THE INFLUENCE OF THE ECONOMIC GROWTH ON THE BIRTH RATE

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Abstract:
The changes occurred over time in the population have effects on the economy, especially the reductions in the birth rate which may lead to disturbances in the population structure. The relationship between the economic growth and the birth rate in Romania is analysed over an 11-year period, in order to see its intensity. The presentation of the evolution of the gross domestic product and of the birth rate is completed by the calculation of the Spearman coefficient for determining the intensity of the relationship between the two indicators. The decrease of the birth rate is determined, to a modest extent, by the economic growth, with a wide range of factors that influence it. In this situation, the establishment and implementation of a birth rate recovery strategy is highly necessary to reduce the imbalance created in the population structure.

Keywords: the theory of demographic transition, economic growth, gross domestic product, birth rate

JEL Classification: E00, J11, O10

1. Introduction

In the contemporary period the ratio between the number of employees and the number of pensioners is extensively discussed and the perspectives are not able to provide the security of the positive evolution of the state pension system. The ratio between the people who have completed their business activity and those conducting this type of activity is based on population aging and the number of live-born children who in over nearly two decades become labour force. The labour market and employment become thus dependent on the demographic phenomena from each state.[4]

The relationship between the economic growth and the birth rate has been observed and presented ever since 1929 by Warren Thompson, who formulated the theory of demographic transition. The development of this theory was made by Frank Notestein in 1954 and Jean - Claude Chesnais in 1986.

The development and progress occurred in all fields of activity turned this theory over time, presenting the second demographic transition (Van de Kaa and Ron Lesthaeghe in 1987) and the third demographic transition (David Coleman in 2006).

In essence the economic development and the economic progress have resulted in a reduction of the birth rates. The demographic transition is the consequence of the modern transformations specific both to developed and emerging states.

This paper aims to identify a link between the economic growth and the birth rate in Romania, as well as its intensity. We consider it important to establish this relationship and its intensity as the population and the changes that it undergoes are the basis of the economic activities. The reference indicator for the economic growth is the GDP, while for the natality we shall use the rate of birth.

The decrease of the population after 1989 has not had any significant negative effects so far on the economy of our country, but the perspective does not fall within the same trends as what is currently an advantage, in time will turn into a disadvantage by the occurrence of demographic imbalances. (Ghețău , 2007)

Vasile Ghețău calls the demographic situation in Romania a latent demographic crisis because of the imbalance between inputs and outputs.

The birth rate in the past 22 years has seen a downward trend. This demographic phenomenon strongly influences the economic activities, but in its turn it is significantly affected by the state’s demographic policy, a component of the economic-social development policy. (Mihăescu, 2005)

The factors that have contributed to reducing the birth rates are:

- degradation of the living standards
- unemployment
- uncertainty
- stress, etc.
2. The relationship between the gross domestic product and the birth rate

The interest concerning the evolution of the birth rate in Romania is determined by the fact that the number of pensioners is greater than the number of employees, and the forecasts of the two indicators show no improvement of the situation, on the contrary, an increase in the gap. In this context, the increase of the birth rate is a direct way to reduce in the future the relationship between the number of pensioners and that of the employees. The future employees are the ones who will support the state pension system, but the current reality reveals low levels of the birth rate.

The birth rate and the GDP during 2000 – 2011 will be analysed to demonstrate the link between the two indicators.

After 1989 the birth rate declined, thus, if in 1990 there were 13.6 live-births per 1,000 inhabitants, in 2011 there were 9.2 live-births per 1,000 inhabitants.

The birth rate between 2000 - 2011 recorded a downward trend, even if within the range analysed there were years in which the indicator was rising (graph no. 1).

![Graph no. 1. The evolution of the birth rate in Romania](src)

Women’s emancipation, insurance of the financial independence and increased involvement in the economic activities were just some of the factors that clearly influenced the birth rate, as stated by the literature.[1]

Nevertheless we must note an obvious fact in Romania’s economic landscape. The employment rate among females decreased during the 2000 – 2011 period, recording lower values as compared to the employment rate among males (graph no. 2).

![Graph no. 2. Employment rate among females in Romania](src)

Although women’s involvement in the economic activities, highlighted by the help of the employment rate, is becoming lower and lower, there was not any increase recorded in the birth rate in Romania.
The GDP in Romania recorded an upward trend during 2000 - 2008, a period followed by a significant decrease caused by the economic crisis. The years 2010 and 2011 managed to reduce the drop recorded in 2009, so that the last year reduced the positive value facing the indicator (graph no.3).

Graph no. 3. The evolution of the GDP in Romania

The demographic transition theory shows that economic growth, higher living standards and higher life expectancy at birth led to reductions in the birth rate.

Based on this hypothesis, the GDP is considered the indicator influencing the birth rate so that the GDP is considered as being the independent variable and the birth rate is considered the dependent variable. The notations used are the following:

- the independent variable will be denoted by X
- the dependent variable will be denoted by Y.

The intensity of the relationship between the two variables is determined by using one of the nonparametric methods for determining the relationship between the phenomena, namely the ranking method. The Spearman coefficient is calculated, which involves establishing the ranks specific for each variable separately. In determining the pairs, the GDP is presented with a one-year lag, because the birth rates record the live-born child at the time of the birth, while the parents’ decision to procreate occurred approximately 9 months before (table no.1).

Table no. 1. Ranks for the X and Y variables

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>R_x</th>
<th>R_y</th>
<th>R_x - R_y</th>
<th>(R_x - R_y)^2</th>
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<td>3</td>
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<tr>
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<td>9.7</td>
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<td>2</td>
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<td>25</td>
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<td>4</td>
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<td>1</td>
</tr>
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<td>0</td>
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<td>2</td>
<td>4</td>
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<td>16</td>
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<td>1</td>
</tr>
</tbody>
</table>

Total 80

Source: Calculations made by the author based on data from graphs no.1 and no. 3
The calculation formula for the Spearman coefficient is presented below:

\[ C_S = 1 - \frac{6 \sum (R_{x_i} - R_{y_i})^2}{n(n^2 - 1)} \] (1)

Where: \( R_{x_i} \) – the rank of \( X \); \( R_{y_i} \) – the rank of \( Y \); \( n \) – the number of pairs.

By substituting in the formula (1) the values calculated in table no. 1, we determine the value of the Spearman coefficient and we show the intensity of the relationship between the two variables.

\[ C_S = 1 - \frac{6 \times 80}{10(10^2 - 1)} = 0.52 \]

The result of the calculations performed is 0.52 which indicates the intensity of the relationship between variables so that between the GDP and the birth rate there is a moderate relation.

3. Conclusions

The demographic changes had and still have different intensities from one country to another; the effects that these changes bring in the real economy are varied. Typically, in the developed countries the decrease of the birth rate and of the death rate is completed by an economic growth. In contrast, in the emerging countries the high levels of the birth rate and of the death rate are accompanied by low levels of the economic growth.[1]

By analysing over a period of 11 years the link between the economic growth and the birth rate in our country we can say that the value recorded by the GDP affects only to a small extent the birth rate phenomenon. The link between the two phenomena exists, but the consequences are much larger, meaning that the evolution of the economic growth determines the standard of living, the quality of life, etc. Despite the fact that the employment rate is in decline in our country, nonetheless, the economic activities involving women, the desire to be independent, fewer marriages, the increase of the age at which women marry and the increase of the age at which they procreate have led to the decrease of the birth rate.

The literature demonstrates the existence in Romania of a delayed fertility, this representing the model existing in the Western European countries. Individualism and consumerism are considered by experts as the main causes of the current developments in the birth rate.

In the current period, an essential role in the decision to procreate is the level of the income obtained by the family. Currently, the cost of raising a child has increased, and especially it is no longer seen as a production factor, as it happened in pre-industrial times.

Without a birth rate recovery strategy, both on medium and especially on the long term, the results will not change. The economic growth and getting over the economic crisis will not lead families to want and be able to support a greater number of children.

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