STUDY ON THE EVOLUTION OF DEMOGRAPHIC PROCESSES IN ROMANIA

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Abstract

The demographic changes in a country affect the evolution of the national economy, having direct effects on social protection, pension and health systems, with major implications for the national budget and public policies. Thus, in order to adopt the necessary measures to mitigate the consequences of demographic changes, it is necessary to identify their causes. At the same time, population aging obliges public authorities to offer solutions to ensure that the aging population maintains its quality of life, for as long as possible.

In this analysis, I started from the consideration that the population of a country constitutes the pillar of the formation of labor resources, respectively the starting point for determining the active population from which to extract the employed population. The population structure represents a precious source of information at the macroeconomic level, being the basis for adopting economic and social policy decisions.

Often, among the changes that occur in the life of an elderly person is the acquisition of the status of pensioner. For most people, retirement means a decrease in income. Pensions are usually the main source of income, if not the only one. Given that life expectancy is increasing, the population will have to remain in work for longer in order to have the necessary income to ensure a dignified life. There are cases where pensioners are even faced with the threat of poverty at an advanced age.

The purpose of this research is to analyze the phenomenon of population aging that Romania has been facing lately. In this regard, I presented and analyzed the main aspects regarding the evolution and structure of the population by age, by environment, by gender in Romania, highlighted through series of data in tables or through graphical representations. The data used in the analysis of demographic phenomena are those published by the National Institute of Statistics and Eurostat.

Keywords: life expectancy, birth rate, fertility rate, natural increase, population aging
JEL Classification: J11, Q56, R2.

Introduction

For some time, more and more countries have been facing the phenomenon of population aging, which represents the change in the distribution of a country's population towards older ages. Thus, there is an increase in the number of elderly people, as well as their share in the total population. Worldwide, there are currently over one billion elderly people and it is estimated that there will be over 1.4 billion people in 2030, respectively 2.1 billion people in 2050. In this context, the period 2021-2030 is declared by the United Nations General Assembly as the UN Decade of Healthy Ageing, the body responsible for implementing this action being the World Health Organization. The objective of the program is to support the concept of a long and healthy life.

A longer and healthier life can offer older people opportunities to continue working or pursuing other careers, to enjoy their passions or discover new ones, to engage in recreational activities or to develop their creativity, thus contributing to their families and communities. However, all of these potential activities are significantly influenced by health, so an important aspect to study is whether the

years lived are, in fact, years of healthy life. As people age, they face increasing needs, such as the need for medical assistance and/or long-term care. Sometimes, older people are considered to be frail or dependent, and measures are needed to combat these inappropriate attitudes towards old age, which can lead to discrimination.

Literature review

Anghelache (2023) conducted a comprehensive analysis of the evolution of the natural population movement in Romania, highlighting the impact of demographic decline on employment and economic growth. Anghelache et al. (2021) conducted a comprehensive study on the natural population movement in the context of the health crisis caused by the Covid-19 pandemic. Anghelache and Anghel (2018) investigated the correlation between the employed population and unemployment, highlighting that the Romanian labor market is characterized by an atypical behavior, in which unemployment is increasing, although there are job vacancies. Attanasio, Bonfatti, Kitao and Weber (2016) conducted a literature review on the impact of demographic changes on consumption and social security. Bloom, Canning, Fink and Finlay (2009) suggested that behavioural change, in the form of increased female labour supply, contributes significantly to economic growth during the demographic transition, when fertility declines. Börsch-Supan, Härtl, Leite and Ludwig (2023) assessed the effects of pension reforms on financial sustainability, social well-being and intra- and intergenerational equality in a unified framework with multiple dimensions of heterogeneity and diverse behavioural responses. Dolls, Doorley and Paulus (2019) analysed the impact of demographic changes expected at the European Union level by 2030 on income distribution. Fernandes, Turra and Rios Neto (2023) highlighted the fact that population ageing is a fundamental element of the demographic transition and that populations age due to decreasing inflows (births) at age zero and insufficient outflows (deaths) at older ages. Migration may also play a relevant role in certain countries or regions. Hejkal, Ravikumar and Vandenbroucke (2025) proposed a model to explain trends in mortality rates and life expectancy at different ages and population dynamics in Western Europe, highlighting that some individuals, by adopting better health technologies, contribute to increasing average life expectancy. Hernæs, Markussen, Piggott and Røed (2016) addressed a number of aspects regarding the early retirement system in Norway. Iftimoaei (2021) presented significant elements regarding the evolution of the rural population in Romania. Marešová, Mohelská and Kuča (2015) conducted a study on demographic developments and trends in the European Union, analysing health care expenditure for seniors and estimated health expenditure in relation to the EU demographic trend. O'Sullivan (2023) considered that the decline in fertility through family planning interventions enabled economic progress and improved women's access to education. Riekhoff, Kuitto and Palomäki (2020) studied the extent to which instrument substitution has occurred between early retirement pathways in Europe (early retirement, disability retirement). Schmidthuber, Fechter, Schröder and Hess (2021) studied how labour market and pension measures associated with active ageing influence retirement behaviour. Weber and Dabbs Sciubba (2018) analyzed the extent to which population growth causes environmental degradation and showed that reducing the emissions of a growing population requires significant planning and investment.

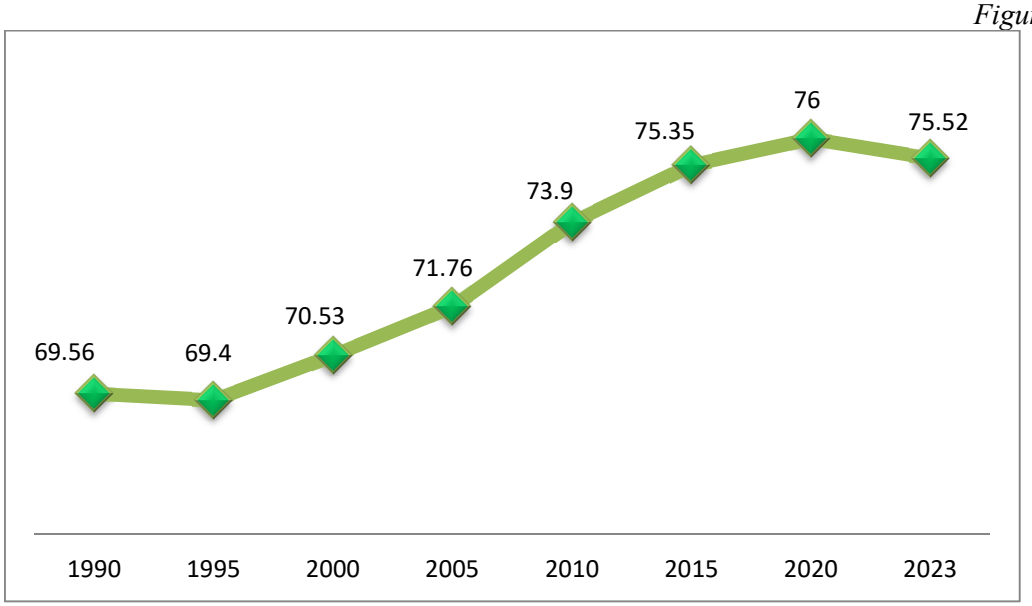
Research methodology, data, results and discussions

An indicator that must be taken into account in macroeconomic analyses and in planning the public pension system and the health system is longevity. The essential indicator for assessing the health of the population is life expectancy at birth. In the research, the first indicator analyzed is the average life expectancy, which reflects the average number of years a newborn would have to live, if the rest of his life were to live under the age-specific mortality conditions of the reference period. Figure no. 1 highlights the data on the average life expectancy in Romania, during the period 1990 – 2023, noting a continuous increase in the indicator, except for 1995, when a slight decrease of 0.16 years was recorded

compared to 1990. Thus, if in 1990, the average life expectancy in Romania was 69.56 years, in 2023 it reached 75.52 years, i.e. by almost 6 years.

Evolution of average life expectancy in Romania, between 1990 and 2023 (years)

Figure no. 1



Source: author's representation based on data from the National Institute of Statistics, tempo online, accessed accessed on March 11, 2025.

The increase in life expectancy was the result of the improvement of both living and working conditions, following economic growth.

Although these increases were recorded in Romania, it should be noted that life expectancy at birth in the European Union was 81.4 years in 2023, according to Eurostat data, placing Romania at the bottom of the European ranking.

Throughout the period under analysis, it is found that women in Romania are longer-lived, living, on average, 7 years longer than men (see table no. 1).

The lowest average life expectancy for women was recorded in 1990 (72.65 years), and for men in 1995 (65.7). For both sexes, the maximum was reached in 2020.

Average life expectancy in Romania by sex, during the period 1990 – 2023 (years)

Table no. 1

Year	Female	Male	Difference between the sexes*
Column 0	Column 1	Column 2	Column 3 = Column 1 – Column 2
1990	72.65	66.56	+6.09
1995	73.36	65.7	+7.66
2000	74.20	67.03	+7.17
2005	75.47	68.19	+7.28
2010	77.64	70.27	+7.37
2015	78.86	71.88	+6.98
2020	79.67	72.42	+7.25
2023	79.16	71.96	+7.20

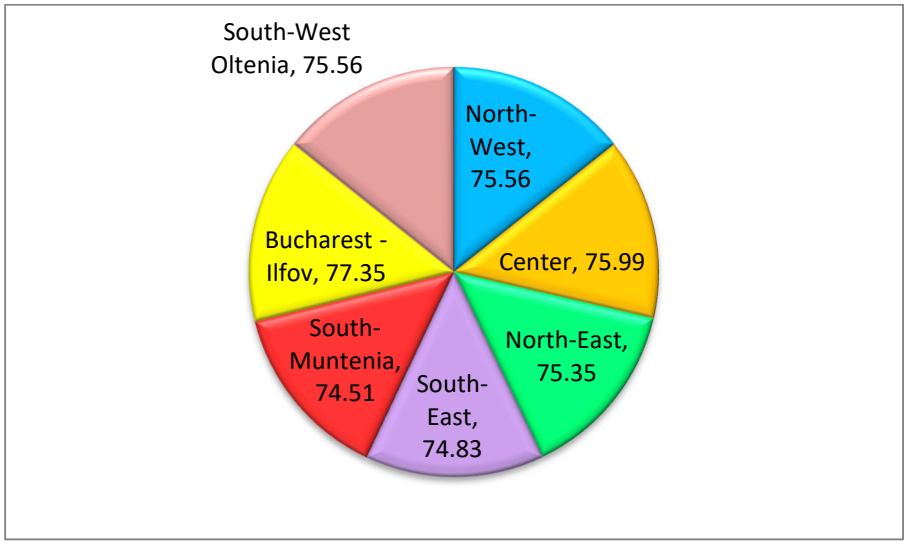
*Source: National Institute of Statistics, online tempo, accessed on March 11, 2025; *own calculations.*

In 2023, the region with the highest average life expectancy in Romania is Bucharest-Ilfov, at 77.35 years. It is followed by the South-West Oltenia and North-West regions, both at 75.56 years. It is worth noting that the South-Muntenia, South-East and North-East regions are below the national average.

The data for all regions of Romania recorded in 2023 are summarized in the figure below.

Average life expectancy in Romania by development regions in 2023 (years)

Figure no. 2



Source: author's representation based on data from the National Institute of Statistics, online tempo, accessed on March 11, 2025.

The analysis is deepened with the study of the average life expectancy by residence area, the data being centralized in the following table:

Table no. 2. Average life expectancy in Romania by residence area, during the period 1990 – 2023 (years)

Year	Urban		Rural		Urban/rural gap*
	Number	Change compared to 2000*	Number	Change compared to 2000*	
1990	:	-	:	-	-
1995	:	-	:	-	-
2000	71.31	-	69.53	-	1.78
2005	72.53	1.22	70.78	1.25	1.75
2010	75.26	3.95	72.2	2.67	3.06
2015	76.58	5.27	73.81	4.28	2.77
2020	77.33	6.02	74.31	4.78	3.02
2023	76.8	5.49	73.88	4.35	2.92

Source: National Institute of Statistics, online tempo, accessed on March 11, 2025.
*Legend: ':' - missing data; *author's calculations.*

Both urban and rural life expectancy increased throughout the period analyzed. For example, in 2020, compared to 2000, the average life expectancy increased by 6.02 years in urban areas and by 3.02 years in rural areas. It is also noted that the urban population lives longer than the rural population, the gap between the two areas of residence being permanently present. The largest gap was recorded in 2010, when city dwellers lived, on average, 3.06 years longer than the rural population, and the smallest gap between the two areas was recorded in 2005 (1.75 years).

The main factors affecting the average life expectancy include those of a socio-economic nature, such as lifestyle and level of education. Thus, the quality of life of the population living in rural areas is negatively influenced by poor public services in the areas of health and education, poor infrastructure (running water, energy supply, sewage, roads) or low-paid jobs.

The increase in the standard of living has led to changes in social preferences and demographic behavior. For example, for some time now, the phenomenon of "postponing marriage" has been gaining momentum, so young people are increasingly postponing the moment of marriage and the birth of children, having other priorities, such as completing their educational training, entering the labor market, advancing in their professional careers, but also diversifying ways of spending their free time. Also, some people no longer want to have children due to insufficient income or the increasing time spent at work.

Young people are postponing the moment of the birth of their first child until they consider that they have a stable job, which provides them with the necessary material resources for a comfortable life. These conditions have led to a gradual increase in the average age at which women decide to have a child. Thus, at the country level, the average age of the mother at first birth has increased significantly, namely by 5.2 years in 2023 compared to 1990, which means an increase of 5.5 years in the urban area, i.e. 29.2 years is the average age of the mother at first birth. In rural areas, this indicator has increased from 21.3 years in 1990 to 25.5 years in 2023, meaning an increase of 4.2 years. The data are presented in the table below.

Average age of the mother at first birth, by area of residence, in Romania, during the period 1990 – 2023 (years)

Table no. 3

Year	Total		Urban		Rural	
	Indicator	Change compared to 1990*	Indicator	Change compared to 1990*	Indicator	Change compared to 1990*
1990	22.3	-	23.7	-	21.3	-
1995	22.7	0.4	23.8	0.1	21.6	0.3
2000	23.7	1.4	24.9	1.2	22.3	1
2005	24.9	2.6	26.3	2.6	22.7	1.4
2010	26	3.7	27.5	3.8	23.4	2.1
2015	27	4.7	28.5	4.8	24.6	3.3
2020	27.8	5.5	29.3	5.6	25.6	4.3
2023	27.5	5.2	29.2	5.5	25.5	4.2

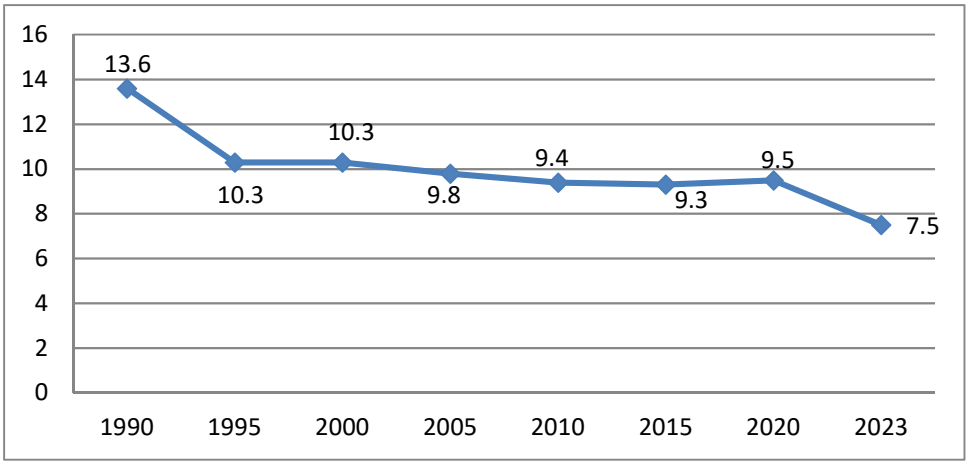
*Source: National Institute of Statistics, online tempo, accessed on February 15, 2025; *author's calculations.*

The increase in the average age of the mother at first birth influences the decrease in the birth rate. By implication, the increase in the age at which women have their first child decreases the chances of having more children. The birth rate is the indicator that highlights the number of live births in a year

compared to the population as of July 1 from the current statistics. It is expressed in the number of live births per 1,000 inhabitants. The following figure highlights the evolution of the birth rate in Romania, during the period 1990-2023.

Evolution of the birth rate in Romania, during the period 1990-2023 (live births per 1000 inhabitants)

Figure no. 3



Source: author's representation based on data from the National Institute of Statistics, online tempo, accessed on March 6, 2025.

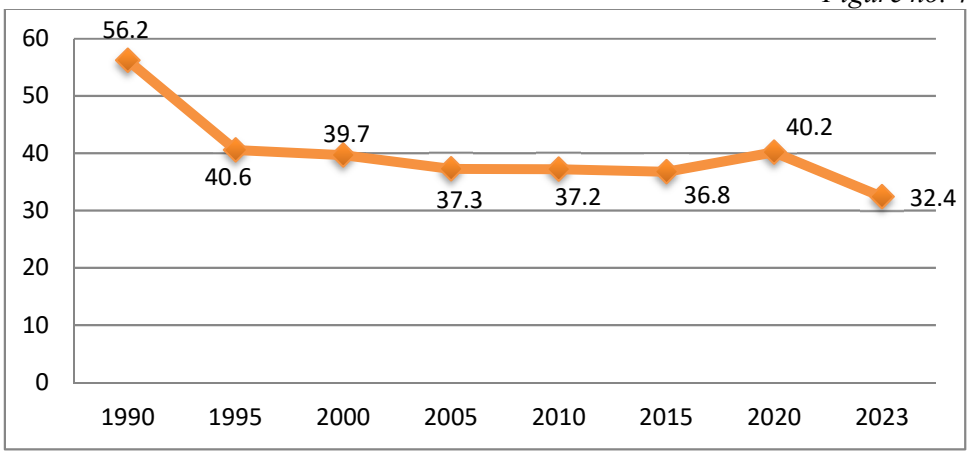
From the analysis of the above data, a dramatic and worrying decrease in the birth rate in Romania is observed, during the period under analysis. This is caused by a mix of economic, social, demographic and cultural factors, such as changing mentality or prioritizing career. For some time, Romanians prefer smaller families in order to have a more comfortable life. At the same time, social models have changed and thus the pressure to have children at a young age has diminished over time. Also, more and more women are choosing to build a career before becoming mothers, postponing the moment of marriage and that of the first birth.

According to data from the National Institute of Statistics showing the natural movement of the population, in 2023, the general fertility rate was 32.4‰. The I.N.S. methodology highlights that the general fertility rate represents the number of live births in a year compared to the female population aged 15 - 49 as of July 1 of the current statistics of the respective year and is expressed in the number of live births per 1000 women of childbearing age (15 - 49 years). This indicator is calculated for the entire fertile population, as well as for five-year age groups.

The decrease in the fertility rate indicates a series of economic, social and cultural changes that influence the decision of families to have children. Thus, an important role is played by economic changes and financial insecurity, including the high costs of raising children (related to ensuring health, education and housing conditions) or the instability of jobs and insufficient income.

Evolution of the fertility rate in Romania, during the period 1990-2023 (live births per 1000 women of childbearing age)

Figure no. 4



Source: author's representation based on data from the National Institute of Statistics, online tempo, accessed on March 6, 2025.

Also, fertility problems caused by stress, pollution or an unhealthy lifestyle should not be overlooked. At the same time, postponing the moment of giving birth to a child determines a shorter fertile period.

In 2023, the fertility rate for women residing in urban Romania was 28.6‰, while for women residing in rural areas it was 37.4‰. In other words, women in rural Romania are more fertile than those in urban areas, the fertility rate in rural areas being 8.8 percentage points higher than in urban areas. The data for the period 1999-2023 are presented in the table below.

Fertility rate by area of residence in Romania, during the period 1990-2023 (live births per 1000 women of childbearing age)

Table no. 4

Year	Urban	Rural
1990	46.7	69.8
1995	30.7	58.2
2000	29.1	57.8
2005	31.5	47.2
2010	33.8	42.5
2015	34.4	40.2
2020	38	43.2
2023	28.6	37.4

Source: National Institute of Statistics, online tempo, accessed on February 27, 2025.

In addition to the decrease in birth rate, Romania is also facing an increase in mortality, resulting in a negative natural increase, a process that determines an accelerated demographic decline and population aging.

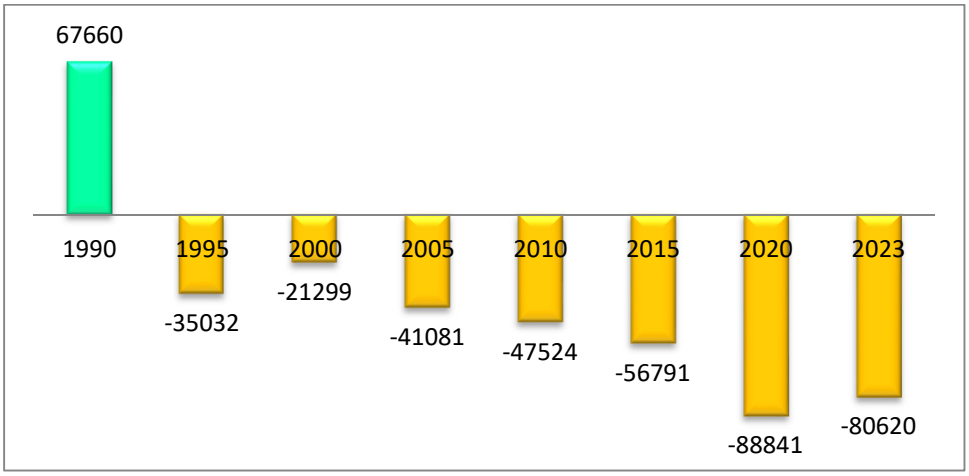
According to official statistics, the share of the elderly population in the total population is continuously increasing, which shows that the demographic aging process of the Romanian population

is strong and long-lasting. Natural increase is the difference between the number of live births and the number of deaths in the reference year.

From the figure below, it can be seen that, in the period 1995-2023, Romania recorded only negative natural increase.

Evolution of the natural population growth in Romania, during the period 1990-2023 (number of people)

Figure no. 5



Source: author's representation based on data from the National Institute of Statistics, online tempo, accessed on March 6, 2025.

The decline in natural growth is putting pressure on the public pension system and the healthcare system, as fewer employees have to support a growing number of retirees. With the decline in the active population, the country is facing a labor shortage, affecting the economy and development of the country..

Conclusions

The analysis of the evolution of the natural population movement is of interest, since this phenomenon influences the evolution of the labor force, the employed and unemployed population, as well as the unemployment rate.

The demographic aging process generates a series of socio-economic effects that influence the increase in healthcare and social assistance expenses for the elderly, as well as the sustainability of the public pension system. In general, the most affected are single elderly people, who do not receive support from their family or loved ones and, sometimes, not even from local authorities.

The most vulnerable and exposed to the risk of poverty and social exclusion are the elderly and single people. Social assistance services do not cover the entire range of needs they face and are usually provided by people who do not have the appropriate training.

Compared to January 1, 2023, In 2024, the demographic aging process in Romania has deepened, with an increase in the share of the elderly population (65 years and over).

In recent years, changes in demographic behavior have been observed in Romania, determined by the living conditions of Romanian society. Young people are concerned about extending the period allocated to educational training and are interested in employment and promotion in their professional careers.

The decline in the birth rate and the decline in the fertility rate are two complex phenomena, caused by a combination of economic, social and demographic factors. At the macroeconomic level, special attention must be paid to the evolution of these indicators, as Romania risks an acceleration of

population aging and a significant decrease in the labor force in the future and, consequently, leading to an imbalance between the active and retired generations, affecting the economy and social systems.

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