

POST-EMPLOYMENT BENEFITS IN ROMANIA AND SERBIA: A COMPARATIVE IMPACT ANALYSIS

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Abstract: *This study is conducted to identify and assess the economic impact of post-employment benefits such as pensions in the case of Romania and Serbia. The International Accounting Standard - IAS 19 describes employee benefits as all kind of advantages granted by companies in exchange for the work and services performed as tasks of their job. Globally, one of the most important employee benefits is represented by the pension system, its importance being extremely high within the present unfavourable demographic context shaped by low fertility rates associated with a lower life expectancy rate and an increased infant mortality rate. These aspects point out that the decreasing active population financially supports a large number of pensioners. The two main pension schemes, respectively the pay as you go pension system and the accumulating funds pension plan perform properly on a global level, these two being at the same time long term saving programs which transfer resources from young to elderly people. Our empirical analysis is performed based on developing several double-log macroeconomic models using a complex set of macroeconomic (GDP total and per capita, resource productivity), labour market (employment and unemployment rates, net earnings), education (first stage of tertiary education, programmes that are theoretically based/research preparatory or giving access to professions with high skills requirements) and pension specific (pension beneficiaries total, old age pension values) indicators, processed by fixed and random effects, respectively through OLS and GLS methods. The results highlight a significant positive impact of pension systems on overall economic activity, increasing the total and per capita GDP, as well as improving labour market stability. Thus, employees consider this type of benefit as providing a security for them on retirement, increasing productivity and reducing unemployment. Nevertheless, the results comply with the economic literature, highlighting that post-employment benefits, especially pensions, represent important incentives that could increase net earnings and improve living standards along with the educational level.*

Keywords: Employee benefits, Pensions, Productivity, Economic Growth, Unemployment

JEL classification: H55, J33

1. Introductory issues concerning employee benefits in Romania and Serbia

Globally, one of the most important *employee benefits* is represented by the *pension system*, its importance being extremely high within the present unfavourable demographic context shaped by low fertility rates associated with a lower life expectancy rate and an increased infant mortality rate. These aspects point out that the decreasing active population financially supports a large number of pensioners. The two main pension schemes, respectively the pay as you go pension system and the accumulating funds pension plan perform properly on a global level, these two being at the same time long term saving programs which transfer resources from youths to elderly people.

In Romania, according to official data provided by the National House of Public Pensions, in December 2014 there were 4692711 pensioners, of which 3360361 were old-age pension beneficiaries, 21062 had an anticipated pension, 91089 had a partial anticipated pension, 686619 were disability pension beneficiaries and 532943 were survivor pensioners. At the same time, 637 people received social help of which 70% were females and 3675 people were comprised in a special category of invalidity and war widower's pension.

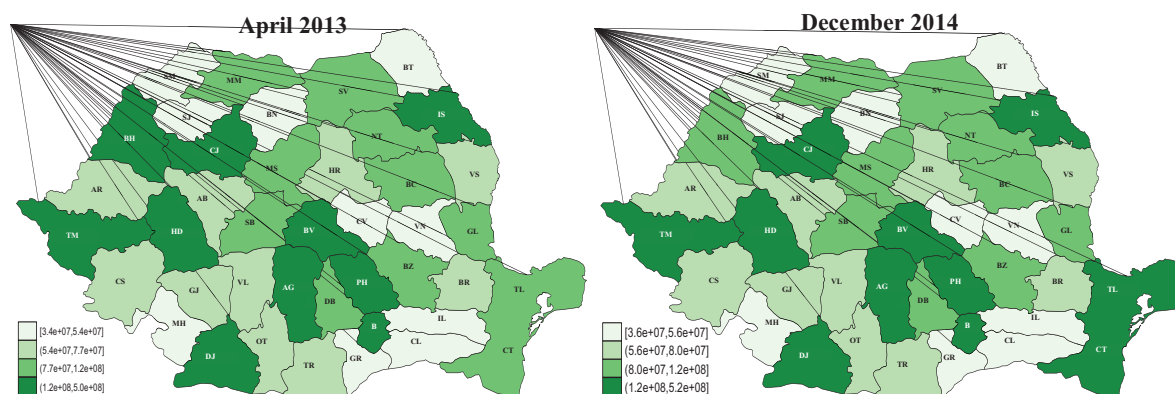


Figure 1: District distribution of pension levels (values),
total social security in Romania

Source: own process of Nation House of Public Pensions in Stata 12

If we take into account the district distribution of pension levels and values overall social security contributions in Romania, we can highlight that in 2013 the western part of the country registered high pension levels, specially Timis, Bihor, Hunedoara or Cluj counties, along with the southern part with Dolj, Argeş, Prahova and Bucharest counties. The lowest performance from this point of view were achieved by the two north and south extremes, with Satu-Mare, Sălaj, Botoşani, respectively Mehedinţi, Călăraşi or Ilfov counties.

In 2014 the pension value remained unchanged compared to the previous year in almost all administrative districts, with the exception of Bihor county where the pension level registered a slight decrease.

In Serbia there are three major types of pensions granted, respectively old-age, disability (invalidity) and survivor pensions.

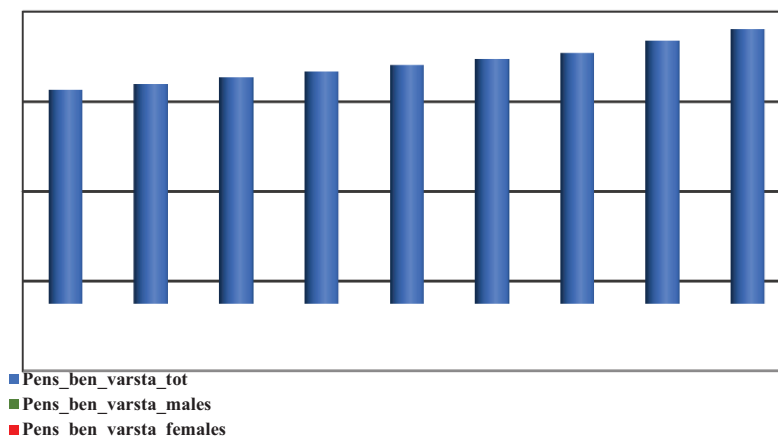


Figure 2: Old-age pension beneficiaries in Serbia during 2005-2013, total and according to gender

Source: Statistical Office of the Republic of Serbia

In the case of old-age pension beneficiaries, during 2005-2013 the number of pensioners has significantly increased, from about 950,000 to 1.22 million people, most of them being males. In 2010, from the total number of pensioners in Serbia, more than half were old-age pensioners (55.3%), while 22.6% of the total pension beneficiaries have had disability pensions and 22.1% of the total pensions granted were survivor pensions. Within this framework, we can state that, even though during the last few years the percentage of old-age pension beneficiaries has increased significantly, still, it remains at a low unfavourable level. The context is even more unstable in the case of employees as major type of insurance, where the percentage of old-age pensioners has reached 50% only in 2008. Nevertheless, the number of pensioners with disability pension registered a decline during 2005-2013, both in absolute and relative terms.

Taking into consideration all these important issues, the empirical research focuses mainly on *identifying and assessing the economic impact of pension plans and schemes* upon economic growth, long term development, labour market stability and resource productivity, through a complex set of macroeconomic models developed based on a large number of specific indicators.

2. Literature review on employee benefits

According to the economic literature, *employee benefits* represent a set of incentives given by entities in order to recruit and maintain the workers, respectively to increase labour productivity and security at the workplace (Banerjee and Perrucci, 2012).

Employee benefits are regulated by the *International Accounting Standard – IAS 19* with the general objective to define its accounting and to present information concerning these types of advantages. Therefore, the IAS 19 recommends a company to present: (i) a *liability*, when an employee has performed a specific service for which he will be paid under the form of various benefits in the future, respectively (ii) an *expense*, when the

economic agent benefits from the work and service provided by an employee in exchange of associated advantages.

At the same time, the International Accounting Standard – IAS 19 – Employee benefits, describes the main types of advantages granted by companies to their workers, including:

- (i) *short-term benefits*: such as salaries, weekly remunerations, social security contributions, paid annual leave, paid sick leave, bonuses, as well as other non-financial advantages, like medical assistance, cars and other goods or services given for free or subsidized;
- (ii) *post-employment benefits*: pensions, other retirement advantages or post-employment medical assistance;
- (iii) *other long-term benefits*, including long-service leave and other long-service advantages, disability benefits, bonuses, profit-sharing;
- (iv) *termination benefits*.

Pensions represent one of the most important labour market institutions, assuring a high and increasing percentage of income for pensioners. The internal perspective on labour markets highlights that pensions generate incentives which promote labour productivity, along with insuring the necessary means for saving during the pension period. Employees involved into a pension scheme are maximizing their welfare in retirement by working without interruption during their entire lifetime until they reach the retirement age (Clark et al., 2013). The pension income is a result of the four specific pillars supporting elderly people, such as redistributive public pensions (*pay as you go*), private pensions with fund accumulation, private direct savings and post-retirement work (Blake, 2000 in Beju, 2007, p. 17).

Economic theories on retirement reveal that the process of granting pensions by the government after retirement has a negative impact on savings during their active labour market participation and lifetime. Therefore, public and private pension plans are the main essential sources to provide the necessary income for the retirement period. In this context, the main indicators used to analyze the performance of various pension plans/schemes are generally the dependency rate, respectively the fraction between the total number of pensioners and total active population, as well as the output and efficiency of assets accumulated in pension funds or labour productivity.

Taking into consideration all these aspects, we can highlight that globally there are two main types of pension schemes, respectively: (i) the *pay as you go* pension system, based on long term savings and resource transfer from young to elderly people and (ii) *accumulating funds* pension system, which is also a long term saving program, but it implies resource transfer from youth to seniority.

Economic theories on pensions generally conduct the hypothesis that pension schemes increase labour productivity. This offer perspective follows the economists' assumption that pension incentives should generate sufficient added value in order to cover the costs. The constraints applied upon workers' ability to get more attractive jobs or to retire when they desire are extremely expensive, requiring that employers should pay compensation wages in order to attract employees. Employers can also attract workers at a lower cost by offering pension contributions if within those firms the pension incentives don't have productive functions.

In a different perspective outside the economic literature, the possibility for pension to be an instrument that promotes productivity is intentionally ignored or eliminated from the research and debates on pensions and retirement policies. The human resources

approach observes pensions as being almost totally coordinated by the preferences of employees. Thus, the imperfect portability of advantages was mainly presented as a disadvantage of pre-defined benefit schemes, rather than a voluntary compensation policy. Nevertheless, pensions are usually discussed within the context of employee benefits, focusing on insuring them the retirement security. This perspective presents pensions exclusively as a mean to insure the necessary income for the after-retirement period.

3. Methodology and data

The model developed for the analysis of the pension systems economic impact has the general form of a single and multiple regression model with panel data. Thus, for panel data, the general linear representation of the model is described as follows (Baum, 2001, p. 219):

$$y_{it} = \sum_{k=1}^k x_{kit} \beta_{kit} + \varepsilon_{it}$$

$$i = 1, \dots, N \quad (1)$$

$$t = 1, \dots, T$$

where: N represents the number of panel units (countries), while T signifies the number of periods (time).

At the same time, our developed models comprise one or several explanatory variables used within the analysis of the pension system impacts for considered panel countries, taking the form of single and multiple regression models:

$$Y_{it} = \beta_1 + \beta_2 X_{it} + \mu_{it}, i = 1, \dots, N; t = 1, \dots, T \quad (2)$$

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \dots + \beta_k X_{kit} + \mu_{it}, i = 1, \dots, n; t = 1, \dots, T \quad (3)$$

Taking into consideration the main objective of the empirical analysis, we focused more on single linear regression models in order to better capture the individual impact of pension indicators on economic growth, labour market, education and productivity.

The general set of indicators used for the empirical research of pension impacts on Serbian and Romanian economies comprises:

i) *pension specific indicators*: the number of pension beneficiaries at 31st December during 2005-2013; the number of pensioners on overall pension schemes – total and according to gender (females and males); the number of old-age pensioner – total and according to gender (females and males); cumulated number of old-age and survivor pension beneficiaries; pension values; expenses on pension funds as percentage of GDP;

ii) *macroeconomic and labour market indicators*: total (mil. Euro) and per capita (Euro) gross domestic product; resource productivity (Euro per kg); at-risk-of-poverty rate for pensioners; employment and unemployment rates (%); net earnings (Euro), tertiary education level.

We used national data sources for pension and labour market specific indicators, respectively the Eurostat Database of the European Commission for macroeconomic and productivity indicators. All developed models and data were processed through Stata 12 econometric package.

In order to validate the models following OLS (Ordinary Least Squares) and GLS (Generalised Least Squares) basic hypotheses for BLUE (Best Linear Unbiased) estimators, we performed the correlation matrix and take use of Stata algorithms for the multicollinearity hypothesis, as well as the Breusch Pagan test for homoscedasticity, the results being thus valid.

Nevertheless, the Hausman test applied in order to differentiate the fixed from random effects estimates validated the results of the fixed effects models for the first set of models developed based on the value of old-age pension in Euro per capita, respectively the random effects models in the case of the second set using the total number of pension beneficiaries.

4. Results and discussion

Following the economic literature and specific methodology we developed a set of eight models processed based on fixed effects (FE) and random effects (RE) through least squares method (Ordinary Least Squares – OLS for FE models and Generalised Least Squares – GLS for RE models) in order to evaluate the impact of pension systems of Romanian and Serbian economies. The models are based on two fundamental pension indicators, respectively the value of old-age pension in Euro per capita and the total number of pension beneficiaries.

The results obtained are synthesised and presented in Table 1.

Table 1: Results of developed models for the impact analysis of pension systems in Romania and Serbia on productivity, earnings, economic growth and educational level, through the perspective of old-age pension values and the total number of pension beneficiaries

Random effects						
Model 5	Model 6	Model 1 Model 7	Model 2 Model 8	Model 3	Model 4	
b/se	b/se	b/se b/se	b/se b/se	b/se	b/se	
log_Pens_varsta_loc		0.288*	0.818**	0.126	-0.049	-
1.324***	0.860	0.712**	1.828			
		(0.14)	(0.30)	(0.58)		(0.12)
(0.22)	(0.79)	(0.23)	(2.80)			
Constanta		-2.975***	5.852***	1.598		4.290***
10.598***	6.058	4.396***	0.817			
		(0.78)	(1.72)	(3.33)		(0.68)
(1.25)	(4.55)	(1.32)	(16.11)			
R-squared		0.2197	0.3171	0.0030		0.0104
0.6996	0.0688	0.3754	0.0259			
Wald		4.51	7.43	0.05		0.17
37.26	1.18	9.62	0.042			
N observations		18.000	18.000	18.000		18.000
18.000	18.000	18.000	18.000			
Fixed effects						
Model 5	Model 6	Model 1 Model 7	Model 2 Model 8	Model 3	Model 4	
b/se	b/se	b/se b/se	b/se b/se	b/se	b/se	
log_Pens_varsta_loc		0.268	0.730**	0.300	-0.075	-
1.265***	0.574***	0.642***	0.889			
		(0.13)	(0.19)	(0.35)		(0.10)
(0.15)	(0.13)	(0.13)	(1.18)			
Constanta		-2.858**	6.354***	0.601		4.442***
10.255***	7.702***	4.795***	6.205			
		(0.74)	(1.08)	(1.99)		(0.56)
(0.85)	(0.74)	(0.77)	(6.81)			
R-squared		0.225	0.500	0.047		0.038
0.829	0.572	0.607	0.036			
Fisher		4.346	15.004	0.747		0.594
72.576	20.032	23.120	0.564			
N observations		18.000	18.000	18.000		18.000
18.000	18.000	18.000	18.000			
* p<0.05, ** p<0.01, *** p<0.001						
Random effects						
Model 6	Model 7	Model 1 Model 8	Model 2	Model 3	Model 4	Model 5
b/se	b/se	b/se b/se	b/se	b/se	b/se	b/se
log_Pens_benef_tot		0.089	0.365***	-0.638***	0.094**	-0.271*
1.117***	0.289***	3.670***				

		(0.05)	(0.09)	(0.13)	(0.03)	(0.12)
(0.07)	(0.07)	(0.39)				
Constanta		-2.648***	5.097***	11.835***	2.612***	7.028***
-5.668***	4.182***	-43.423***				
		(0.73)	(1.32)	(1.88)	(0.51)	(1.81)
(1.00)	(1.07)	(5.75)				

R-squared		0.1708	0.5161	0.6146	0.3167	0.2380
0.9458	0.5023	0.8501				
Wald		3.30	17.06	25.52	7.41	5.00
279.08	16.15	90.77				
N observations		18.000	18.000	18.000	18.000	18.000
18.000	18.000	18.000				

Fixed effects						

		Model 1	Model 2	Model 3	Model 4	Model 5
Model 6	Model 7	Model 8				
		b/se	b/se	b/se	b/se	b/se
b/se	b/se	b/se				

log_Pens_benef_tot		0.767	2.243	5.871**	-1.706**	-0.377
0.338	0.331	14.588*				
		(0.90)	(1.58)	(1.66)	(0.45)	(2.27)
(1.24)	(1.34)	(6.64)				
Constanta		-12.754	-22.904	-85.237**	29.463***	8.615
5.958	3.545	-206.265				
		(13.45)	(23.63)	(24.78)	(6.67)	(33.82)
(18.44)	(20.06)	(99.04)				

R-squared		0.046	0.118	0.454	0.493	0.002
0.005	0.004	0.243				
Fisher		0.723	2.003	12.482	14.560	0.028
0.075	0.061	4.826				
N observations		18.000	18.000	18.000	18.000	18.000
18.000	18.000	18.000				

* p<0.05, ** p<0.01, *** p<0.001						
Source: own process of panel data based on Stata 12 econometric package						

Thus, we analysed the pension impact on resource productivity (*model 1*), on net earnings (*model 2*), on the labour market through unemployment rate (*model 3*) and employment rate (*model 4*), as well as on the overall economic activity and living standards through at-risk-of-poverty rate for pensioners (*model 5*), total (*model 6*) and per capita (*model 7*) GDP, respectively on tertiary education level (*model 8*).

The accuracy of estimated coefficients is also validated through the high level of statistical significance, mostly at 0.1%, as well as through the level of R-square and its adjusted values, Fisher and Wald tests. Thus, especially in the case of model 5, 6 and 7 which comprise the welfare, living standards of elderly people, especially pensioners and the overall economic activity, the R-squared values highlight that more than 50% in the variation of old-age pension values and total number of pension beneficiaries could be explained by the selected explanatory variables.

Our results comply with the economic literature highlighting that post-employment benefits such as pensions can lead to an increase in productivity, earnings and improve the living standards, as well as the educational level.

Thus, there is evidence to attest that an increase in old-age pension values for the two countries considered can lead to a 0.288% increase in productivity and a 0.730% increase in the level of net earnings. The positive effects of such a measure are also reflected in a total GDP increase by 0.574% and a per capita GDP increase by 0.642%, reducing at the same time the at-risk-of-poverty rate for pensioners by 1.265%. Moreover, a 1% increase in the total number of pensioners (a quantitative perspective) generates positive labour market impacts mainly through a significant reduction in unemployment rates by 0.638% and a slight increase in employment rates by 0.094%.

The positive impact is also revealed by an improvement in educational levels, the increase in the total number of pensioners leading to an increase in the number of persons finishing the first stage of tertiary education, respectively those programmes that are theoretically based/research preparatory or giving access to professions with high skills requirements.

5. Concluding remarks

The comparative analysis of employee benefits granted by various entities in Romania and Serbia highlights the importance given during the past few years to post-employment benefits, especially retirement advantages and pensions, locally and globally, as well as to the sustainability of the pension systems and to various measures that should be adopted and implemented to insure transparency and to facilitate a possible change in pension indexation methods.

The empirical research performed in order to assess the economic impact of pension systems in Romania and Serbia complies with the major issues revealed by the literature and highlights that pensions can lead to positive economic effects, having a major impact on labour and resource productivity, labour market stability and general population welfare. The economic impact of pension schemes in Romania and Serbia is confirmed by the results obtained which point out that the increase in total number of pensioners can reduce unemployment, having positive effects on total and per capita GDP, respectively on living standards through a significant reduction of poverty rate for pensioners.

The research performed was confronted with a major limit concerning low data availability for Serbia. Nevertheless, there are important opportunities to expand the analysis by taking into consideration the shaping factors of pension systems, as well as by increasing the

number of countries and time periods within the panel.

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