences the economic, social, cultural space, respectively. All these characteristics are closely linked and lead to the highlighting of the positive or negative transformations.

As we see from Fig 4 and Fig 5 the distribution of population is mainly in Podisul Central Moldovenesc (25,2%) and Subcarpatii de Curbura(25,2%). The rest of population is almost equally distributed in the other landoforms (e.g. Carpatii Occidentali, Subcarpatii Moldovei, Podisul Sucevei, Campia Jijiei, Campia Moldovei and Lunca Dunarii).

**Distribution of population by area**

![Distribution of population by area](image)

**The numerical evolution of the rural population**

The evolution of the population in historical region of Moldova shows first that in the last 21 years prior to the census of 2011; population growth was low compared to the communist period. Since 1990, the population decreased year by year both due to negative external migration balance and, to a negative natural balance of population. In 2002, only 10 years after the first census of the post-communist period, the population of Moldova has decreased by 105,000 persons and this trend has continued and in 19 years the population has decreased by 607,000 people and is projected to decrease in the near future. At this decrease contributed, in addition to reducing female fertility at a level that does not provide even simple reproduction of the population, high levels of mortality in recent years.

In Fig 6 is presented the evolution of rural population between censuses.
form 1912 until present. Can be seen an inflection point represented by year 1977. An increase in number of the population has been taken until the census form 1977 and then occurred a continuous decrease in the number of population. After 1990 the downward trend has continued with small variations in 2002 and 2011.

**Evolution of rural population from between censuses**

The rural population of Moldova in 2011 was 2.39 million people (representing 57.1% of the region), reaching below the 2.42 million people in 1948 (representing 80.4% of the region). The comparison is not even relevant to that region of Moldova in 1948 had a total population of 3,000,000, with a million and a little more than in 2011, ie just over 4 million residents.

Fig 7 shows the evolution of the rural population in the period 1990-2013. During this evolution are highlighted several distinct stages influenced by various disturbing factors, such as political and social changes, which led to these transformations. In the early post-communist period in 1992 the rural population was quite small compared to the urban population, accounting for 80.4% of the region. In 2011, it reached equilibrium, with 57.1% of the rural population.
3.4. Transformations on natural movement and migration

Social transformations of the period made the Romanian village are characterized by major changes, determined by uneven development of the way villages. In this way, rural profile is dominated by several post-communist transformations, starting from rural development, located in the peri-urban sprawl, to traditional country, dominated by agricultural practices for their own household and family.

It is known that the Romanian rural area has undergone major geodemographic changes legally, due to increased territorial movements, migratory flows between environments that have led to overcrowded peri-urban areas around major cities and depopulation of villages, creating major regional differences.

In Fig 8 is presented the evolution of natural growth in postcommunist era. We can see that until 2002 the natural growth has been positive and from 2002 until 2012 the natural growth has been negative. Also can be seen a descendent trend of this indicator.
Regarding the migratory balance, from Fig 9 we can see that this indicator was negative in the considered period, meaning that a significant number of people emigrated in other countries from the world or inside Romania in other counties. The period from 2012 until 2012 the migratory balance has been positive.
3.5. Transformation of demographic behavior

The indicators of demographic behavior are very important in order to understand the evolution and phenomena related to population. In Fig 10 is presented the evolution of population based on age groups, for male and female population in two distinct years 1990 and 2013. At level of male population the number of young people was higher in 1990 than 2013. Moreover the number of old male population is higher in 2013 than 1990. Almost the same evolution is recorded for the female population. Thus we can talk about an aging process inside the rural population, fact that can be observed in the pyramid of age in Fig 12. Another important set of indicators presented in Fig 11 that state the process of aging (index of depopulation aging, dependency rate and the ratio of elderly population form total population). The ratio of elderly population is higher in 2013 than in 1990, also ratio of elderly population form total population, showing once again the aging of population. Moreover the dependency ratio shows that number of young people is smaller in 2013 than 1990.

Evolution of population by age groups

Evolution of population by age groups

Fig. 10
From the point of natural growth rate, the distribution of this indicator in historical region of Moldova in year 1990 and 2013 is represented in Fig 13 and Fig 14. As can be seen in 1990 the natural growth rate was positive in all regions for considered area. Contrary, in year 2013 an important number of counties in the region have a negative natural growth rate. Also regions with high natural growth rate are far fewer than in 1990. Predominant are zones with small growth rate, between 2-7%.

**Population piramid**

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Natural growth rate in 1990

Fig. 13

Natural growth rate in 2012

Fig. 14
3.6. Demographic transformation of communities in the territory

In order to indentify the transformations that has been placed at the level of communities, in postcommunist period, we take into consideration the population in 1990 and 2013. Further more I calculate degee of depopulation and finally I classified the areas be the degree of depopulation.

In Fig 15 and 16 is represented the distribution in number of population in year 1990, respectively 2013. Thus we can distinguish five typologies of rural area, classied by population size as follow:

- Localities under 3000 inhabitants, prevailing in Vest part of Suceava County (mountain area), southwestern region of Vrancea county (Sub-Carpathian zone) and Vaslui county.
- Localities between 3001 and 5000 inhabitants, prevailing in Botosani, Neamt, Iasi and Bacau counties.
- Localities between 5001-6000 prevailing in the centreof Bacau County.
- Localities with 6001-900 inhabitanst in Galati county (Roamanian Plain).
- Localities above 9000 inhabitants distributed aroung urban areas form entire region.

The most significant differente between 1990 and 2013 have been placed 4 diferent areas: Vrancea, Vaslui counties, west side of Suceava county and center of Botosani. So we can idetiify those 4 areas with demographic problems.

Depopulagted rural spaces can be de defined as “areas in demographic decline” due to emigration of people. The zones with extreme depopulation can be observed in Fig. 17 where is presented a map with classification of rural space, based on demographic risk of depopulation. The localities maked with red colour are the most affected by the depopulation fenomena. In those localities over 50% of inhabitants have emigrated or died. The map was realisated based on the mean annul rate of increase for the period 1990-2013. In realized map, the zones with white colour represent urman area and also the localities appeared after 1990.
Thus we classified the localities based on the intensity of the depopulation in five categories:

- Zones without depopulation, with positive values (228 communes)
- Weak depopulated zones, the indicator range between 0-(-20) % (250 communes)
- Depopulated zones, (-20)-(-30) % (40 communes)
- Very depopulated zones, the values range between (-30) – (-50) % (26 communes)
- Zone with extreme depopulation, over -50% (21 communes)

Counties with extreme depopulation are Suceava, followed by Vaslui and Neamț.
4. Conclusion

In conclusion we can state that significant geodemographic changes occur in the rural area during 1990-2011. Another important aspect to note is the occurrence of migratory phenomena which led to depopulated zones. Furthermore, there is a change in demographic behaviour which led to low birth rate, high mortality, aging, and positive migratory balance.

Also, we can note a process of accelerated aging of the population. At the administrative level, also occurred important transformations. The main triggers for those transformations were socio-economic measures adopted by the political regime occurred after 1989. Thus, it is considered necessary to adopt sustainable social policies at the local level, especially in terms of demographic decline and preparation of projects / programs related to these processes which are in a big dependency in order to create sustainable development of regions.
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