

## POPULATION OF ROMANIA – SHAPES AND DEMOGRAPHIC TRENDS\*

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### ABSTRACT

Demographic changes affect all countries of the world, with higher and more sensitive impact on economic and social development in nowadays than in the past. An important aspect for the development of the nations is its demographic potential. Country population is considered the main factor when we are talking about the evolution of the society and its sustainable development. The objective of the paper is to analyse the population of Romania in terms of dimension, age structure and trends in the context of the international demographic evolution. Changes in dimension and age structure of the population are important concerning the economic behaviour on national and international level.

Birth rate, life expectancy, mortality rates, migration rates are important indicators for the analysis of the population dynamics. Birth decline and high mortality rates show a natural decrease of the population with negative impact on the development level of the country. The statistical figures show a deep demographic decline in Romania, the main causes being the natural decrease of the population and the negative net international migration. On the other side, as the European countries, Romania faces the complex economic and social consequences of the slow but steady process of demographic ageing. Changing of the population structure by age, more balanced on older ages, is the consequence of the evolution of two major factors: vital events and international migration on one hand and life expectancy on the other hand. National Institute of Statistics, Romania and Eurostat mainly provide data used in this paper.

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## INTRODUCTION

The population is an important factor in the development of the countries due to frequent changes in its structure and size. The structure of the population by age and gender defines the role and place of each person in the process of reproduction of the population, of the economic activity and in general of the social organization.

In view to highlight the number of inhabitants living inside the country, but also of those who have their permanent residence in Romania, but reside in other countries, official statistics calculates two indicators measuring the size of the population: the usually resident population and the permanent resident population. The two types of populations have different scope: the permanent resident population is defined as the number of persons of Romanian citizenship and having their residence on Romanian territory, while usually resident population is defined as all persons of Romanian citizenship, foreign citizenship and without citizenship having their usual residence in Romania, for a period of at least 12 months.

Besides the “statics of the population”, the demographers take into account a natural dynamics related to births and deaths and a migratory dynamics of the population (emigrations and immigrations). “The history of the population is the result of the interaction between flows (births and deaths) and structures” (Dumitrașcu 2009, 204).

Why it's so important to study the dynamics of the population and why demographic data matters? The power of a state depends on its demographic potential. All the strategies consider demographic factors as important indicators for understanding the degree of socio-economic development of a country. At a global level, the demography was considered as an important dimension in the analysis of sustainable development and an important tool for many aspects of society. “Demographic data may facilitate the making of arrangements for the ascertainment of people's views on important topical questions, the election of representative governing bodies, the collection of taxes, the planning and conduct of industry and commerce, the provision of social services, the maintenance of health and the preservation of law and order” (Cox 1976, 11).

The aim of the article is to study the shapes of Romanian population, its demographic trends, and the impact of the population changes on the development of the country.

### LITERATURE REVIEW

The structure of the population, its territorial distribution and its dynamic captures the economic, social and political state of the country.

Besides quantitative data, the numerical registration of the population, social demography takes into account the social, economic and political implications of the demographic phenomena. Concerning these, the mission of the researchers is to analyze the relations between demography and social changes.

Traian Herseni underlined that “demographic sociology highlights all the consequences of demographic phenomena such as natality, mortality, migrations. These phenomena are not indifferent to the unfolding of the social life, but, on the contrary they represent the important components of society and, at one point, they can even give diagnosis of social life” (Herseni, lectures 1939-1940, 205–206). The same author advocates the fact that the evolution of demographic phenomena can lead to transformations in the structure of the population. He presented three cases: “1 surplus populations—marked by social and economic dynamism—these can lead to a nation’s rejuvenation; 2. deficient populations that lead to demographic ageing and 3. stable populations—population numbers are constant with a small variation” (Herseni, lectures 1939–1940, 205–206).

The development of a country depends mainly on its demographic changes. As Vladimir Trebici (1978) claimed, the transition from the developing country to a developed one is accompanied by the change in demographic trends, a process named the demographic transition. The same author explained that the demographic transition of the population is the process by which a population changes from higher levels to lower levels of birth and mortality rates (Trebici 1978).

Chesnais (1979 cited by Trebici 1978) mentioned that the demographic transition is the passage over a period of time from a “traditional demographic balance” with high levels of fertility and mortality to “a modern equilibrium regime” with low levels of fertility and mortality. Trebici (1978) underlined the fact that the transition begins with low level of mortality and the end of this process is marked by a return to an era characterized by a natural growth rate. Between these periods, the natural growth passes through three phases: “gonflement growth, the phase of maximal growth and the narrowing phase of growth corresponding to a decrease in birth rates” (Trebici 1978, 343).

Concerning the phases of the demographic changes, Trebici noted that the demographic transition comprises three stages: “a) the transition of mortality from high to low levels; b) the transition of natality from high to low levels; c) the transition of the natural surplus from the old equilibrium to the new balance” (Trebici 1978, 38).

The transition theory was considered “the central preoccupation of modern demography” (Kirk 1996, 361). Warren Thompson was the first demographer who initiated the discussion about demographic transition. He published in 1929 a study where he specified “three types of countries with different rates of population growth: The first (Group A) were those with falling rates of increase and which were facing potential population decline. Although mortality in these countries was low, their rapidly declining fertility presages first a stationary, and later a declining population” (Thompson 1929 cited by Kirk 1996, 361). For this category Thompson (1929 cited by Kirk 1996) included the countries of Western Europe and that countries “settled by immigrants of European origin” (ibidem). The same author underlined that “Group B consists of countries in which both birth and death rates had fallen, but where death rates had declined earlier and more rapidly than birth rates. In this group were the countries of Eastern and Southern Europe. Countries in Group C in which neither birth nor death rates were under control were classified as 'Malthusian (Japan, India and Russia)’” (Thompson 1929 cited by Kirk 1996, 361).

There are some theories that explain the causes of the demographic transitions. The main thesis affirms that the demographic transition has began in the second part of the 18th century being generated by industrial revolution and the process of urbanization, in one word, by the modernization of society.

Caldwell (1976), cited by Trebici (1978) argues that the decline in fertility may precede industrialization; and it can foster economic development.

In Romania, demographic transition has been influenced by the events after the Two World Wars, the measures of demographic policy from the end of the year 1966 with a strong impact on fertility and birth rates.

The most significant changes took place after the Second World War. As some studies revealed (Trebici 1978), that period registered the most pronounced decline in mortality. It was a significant decline of infant mortality because of the progress in medicine and the improvement of the population's access to sanitary services. The birth rate was relatively high between 1948 and 1955. After 1966, it was an accelerated decrease of the birth rates because of the measures concerning the abortions. At the same time, it was an increase of the mortality rates, especially infant mortality rates. Therefore, starting from 1967 Romania has entered in a new phase of the demographic transition (Trebici 1978).

After 1990, as Ghețău (2007) stated, Romania faced an accelerated decline in population caused by a negative external migration higher than natural growth. Also, Ghețău (2007) observed that the deterioration of population structure after 1990 has not necessarily resulted from the change of mortality rates, but from the birth retrenchment.

The decline of the population has led to a series of socio- economic transformations of society. The demographic ageing is one of the consequences of

the population decline. It has social causes affecting the entire society. The long-term effects on the decrease of the young population will result in a diminishing of the labour force. Fewer active persons will support inactive persons with negative consequences on social protection system.

The decrease of birth rates and the migration of young people influenced the marriage rate. The transition to modernity induced transformation at family level. Marriage is losing its social function, appearing different forms of cohabitation. The modernization process destroyed family particularities (Valade in Boudon 2003). The processes of modernization and industrialization also influenced fertility. The theory of cultural gap (cultural factors that influence fertility) stated that the richest family in the urban area had the first rational decision using fertility control mechanisms (Ciontea and Georgescu 2006, 44–45).

Analyzing the difference of variations concerning mortality and birth rate evolutions, Romania has different demographic trends than that of the other European countries.

#### METHODOLOGICAL ISSUES

The definitions and the coverage of the main indicators used in this study are the followings: “Permanent resident population represents the number of persons with Romanian citizenship and domicile on the territory of Romania, determined according to administrative-territorial criteria. Person domicile is the address where he/she declares to have the main dwelling, registered in the identity card, as the state administrative bodies register it. To set up the value of this indicator, the usual residence does not taken into account as well as the period and/or reason of absence from the domicile.

Usual resident population represents all persons with Romanian citizenship, foreigners and without citizenship, who have their usual residence on Romanian territory. Usual resident population on January 1st was determined according to international methodology and regulations in this field.

The average age of the resident population is the average of a population’s ages, understanding by age that continuous demographic variable expressing the time elapsed from the date of birth of a person to a particular time of observation.

The age dependency ratio is the ratio of “dependant” age persons (aged under 15 and over 64) to working age persons (aged 15–64), calculated per 100 persons.

The demographic ageing index is the number of elderly persons (aged 65 and over) per 100 young persons (aged under 15).

Sex ratio derives by dividing the number of men to the number of women; is expressed per 100 or 1000; is calculated for the entire population by age and age groups.

Life expectancy at birth is the average number of years an infant would live, if he/she lived all his/her life under the conditions of mortality by age corresponding to the life table”<sup>1</sup>.

International migration includes two components: emigration and immigration. Statistically, according to Regulation (EC) No 862/2007 of the European Parliament and of the Council on Community statistics on migration and international protection, we define the components of international migration as following:

- Emigration means the action by which one person who had the previous usual residence on the Romanian territory ceases to have this usual residence for an actual or expected 12 months period at least.
- Immigration means the action by which one person settles his/her usual residence on the Romanian territory for an actual or expected 12 months period at least, previously having the usual residence in another country (EU member state or not).

“Live-birth is a product of conception completely expelled or extracted from its mother’s body, regardless of the pregnancy duration, who, after this separation, gives a sign of life (breathing, heart activity, pulsation of the umbilical chord or voluntary muscular contractions);

General fertility rate is the ratio between the number of live births in a year and the female population aged 15 to 49 years at the 1st of July from the current statistics of the respective year, and expresses the number of live births by 1000 women of fertile age (15 to 49 years).

Deceased is the person whose final functions definitively ceased after any amount of time passed from his/her birth; Cause of death are illness, morbid conditions or wounds and “accidental” or “voluntary” poisonings that contributed or produced the death. Causes of death are accordingly to the World Health Organization’s International Classification of Diseases – 10th Revision;

Infant mortality rate is the ratio between the number of deaths under 1 year in a year and the live births of the same year<sup>2</sup>.

Natural increase is defined as the balance between the number of live births and the number of deceased persons during the reference period”<sup>3</sup>.

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<sup>1</sup> The methodological definitions of the indicators are in accordance with those from the National Institute of Statistics, TEMPO online database.

<sup>2</sup> Excepting the rates between 1957 to 1962, calculated by ratio between number of deaths under 1 year old and live births structured as follows: 1/3 live births from previous year and 2/3 live births from reference year.

<sup>3</sup> The methodological definitions of the indicators are in accordance with those from the National Institute of Statistics, TEMPO online database.

*Data sources* used in the study:

- Statistics from current evidence of population, for data referring to population number and demographic structure;
- Registrations from civil register evidence: Statistical demographic reports filled in by civil register offices with data on births, deaths, marriages, divorces and registrations of divorces from the court of law and notary offices;
- Annual migration flows series (immigrants and emigrants) sent by the national statistical offices from Italy and Spain for 2002–2012 period; “Mirror” statistics regarding international migration from Eurostat database as benchmarks for the quality evaluation of the results from econometric model application;
- Statistics on international migration are estimated according to the stipulations of EC Regulation no.862/2007 of the European Parliament and of the Council of July 11, 2007 regarding community statistics from migration and international protection field and repealing the Council Regulation (EEC) no.311/76 regarding the elaboration of statistics on foreign workers;
- statistics on usual resident population estimations are according to the stipulations of EU Regulation no.1260/2013 of the European Parliament and of the Council of November 20, 2013 regarding European demographic statistics.
- Administrative sources: Database of Ministry of Internal Affairs, for persons’ evidence, for the permanent resident population, internal migration (with domicile change and residence settlement) and international (final) migration determined by domicile change.

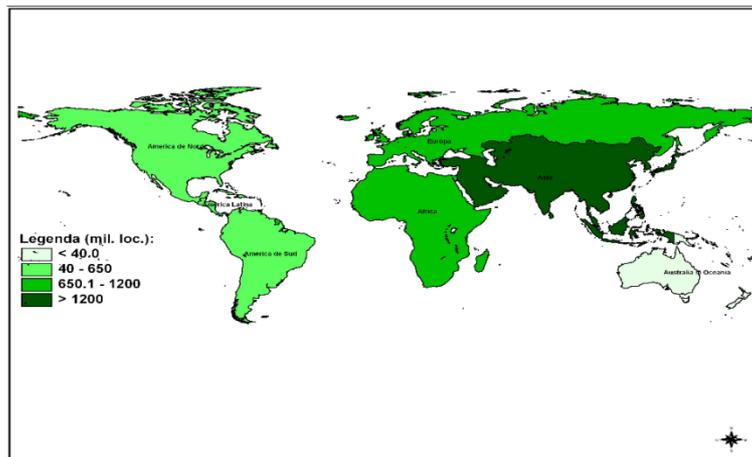
#### TRENDS OF THE WORLD’S POPULATION

The rapid growth of the world's population over the past three decades because of long-time economic and social transformations has led to increased interest in knowledge of demographic events and processes. According to United Nations (2017<sup>4</sup>) estimates in the World Population Prospects, the world's population on January 1, 2017 was 7.6 billion people, up 300 million compared with 2015. Asia has the largest share of the world's population (59.7%), with 4.5 billion inhabitants, while Africa is the next most populous continent with 1.3 billion inhabitants (16.6%). Europe occupies the third place with a weight of 9.8%.

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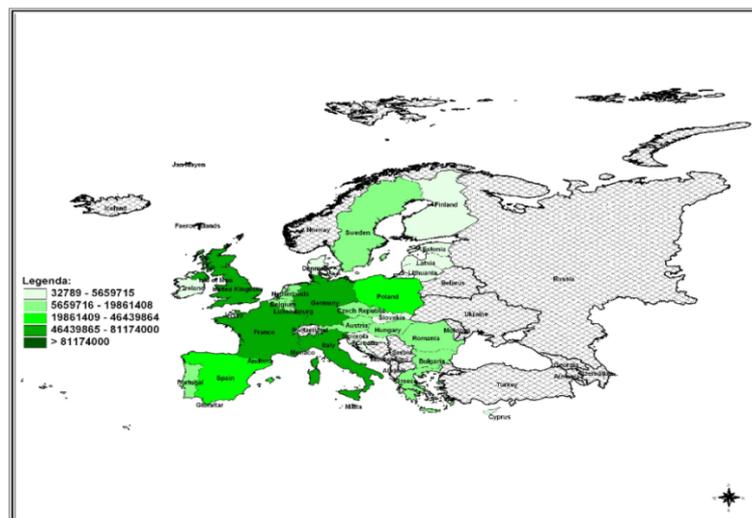
<sup>4</sup> United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision. New York: United Nations.

Recent demographic developments show that the population of the European Union is increasing, while the age structure shows also an increasing ageing.



**Figure 1.** Population's world map, at 1<sup>st</sup> January 2017.

Source: National Institute of Statistics, Romania – according to United Nations data



**Figure 2.** Population of the European Union, at at 1st January 2017.

Source: National Institute of Statistics, Romania - according to United Nations data

According to Eurostat data, on 1 January 2017, the European Union's resident population reached 511.5 million inhabitants, up 3 million compared with 2015, even after the increase of EU population, by joining Croatia (July 2013). Almost three quarters of the European Union, population is located in seven of the 28 countries (Germany, France, the United Kingdom, Italy, Spain, Poland and Romania). On the other side, the United Nation estimates predicted (based on 2015) the population of the entire European continent in 2017 to 742 million.

#### **SHAPES OF ROMANIAN POPULATION, INTERNATIONAL MIGRATION AND DEMOGRAPHIC TRENDS**

In official statistics, the population is calculated by two dimensions: usual resident population, according to the criterion of usual residence on the territory of Romania for at least 12 months, no matter of citizenship and permanent resident population, according to the criterion of domicile on the territory of Romania, only for the persons with Romanian citizenship.

Although the usually resident population of Romania follows a downward trend, Romania is still among the top EU Member States, in terms of population size, on the seventh position, with a population of 19.6 million inhabitants (National Institute of Statistics data). The major milestones which pointed out the markedly reduction of the usually resident population were the Censuses of 2002 and 2011, a period when the population declined by almost 1.6 million people. On January 1st, 2017, the data from National Institute of Statistics also shows the continuing downward trend of the usually resident population (19.6 million inhabitants).

On the other hand, according to National Institute of Statistics data, TEMPO online database, the usually resident population structure by age groups shows a decrease in the weights of the age groups up to the age of 30 (of 8 percentage points), as a result of the low birth rate and the emigration of young people. The groups most affected are 20–24 years (2.6 percentage points), respectively 15–19 years (2.1 percentage points).

Another red flag about the acute phenomenon of population ageing is the increased values for average age and median age of population. According to National Institute of Statistics data, TEMPO online database, on January 1st, 2017, the average age of the female and male population in Romania has increased compared to the same date of previous years. The average age of the female population is higher than the average age of men by 3.2 years. The rural population, more aged, has an average age of 41.9 years, 0.3 years more than urban population (41.6 years).

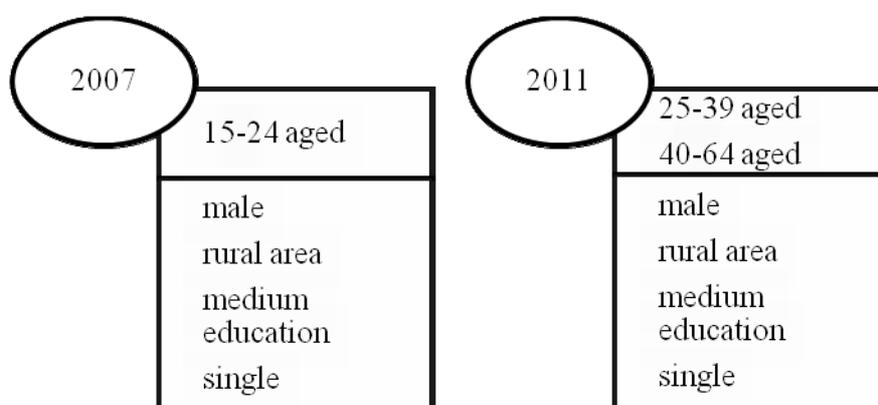
Official statistics in Romania estimate annual flows of international migration based on the European Regulation (EC) No 862/2007 of the European

Parliament and of the Council on Community statistics on migration and international protection. The authors note that the definitions of the components of international migration set out in the European Regulation delimit the number of emigrants, respectively of immigrants according to the notion of *usual residence* and the time criterion for *12 months and over*. A further remark relates to the definition of immigrants, which also includes those who “return home” after having established their usual residence in another state for a period of 12 months and over.

Emigration is a demographic phenomenon extremely difficult to measure, especially in the European Community space, where people are free to move from a member states to another. Nevertheless, the official statistics in Romania make permanent efforts to improve the quality of estimates by using multiple data sources, both statistical and administrative sources.

The economic and financial crisis, which affected the “receiving” states of emigrants in Romania, created new premises for migration patterns. If in 2000 the dominating profile of the migrant was that of a person aged over 40, with a medium and uneducated level of education, nowadays the trend of emigration is changed. The Romanian emigrant profile shows a young people who have acquired some migration experience, such as temporary cross-border work, study abroad or foreign specialization.

According to a study carried out in 2014 (Caragea, Dobre, Alexandru, 2014), a comparative overview of migrant’s profile between 2007 and 2011 is presented bellow

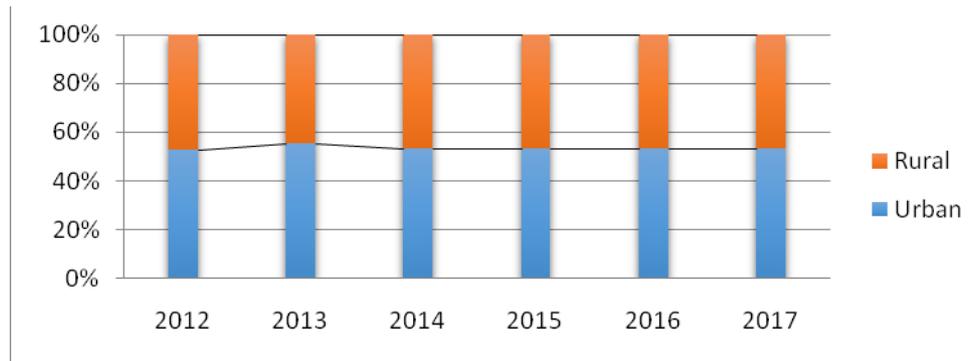


**Figure 3.** Comparative overview of migrant’s profile between 2007 and 2011<sup>5</sup>.

Source: Caragea, Dobre, Alexandru, *Profile of Migrants in Romania – A Statistical Analysis Using “R”*, <ftp://ftp.repec.org/opt/ReDIF/RePEc/eub/wpaper/eub-2013/2013-04.pdf>

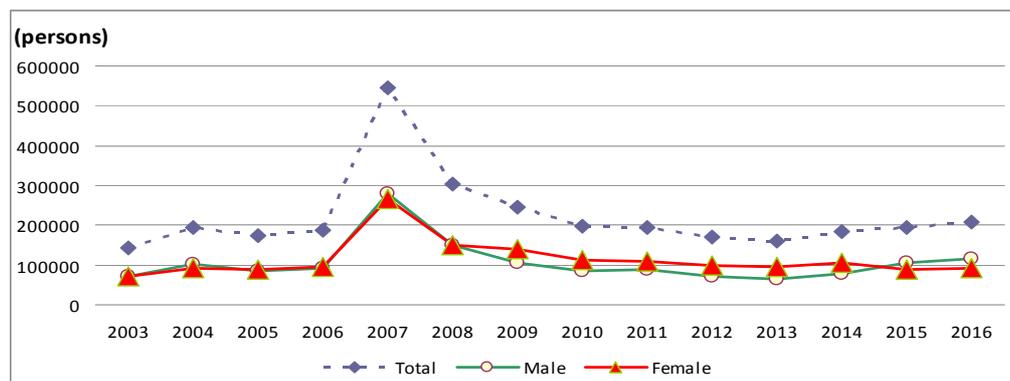
<sup>5</sup> The results in the tables above highlight the profile of the Romanian migrant at 1<sup>st</sup> January of 2008, respectively 2012 using LFS 2007 and LFS 2011.

The comparison analysis of migrants between 2007 and 2011 shows that the profile of migrants was changed: from younger to middle-aged people. In 2011, people aged 25–39, even with medium education, emigrate towards better economical and employment conditions. The migrants from 2007 were leaving almost for studying abroad.



**Figure 4.** The profile of emigrants, by residence areas, during 2012–2017.  
Source: National Institute of Statistics, Romania

In 2017, the share of urban emigrants continues to be higher than in rural area (53.4% in urban against 46.6% in rural area), but the situation is almost constantly in every years.



**Figure 5.** The annual flow of emigrants, by sex, during 2003–2016.  
Source: National Institute of Statistics, Romania.

International migration has affected both sexes, but in different proportions: until the year 2008, the emigration was balanced by gender, but in 2009–2014 the share of female immigrants was always higher than the male share. Since 2015, the situation was reversed, so that in 2016 the share of male immigrants was 55.4%.

The distribution of emigrants at territorial level indicates the existence of some emigration basins, particularly in counties where the population is very large. For example, a large number of emigrants records in Bucharest, but also in Prahova, Iaşi, Constanţa, Cluj, Timiş, and Dolj counties (more than 7000 persons in 2016) (National Institute of Statistics, Romania).

An unprecedented specific of international migration is circular migration or inter-state populations exchange, where the nationality or the permanent residence of the person are no longer essential criteria to define the concept of international migration. For example, Romanian immigrants registered in countries that were up to 2010 true reservoirs in terms of international migration (Italy and Spain) are deemed to have “emigrated” in the United Kingdom and Germany, the main criterion being economic and political stability in the country of destination.

Natural increase of the population that takes into account births and deaths, infant mortality rate, total fertility rate, general fertility rate are the most relevant indicators that can show Romanian demographic trends.

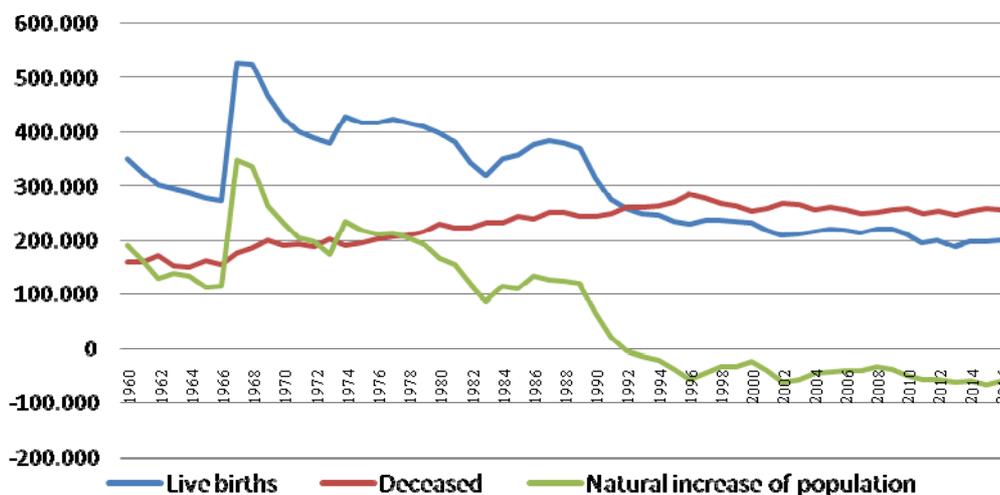
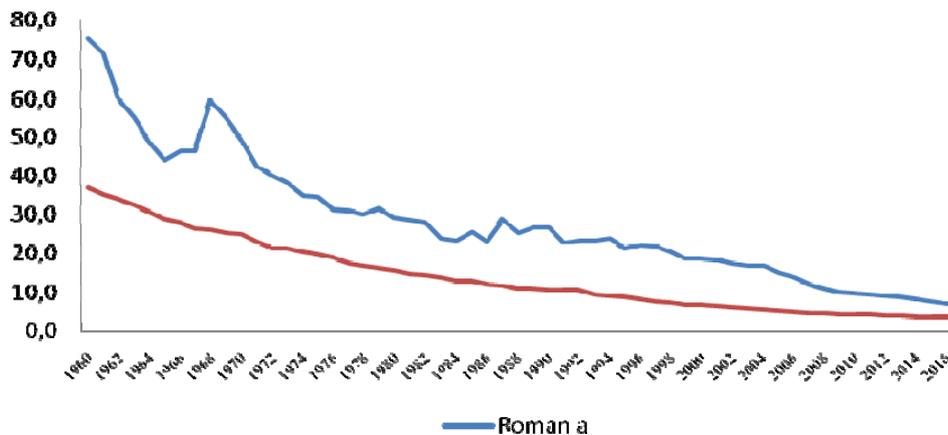


Figure 6. Natural increase in Romania (1980–2016).

Source: According to Eurostat data,  
[http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=demo\\_gind&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=demo_gind&lang=en)

The evolution of population depends on the analyzing of its natural increase.

After 1992, the population is decreasing, registering a negative natural growth. The births are decreasing and the mortality is growing slowly. The higher levels of births were after 1980, the consequences of the law against abortions from 1966. After 1990, the births decreased, the lower levels being after 2009. Romania is losing population because of the decreasing of births. The decline of the population has serious economic and social consequences, affecting all domains: education, health, labor market, but especially social security systems.



**Figure 7.** Infant mortality rate – Romania in comparison with the European mean.

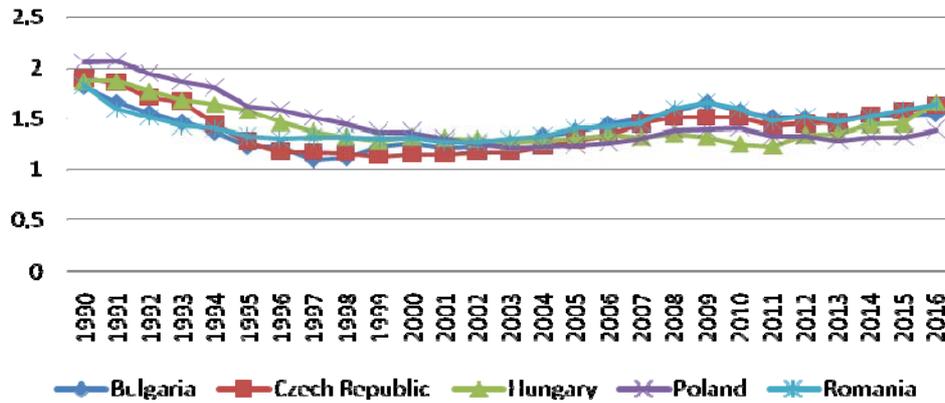
Source: According to Eurostat data,

<http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>

The infant mortality rate is a basic indicator for the measurement of the development level of the country.

The figure shows that infant mortality rate in Romania has higher values in all years than European mean. In 1960 Romania registered the highest values of the infant mortality rate, 75,7 deaths of children under one year of age per one thousand live births, more than double than European mean. The value of the indicator decreased from 1961 until 1967. After 1967 it was an increase of the infant mortality rates. As Trebici noted (1978), starting from 1967 Romania was in a new stage of the demographic transition. After 1970 the infant mortality rate decreased from 49,4 deaths of children under one year of age per one thousand live births to 26,9 deaths of children under one year of age per one thousand live births in 1990 and 7 deaths of children under one year of age per one thousand live births in 2016. The European mean of the infant mortality rate decreased after 1960 from 37,1 deaths of children under one year of age per one thousand live births to 3,7 1 deaths of children under one year of age per one thousand live births in 2016.

Even Romania has a lower rate of infant mortality rate in 2016 than in the past, the value of the indicator is still double than that of the European mean.

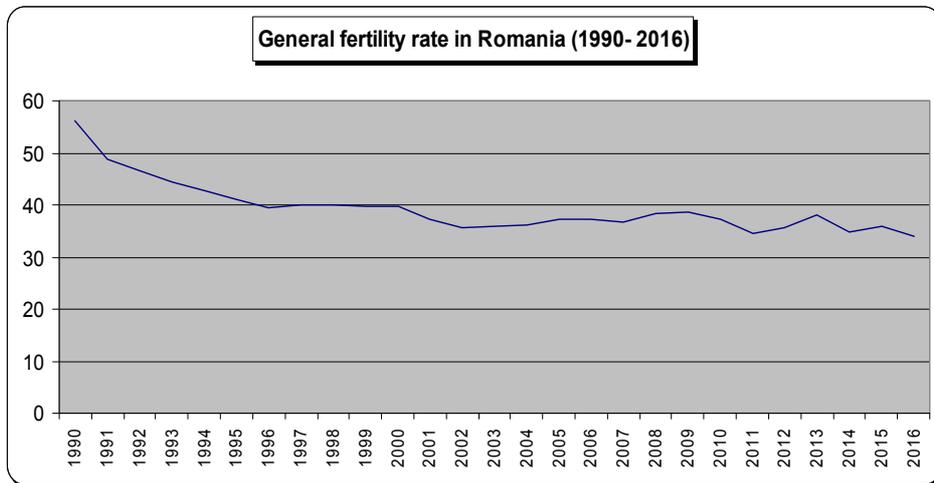


**Figure 8.** Total rate of fertility (comparisons with European countries).

Source: According to Eurostat data,

<https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tps00199&plugin=1>

The figure shows a decreasing rate of total fertility after 1990 for all countries presented. Poland registered the lowest value of total fertility from 2.06 children per woman to .39 06 children per woman in 2016, the lowest rate. After 1990, Romania registered a decreasing of total fertility rate from 1.83 children per woman to 1.64 children per woman in 2016.



**Figure 9.** General fertility rate in Romania.

Source: According to INS data, TEMPO online database,

<http://statistici.insse.ro/shop/index.jsp?page=tempo3&lang=ro&ind=POP203A>

The decreasing of the Romanian population also expresses the general rate of fertility. The data shows a decreasing rate from 1990 to 2016. The most pronounced downward trend was between 1990 and 1995, once with the decreasing of births. After 2015, the trend of the general rate of fertility is decreasing with negative consequences on the structure of the population.

#### **THE IMPACT OF POPULATION CHANGE ON LABOUR MARKET**

The dimensions and structure of a country's population depend on key demographic processes, such as birth rates, mortality and international migration. In turn, demographic phenomena produce strong influences on the level and pace of labour market development. For example, in the context of Romanian population decline and the changing trends of age structure, the labour market tends to shrink by reducing the working age population, although the unemployment rate is low and the employment rate is rising. In addition, the international migration, especially persons in full potential of employment and the highly skilled workers produce a strong impact on the labour market and consequently on society and the national economy.

In the economic sphere, the effects of international migration can have positive or negative meanings and generally occur in the medium or long term. In this respect, we can list some of the positive effects of international migration: increasing the incomes of the population, providing a better (paid) job, raising the standard of living (especially in rural areas), decreasing the number of unemployed in some sectors activity. On the other hand, international migration also brings a number of negative effects: the so-called phenomenon known in the literature as “brain drain”, which in most cases expresses “the migration of educated and qualified labour force from poor countries towards rich one” (Stănică 2007, 61–98), pursuing professional recognition and higher remuneration, conditions fulfilled in developed countries.

#### **CONCLUSIONS**

The size and structure of a country's population depend on key demographic processes, i.e. the birth rate, mortality and international migration, demographic phenomena having, in their turn, strong influences upon the level and development of the labour market. For example, in Romania, on the background of declining population size and of the trends in changing the age structure, the labour market tends to get restricted, by shrinking the economically active population, though the unemployment rate is low and the employment rate is increasing. Moreover, the emigration of the population, especially of those in the middle age and highly

qualified workers have a strong impact on the labour market and, consequently, on the society and the national economy.

The analysis concerning the demographic trends in Romania reveals that our country is losing population since 1991 because of the births decreasing, but also because of the migrations. After 1991, Romania had a negative natural growth, a decreasing of births and an increasing of deceased persons. Even if it had a downward trend after 1990, the value of infant mortality rate is still double than that of the European mean.

The decreasing of the Romanian population is affecting all areas, starting with labour system, health, education, but also with negative consequences on social protection system. It has a negative impact on the structure of the population, the ageing of the population being the main consequence. The ageing of the population involves a number of difficulties, influencing the insurance of financial stability and increasing the cost of assistance. In this context, the phenomenon of the ageing population attracts more and more attention of the governments.

The development of the country depends on the evolution of the demographic phenomena. The decreasing of the births and the increasing of migration will lead to the losing of an important segment of the population, the working one. The power of a nation depends on its demographic potential. The deterioration of the demographic potential induces negative consequences on the human capital and investments.

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