Demographic ageing vulnerabilities in the North-East Region of Romania

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Keywords: demographic vulnerability; population dynamics; demographic ageing; demographic dependency

Abstract: The phenomenon of demographic ageing can be considered a social hazard which, depending on its size, can produce strong socio-economic imbalances in the region or state in which it occurs. This phenomenon takes place independently and cannot be easily stopped by legislative measures, as it is known that the restoration of structural imbalances in relation to age requires a long time. In Romania, the transformations that took place after 1989, in the political and economic system, in the social life, as well as in the mentality of the people, brought about important demographic changes. Therefore, the number of the population continuously decreased year by year, the demographic ageing along with the decrease of the birth rate and the increase of the number of emigrants being the main demographic phenomena that made their presence felt. These phenomena have manifested themselves mainly in rural areas. This paper aims to highlight the scale of the demographic ageing process in the rural areas of the North-East Region and to assess its socio-economic consequences in the medium and long term.

1. Introduction

The issue of vulnerability has arisen much interest among specialists in recent years. According to Oxford Learner’s Dictionaries, it is associated to “the fact of being weak and easily hurt physically or emotionally”, while The United Nations Office for Disaster Risk Reduction (UNISDR, 2017) brings forth “the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard”.

Dealing with demographic ageing induced risks, the present paper gravitates around the concept of social vulnerability, which is triggered by multiple factors, such as age, migration, revenue, health condition (Wisner et al., 2004). Consequently, sociodemographic variables are often taken into consideration when tackling this topic, along with other characteristics, as for example the economic situation, the mental /
physical status (United Nations, 2001). Busetta and Milito (2010) argue that socio-demographic vulnerability has two dimensions: an objective one (based on the social, economic and demographic features of individuals) and a subjective one (related to their perception of uncertainty, derived from self-reported opinions).

Although not exhaustive from this point of view, the Romanian literature in the field has been enriched with different preoccupations of linking the concept of vulnerability to human-geographical aspects, often also pointing out the impacts of demographic risks - (Surd et al., 2007; Bâlțeau and Costache, 2009; Socorovschi, 2010; Șorcaru, 2013; Todor, 2015). Demographic ageing vulnerability is associated with changes in the behaviour of the population in terms of social life, but it is also correlated with the local economic situation.

Demographic ageing vulnerability in the North-East Region began to make its presence felt especially after 1990 when, with the start of Romania's transition towards a democratic system, numerous social and economic changes took place, which forced the population to adapt to the new living conditions. The most affected were rural and mono-industrial regions which, following economic restructuring, were affected by massive unemployment and the degradation of living conditions, which led to mass migration to other cities and especially abroad. Following migration flows, the labour force dropped numerically, the share of the elderly rapidly increased, while the birth and fertility rates decreased far below the replacement level of the generations, leading to depopulation in extensive areas (Ghețău, 2007; Rotaru, 2009).

The present paper aims to highlight the dimension of the demographic ageing process within the North-East Region, at the same time pointing out the current spatial differences that exist within the territory.

2. Materials and Methods

Through this article, we aimed to identify areas with different degrees of vulnerability to demographic ageing by grouping them into several types of vulnerability. In this sense, we identified and used a set of four demographic indicators that best illustrate demographic vulnerabilities:

- the natural balance - calculated as the difference between the birth and death rates
- the demographic dependency ratio - expressed as a measure of the number of dependents aged 0 to 14 and over the age of 65 in relation to the total population aged 15 to 64 (it is illustrative of the economic and social burden on the working-age segment of the population – Ungureanu and Muntele, 2006)
- the demographic ageing index – relates the number of persons aged over 65 to the population aged under 14
- the ageing of the active population – represents the percentage ratio between the population aged 50-64 and the elderly population of over 65

The above mentioned indicators were calculated based on the data provided by the Romanian National Institute of Statistics (INS) and mapped using Philcarto and Adobe Illustrator programs. Following the process of data standardization and normalization, we performed a hierarchical ascendant classification in order to separate types of demographic ageing vulnerability.

3. Results

3.1. Study region

The North-East region, as the name suggests, is located in the north-eastern part of Romania, consisting of 6 counties: Suceava, Botoșani, Neamț, Iași, Bacău and Vaslui.

The total area of the region is of 36,850 km² (15.5% of the total area of the country), being the largest development region of Romania.

The total population of the North-East Region in 2019 was represented by over 3.99 million inhabitants. In the 2010-2019 interval, the population of the North-East Region
increased by 2.6% (from over 3.88 million inhabitants in 2010 to over 3.99 million inhabitants in 2019). The population density in 2019 was of 108.3 people/km², higher than the national average (93 people/km²).

The evolution of the population in the North-East Region was realized in a different way and at a different pace between the two areas of residence. Population growth was mainly achieved in the urban environment. In the rural area, the population followed a growth curve and then a decrease, reaching in 2019 a lower value than in 2000, mainly due to mortality and permanent migration.

3.2. Mechanisms of demographic ageing

The demographic danger invoked until recently was related to the overpopulation of the earth, caused by the "demographic explosion" that could not be accompanied by an adequate development of the means of living. However, population forecasts since 1980 have determined a lessening of concerns about this risk, while "the new demographic risk is no longer related to the volume of the population, but to its structure, it is about the ageing of the population." (Rotariu, 2006).

"Demographic ageing is the most important and lasting change known to the age group structure of a population." (Găgăuz, 2012) Its mechanisms are not difficult to deduce, they are represented by: the (long-term) decrease in birth rate/fertility; decrease in mortality/increase in average life expectancy at birth; migration that can accentuate or diminish the process depending on the size of the migration and the geography of the flows (Erdeli and Dumitrache, 2011; Muntele and Ungureanu, 2017; Surd, 2001).

The analysis of the main demographic indicators illustrates that the North-East Region has adapted to the model of demographic transition that developed countries have experienced in recent decades and which is characterized by the transition from high levels of mortality and birth to lower levels. The demographic transition in the Northeast Region is inextricably linked to the general trend of social modernization. Due to the changes that the demographic transition has brought to the dynamics of mortality and birth, it will further promote the intensification of the ageing of the population.

3.3. Analysis of the main indicators of demographic ageing

The analysis of the main demographic indicators illustrates the fact that the North-East Region has adapted to the demographic transition model experienced by developed countries in recent decades, which is characterized by the transition from high mortality and birth rates to lower levels.

3.3.1. Natural balance

Figure 1 reveals the spatial distribution of the values of the natural balance for the year 2019. The predominance of the negative values of the natural balance indicates that most of the region will be subjected to the process of intensification of the demographic ageing phenomenon, the difference between them being given by the profundness of the phenomenon. The highest concentration of extremely low values can be found in Vaslui county, where many (especially rural) settlements face a deep demographic ageing process, illustrated by low birth rates and a large number of deaths.

In the case of positive values, we notice that there is a tendency to cluster the values in space. The most visible group of this kind is contained in the central-eastern part of Suceava county and the southern half of Iasi county, being brought about either by ethnicity (a good representation of the Roma population, as it happens in Iasi county, or of the hutsuls in western Sucea county), by confessional aspects (the presence of Neo-Protestants adepts in Suceava county) or by a still traditional natalist behaviour (Iasi county).
3.3.2. Demographic Dependency Ratio

Regarding the demographic dependency ratio (Figure 2), the value recorded by the North-East Region in 2019 is similar to that of the other development regions.

In 2019, the average value of the demographic dependency ratio recorded by the North-East Region was 49. This fact means that for every 100 active people aged between 15 and 65, there are 49 young people (0-15 years) and elderly (over 65 years). The North-East Region seems to have an average vulnerability compared to the other development regions of the country in terms of demographic dependency, having a somewhat better situation compared to the South Muntenia (52) and South-West Oltenia (53) Regions and less favourable than the Bucharest-Ilfov (44) and West (47) regions. Within the region, of course, the most favourable situation is in the big cities and their peri-urban areas (as it happens in the case of Iasi, Bacău, Piatra Neamt and Botoșani, for instance, which record positive migration balance values, mainly when it comes to their workforce). Less optimistic are the situations in the areas characteristic of the deep countryside, but also of the countryside proper (extended areas in Bârlad Plateau, Suceava Plateau and the area of the Subcarpathians of Moldova). Thus, we can state that from the point of view of demographic dependency, the North-East Region, like Romania on the whole, has for the moment an average degree of vulnerability, but with prospects of worsening with the annual increase in the share of the elderly. Starting with the 2030s, when the "decree" generations will enter the category of the elderly population, the demographic dependency ratio will be much more disadvantageous, the North-East Region getting to be one of the most vulnerable in the future (Bălteanu, 2007; Erdeli and Cucu, 2005).

Of course, as the map illustrates, the regional gaps are not induced only by the distinction between the urban and rural environment, but also by natural and social factors, the situation being worse in the eastern part: the north of Jijia Plain (confronted with serious demographic ageing problems), as well as in the south-west of Iasi county.
and north-west of Vaslui county (where the high values of the dependency ratio are induced by the larger number of young persons, as an effect of the more active reproductive behaviour of the Roma population).

**Figure 2.** Demographic dependency ratio in North-East Region in the year 2019 (Data source: INS)

### 3.3.3. Demographic ageing index

As concerns the demographic ageing index (Figure 3), the North-East Region recorded a value of 91% in 2019. The situation registered by the North-East Region in 2019 was much more favourable compared to that recorded by the West, South-East, South-Muntenia and South-West Oltenia Regions, where the number of elderly people over 65 considerably exceeds, in some cases, that of young people.

However, the fact that many areas of the region (the north of the Jijiia Plain, the areas at the foot of the Eastern Carpathians, the east of the Bârlad bridge) have values that exceed 10.0 show us that the demographic ageing process is quite acute in the North-East Region as well, this threshold symbolizing the fact that the number of old people (+65) exceeds that of young people (under 14), a fact with long-term negative demographic and economic consequences for the respective areas.

Of course, the ageing demographic process is a consequence of the increase in life expectancy at advanced ages. Compared to the year 2000, the life expectancy of urban residents increased by 5.600 years (7.8%) between 2000 and 2019 (from 71.6 to 77.2). Also in the same interval, the life expectancy of rural residents increased by 3.9 years (5.6%), from 69.9 to 73.8. Even if the life expectancy at old ages has registered a lower increase among the population, it still has its say in the shaping and evolution of the phenomenon of demographic ageing, given the fact that the other mechanisms of demographic ageing are also fully felt.

The deepest ageing process is specific to three areas: the eastern part of Neamt county (a typically post-communist out-migration region), the northern part of Botosani and eastern Vaslui counties (predominantly rural areas which generated significant migration flows even before 1989).
3.3.4. Ageing of the working population

As it can be seen, the biggest problems regarding the ageing of the active population (Figure 4) are noted in the Carpathian and sub-Carpathian areas. This indicator shows us that these areas will face in the relatively near future (10-15 years) an overgrowth of the elderly population and serious problems regarding the availability of labour.

Figure 4. Ageing of active population in North-East Region in the year 2019 (Data source: INS)
The issue of the ageing of the active population raises, just like in other European countries, significant economic and social problems, resulting in structural dysfunctions of the labour market. This is, of course, a consequence of the demographic transition, which lessens the contingents of available workforce, triggering changes in the structure of this population segment, in the occupation policies and pension system (Bălașa, 2005). One of the solutions to this topic could be the prolongation of the active age which, however, will require a reform of the social protection and fiscal systems.

3.4. Demographic vulnerability types

In order to trace patterns of demographic ageing vulnerability, based on the indices mentioned above, we performed an ascending hierarchical classification (Figure 5) aimed at classifying settlements according to their demographic vulnerabilities. We thus identified six significant types.

**Figure 5.** Demographic vulnerabilities models in North-East Region in the year 2019 (Data source: INS)

Type 1 is less spatially represented and is characterized by negative values of the demographic ageing index which together with positive values of the share of the young population generate low values of the demographic dependency ratio. The higher share of the young population is due to a greater economic dynamism that these settlements
have, as an effect of their proximity to two of the largest cities in the North-East Region, respectively Iași and Bacău (North-East Regional Development Agency, 2019).

Type 2 is mainly found in Iași County, in the area overlapping the Lower Jijia Plain, as well as in Suceava County, in the areas overlapping the Suceava Plateau and Bucovina settlements. The weakest representation of this type is in Botoșani county (5 localities). This type is characterized by a reduced vulnerability to demographic ageing, the values of the natural balance being slightly positive. The municipality of Iași, the most important city of the North-East Region, is included in this type. Although the city of Iași attracts many young people, the share of the elderly population means that this city does not fall into type 1 with the lowest degree of vulnerability to demographic ageing.

Type 3 is present in several areas of the Moldavian Subcarpathians, Siret Corridor and Jijia Plain. The values of the indicators in type 3 do not yet denote problems regarding the vulnerability to demographic ageing, but this situation may change under the conditions of the evolution of the values of the indicators in a negative sense. Some of the localities that belong to this type are rural localities that are located in the intermediate (median) rural space, which for certain reasons can be appreciated as "typical"/representative, in the sense that they develop without being under the direct influence of urban centers.

Type 4 has an uneven distribution within the North-East Region and is characterized by slightly positive values of the indicators that underline possible future problems related to demographic ageing, the numerical reduction of the population and the reduction of the labour supply.

Type 5 has a more pronounced distribution in most of Neamț county, the north of Botoșani county, the west of Suceava county and the central-eastern part of Vaslui county. It best overlaps the average profile of the region, faithfully summarizing the problems it faces.

Type 6 has the most pronounced representation in Neamț and Botoșani counties. Indicator values of this type denote the highest degree of vulnerability that exceeds the average profile of the region.

5. Conclusions

The 30 years that have passed after the fall of communism in Romania have brought about significant transformations not only in the political and social-economic field, but also in the demographic one. Just like the other Romanian development regions, the North-East has also joined the transition demographic process, distancing itself from the strongly natalist demographic behaviour typical of the communist regime. The decrease in the birth and fertility rates, the rise in the life expectancy at birth and the extremely active out-migration have brought about a deepening ageing process, with possible future effects not only at the level of the society, but also from the geopolitical perspective (Nancu, 2010). Most territorial administrative units in the North-East Region are characterized by a low or medium demographic vulnerability, but most of them are prone to a worsening of the situation in the near future, as well as in the long term, due to the fact that these demographic indicators of population ageing may undergo changes in a negative sense. The values of the demographic ageing indicators tend to cluster in space, leading to the formation of territorial aggregates of localities with different degrees of specific vulnerability. Of course, there are also areas that skip the rule, the exception being the consequence of a certain religious structure (in which the Roman-Catholics and New-Protestants are well represented) or ethnic profile (the presence of some ethnic groups which preserve a pro-natalist mentality, such as the hutsuls or mainly the Roma group); isolated rural settlements may also occasionally maintain a traditionally natalist behaviour (Horea-Șerban and Istrate, 2015).

In the coming decades, as a consequence of the ageing of the population, the North-East Region as well as the entire Romania, in extended areas, will face fiscal and
political pressures regarding the public health care, pension insurance and social protection systems for a growing elderly population (Nancu et al., 2010; 2007; Zugravu, 2011; North-East Regional Development Agency, 2019), which means that they will need a reformation of the labour market, as well as a new legal and institutional framework, adapted to the present socio-demographic context. Triggered by the combined effect of out-migration (especially of the people in working age groups), constant increase in the life expectancy at birth and decrease in the fertility indicators, the ageing process of the population has already become a real social and economic challenge, impacting on the workforce supply and dependency burden (Berlina et al., 2016).

Author contributions: Both authors equally contributed to the present scientific paper

References


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