

SOCIAL AND ECONOMIC FACTORS AFFECTING POPULATION IN ROMANIA

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As a result of the fact that at the end of 2011, in Romania, was conducted the Population and Houses Census, many studies were focused on the demographic evolution from our country. Our paper is focused on the factors that are influencing the evolution of population in Romania, in order to explain the evolution of demographics. The study was conducted on a 20 years timespan, using statistical data that are characterizing the macroeconomic and demographic environment between 1990 and 2010.

To achieve our goals, we will use the statistical methods to analyze the data released (time series and cross section data) by the National Institute of Statistics. We will try to find some correlations between the evolution of population and social (natural increase of population, net migration) and economic factors (employment, average net wage, GDP).

We conclude sustaining that the increase of emigrants and the ageing phenomenon in last 20 years decreased the number of population, while the increase of employment and GDP are two factors that have a positive influence on the population evolution. The average net wage may have two types of effects: an increase of the wage may represent an opportunity for some families to cover easily the cost of having a child, while for others, the opportunity of gaining higher wages may change their working behavior determining them to focus on career and postponing the birth of a child.

Keywords: population, natural increase of the population, migration, employment, net wage, GDP

JEL codes: J11, E24

Introduction

A major component of today is quality of life. All of us need a quality life, because contemporary society focuses directly on life and on social development. There are many years since the world is carrying out research and publishes studies regarding the quality of life, closely linked to social and economic indicators, namely with national and social policies leading to improving existing in people's lives.

In modern times, society had to ensure the greatest happiness, to influence contemporary economic theory and contemporary social policies. The issue of life is best taken in the twentieth century; the other fields of knowledge, so that sociology will take much of the social factors of society and the individual changes. Measuring quality of life is subjective and objective approaches, pursuing a wide range of sizes. Current perception is complex and multidimensional based on progress in all areas, economic components being very important and considered.

We believe that population with physical and economic characteristics, outline the main coordinates of a country and is a component of the indicators of quality of life. As a result, our purpose is to highlight the socio-economic factors that influence the evolution of population in our country.

In order to achieve our purpose, we structured the paper as it follows: in the literature review we present the findings obtained in some representative papers on this topic, in the methodology we describe the instruments and the method used in the analysis, while the results and discussions section enhances our main results we obtained during our analysis. The paper ends with conclusions.

Literature review

Studying the literature, we find out that most of the previous researches were focused on the impact of social factors on the population evolution. There are also, papers where the authors'

studied the impact of economic factors on population evolution. In some of these articles, the authors have studied the relationship between urbanization and industrial structure (Komei Sasaki, Taku Ito, Sotaro Kunihiya, Michihiro Kaiyama, 1997; Sovani, 1964; Gugler, 1982), between urbanization and urban concentration (Henderson, 1980), between urban concentration and economic development (Rosen, Resnick, 1980; Wheaton, Shishido, 1981) and between economic development and income distribution (Kuznets, 1955; Williamson, 1965; Mera, 1975). The underlying hypothesis is that the greater an economy is industrialized or a higher level of urbanization in developing countries cause migration from rural to urban areas, which will increase the national unemployment rate because of limited job opportunities in urban areas. The economic efficiency is increased by agglomeration economy in the early stage of urbanization, while agglomeration diseconomy prevails in the late or mature stage, so as to lower the economic efficiency. Regional income disparity increases in the early stage of development and decreases in the late stage of development.

Vasile V. (2004) shows us that increasing population is influenced by several demographic, economic, social and political factors that covered distinct periods of different intensity or significance. The low birth rate, associated with a total fertility rate fewer than 2 after 1990, caused the diminution in the proportion of the youth. The reduction in the demographic dependence ratio due to the decrease in the segment covered by the young persons caused economic and social problems. There will be less and less working age people to support economically the inactive ones, that is the adults must face a heavier social burden as they provide for their families, the education of the young generation and financial support to the pensioners. The size of the demographic imbalance measured by the ageing index is more serious the more so as it shows a higher dynamics. If in 1992, the number of elderly to 1000 children was only 722, in 2002 this value increased at 1098 persons, an increase by more than 50 percent in 10 years (Vasile V., 2004:9). The population's spatial mobility in order to adapt to the labor market needs and to balance the labor market throughout the country is low. Romania's population prefers commutation and/or temporary circulatory migration to residence/household movement. Inside the country about 6.7 million people migrated at least once in their lifetime, while over the period 1992-2000 about 197 thousand people emigrated and 75 thousand repatriated themselves and the annual flows were decreasing (Vasile V, 2004:9-10).

Romania's labor potential is one of the pillars of the sustainable development of the society in the third millennium. The completion of the economic and social reforms and the functional effectiveness of the economy in the post-transition period depend to a great extent on the nation's productive capability as well.

The National Institute of Statistics confirms in the population projections (reviewed in 2003) the continuation of the population ageing. Until 2025 the number of less than 15 years age people diminishes by about 1.3 million and the number of the elderly increases by 130 thousand. Therefore, the young persons will account for 14.8 percent of all population in 2010 and only 12.9 percent in 2025, while the elderly account for 19.8 percent and 22.5 percent, respectively (INS, Projections, 2004:7). The share of the "60 and over" population increases to a greater extent in 2025 when among the elderly we find even more "very old" people. The population reduction and accentuate ageing trend will bring about the medium-age increase by at least 8 years until 2025 and other 4-6 years until 2050.

The effects will be stronger on the labor market both directly by changing the age structure in favor of the elderly, and indirectly by increasing economic dependence rate of the old people (INS, Projections, 2004:9). The population of 65 years and over will reach about 4 million in 2025 and about 5 million in 2050, and its share in all population will be one-fifth and one quarter, respectively (Vasile V., 2004:17). According to EU population projections 2008 – 2060, the old age dependency ratio is projected to be 65.3 in the case of Romania. In other words, there would

be only two persons of working age for every person aged 65 or more in 2060, compared with four persons to one today (EU, 2008).

Methodology

In order to identify the factors that are influencing the evolution of population in Romania, we decided to use statistical instruments - we studied the correlations between the number of people and different social and economic indicators.

In our study we employed two types of data. Firstly we used time series analysis to detect the impact of socio-economic factors on population evolution and secondly, we developed a cross section data analysis (using county data) with the purpose of identifying the impact of social and economic factors on the number of people in the same macroeconomic environment.

Both time series and cross section data we used in our paper are available at National Institute of Statistics from Romania in Tempo Online section and in Statistical Yearbooks. Time series data cover the time span between 1990 and 2010, while the cross section data describe the county situation in 2009. In the case of cross section analysis we have eliminated the municipality Bucharest because we consider that being the capital of Romania has different characteristics than the other 41 counties.

Results and discussions

Analyzing the evolution of population in Romania, we observe that we are facing a phenomenon of population decrease (Fig.1). The number of people is determined by the natural increase of the population (the difference between live-births and deaths) and the net rate of migration. Also there are a number of economic factors which affects the population growth, like GDP evolution, employment and net wage.

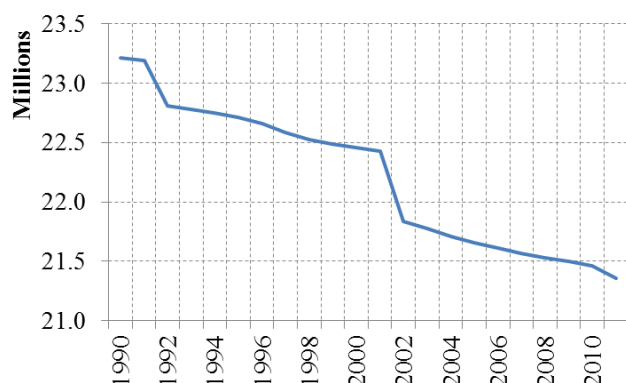


Fig. 1. Population evolution in Romania

Source: realized by the authors using NIS data

We will begin our analysis studying the effects of social factors on population evolution. Usually, the yearly values of people are determined by the NIS adding to the population from previous year the natural increase of population and the net value of migration. We have an exception in the years when we have a census (like 1992, 2002 and 2012 in Romania), when the data series are updated with the values obtained from the census. This is the reason why in these years may appear serious differences between the values computed using the usual formula and

the census values. For example, according to NIS, in the 2012 census we had a difference of approximately 1 million persons between the census value and the population from current statistics (NIS 2012:3). In our view, these differences are due to the unrecorded migration.

According to economic rules, an increase in the number of emigrants will reduce the net value of migration, reducing the population number. As a result of statistical analysis of time series, we conclude that the wage and the age of population represent two main determinants of emigration. We have determined a statistically significant relationship (at the 99% confidence level) between the number of emigrants and the evolution of average net wage, the correlation coefficient being equal with -0.921. According to our model, an increase of 1% in the average net wage will generate a reduction of 0.219% in the number of emigrants. Also, R-Squared statistics indicates that the model as fitted explains 84.91% of the variability of emigration.

Since 1992, the natural increase of population had in Romania a negative effect on the population, reducing each year the number of Romanians. Unfortunately, it seems that the

phenomenon will continue to sustain the reduction of population, because of aging population. According to our calculation, every time the average age of population is increasing 1 year, the natural increase of population will decrease 11552.7 persons. The model is statistically significant at the 99% confidence level and explains 41.1987% of the variability in the natural increase of population.

There is also good news. We have studied the relationship between employment and natural increase of population and we concluded that there is a strong relationship between variables, the correlation coefficient being 0.81048, an increase of employment by 1000 persons will ameliorate the value of natural increase of population in Romania by 27.01 persons (the model is statistically significant at the 99% confidence level). Usually, a positive evolution of employment is associated with economic growth, when the chances for the young families to obtain higher revenues increase. As a result of a better economic and social perspective, the number of births

increases (Fig. 2). Our conclusion is sustained by the relationship identified between the evolution of fertility rate (live births / 1000 women) and employment. During the time span 1990 – 2010, every time the level of employment increased by 1%, the level of fertility rate increased by 0.93% (the model is statistically significant at the 99% confidence level). Unfortunately, the increase of net wage has a negative effect on the evolution of fertility rate, suggesting that in some situations, women choose to develop a career and to postpone the birth of a child (the average age of mother at the first birth has increased in the last 10 years from 23.7 years in 2000 at 26 years in 2010 (NIS

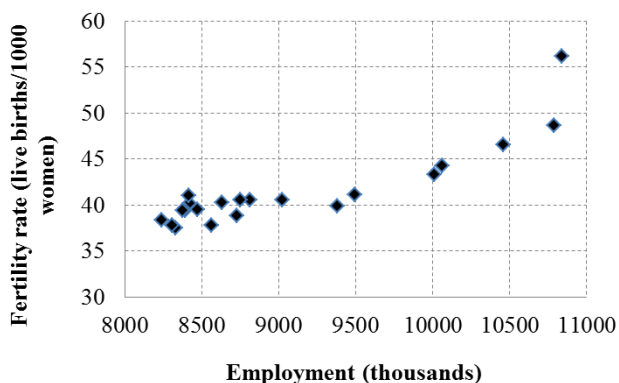


Fig. 2. Fertility rate and employment (1990 – 2010)

Source: realized by the authors using NIS data

2012:62)). Our calculations suggest that an increase by 1% in net wage will generate a decrease by 0.03253% in fertility rate.

The effects of employment and net wage evolution on the population can be analyzed directly using statistical instruments.

Regarding the relationship between employment and population we prove one more time the hypothesis enounced previously: the increase of employment determines the increase of population (see fig. 3 and 4). We verify this idea using to types of data. Firstly, analyzing time series data we conclude that an increase by 1% of employment will increase by 0.239% the number of population. Moreover, studying the cross section data, we may conclude that at the county level, an increase by 1% of employment will increase the population by 0.884%. As a result, we believe that people tend to migrate to the counties (towns) that generate more jobs, here the population increasing more rapidly.

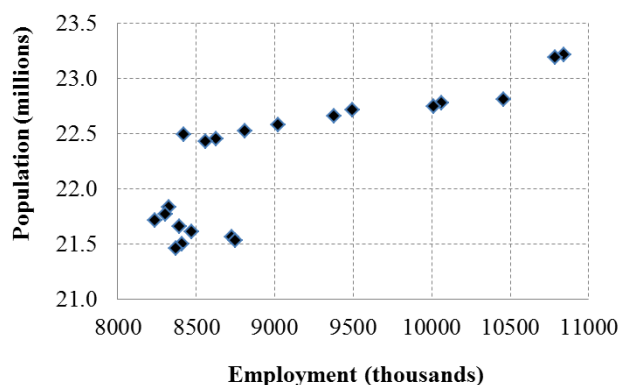


Fig. 3. Population and employment (1990 –

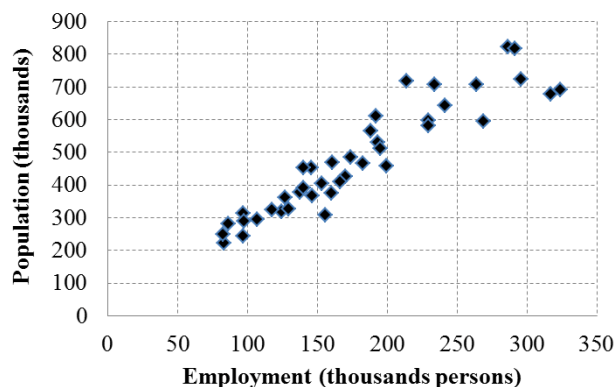


Fig. 4. Population and employment - county

2010)

Source: realized by the authors' using NIS data

values

Source: realized by the authors' using NIS data

The effects of net wage evolution are different when we analyze time series than cross section data (as we can see in figures 5 and 6).

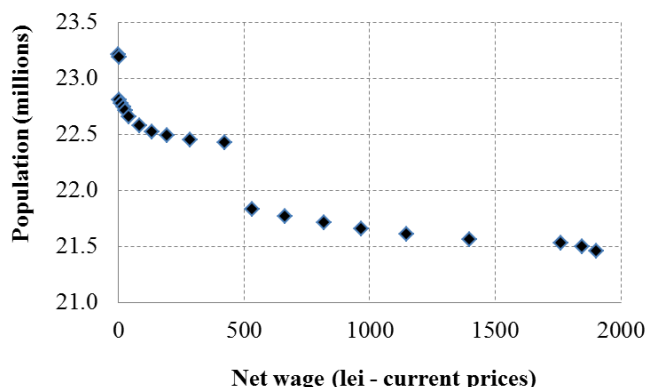


Fig. 5. Population and net wage (1990 – 2010)

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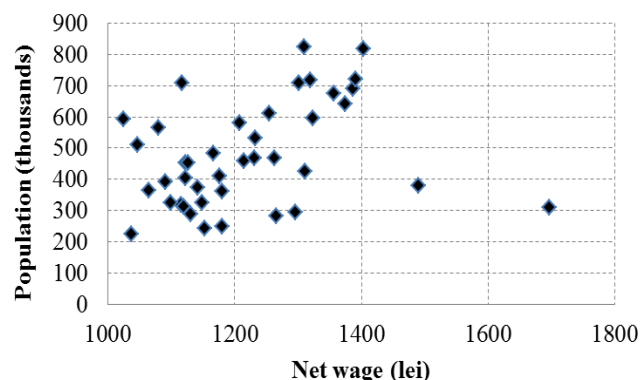


Fig. 6. Population and net wage - county values

Source: realized by the authors' using NIS data

During the time span 1990 – 2010, the increase of net wage had a negative impact on the fertility rate (as we saw previously). The opportunity of gaining higher wages change the working behavior of many people, some of them neglecting their private life. According to our model, an increase of the net wage by 1% determined a decrease by 0.00941% of population. On the other side, studying the relationship in the case of counties, we obtained that an increase of net wage by 1% will increase the population by 522965 people. This conclusion relates with the idea we mentioned previously, that people tend to migrate to the counties that generate more jobs. In these counties, the labor market tends to be more competitive: we have more jobs and in the same time we have more people who are willing to work, people that are well educated and skilled. As a result they will obtain higher wages and will have better perspectives.

We are obtaining similar results (as in the case of net wage) when we are analyzing the relationship between GDP evolution on population (as we can see in figures 7 and 8).

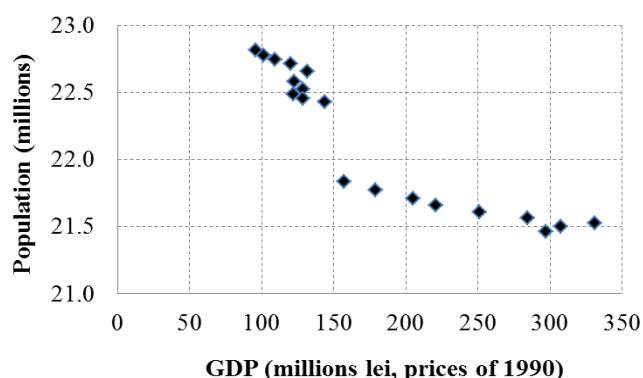


Fig. 7. Population and GDP (1990 – 2010)

Source: realized by the authors' using NIS data

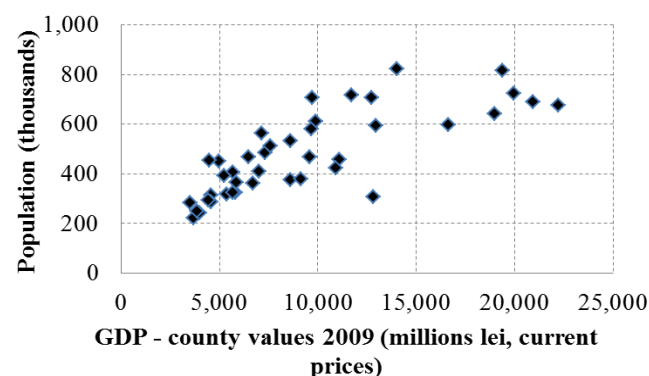


Fig. 8. Population vs. GDP – county values

Source: realized by the authors' using NIS data

We observe that during time, as GDP increased, the number of population decreased (fig. 7). We believe that one cause is the fact that the intensification of economic activity increased the number of hours worked and the efforts of employees. Also, more opportunities for career development or the fear of losing their job (during the economic downturn since 2008) have

determined many families to think one more time before having a child. According to our model, an increase of GDP by 1% decreased the number of population by 0.0581%. In contrast, when we analyze the cross section data, we can see clearly that the counties that generate a higher GDP tend to have a higher population, because they have more job opportunities and better jobs (as we saw previously). So, an increase of GDP by 1% will increase (attract new people) by 0.555% the population of that county.

Conclusions

Demographic evolution is facing a decreasing phenomenon, because of the natural increase of the population and the net rate of migration. Also there are a number of economic factors which affects the population growth, like GDP evolution, employment and net wage. Using the statistical data, we verified that an increase in the number of emigrants will reduce the population number. In the case of Romania, the number of emigrants is influenced by the evolution of average net wage - an increase in the net average wage will generate a reduction in the number of emigrants. Since 1992, the natural increase of population had in Romania a negative effect on the population, reducing each year the numbers of Romanians – an increase of the average age of population will decrease the natural increase of population. Unfortunately, according to current demographic evolutions it seems that this phenomenon will continue to sustain the reduction of population also in the next years.

The good news in the case of population evolution is the fact that an increase of employment will ameliorate the value of natural increase of population in Romania. A positive evolution of employment is associated with economic growth and with better economic and social perspectives, aspects that will sustain the increase in the number of births. Another proof for this positive relationship is the fact that people tend to migrate to the counties that generate more jobs and that have a highest GDP. Unfortunately, the intensification of economic activity increased the opportunities for a career, or simply for a job, the desire to have a child being left after.

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