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Impact of Demographic Changes on Economic and Social Life

Valerica TOPLICIANU¹, Loredana Cristina TANASE^{2*}

Abstract

In Romania, as in most European countries, there is a tendency of demographic aging. This trend is based on two essential causes: a constant increase in life expectancy at birth and a decrease in birth rates. The demographic aging phenomenon has both direct and indirect consequences on the short-, medium- and long-term economic and social life of economic growth. The process of replacing generations in active working groups with those under the age of 24 will be affected as a result of demographic imbalances. Increasing the share of the elderly population will directly lead to increased economic pressure on people in active age groups. The question is, "Can the reduction in the share of the active population in the total population be offset by a corresponding increase in productivity?" If such compensation is not feasible, the likelihood of imbalances in the long run is relatively high. These imbalances are not only of an economic nature but can affect well-being in all its aspects.

Keywords: *population; birth rate; labor market; demographical evolution; social behavior.*

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1. Introduction

The population, viewed as a dynamic system, was considered as a determinant of the development and welfare of a nation. The evolution of the population must be seen in close correlation with existing resources at a given moment. The trend of population growth, identified since ancient times, has increased as a result of maintaining a high birth rate, coupled with the rise in "life expectancy at birth". At the same time, there are mutations in both age structure of the population as a result of the demographic aging phenomenon as well as from the point of view of the population geography as a result of the migratory phenomenon. The liberalization of the labor market and the somewhat different from one country to another have led to an increase in the migration phenomenon. All of these aspects have a bearing on the economic and social activity of the member countries.

2. Problem Statement

The population and its evolution have been the subject of statistical studies since ancient times. Not accidentally the first statistical works were the censuses of the population, the so-called census. Most population surveys have been geared either to the demographic study (number, gender, age, environment) or geography of the population (number, evolution, territorial distribution, etc.).

The evolution trend of the population has been one of growth in geometric progression as it has been seen in the 18th century by Thomas Robert Malthus in his essay on the principle of population [1]. However, this increase must be doubled by a similar increase in resources for the welfare of the population in order not to reach the situation where "the amount of livelihoods per capita will become insufficient", which would lead to a significant decrease in the degree of satisfying the needs of members of a community.

Starting from this rapport population / resources analysis, we need to look at the demographic phenomenon to be viewed in a broad sense as an interaction between the individual, economy and social behavior.

"The understanding of human existence, no matter what era we refer to, was only possible through the knowledge of the objective relationships between man (in a narrow sense), the human collectivity (in the broad sense of human conception) and the social and material reality characteristic of the times. Within these relationships, an important place has always been the

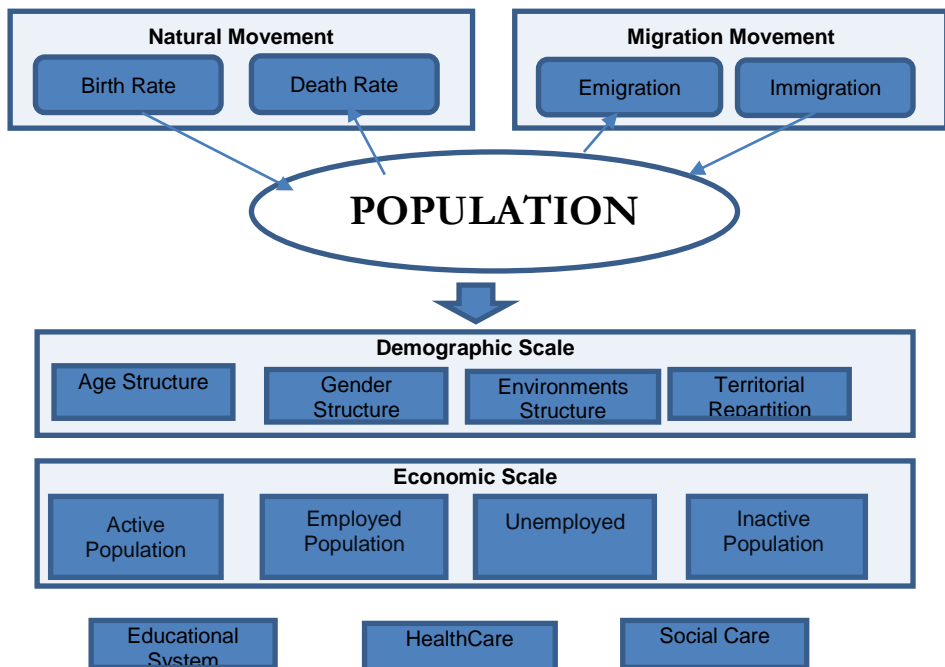
nature or in a more concrete sense the different components of the geographical environment "[2, 3].

In Romania, the preoccupation for studying the population, both numerically and in terms of socio-economic aspects, we meet at Ion Ionescu from Brad, in his village monographs, as well as in the works of other statisticians of the time: Dionisie Pop Martian, Dimitrie Gusti, Ion N. Angelescu etc.

3. Research Questions/Aims of the research

Starting from the changes in the dynamics and age structure of the population, we propose to analyze the impact of these changes on the labor force with direct or indirect implications on the economic development. From this perspective, the population should be seen as an open and dynamic system (Figure 1).

Figure 1. Population viewed as a system



Population, viewed as a dynamic system, is the determinant factor of a country's development at least through the following considerations:

- is the labor force provider;

- is the main consumer of goods and services produced;
- is the main beneficiary of the effects of sectorial public policies.

Demographic studies follow the numerical evolution of the population and its structure by age, gender, residence, natural movement, migratory movement, etc.

There is, however, a need to deepen the analysis at least on the economic and social levels, at least for the following two reasons:

- the active population, which provides a useful activity, is the one that provides the economic support of the other categories of the inactive groups (under 16s, retirees, etc.) with a direct impact on the level of the average welfare at the level of the whole society ;

- age structure of the population also influences the evolution of the educational system (school population, school infrastructure, employment in the education system).

The effects of mutations in the population structure should be followed not only from a demographic point of view, but also from an economic and social perspective.

4. Research Methods

Starting from the existing data and the forecasts made by both EUROSTAT [4] and the National Institute of Statistics of Romania using the comparative analysis of the data we propose to analyze the extent to which the demographic aging process influences the economic and social evolution in the medium and long term [3, 5].

5. Findings

A study on the evolution of the European Union population in the horizon of 2080, conducted and published by EUROSTAT, highlights the fact that, for the next 60 years, the EU population will remain at the same level with fluctuations of $\pm 1\%$ from one period to the next will make it rising by 2% in 2080 [4, 6]. If population growth is not significant, there will be significant population gaps in the countries of the European Union (Table 1).

Three main trends are identified from the available data:

- countries where, both as a result of a high birth rate and a favorable migratory flow, the population will increase from one period to another at a rate of between 2% and 20%, which will cause population growth in 2080

over 15% compared to 2000 (Belgium, Denmark, Ireland, France, Cyprus, Luxembourg, Malta, Netherlands, Austria, Sweden, United Kingdom);

- countries where the population first increased, then declining after 2030, so that the forecast horizon is around the European average of $\pm 10\%$ (Czech, Germany, Finland, Slovenia) ;

- countries which in the next period will see a demographic decline, with the population shrinking from one period to the next by 2 to 5%, which will lead to a decrease of over 25% over the forecast horizon (2080) compared to 2000 (Bulgaria, Greece, Latvia, Lithuania, Poland, Portugal, Romania).

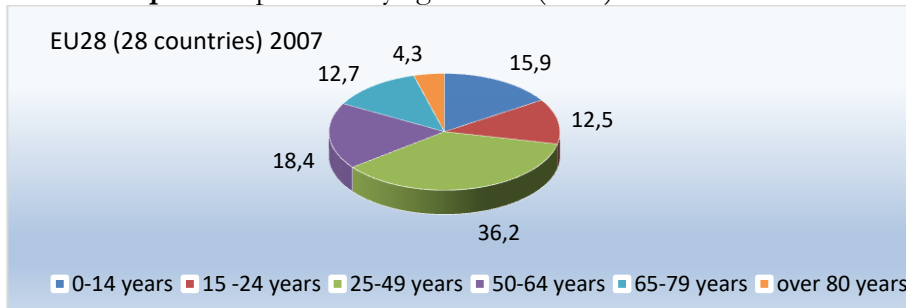
Table 1. Population structure

Country	2010/ 2000	2020/ 2010	2030/ 2020	2040/ 2030	2050/ 2040	2060/ 2050	2070/ 2060	2080/ 2070	2080/ 2000
European Union	103,3	102,5	101,6	100,9	100,0	99,3	99,2	99,7	102,0
Belgium	105,9	106,8	105,9	104,7	103,3	102,3	102,3	102,2	126,6
Bulgaria	90,6	93,7	92,2	92,6	93,8	93,9	93,2	94,3	63,8
Czech	101,8	101,8	100,4	98,7	99,3	98,4	96,9	97,9	92,8
Denmark	103,8	106,4	107,0	104,2	101,8	101,1	101,0	100,5	121,2
Germany	99,6	102,4	101,0	99,4	98,3	97,8	98,1	98,1	95,8
Estonia	95,2	98,8	99,1	98,3	97,9	97,1	96,5	96,8	86,8
Ireland	120,4	106,7	106,1	104,9	105,5	103,6	102,3	103,1	134,4
Greece	103,2	95,0	94,2	94,7	94,7	93,0	92,7	94,5	66,9
Spain	114,9	100,2	101,2	102,4	102,1	100,6	100,5	102,3	109,8
France	106,8	104,9	104,0	103,4	102,0	101,5	101,9	102,3	118,5
Croatia	95,7	95,1	96,7	96,6	96,2	96,2	96,3	96,3	77,5
Italy	104,0	102,6	99,4	99,4	98,3	96,6	96,5	97,9	88,5
Cyprus	118,6	106,1	105,9	103,7	103,2	102,8	100,7	98,6	118,6
Latvia	89,0	90,2	91,2	91,7	94,2	94,7	94,1	95,6	64,7
Lithuania	89,5	87,5	87,7	88,3	91,9	93,9	93,8	96,2	56,8
Luxembourg	115,8	125,3	120,0	114,1	109,0	105,8	104,3	103,0	189,4
Hungary	98,0	97,8	98,7	98,0	98,1	98,2	97,4	97,8	88,2
Malta	106,5	109,3	108,0	103,5	101,4	101,2	100,3	99,3	120,5
Netherlands	104,5	105,0	105,6	103,5	101,0	100,5	101,1	101,0	116,7
Austria	104,4	107,8	107,4	104,3	101,6	99,8	99,4	99,0	117,4
Poland	99,4	99,8	98,1	96,3	95,9	95,6	94,3	93,8	76,4
Portugal	103,2	96,6	96,8	96,7	95,4	93,8	93,6	94,6	73,1
Romania	90,4	94,9	93,6	94,7	95,7	96,1	95,6	96,8	73,1
Slovenia	103,0	101,4	100,2	99,3	99,0	97,8	97,8	99,1	94,0
Slovakia	99,8	101,3	100,1	98,3	97,9	97,2	96,0	96,0	87,0
Finland	103,5	103,9	102,4	100,4	99,4	99,4	99,5	99,1	101,9
Sweden	105,4	110,2	109,2	106,7	105,7	104,8	104,2	103,9	147,6
United Kingdom	106,3	107,6	106,4	104,8	103,4	102,3	102,0	101,8	127,1

Source: Authors processing based on EUROSTAT data [4]

It can be seen that the population growth tends to be particularly high in economically developed countries with a high GDP per capita due to both a high birth rate and increased life expectancy at birth due to a high level of welfare economic and social issues. At the same time, new EU countries will face a demographic decline that can be explained either by changing demographic policies or by migrating their population to developed countries.

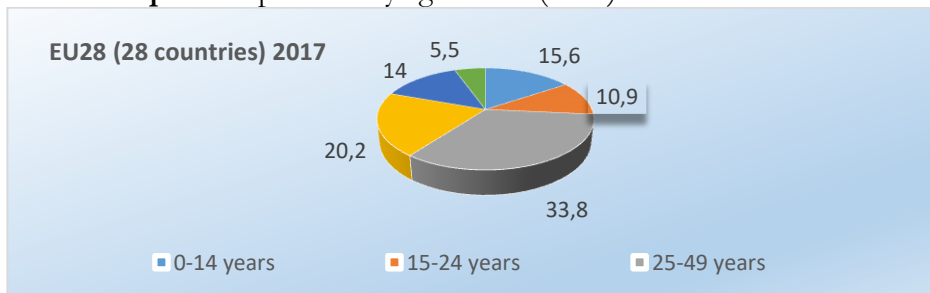
Graph 1. Population by age in EU (2007)



The evolution of the population from the numerical point of view and the tendency of demographic aging should be analyzed in close correlation with the age structure. The age structure of the population is closely related to its socio-economic structure. Starting from this goal, we can divide the population into three main groups:

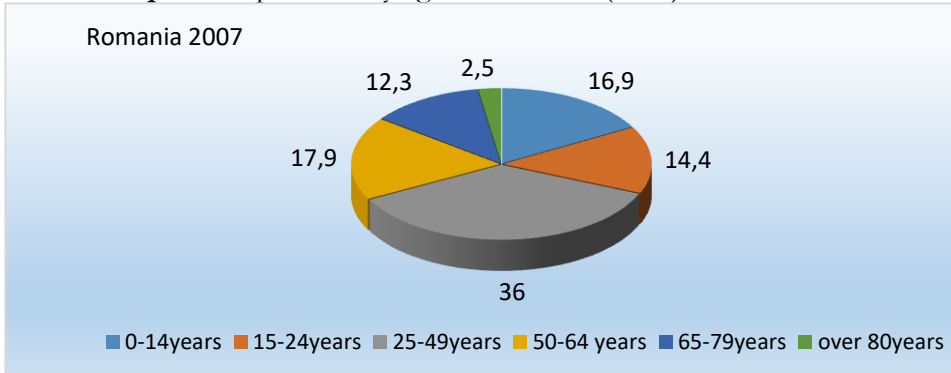
- 0-14 years - dependent young population;
- 15 - 24 years - the working-age population but likely to be included in the training process;
- 25 - 64 years - economically active population;
- 65 years and older - the elderly population, which from economic point of view can be considered inactive.

Graph 2. Population by age in EU (2017)



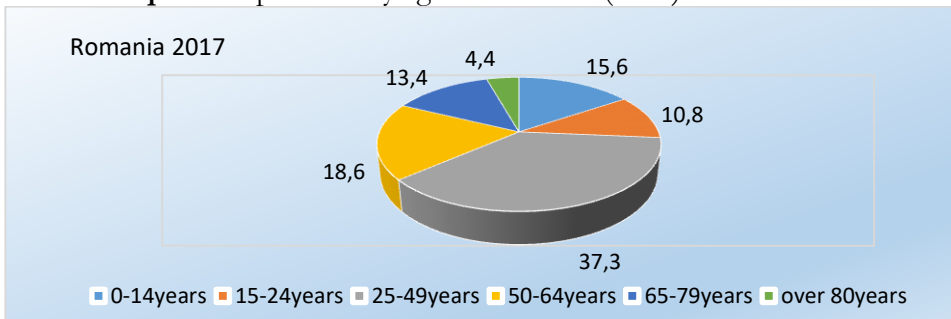
The largest share is the 25-65 age group, which ultimately represents the engine of any economy. From a demographic point of view, the age structure of the EU population has seen structural changes over the past 10 years in the direction of a 1.2-1.8% increase in the age group over 50 years , in Romania the increases were 0.7-1.9% in the groups over 25 years, to the detriment of the population under 24 years of age.

Graph 3. Population by age in Romania (2007)



In the case of Romania, if the short-term situation is favorable (the share of the population aged 25-49 years increased by 1.3%) in the medium and long term, the situation may deteriorate seriously, given that all forecasts regarding the evolution of the population places Romania among the countries with a drastic population decline until the year 2080.

Graph 4. Population by age in Romania (2017)



6. Discussions

The modification of the age structure of the population has considerable implications for the ratio between the economically active

population and the assisted population. One of the problems is related to the inputs and outputs of people in the age groups of the active population. In order to ensure sustainability in terms of economic activity, there needs to be a correlation between the cohorts coming out of the active population category (50-64 years) and those that fall into this category (15-24 years) to have a high degree of correlation. Typically, the population that belongs to the active population category should represent 2/3 of those in the 50-64 age group.

The phenomenon of demographic aging facing Europe leads to a continuous deterioration of this rate. If in 2007, at the level of all the EU countries plus Croatia, the ratio between the young population and the share of the population out of the active population category was 0.68, indicating some sustainability of the generation gap, ten years later the situation deteriorates, the ratio decreasing to 0.58. Changes in the structure of the population have different trends from one country to another in one sense or another.

Table 2. Population structure by age in 2017

Country	Rapport 2007			Rapport 2017		
	Young / elderly	15-24/ 50-64	0-14/ 50-64	Young / elderly	15-24/ 50-64	0-14/ 50-64
EU (28 countries)	0,94	0,68	0,86	0,80	0,54	0,77
Belgium	1,00	0,65	0,92	0,92	0,58	0,85
Bulgaria	0,75	0,63	0,63	0,68	0,46	0,69
Czech	0,99	0,61	0,68	0,83	0,50	0,81
Denmark	1,22	0,57	0,93	0,88	0,66	0,86
Germany	0,71	0,64	0,76	0,63	0,47	0,60
Estonia	0,87	0,81	0,82	0,84	0,51	0,83
Ireland	1,88	0,98	1,32	1,56	0,72	1,24
Greece	0,79	0,71	0,85	0,67	0,51	0,73
Spain	0,88	0,69	0,87	0,79	0,48	0,76
France	1,13	0,70	1,01	0,95	0,61	0,95
Croatia	0,88	0,64	0,80	0,74	0,52	0,67
Italy	0,70	0,54	0,76	0,61	0,46	0,64
Cyprus	1,54	0,96	1,13	1,05	0,76	0,91
Latvia	0,82	0,88	0,80	0,78	0,47	0,75
Lithuania	0,96	0,88	0,95	0,77	0,55	0,69
Luxembourg	1,31	0,69	1,07	1,14	0,61	0,83
Hungary	0,96	0,63	0,75	0,78	0,56	0,73
Malta	1,20	0,68	0,79	0,75	0,61	0,73
Netherlands	1,26	0,62	0,93	0,88	0,59	0,79
Austria	0,92	0,70	0,89	0,78	0,55	0,69
Poland	1,18	0,84	0,84	0,92	0,54	0,74
Portugal	0,90	0,66	0,87	0,66	0,51	0,68

Romania	1,14	0,80	0,94	0,88	0,58	0,84
Slovenia	0,88	0,65	0,71	0,79	0,44	0,68
Slovakia	1,34	0,84	0,88	1,03	0,55	0,77
Finland	1,04	0,59	0,81	0,78	0,57	0,80
Sweden	0,98	0,64	0,86	0,89	0,65	0,97
United Kingdom	1,12	0,73	0,99	0,98	0,64	0,95

Source: Authors processing based on EUROSTAT data [4]

Thus, in 2007 a rapport between the European average had economically developed countries (Denmark, Sweden, Finland, Germany, Holland, Italy, Austria, United Kingdom) and Bulgaria, Czech, Hungary while countries like Estonia, Latvia, Romania, Poland, Slovakia, Ireland and Cyprus were above the European average, placing these countries in a normal labor situation.

This situation changes considerably ten years later. In most countries, the ratio of people entering and leaving the labor market is continuously deteriorating. The only countries that maintain a favorable situation are Ireland, Cyprus and the United Kingdom. Also, in the Nordic countries (Denmark and Sweden) the situation tends to improve.

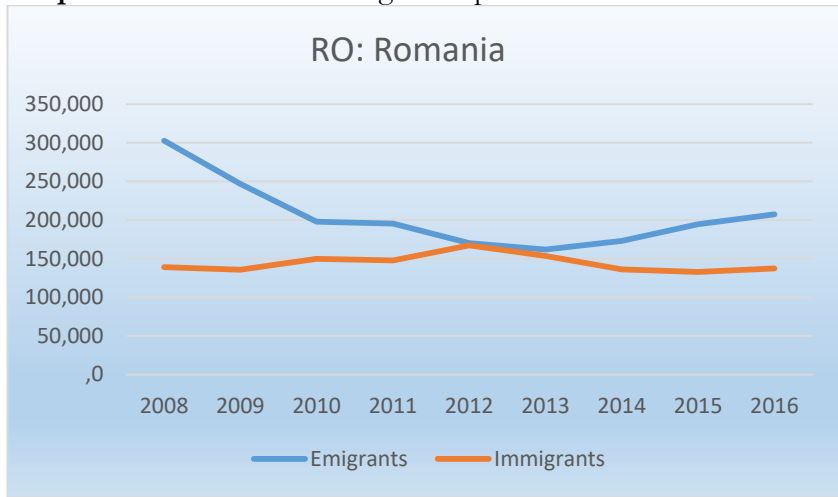
This indicates that, as a result of the demographic aging process, as a result of the increase in life expectancy at birth and the decrease in the birth rate, the share of those who leave the category of the active population, falling under the category of economically assisted persons, there is the possibility of major imbalances.

There is a risk that the situation will deteriorate as the ratio between the population aged 0-14 years and the population in the 50-64 age group is a subunit, which in the long run will lead to gaps between the cohorts belonging to the active population groups and those coming out of the labor market. From this perspective, Romania is in a more favorable situation, the ratio being of 0.84 compared to other countries like Germany (0.60) or Italy (0.64).

In the same time, it should not be neglected that Romania faces two major challenges: the increase of the migratory phenomenon, which leads to a continuous decrease of the active population and a rate of activity well below the average in the European Union.

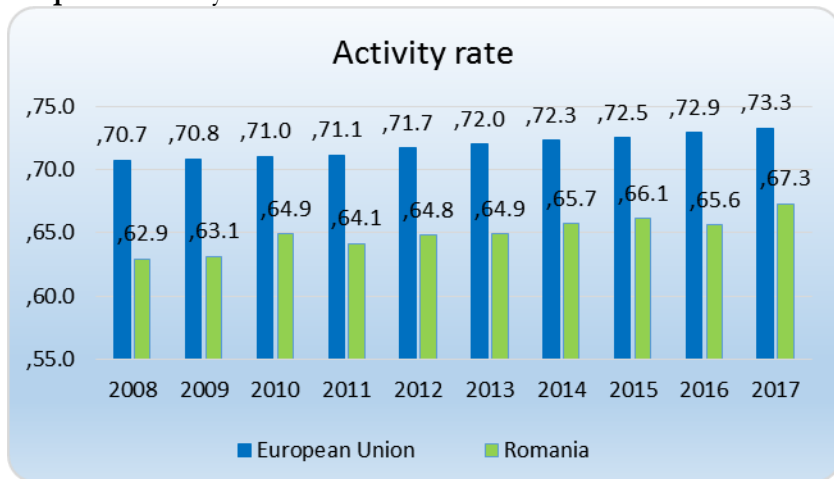
After Romania's accession to the European Union, the migratory phenomenon experienced a certain regress, decreasing from 302,796 in 2008 to 161,755 in 2013, so that the positive trend could be resumed (graph 5), as the number of immigrants remained relatively constant.

Graph 5. Evolution of the migration phenomenon in Romania



A second aspect to be taken into account is that the rate of activity in Romania is below the EU average.

Graph 6. Activity rate



6. Conclusions

The population reduction trend registered in many EU countries, coupled with the generalized demographic aging phenomenon, may affect the economic activity in the medium and long term in the component

countries. Proactive demographic policies need to be adopted to improve the demographic structure so that in the medium and long term there will be no imbalances in the generation gap generation of active age groups.

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