EVALUATING THE RETIRING PENSIONS BY SIMPLE REPLACEMENT RATES AND CURRENT VALUES OF THE RETIRING PENSIONS

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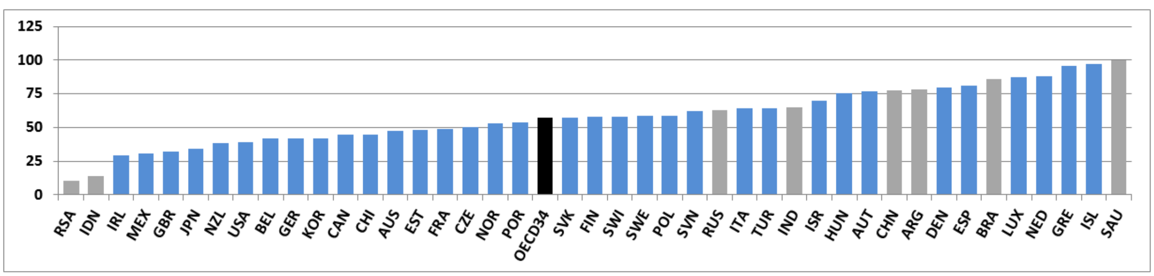
ABSTRACT
The first two parts of the paper carry out an approach over some issues related to the gross rates levels of revenues replacement within retiring pensions of the current pension systems. In the following parts of the paper, the current values of the gross and net retiring pensions are described, concluding the weight average pension and the average current weight value of the retiring pension.

Keywords: *gross replacement rate, net replacement rate, retiring pension, mean revenues, current value of the gross retiring pension, current value of the net retiring pension, weighted average retiring pension, current weighted average value of the retiring pension.*

1. THE GROSS RATE OF REVENUES REPLACEMENT WITHIN THE RETIRING PENSIONS

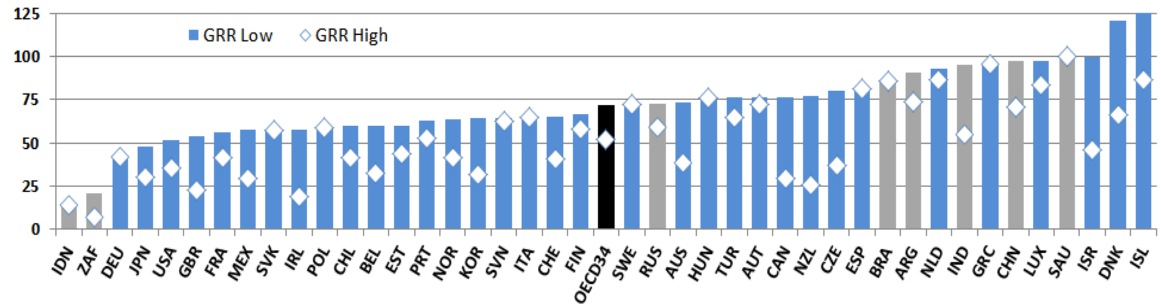
The gross rate of the pension revenues replacement is usually defined as the report between the gross retiring pension and the last wage taken before the retirement. Such report shows how the revenues offered at the retirement by the pension systems will replace the revenues earned before the retiring.
Most of the countries have protected of poorness the employees at old age, with low revenues, by providing higher rates of replacement, of about 72% on the assembly of the countries within OECD, as comparing to people of average revenues, situated around 57%. Though, there are seven countries that offer replacement rates, equal to those of low and average revenues: *Germany, Austria, Greece, Hungary, Italy, Poland, Slovakia and Spain*, issue that can be noticed in the following two figures.



Source: www.oecd.org

Figure 1 Gross rates of revenues replacement within retiring pensions for the employees with average revenues

Figure 2 illustrates the edge of the classification, where three countries offer to those with low revenues retiring pensions higher as comparing to the revenues earned before retirement: *Island* (145%), *Denmark* (121%) and *Israel* (100%). At the other pole, *Germania* and *Japan* offer replacement rates of 42%, and respectively 48%. Other countries, as *Canada* or *New Zeeland* pay relatively low pensions to those of average revenues, but are situated at the middle of the scale, as regards the replacement rates for those with modest revenues.



Source: www.oecd.org

Figure 2 Gross rates of revenues replacement within retiring pensions for the employees with low and high revenues

In average, *in countries within OECD*, the gross rate of revenues replacement for those with high revenues is under 52%, under the rate level of those with average revenues (57%). In the situation of those with high revenues, there are significant variations from one country to other, exceeding 80% in *Greece, Island, Luxemburg, Holland and Spain.* Instead, *Ireland*, *New Zeeland* and *Great Britain* have offered rates of replacement lower than 26%.

Regarding the people with average revenues, the gross rate for the 34 countries within OECD is of 57.3%, where the highest deviations from this could be seen in *Island*, *Greece*, *Holland* and *Luxemburg* with high rates, about 90% or even above, and in *Ireland, Mexico and Great Britain*, having low rates, of about 30%.

The gross rate of revenues replacement is different at women as comparing to men (due to the differences noticed at the retiring age) in only five countries, *Chile, Israel*, *Italy, Poland* and *Switzerland,* with values lower in the first three of them, differences that might reach to a third of the rate to men. The replacement rate in the situation of women is lower in Australia and Mexico, but this is due especially to the increased rates of the annuities, rather than differences noticed at the retiring age.

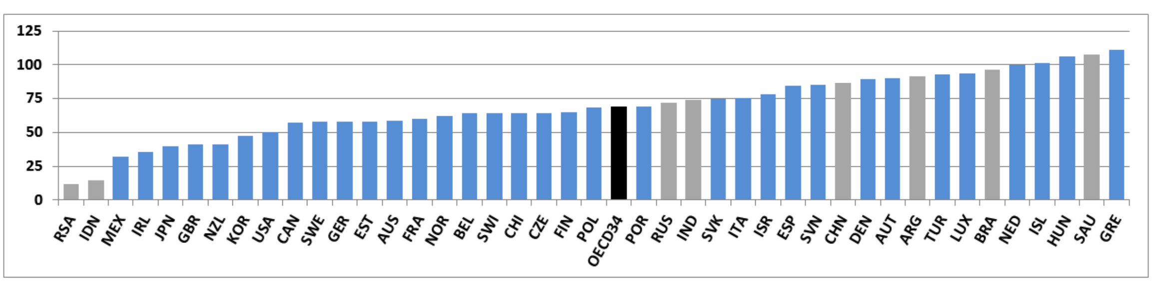
As regards the countries outside OECD, there is a large interval of the gross rates values of replacement, with South Africa and Indonesia, having low rates for the employees of average revenues (under 15%), while at the opposite pole we find Saudi Arabia with rates of 100%.

One might notice that the average of the gross rates of replacement for those of average and high revenues of EU countries is significantly higher than that of the OECD states.

2. THE NET RATE OF REVENUES REPLACEMENT WITHIN THE RETIRING PENSIONS

The net rate of revenues replacement within the retiring pension is defined in accordance to the taxes on individual revenues and of social contributions paid by retirees and employees.

As seen in the previous mentioned concepts, the retirees do not usually pay the social contributions, and have a preferential fiscal treatment. These facilities, next with the fiscal system progressiveness, coupled with the gross rates of replacement are usually lower than 100%, having as consequence the net replacement rates for revenues higher than the gross ones.

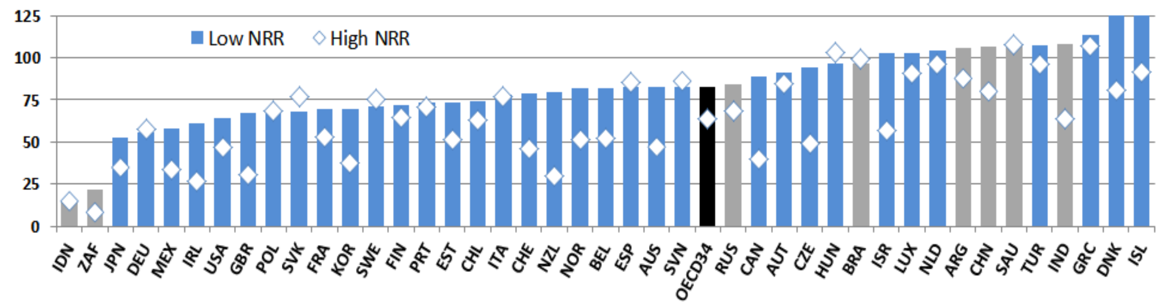


Source: www.oecd.org

Figure 3 Net rates of revenues replacement within the retiring pension for the employees of average revenues (%)

As concerns the average revenues, the net replacement rate has an average of 69% in OECD countries, being with 12% higher than the average of the gross rates. This difference is due to the higher taxes paid by individuals when they are in activity, as comparing to those paid after retirement. From **Figure 4** one might notice that, as in the situation of the gross replacement rates, the net ones have a higher variation in world, from under 40% in Mexico, Ireland and Japan, at over 100% in Greece (for people with average revenues).

Regarding the people with low revenues, the net average rate of replacement at the OECD level is of 82%, while for those of high revenues is 63%. As in the situation of gross rates of replacement, the differences of these rates depending upon the size of revenues have shown **the progressive character of the retiring pension systems,** reflected by the existence of the minimal benefits or of the limits specific to the retiring pension revenues.



Source: www.oecd.org

Figure 4 The net rates of revenues replacement within the retiring pension for the employees of low and respectively, high revenues (%)

For the participants with **average revenues**, the template of net replacement rates within various states is different of that specific to the gross rates. For instance, the retiring pension systems of Belgium and Germany have net rates higher than the gross ones. This is firstly due to the favorable treatment for retiring pensions, under the aspect of social contributions, and then, to the gross replacement rates, which are lower than the average of OECD, as well as to the emphasized progressiveness of the fiscal system in these states, people paying taxes lower than the period after retirement. This thing happens in Germany despite the fact that this very generous fiscal treatment, of which the retiring pensions revenues benefit, has started to be gradually retired.

By contrast with the other countries, New Zeeland and Sweden have proven to have net replacement rates lower than the gross ones, since they tax almost in the same way the revenues of retiring pension and of the wage incomes (even if Sweden has reintroduced since 2009 the tax relief for the retirees).

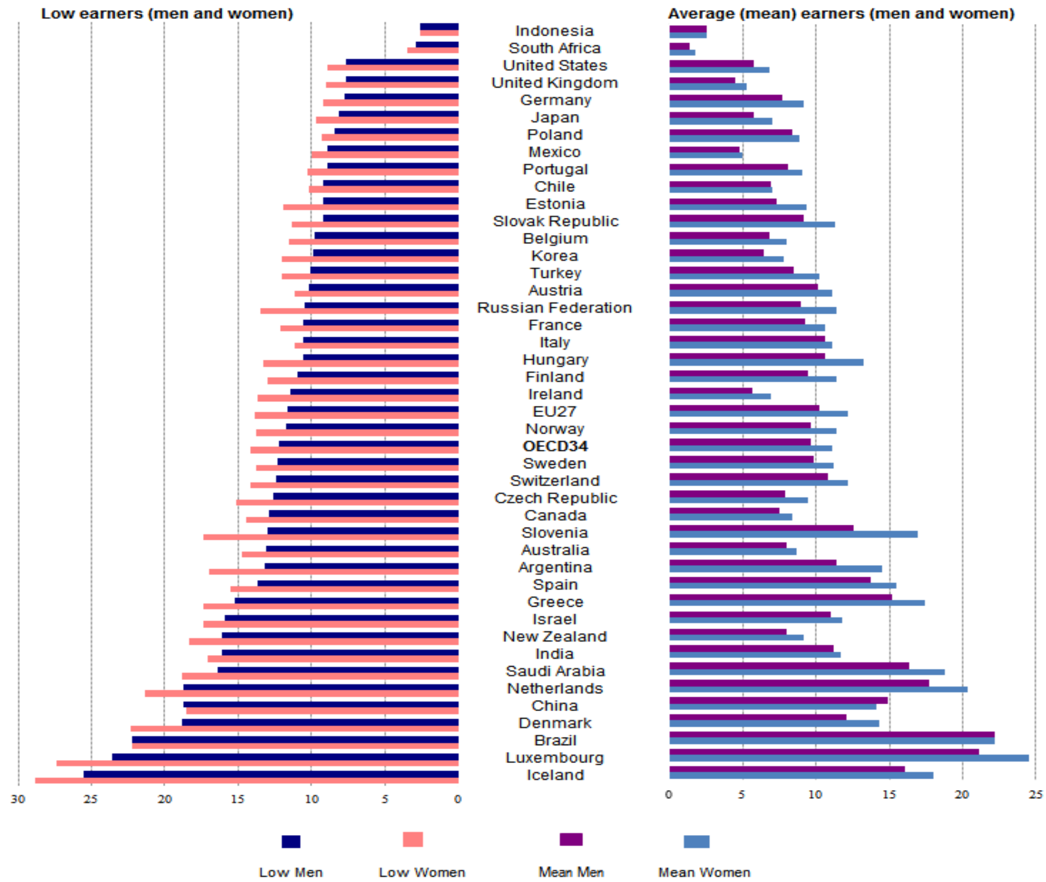
For people with **low revenues,** the effect of taxes and contributions over the net replacement rates is lower than in the situation of those with high revenues, since many times, their retiring pensions are lower than the standard level of the fiscal facilities (indemnities or help). In this way, sometimes they do not completely benefit of the supplementary facilities as regards the taxes on individual revenues. The difference between the average net rate and the gross one is of 10% of the level of OECD, for those of low revenues. The exceptions are here represented by Belgium and Slovenia, which have net replacement rates much higher than the gross ones.

The highest net rate of replacement within people of **high revenues** is met in Greece, and the lowest, as expected, in New Zeeland and Ireland. In the last two states, the participants with high revenues will receive retiring pensions lower than one third of the net revenues before retirement. As in the situation of the gross replacement rates, the average of the net rates on EU level is of 74%, being significantly higher than that of OECD. Within the countries outside OECD, small differences of the net rates of replacement among the three categories of revenues can be seen. Though, there are high differences between different states, the net rates varying for those of average revenue, from 12% in South Africa to 108% in Saudi Arabia.

3. CURRENT VALUE OF THE GROSS RETIRING PENSION

The rates of revenues replacement within the retiring pensions give indications over the promised pension, but they are not complete measures, since it is about the benefit at retiring. In order to comprise a much larger image, the life expectancy should be taken into account, the retirement age and the indexation of pensions. All these will show for how long the retiring pension benefits will be paid, and how these will evaluate in time. The current value of the retiring pension signifies a measurement of a value dedicated to future benefits flows, which takes into consideration all these factors.

The current retiring pension value is defined as the necessary amount at the moment of retirement, in order to buy an annuity, able to generate the same flows of payments, as those promised by the compulsory pension diagrams. Within the calculations of the current values, *a uniform discount rate* of annual update of 2% has been used, and views up to 2050 of the mortality rates were taken into account, for each country, on ages and sexes. The current value is expressed by a **multiple of the gross individual annual revenues.**



Source: www.oecd.org

Figure 5 Current values at men and women having low and average revenues (multiple of the individual revenues)

As can be seen in Figure 5, the current value of the gross retiring pension for men having average revenues is higher in Luxembourg, being followed by Holland, Island and Greece. As regards these states, the current value of the gross retiring pension is of about 17.5 times higher than the revenues, being of 80% higher than the current values of the gross retiring pensions, within the OECD, situated around the value 9.6. as regards the members with average revenues, the current value of the gross retiring pension is the lowest in Great Britain, because of the replacement rates relatively low and because of the foreseen growth for the retirement age, up to 68 years old.

As concerns the average revenues people, the current values of the gross retiring pensions will be higher as regards **the reduced revenues**, as effect of the replacement rates, which are higher for the last ones. As regards the men earning low revenues, the current value of the gross retiring pension is situated around a coefficient of 12.2 at the level of OECD, as comparing to the value 9.6 in the situation of those earning average revenues. Similarly, women with reduced revenues earn a current average value of the gross retiring pension of 14.1 as comparing to 11.1, meaning the average for OECD, for women with average revenues. As regards men earning low revenues, in four countries where the current value of the gross pension is high (*Denmark, Island, Luxemburg, Holland*), such value exceeds more than 21 times the individual earnings.

The impact of the life expectancy over the current value of the gross retiring pension is emphasized to countries as *Hungary, Mexico, Poland, Slovakia or Turkey*, where the low life expectancy at retirement will negatively influence the current value level. The effect is opposite in *Switzerland and the Nordic countries*, which have high life expectancy. The influence of life expectancy can be also noticed as comparing the current values of the gross retiring pension for women as for men. Since the life expectancy of women is higher, the current values will be generally higher. At such difference, the retirement ages for women contribute, which are lower in some states as comparing to the situation of men.

The current value of the retiring pension is also influenced by the retirement age. States as *Denmark, Germany, Island, Norway, Great Britain or USA* have or about to have retirement ages for people of over 65 years old, which have reduced the current value of the gross retiring pension.

The current value of the gross retiring pension is also influenced by the indexation mechanism. Even if for the time being most of countries of OECD index the retiring pensions in accordance to prices, there are also exceptions: in *Luxembourg*, there is a connection made between retiring pension and the average revenue, while *in Czech, Finland, Slovakia, Hungary and Switzerland*, the indexation is carried out in accordance to the inflation, the prices and growth rates of the revenues. Usually, the revenues grow faster than prices, so that within these states, the current value of the retiring pensions is higher, due to this "more generous" indexation. Various politics of indexation will affect the difference between the current values and the retiring pensions of women and men, respectively. Due to superior life expectancy, women aim to benefit more and more of the favorable indexation procedures.

As concerns the countries outside OECD, there is a large variation of the current values for the retiring pensions, from a coefficient of 1.4 to those earning average revenues in South Africa, to a coefficient of 22.2 in Brazil for the same participants. The low value met in South Africa is due to the combination between the low ratios of replacement and the low life expectancy.

4. CURRENT VALUE OF THE GROSS RETIRING PENSION

As the gross indicator, the current value of the retiring pension signifies the value existing at the time being for the potential future benefits earned from retiring pensions, on the entire period of retirement, taking into account the taxes and social contributions paid to the retiring revenues. It is important to mention that **the current value of the net retiring pension is expressed as a multiple of the gross individual annual revenues.** The reason for which one may use as comparison the **gross** revenues is done in order to isolate the effects of taxes and contributions paid at retirement, from those of taxes paid during the work activities. This practically means that the current value of the net retiring pension will be equal to the gross one, for the participants that do not pay taxes and contributions at the retirement, as the situation of Slovakia and Turkey.

The average current value of the net retiring pension for those earning average revenues exists at the OECD level, around the value 8.2 to men and 9.6 to women. As the gross retiring pension, the values are higher to women, due to their higher life expectancy.

The current values classification of the net retiring pensions will suffer modifications if one report to that dedicated to the gross or net values for the participants of average revenues. For instance, Slovakia has the 8th position as regards the net retiring pension and the 16th gross retiring pension, while in Denmark the situation is exactly opposite, with the current value or the gross retiring pension on the 8th position, and of the net retiring pension of 14th. This situation is explained by the fact that Denmark perceives the highest taxes for the retiring pensions.

If one analyzes **the impact of individual revenues over the current net pension value,** one will understand that those earning low revenues are not submitted to taxation in ten countries: *Australia, Belgium* and *Canada*, besides the seven countries that do not excise even the average revenues pensions. In other four states, meaning *Greece, Hungary, South Korea and Great Britain,* the taxation at retirement for people earning low revenues is very low: under 1% of the retiring pension.

In the situation of people earning high revenues, there is a lower variation of the current values of the net retiring pensions, where their level is in generally from 4 up to 7 times higher than the annual revenues. The main exceptions are Luxembourg (with a coefficient of 14 at men), followed by *Greece and Holland* with 12.3, and 11.6 respectively. At the opposite pole, we find Great Britain, with 3.1 at men and 3.6 at women.

Concerning the states outside OECD, the current values of the net and gross retiring pensions are the same in *Brazil, Indonesia, India, Russia* and *South Africa.* As in the situation of current gross value of the retiring pensions, the values interval is very large, as regards South Africa, with a coefficient of 1.4 towards 22.2, as we can see in Brazil, for men earning low revenues.

5. THE WEIGHTED AVERAGE PENSION AND THE CURRENT VALUE OF THE WEIGHTED AVERAGE RETIRING PENSION

These indicators are calculated upon basis of the retiring pension level, and of the current value of the retiring pension, for employees that earn from 0.3 to 3 times more the average revenue within the economy. To each level of the individual revenue, a weight is allocated, weight that is based upon its importance within the revenues distribution, where high weights are met at those of low revenues in high number.

The weighted average pension combines data from revenues distribution with calculations of pension's rights, being expressed by a percentage of the average revenues from the entire economy. This will show the average level of the retiring pension, in the moment of retirement, and takes into account the various treatments at which the workers of different revenues are complied to. The weighted average pension is of 55.3% of the average revenues, within the entire assembly of the OECD member states.

We find the highest weighted average pension in *Island* (over 100%), followed closely by *Holland* (with a value of the weighted average pension of 87%), *Luxembourg* (82.7%) and *Greece* (81.8%). In other three states, as *Denmark, Hungary*

and Spain, its level exceeds 70% of the average revenues. At the other pole, we find ten countries within OECD, where the weighted average pension represents less than 40% of the average revenues: *Belgium* (38.2%), *Chile* (45.6% to men and 33,7% to women), *Germania* (39.3%), *Ireland* (29%), *Japan* (34%), *South Korea* (39.1%), *Mexico* (37.3% to men and 35,3% to women), *New Zeeland* (38.7%), *Great Britain* (30.3%) and *USA* (37.5%).
The same procedure has been also applied within calculation of another indicator: **the current weighted average value of the retiring pension**, having a much more comprehensive character, since the current pension value takes also into account the differences between countries, as regards the retirement age, life expectancy and the indexation politics. The weighted current average value of the retiring pension is expressed as a **multiple of average revenues of the entire economy.** At the OECD level, the current weighted average value of pensions is 10.3 times higher as comparing to the average revenues to men, and 12 times to women.
Values over the OECD limit, comprised within 13.3 and 21.8 at men, and within 15.1 and 25.8 to women have been met in *Denmark, Greece, Island, Luxembourg, Holland and Spain.* Around value of 10-12 on the scale of this indicator, we find closely grouped countries, as *Hungary, Israel, Italy, Slovenia, Sweden or Switzerland.* If they are **converted in American dollars** (at the stock exchange market ratios), the mean of the weighed average values in these twelve states of high revenues will be situated around 667.000 USD to men and 776.000 USD to women, where these amounts represent the current average values that societies promise to transfer to the future retirees, in conditions of the current retiring pensions system.
At the opposite pole, there are three countries (*Japan, Great Britain and USA*), where this indicator is more under the OECD mean value, at the value of 6.3 to men and 7.6 to women. The current weighted average value of the retiring pension is lower in some countries and has low life expectancy, as in the situation of Poland.
In countries outside OECD, the values of this indicator are under OECD mean value. As concerns the current weighted average value of pensions expressed in dollars, one might remark *Brazil* supremacy, with an amount of 198.000 USD for both men and women, where this thing is opposite, though under extremely low level of wages.

CONCLUSIONS

Most of the countries have protected of poorness the employees at old age, with low revenues, by providing higher rates of replacement, of about 72% on the assembly of the countries within OECD, as comparing to people of average revenues, situated around 57%. In average, within the OECD countries, the gross replacement rate for people earning high revenues is of 52%, under the ratios level of people earning average revenues (57%).
As concerns people earning average revenues, the net replacement rate has an average of 69% in OECD countries, being with 12% higher than the average of the gross rates. This difference is due to the higher taxes paid by individuals when they are in activity, as comparing to those paid after retirement. For people earning low revenues, the net replacement rate at OECD level is of 82%, while for those earning high revenues, this gas a value of 63%. As in the situation of gross replacement rates, the differences of these ratios depend upon the revenues size, which shows *the progressive character of the retiring pensions systems*, reflected by the existence of the minimal benefits or of the retiring pension revenues limits. The weighted average value of the retiring pension is of 55.3% of the average revenues, within the entire assembly of the OECD member states, while the current weighted average value of the retiring pensions is 1.3 times higher towards the average revenues to men and 12 times higher to women.

REFERENCES

[1]. Lahey, J. (2006) - *State Age Protection Laws and the Age Discrimination in Employment Act*, Working Paper, nr. 12 048, NBER, Cambridge, Massachusetts
[2]. Lazear, E.P. (1986) - *Retirement From the Labour Force*, Handbook of Labour Economics, O. Ashenfelter and R. Layard (eds.), North Holland, Amsterdam, pag. 305-355
[3]. Myles, J., Pierson P. (2001) - *The comparative political economy of pension reform*, The New Politics of the Welfare State, P. Pierson (ed.), Oxford: Oxford University Press, pag. 305-333
[4]. Myles, J., Quadagno J. (1997) - *Recent trends in public pension reform. A comparative view,* Reform of Retirement Income Policy – International and Canadian Perspectives, K. G. Banting and R. Boadway (eds.), Kingston: Quenn's University, pag. 247-272
[5]. OECD (2005) - *Pensions at a Glance: Public Policies across OECD Countries*, OECD Publishing, Paris
[6]. OECD (2006) - *Live Longer, Work Longer*, OECD Publishing, Paris
[7]. OECD (2007a) - *Pensions at a Glance: Public Policies across OECD Countries*, OECD Publishing, Paris
[8]. OECD (2007b) - *Public Sector Pensions and the Challenge of an Ageing Public Service*, Working Paper on Public Governance, nr. 2, OECD Publishing, Paris
[9]. OECD (2009) - *Pensions at a Glance: Retirement-Income Systems in OECD Countries*, OECD Publishing, Paris
[10]. OECD (2011) - *Pensions at a Glance*, ISBN 978-92-64-09523-6
[11]. Palier, B. (2002) - *Beyond Retrenchment: Four problems in current welfare state research and one suggestion how to overcome them*, "What Future for Social Security? Debates and Reforms in National and Cross-National Perspective", J. Clasen (ed.), London: Kluwer Law International
[12]. Turner, J. (2007) - *Social Security Pensionable Ages in OECD Countries: 1949-2035*, International Social Security Review, vol. 60, nr. 1, pag. 81-99
[13]. United Nations (2008) - *World Population Prospects* – The 2008 Revision
[14]. www.oecd.org