A DARK SCENARIO FOR ROMANIA'S PENSION SYSTEM FUTURE: FERTILITY, MORTALITY AND MIGRATION REMAIN THE SAME.

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Abstract

The paper tries to forecast some of the issues of the pension funds and sustainability considering a scenario of constant age specific fertility and mortality in Romania for the next 50 years. Considering the issues that population ageing brings, we show that if nothing happens in Romania with the demographic indicators, we're heading towards huge problems. The first problem we'll experience is the lack of sustainability of the Romanian pension fund. This will increase deficits and lead to a debt spiral that is hard to stop, especially when confronting with an old population, high taxes that don't attract migrants and the lack of capital.

Keywords: Population Ageing, Demographic Decline, Pension Fund

JEL Classification: E27, R23, J13, J14

1. Introduction

Romania has started the demographic transition during the 1960s'. Since then, with a small outliner due to the 1966 Decree, the fertility in Romania has been decreasing. After 1990, Romania's fertility dropped to very low levels. Today we're in a situation where, due to the decreasing base, the age specific fertility would need to grow exponentially in order to stop the population ageing and the population decline.

2. Research Status

Different studies try to compute the risks that Romania is facing in terms of deficits and public debt, for the next 50 years. The results can only scare us: Romania's population will be 16Million inhabitants in 2060 (Ghețău, 2004), same 16 Million according to the United Nations Fund for Population (Ghețău, 2007), 18 Million in 2050 according to Standard and Poors (Mrsnik, Beers, Morozov, 2010) and 13 Million according to some other more pessimistic studies. All these results are based on the data before the 2011 Census and back then the population in Romania was considered to be 22Million instead of just 19Million as the Census has confirmed.

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This population decrease happens due to the fact that fertility decreased and despite mortality has also decreased. Still, in this case, besides shrinking, the population also gets older. In these conditions, since working age population ratio in total population is shrinking and old age population ratio is increasing. This would move the median age of the population from 37 nowadays to 53 in 2060 (Gheţău, 2007), putting a lot of pressure on the working population to sustain the aged population causing lack of sustainability to the pension funds but also to other public systems (health, social security etc.).

From this perspective, the old age dependency ratio would increase from 21% now to 6.3% in 2060 (Buti, Deroose et. al, 2009), a value considered impossible to handle, especially that the pension funds already have deficits ever since the ratio was below 18%. Thus in the official Population Ageing Report - Economic and budgetary projections for the EU-27 Member States (2008-2060) (H.Bogaert et al, 2009), we find out that Romania will have one of the highest costs of ageing. According to this study, Romania will need to double its expenditures on pension funds, health and social security, despite the assumption that it will raise the pension age over 70 years by 2060.

Furthermore, according to a European Commission study, in order to support the costs of population ageing, Romania will need to borrow from international markets, increasing the public debt from 22.7% in 2009, or 34% in 2012 to 633% in 2060 (Buti, Deroose et al, 2009).

Most other European countries are considered to have the same problems but many developed countries do already have different approaches to solve these issues. One of the solutions is immigration but Romania can't think of such thing as it is the second workforce exporter on the globe in 2010, right after China and before India according to OECD data. If we also add that Romania has lost more than 10% of its population in less than a decade and that the emigration from Romania has increased after our country has entered the European Union, we can imagine that this is not the solution.

3. Romania's future if we don't change anything

Considering the problems in modeling the fertility due to the demographic transition (Galor, 2005) that Romania is passing right now (Barbulescu, 2013), a scenario based approach was used. The scenario keeps the age specific fertility and age specific mortality constant to their 2011 levels allowing us to foresee where we are heading if nothing changes.

Whereas in 2010 the Romania approximately 278,000 people emigrated, up 72,000 from the previous year, migration is considered the most difficult to approximate. Moreover, if the number of migrants remains constant and birth rate would grow instantly to replacement level of 2.1 children per woman, it would still lead Romania to remain with under 3 million inhabitants in 2060.

Moreover, in Romania since 2004 left at least 200,000 immigrants annually. In these circumstances, this scenario does not take into account migration, trying to

see what would happen if the factors that determine the natural increase of population would remain constant to see how serious the situation is.

Born babies were considered to be 50% boys and 50% girls, both to simplify the calculation and because the decision to have a boy or girl is not taken by the parents but is rather a random variable despite "preference" for boys was noticed lately since the births of boys are about 10% more common than births of girls.

Mathematical calculations are based on a model containing:

$$Ent_t = Sum \left(Fert_{i,t} \times Fem_{i,t} \right)$$

Entt where the number of births (entries population trends) Ferti represents birth and considered the same age group in 2012 until 2060 and Femi is the number of women in age group i, all cast for year t

$$Ex_t = Sum \left(Mor_{i,t} \times Inh_{i,t} \right)$$

Where Ext is death (outputs to changes in the population) for year t, Mori is mortality age group and considered as the same from year 2012 to 2060, the number of inhabitants inhibitory and age in year t

$$Inh_t = Sum \left(Inh_t \right) + Ent_t + Ex_t$$

Where Inht represents the total population in year t calculations were performed separately for women and men in order to predict the evolution of each age group for each sex and population pyramid to build valid every year.

Also, in order to calculate the impact of population ageing over pension expenses ratio in GDP, the following decomposition formula will be used:

$$\frac{Cheltuielile\ cu\ Pensiile}{PIB} =$$

$$= \frac{Populatie\ 65+}{Populatie\ 15-65} \; x \; \frac{1}{\frac{Angajati\ 15-65}{Populatie\ 15-65}} \; x \; \frac{Pensionari}{Populatie\ 65+} \; x \; \frac{\frac{Pensie\ medie}{PIB}}{Angajati\ 15-65}$$

From calculations based on the number of inhabitants of Romania reported by Eurostat in 2012 (number that is significantly different than 2011 Census), using the same birth and death rates for each age group to reach a population decrease from 21,355,849 people considered the population in 2011 to 13,186,595 persons in 2060 (see Figure 1).

Very interesting is also the fact that although age specific birth rates are kept constant, when decreasing the number of women in each group than of childbearing age, overall birth rate has a tendency to decrease from 1.25 children per woman in 2011 to about 0.47 children per woman in 2060.

Figure 1. Population trends 1968-2060 .
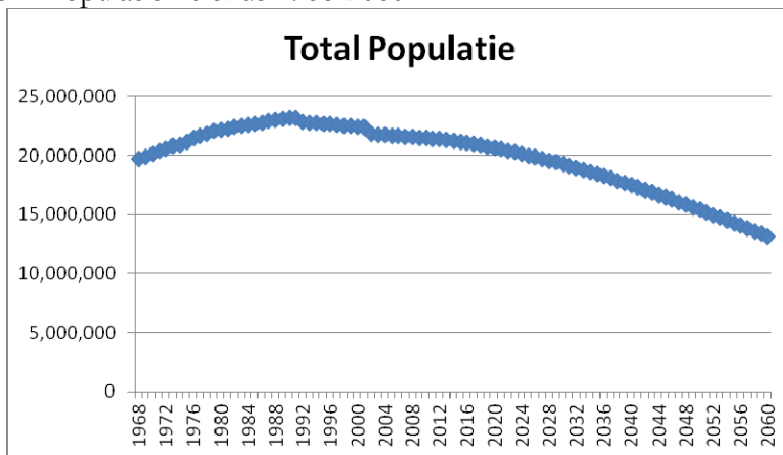
Source: Eurostat and own forecast based on own scenario.

The reason for this development is the emergence of small generation of people within the child-bearing age (i.e. women born after 1990) in the same time with the disappearance from fertile age range of a generation of people that was a lot higher (e.g. women born in 1967 who is close to twice the number of women born in 1990 and nearly three times the number of those born in 2011).

Even more interesting is the evolution of old age dependency ratio. It also had an upward trend before 1990 due to the appearance of normal medical discoveries that allowed the extension of the average lifespan, up from 11.2% in 1968 to 13.9% in 1990 and continuing from there to 17.6% in 2000 and 19.8% in 2010.

Figure 2. Developments in old age dependency ratio 1968-2060
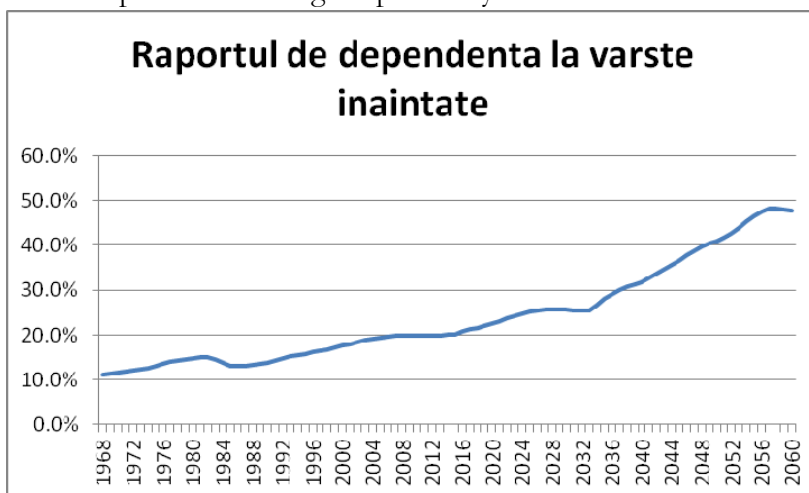
Source: Eurostat and own forecast

We already know that the public pension budget pose serious challenges to the general government, requiring loans to cover deficits. Also, it can be seen already in

Figure 2, that the old age dependency ratio places us somewhere on top of the European rankings, surpassing many other EU countries.

Under this Scenario, in the future we can expect an increase in the dependency ratio from the present value of 19.8% to 22.5% in 2020, 26% in 2030, 32.3% in 2040, 40.7% in 2050 and even 48.8% in 2060. This happens due to the dramatic changes in the demographic pyramid as the young generations are getting increasingly smaller number of people and while lowering mortality led and still leads to a greater number of surviving to old age.

Figure 3. The evolution of the population pyramid 2010 - 2060 under Scenario 1
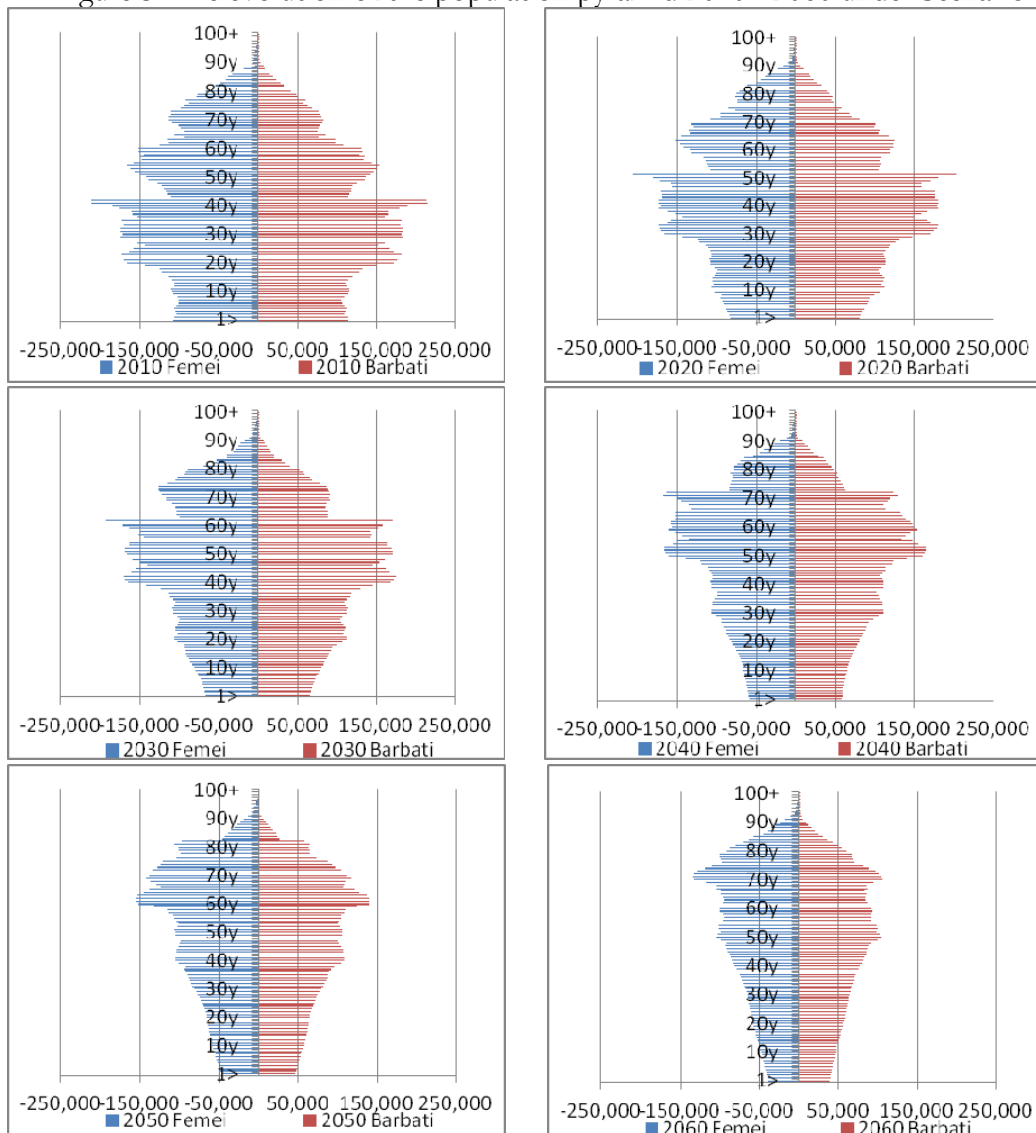
Source: Eurostat and own forecast based on scenario 1

Using the decomposition formula given earlier, we see that an increase in the dependency ratio 65 + over 15-65 from 19.8% currently to 48.8% in 2060 will lead to an increase of public pension expenditure in total GDP by about 146% if the all other factors remain constant.

Being already under a budget deficit, Romania will need either to reduce other public services (defense, justice, public order, health, etc.) or change the pension system radically. Yet many of these costs are also increasing with the aging population while reducing public investment would also lead to lower GDP and thus again increasing pension expenditure ratio.

Furthermore, as these system deficits have become chronic we can expect over time, besides the unsustainability that comes from it, we can expect over time the accumulation of more public debt in order to maintain the status quo. Yet, since other debts also need to be rolled over, Romania is expected to soon reach a point of no return.

4. Romania's future if we don't change anything

The research shows that Romania needs to take action soon to increase fertility and stop migration as its future situation is severely unsustainable. As can be seen in Figure 2., the bad situation today will get even more alarming in 2031 when the highest age population in the history of Romania is going to pension.

Thus we have a very limited window of opportunity when we can act to increase fertility and to keep Romanians in Romania. Yet, despite this problem is known for several years, the politicians are thinking mainly short term on an election cycle that leaves the future problems unresolved.

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