DEMOGRAPHIC CHALLENGES AND SUSTAINABILITY OF PUBLIC PENSIONS EXPENDITURES

Miloș Marius Cristian
University “Eftimie Murgu” of Resita, Faculty of Economics, m.milos@uem.ro

Abstract
The demographic changes that are likely to be experienced in the European Union in the coming decades determine governments to find solutions in order to provide the sustainability of social public expenditures. The literature usually focuses on elements which underline the effects of macroeconomic parameters on the size of public pension expenditure: Samuelson (1958), Cass and Yaari (1966), Blanchard (1985), and Gertler (1999). However demographic effects, notably fertility rate and old-age dependency ratio, are also key elements which affect the sustainability of social security expenditures according to Miroslav Verbic and Rok Spruk (2011). Our econometric testing confirms the high relevance of old age dependency ratio and of the fertility rate upon public pension expenditures, both demographic variables proving to influence the size of public pension expenditure. Considering these results we propose some measures which governments should include in future public policies.

Key words: demography, pensions, public expenditures, sustainability, governments.

JEL classification: H00, H55

1. Introduction
Within the current paper we are revealing the main issues regarding the ageing of the EU-27 population by focusing mainly on the facts offered by the European Commission, Eurostat (2012) through a very interesting statistical portrait, entitled “Active ageing and solidarity between generations: A statistical portrait of the European Union”. The European Union’s (EU’s) population structure is changing and statistical data proves that population is becoming older and older – there were slightly more than 87 million persons aged 65 and over on 1 January 2010 in the EU-27, some 17.4% of the total population. These latest figures can be compared with data from 1 January 1985, when there were 59.3 million persons aged 65 and over in the EU-27 (12.8% of the total population) (Eurostat, 2012).

An increase in life expectancy across the EU during the last century led to increased longevity, while in more recent decades – from the 1970s onwards – the EU has experienced falling fertility rates. Those demographic changes had very strong effects regarding ageing in the last 30 or 40 years and it is expected, by many, that the ageing process will further affect society during the next half century, as the absolute number of older people and the percentage in total population of older persons are still growing. This process should be mainly
considered by governments as the ageing of the population could determine implications for public policies and budgets. At present, there are severe constraints on fiscal policies and a strong need for fiscal consolidation over a number of years in the EU, all this happening also because social security expenditures are influencing policies and the pressure regarding the sustainability of pension expenditures is steadily growing.

2. Literature review

Usually focusing on the main literature regarding the challenges with which governments are being confronted we could see mainly those elements which underline the effects of macroeconomic parameters on the size of public pension expenditure: Samuelson (1958), Cass and Yaari (1966), Diamond (1965), Blanchard (1985), and Gertler (1999). Demographic effects, notably fertility rate and old-age dependency ratio, are also key elements which affect the sustainability of social security expenditures. Consequently we underline the paper of Miroslav Verbic and Rok Spruk (2011) who reveal that demographic processes play a significant role, much more important than the role of macroeconomic parameters, explaining the long-run pressure of ageing.

The changes in the demographic profile of the EU will also affect the labour and product markets, families and individuals. In order to defeat the obstacles occurred by population ageing, a long-term view seems necessary, well beyond the horizon of electoral cycles. Many of the challenges that arise from population ageing are universal and include (Eurostat, 2012):

- pressure on public budgets and fiscal systems;
- strains on pension and social security systems;
- adjusting the economy and in particular workplaces to an ageing labour force;
- possible labour market shortages as the number of working age persons decreases;
  - the likely need for increased numbers of trained healthcare professionals;
  - higher demand for healthcare services and long-term (institutionalised) care;
- potential conflict between generations over the distribution of resources.

Romania’s population is rapidly decreasing and ageing, which, unless adopting the necessary reforms, will lead to the explosion of the demographic bomb in a few decades.

- Romania’s population has decreased by 1.8 million inhabitants during 1990-2008, from 23.2 to 21.4 million inhabitants
- Until 2050, Romania’s population is set to decrease by a further 4-5 million inhabitants, to reach 16-17 million inhabitants
- The fertility rates in Romania decreased from 2.3 new born babies per woman in 1989 to 1.4 new born babies per woman in 2008;
- The average age of mothers at their first birth giving increased 22.3 years in 1990 to almost 26 years in 2008;
Life expectancy in Romania increased from 70 years in 1990 to 74 years in 2008 and continues to grow. These figures show that the population is rapidly decreasing and ageing, the trend looking quite irreversible. And all these trends took place in the last 18-20 years alone. The decreasing and ageing population puts a heavy burden on the public pensions budget, which has to rely on less contributors (active employees) to support more beneficiaries (pensioners). Romania’s demographic problems show that its public pension budget is no longer sustainable in its current form and needs a major reform, to avoid collapsing sometimes during the next decades. That is why, in 2007, Romania introduced the private pensions system, based on the model tested and recommended by the World Bank. The multi-pillar private pensions system includes the 2nd pillar – mandatory schemes and the 3rd pillar – voluntary schemes. Nowadays, over 30 countries throughout the world have such a system put in place – most of them are in Central and Southern America and in Central and Eastern Europe. In the CEE, no less than 11 countries run such a system.

In the public pensions system (PAYG = pay as you go), the state collects contributions from employees and redistributes the money among existing pensioners. Demographics show that this redistribution logic is no longer viable, as contributor's numbers will fall and the number of pensioners is already going up. All over the world, countries reformed or are in the process of reforming the PAYG public systems, introducing private pensions schemes.

Social security sustainability and also the public pensions sustainability seem to become real problems of nowadays economy. This frightening challenge is due to ageing of population but also due to migration from Eastern European countries towards more developed countries. All this is definitely being stimulated also by the unsuitable allocation of public expenditures as revealed in the lines above and by less efficient governments.

“In Romania, before 1989, there were two migration mechanisms: permanent migration which had as main motivations than the political and ethnic ones. On a smaller scale there also existed temporary migration for study or working abroad which was based only on inter-governmental agreements between Romania and other countries. After 1990, migration becomes a social phenomenon that gains momentum and the main motivations of migration have transformed from the ethnic and political ones to economic reasons. Migration in this period took on many forms. We are dealing with migration for family reunification, ethnic migration (Hungarians migrating to Hungary, Germans migrating to Germany, etc.), business migration, educational migration due to international mobility of students and concluding with migration for employment” (Panzaru and Milos, 2011).

Figure 1 illustrates that the population of European Union is ageing, without any exception (old and new member states). This is due to an increase of the population over 65 years old and a shrinking of the segment of population between 0-14 years old (Milos and Corduneanu). The highest increase in the
A segment of 65 over years population is noticed especially in the EU-15 countries, while the most significant decrease in the 0-14 years population is noticed in the EU-12 countries.

**Figure 1. Rate of growth/decrease by age EU (2001-2007) (%)**

![Bar chart showing rate of growth/decrease by age EU (2001-2007)]

Source: (Milos & Panzaru, 2011)

"The international financial crisis had a negative impact on the pension systems, both on the first and the second pillar. It is true that, given the volatile nature of the investments made by private pension funds, the second pillar was more affected. While the second pillar was introduced for avoiding some specific risks for the future of pensions, given the negative demographic trends (i.e. their sustainability and adequacy), this pillar is more affected by the financial risk at which financial markets are exposed when a financial crisis occurs. Although less affected, the first pillar is also negatively influenced by the financial crisis, once with the reduction of the aggregate national income" (Milos and Panzaru, 2011).

As discussed earlier, the impact of fertility on public pension expenditure is unambiguous (Barro and Becker 1989; Meier and Wrede 2010). The empirical evidence suggests a negative relationship between age-related government spending and equilibrium fertility rates. The literature suggests (Stensnes and Stølen 2007) that public pensions should respond strongly to the increases in old-age dependency ratio.

### 3. Methodology and Results

The econometrical model we have chosen in order to prove the existing relation between total pension expenditure and demographic elements is a multifactorial regression and focuses on the following variables:

- Dependent variable: Total pension expenditure (mill. Euro): old age pension, anticipated old age pension, partial pension, disability pension
- Independent variables: old-age dependency ratio (population aged 65 and over/population between 15 and 64), fertility rate, migration (net migration).

The source of the data is Eurostat, the time period 2000-2009 and the sample of countries is EU-27.

The results of our model can be seen in the table below (Table 1):

**Table 1 – Results of the econometric model**

<table>
<thead>
<tr>
<th>EXPLANATORY VARIABLE</th>
<th>Pooled EGLS</th>
<th>Fixed effects (cross-section)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OADR</td>
<td>3030.302*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1300.896)</td>
<td></td>
</tr>
<tr>
<td>FERT</td>
<td>-17124.57**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(9020.553)</td>
<td></td>
</tr>
</tbody>
</table>

Observations 140
Number of countries 27
R-squared 0.9971
Adjusted R-squared 0.9964
F-test 1332.3680
p-value 0.0000
Durbin-Watson 1.66

Notes: Public pension expenditure is the endogenous variable of the model. Standard errors are given in parantheses. Asterisks * and ** denote significance at 5 percent and 10 percent level, respectively.

Source: Author’s calculation

The results seem to confirm the fact that aging is positively associated with the level of pension expenditures while the rate of fertility has a negative effect. Migration seems not to be a key variable for the pension expenditure dynamics as the results were not statistically significant. Positive implications of our empirical findings suggest that aging population and diminishing fertility rates shall impose considerable pressure on long-term sustainability of public pension expenditure. We consider that the main aims of future policies should be creating better job opportunities and working conditions for the growing number of older people in Europe. Retirement should happen at an older age but only if appropriate jobs are available for older generations.

Future research will consider:
- more control variables
- a delimitation of the whole sample of countries (ex. EU-12, EU-15)
- more tests in order to establish the right estimation method.

4. Concluding remarks
Considering all the aspects mentioned above, we think that urgent and useful measures are necessary in order to keep social expenditures sustainable and to hinder the potential suffering of ageing people. It is important to promote the active participation of older persons and to increase pension ages according to life expectancy, while early retirement schemes should be reduced.

Migration flows have increased steadily which determines that Romania is loosing work force and also contributions towards public pensions. It should also be considered that Romania holds the second smallest position among the EU 27 states in terms of gross domestic product per capita, thus it is clear that migration involved a transition from a level of lower income to a higher one.

The development of new products and services which are constructed in order to serve older people may allow older people to stay autonomous and live longer in their own homes, avoid the delivery of assistance from other employees and save public or private money. As stated, longer active lives and a good control of the old age dependency ratio are key elements in determining the sustainability of public pensions expenditures.

References

8. Milos M.C., Panzaru, C. „Considerations on social security within European Union member states”, 3rd *International Conference “Economies of Central and Eastern Europe: Convergence, Opportunities and Challenges”*


13. ***Eurostat (2012), Active ageing and solidarity between generations A statistical portrait of the European Union 2012, European Commission

Acknowledgement

This work was cofinanced from the European Social Fund through Sectorial Operational Programme Human Resources Development 2007-2013, project number POSDRU/1.5/S/59184 „Performance and excellence in postdoctoral research in Romanian economics science domain”. 