

How does the labour's market dynamic influence the level of the public pension in Romania in the actual economic context?

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Abstract. *In order to survive, the ageing population depends on the level of the public pension, for most of them the only source of income. This crucial social variable registers modest values in Romania in many cases, its level being less than the level of the minimum wage per economy.*

As underlined below the average pension is an important social indicator and based on its value one can indicate the poverty level of one area or country.

Since according to Eurostat the percentage of the people at risk of poverty or social exclusion with ages over 60 years was greater than a quarter for 2011, we can state that the resources allocated for the pension public budget are insufficient.

In this study we analyze the connections between Romania's labor market and the real pension. We assume that the labor market configuration has an important role for the evolution of the pension income.

Using an econometric time series model we capture a particular correlation between the real pension and different categories of active population and the real wage, both of the mentioned exogenous variables being representative and characteristically linked to the labor market dynamics.

Our approach underlines once more the importance of sacrificing the present, the immediate reality for a safer and better future. Nevertheless we express our concern for the future generations since the effects of the economic crisis will persist a long time further.

Keywords: pensions; wages; unemployment benefits; employment.

JEL Codes: J21, J26.

REL Codes: 12B, 12I.

Introduction

Employer-provided pensions represent an important part of labor compensation. According to the economic theory the firms are paying the workers the compensation equal to the value of productivity.

Since compensation has many forms the firms could be viewed as neutral sellers of employee benefits, willing to provide whatever combination of cash payments and benefits that employees wish for. Usually they prefer a percentage of their total compensation to be paid in the form of pension benefits because their net compensation is enhanced by the tax treatment of pensions.

Pension systems purpose is to finance the expenses of the employees during their retirement or in the event of disability. These systems are referring to the economic problem of setting aside part of the production for these types of situations.

In that matter it is necessary to identify the financial resources for covering the cost of these benefits.

Among this resources are the workers savings, public taxes for the financing of public benefits or insurance premiums for defraying costs in cases of disability and death.

Many persons will be left without any form of social protection if the systems do not take into consideration all the influence factors.

The fundamental social function of a pension system must be to achieve universal coverage, providing decent retirement and disability pensions for income-earners and survivors' benefits for dependents after the death of the contributor, as well as coverage for non-income earners. Achieving these goals is difficult because of the multitude of factors that influence differently one's life style and applying the same condition to everyone is often wrong and unfair.

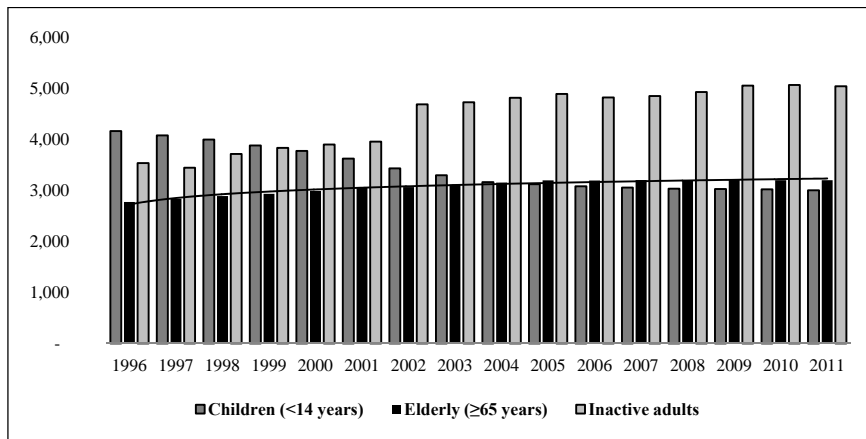
According to the economist Peter Diamond pension benefit depends more on the individual history far more than taxes do, and age plays a much larger role in the determination of it.

In this study firstly, we analyzed this hypothesis using a Granger test to determine if taxes have an influence on the average public pension.

Furthermore we try to determine the relation between the labor market and the size of the public pension using an econometric approach.

The economic context in Romania

According to the figure above, the rapid pace of population ageing has more negative elements than positive. On the negative side, the working age population that is participating in the economy is continuing to decrease and the retirement-age population is growing steadily.



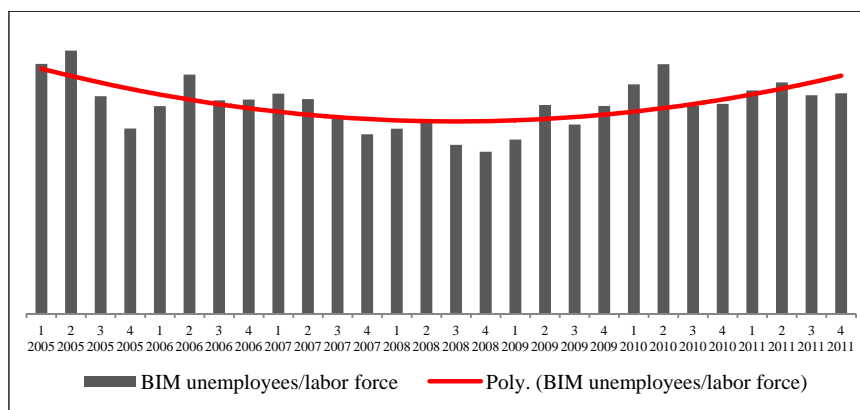
Source: www.insse.ro; all calculations and representations were made by the authors.

Figure 1. Romania: Demographic dependency

The only positive fact on short term although is that the children of school age which dependent on the working population is going down. Nevertheless, on the long term this shows a deficit when it will come to the future labor force.

Another concerning fact pointed by the International Labor Organization (ILO) is that those who work are subject to increasingly precarious conditions which are reflected in higher rates of unemployment (Figure 2), informality and lack of social protection.

If we look at the graph below we can notice the ascending trend of the BIM unemployment rate, even if until 2008 its tendency was of slow decreasing. The moment of growth is coinciding with the triggering of the economic crises that seems to have an important negative impact on the labor market in Romania.

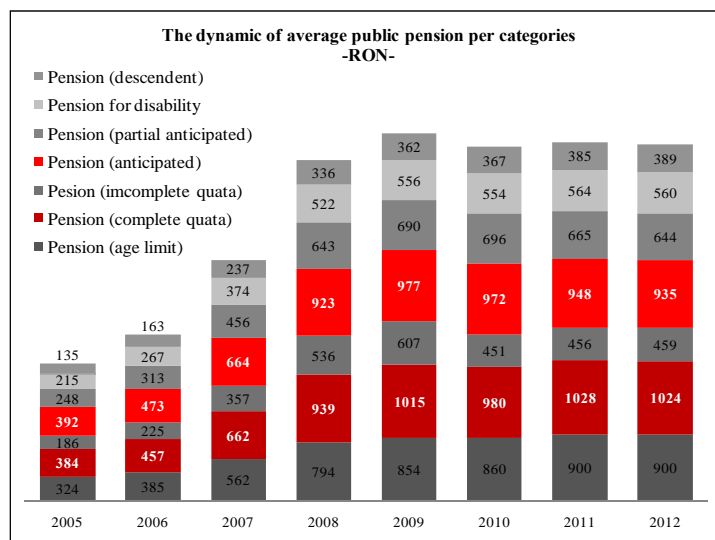


Source: www.insse.ro ; all calculations and representations were made by the authors.

Figure 2. Romania: The quarterly dynamic of BIM unemployment 2005-2011

The sharply ascending of the different pension categories until 2009 was slowed down by the same phenomenon, the economic crises. Although the effects of the crises weren't as visible as in the case of the labor market, the growing rhythm stagnated.

A worrying fact when it comes to pensions is their small values, insufficient for many of the elders.



Source: www.insse.ro; all calculations and representations were made by the authors.

Figure 3. Romania: The dynamic of public pension per categories

The effect of taxes on the public pension in Romania (2005-2011)

Usually, it is expected that the level of taxes to influence the level of the public pension. Nevertheless, according to the economist Peter Diamond pension benefit depends more on the individual history far more than taxes do. In that sense, in order to identify the particularities of this relation in Romania we have chosen to apply the Granger test for two types of taxes: in the right part of Table 1, taxes on wages calculated as the difference between the sum of gross salary and the sum of net salary (registered at ITM) and in the left part of Table 1 the total taxes on product (VAT and other types).

Also, the regularity of the analyzed data was quarterly for six consecutive years and we eliminate the seasonality effect.

Table 1

The relationship between the public pension and taxes

Pairwise Granger Causality Tests			
Sample: 2005Q2 2011Q4			
Lags: 1			
Null Hypothesis:	Obs	F-Statistic	Probability
IMP_SAL_SA does not Granger Cause PENS_SA	26	3.64134	0.06892
PENS_SA does not Granger Cause IMP_SAL_SA		1.36106	0.25531
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Probability
IMP_SAL_SA does not Granger Cause PENS_SA	25	5.66709	0.01122
PENS_SA does not Granger Cause IMP_SAL_SA		0.14205	0.86844
Lags: 3			
Null Hypothesis:	Obs	F-Statistic	Probability
IMP_SAL_SA does not Granger Cause PENS_SA	24	4.47594	0.0172
PENS_SA does not Granger Cause IMP_SAL_SA		0.08333	0.96821
Lags: 4			
Null Hypothesis:	Obs	F-Statistic	Probability
IMP_SAL_SA does not Granger Cause PENS_SA	23	3.22354	0.04512
PENS_SA does not Granger Cause IMP_SAL_SA		1.94139	0.15932
Lags: 5			
Null Hypothesis:	Obs	F-Statistic	Probability
IMP_SAL_SA does not Granger Cause PENS_SA	22	2.29404	0.11666
PENS_SA does not Granger Cause IMP_SAL_SA		1.50392	0.26561
Lags: 6			
Null Hypothesis:	Obs	F-Statistic	Probability
IMP_SAL_SA does not Granger Cause PENS_SA	21	1.90448	0.19591
PENS_SA does not Granger Cause IMP_SAL_SA		2.84949	0.08637
Lags: 7			
Null Hypothesis:	Obs	F-Statistic	Probability
IMP_SAL_SA does not Granger Cause PENS_SA	20	3.38769	0.09896
PENS_SA does not Granger Cause IMP_SAL_SA		5.16293	0.04465

Pairwise Granger Causality Tests			
Date: 11/18/12 Time: 22:02			
Sample: 2005Q2 2011Q4			
Lags: 1			
Null Hypothesis:	Obs	F-Statistic	Probability
IMP_PROD_SA does not Granger Cause PENS_SA	26	0.28234	0.60026
PENS_SA does not Granger Cause IMP_PROD_SA		0.02259	0.88183
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Probability
IMP_PROD_SA does not Granger Cause PENS_SA	25	0.37706	0.69065
PENS_SA does not Granger Cause IMP_PROD_SA		0.10963	0.8967
Lags: 3			
Null Hypothesis:	Obs	F-Statistic	Probability
IMP_PROD_SA does not Granger Cause PENS_SA	24	0.4787	0.70133
PENS_SA does not Granger Cause IMP_PROD_SA		0.19253	0.90002
Lags: 4			
Null Hypothesis:	Obs	F-Statistic	Probability
IMP_PROD_SA does not Granger Cause PENS_SA	23	0.35091	0.8391
PENS_SA does not Granger Cause IMP_PROD_SA		0.45819	0.76516
Lags: 5			
Null Hypothesis:	Obs	F-Statistic	Probability
IMP_PROD_SA does not Granger Cause PENS_SA	22	0.39663	0.84122
PENS_SA does not Granger Cause IMP_PROD_SA		0.8575	0.5383
Lags: 6			
Null Hypothesis:	Obs	F-Statistic	Probability
IMP_PROD_SA does not Granger Cause PENS_SA	21	0.34659	0.89321
PENS_SA does not Granger Cause IMP_PROD_SA		0.57643	0.74091

Source: www.insse.ro; all calculations were made by the author.

In the table above, we have tested using the Granger causality test whether the two variables: taxes on wages and taxes on product are influencing public pensions or not.

According to the results taxes on wages influence the public pension five cases and vice versa in three cases (starting from the fifth lag until the last one).

When it comes to the other type of taxes, according to the test results the null hypothesis couldn't be rejected. In all of the cases (since p value > 0.05) the results show that in Romania, in the analyzed periods, neither taxes on products nor average public pension influence one other.

Econometric analysis

In this section we analyzed the correlation between real average pension (pensie_medie_reala) and four of the labor market representative indicators like real wage (salariu_real), the employment rate for different age categories

(ocupare), the unemployment benefits as percentage of the minimum wage for workers with experience in the labor field (som_exp) and the unemployment benefits as percentage of the minimum wage for workers with no experience in the labor field. All the data used were collected from the INSSE databases (www.insse.ro) for the period 1991-2011, for Romania.

We tried to test the correlation between the real average pension and these variables by using nine econometric equations, starting with the elder employee population and finishing with the youngest one. Also, in order to obtain relevant and consistent estimators all data suffered modifications.

Table 2

Econometric regressions

Real pension		Real wage		Employment			Unemployment benefits (experience)		Unemployment benefits (no experience)	
Lags	Coeff.	Lags	Coeff.	Age	Lags	Coeff.	Lags	Coeff.	Lags	Coeff.
1	0.533685		0.981551	60-64	3	0.820727	2	0.19189		
		3	-0.164908							
1	0.493929		0.954687	55-59	3	0.955661	2	0.14627		
		3	-0.208406							
1	0.545358		0.745536	45-49	2	1.411295				
		3	-0.143491							
1	0.421265		0.766857	40-44	2	1.97606		0.09847		
1	0.493721		0.753943	35-39	2	2.437797				
1	0.441531		0.823988	30-34	2	2.471687				
1	0.505428		0.790367	25-29	2	1.774151				
1	0.540274		0.872304	20-24	2	1.154159				
1	0.548551		0.917098	19-15	2	2.479926			1	-0.218455

Source: www.insse.ro; all calculations were made by the author.

Based on the above results we notice that the inertial trend of the real pension is maintaining in all of the equations, the coefficient oscillates in the 0.4 - 0.5 interval.

The correlation between real wages and real pensions seems to have different directions if we change the number of lags. In that matter there is a positive connection for the actual values and a negative one for the values at three lags distance.

The employment rate effects on the pension level are different for all of the occupied population categories. As we descend from 64 years to 30 the coefficient values are greater but if we go any further until the 20 years age its strength seems to weaken. For the youngest category the value for the coefficient overcomes the one for the group of 30-34.

Econometric tests show that the equations are consistent and the coefficients and the degree of significance for coefficients are about 90% each of them. Unit root test show that the model variables are stationary.

Based on the Akaike and Swartz tests we have chosen the first three of the most relevant equations to describe:

Table 3

The Akaike and Swartz tests results		
	Akaike criterion	Schwarz criterion
Eq.1	4.52729	4.78804
Eq.2	4.69751	4.95825
Eq.3	5.08959	5.30688
Eq.4	5.27178	5.500015
Eq.5	5.473347	5.655935
Eq.6	5.276652	5.45924
Eq.7	5.451705	5.634293
Eq.8	5.737124	5.919712
Eq.9	5.344514	5.572749

Source: www.insse.ro; all calculations were made by the author.

$$\text{PENSIE_MEDIE_REALA (t)} = - 87.15471 + 0.53368 \times \text{PENSIE_MEDIE_REALA (t-1)} + 0.19189 \times \text{SOM_EXP (t-2)} + 0.98155 \times \text{SALARIU_REAL (t)} - 0.16490 \times \text{SALARIU_REAL (t-3)} + 0.82072 \times \text{OCUPARE60_64_ANI (t-3)} \quad (1)$$

The first equation shows that there is an important inertial trend in the dynamics of the real average pension (coefficient 0.53368) at the first lag.

The most important influence factor is the dimension of the real wage at one lag (0.98155), positively correlated with the real pension. The same variable but at with 3 lags has a negative impact on the real pension, though its coefficient strength is more weak (only -0.16490).

When it comes to the employment rate for workers with ages between 60 and 64 years, the correlation is strong and positive and at three lags away.

As expected the unemployment benefits are positively correlated with the pension level since these two variables represent two of the most important social indicators and if the level of one increases the other must increase as well. The distance between the growth moments is two years (2 lags).

$$\text{PENSIE_MEDIE_REALA (t)} = - 91.92381601 + 0.49392 \times \text{PENSIE_MEDIE_REALA (t-1)} + 0.14626 \times \text{SOM_EXP (t-2)} + 0.95468 \times \text{SALARIU_REAL (t)} - 0.20840 \times \text{SALARIU_REAL (t-3)} + 0.95566 \times \text{OCUPARE55_59_ANI (t-3)} \quad (2)$$

If we substitute the employment rate for workers with ages between 60 and 64 years old with the one for workers with ages between 55 and 59 years old, the sign of the coefficients remains the same as expected but their values is reduced whit a few percentages. Nevertheless the effect of the new employment rate is stronger (0.95566).

$$\text{PENSIE_MEDIE_REALA (t)} = - 127.7945138 + 0.54535 \times \text{PENSIE_MEDIE_REALA (t-1)} + 0.74553 \times \text{SALARIU_REAL (t)} - 0.14349 \times \text{SALARIU_REAL (t-3)} + 1.41129 \times \text{OCUPARE45_49_ANI (t-2)} \quad (3)$$

Furthermore, if we replace the employment rate for people aged between 55 and 54 years with the ones aged between 45 and 49 years, the coefficient of the one lag real pension variable is changing exceeding a little bit the level registered in the first equation. Compared with the second equation the other coefficients are still decreasing.

Final remarks

The economic crises had an impact on the public pension system in Romania too. Although the effects of these phenomena affected in a greater proportion the active labor market, the pensions suffered important decreases in a short period of time. The modest level of the pension, for many of the elders the only disposable income, is affecting the welfare of the elder social group.

The econometric analysis shows a positive correlation between the endogenous variable, the real pension, and the real wages in current period, employment rate, and unemployment benefits for experienced workers. Nevertheless, the effects of those factors aren't immediate and this fact is reflected in the number of lags for each exogenous variable taken into analysis.

The sign of the coefficient for the real wage variable changes at three lags and the pension will decrease in the current year if the level of the real wage from past three years increased.

In order to connect to the current economic problems such as high level of unemployment, that the majority member states in the European Union are facing we also tested the relationship between pensions and unemployment benefits and the results sustain the assumption of a positive correlation between them when it comes to experienced workers and a negative one when it comes to inexperienced workers.

Since there is an important relationship between the labor market and the retired generations it is necessary to rethink the actual public pension system in Romania.

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