SHAPING FACTORS OF POST-EMPLOYMENT BENEFITS IN ROMANIA AND SERBIA

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Abstract:
The research aims to identify and analyze the main shaping factors of employee benefits focusing on post-employment advantages, respectively on pension systems in Romania in Serbia during 2005-2013. Employee benefits comprise all tyes of incentives given within the framework of a job, various multinational companies focusing on pension plans along with other advantages granted mainly to increase labour productivity. The empirical analysis is based on developing various double-log macroeconometric models, focusing on GLS (Generalized Least Squares) and MLE (Maximum Likelihood) estimations and a complex set of indicators. Pension beneficiaries in Romania and Serbia are influenced by the economic activity and living conditions, labor market stability and by the level of net earnings, according to the results obtained, each being discussed in various ways and presented within the paper.

Key words: *employee benefits, economic growth, earnings, unemployment, pension*

JED Classification: H55, J33

1. Introduction: post-employment benefits as pension systems in Romania and Serbia

The economic literature defines *employee benefits* as a complex set of incentives granted by employers (companies and various entities) in order to acquire and maintain their workers and to increase security and labor productivity within the framework of a specific job.

Employee benefits are also described by the *International Accounting Standard - IAS 19,* which has the major objective to prescribe accounting and to present information for employee advantages.

Pensions represent one of the most important post-employment benefits granted by multinational firms at a global level. The Romanian pension system has been shaped by several reforms during the latest years in order to increase its sustainability, being frequently confronted with numerous structural changes, especially demographic, within the perspective of an increased ageing population. Nevertheless, the new pension system has three main components: first (I), second (II) and third (III) pillars.

A general analysis of the pension schemes in Romania focuses on grouping the pensioners of public social security on various pension levels and points out that most of the old-aged pension types are comprised between 1000-1693 RON, while the disability pensions are grouped between 600-700 RON. Overall public social security, most pensioners receive a pension of about 601-740 RON, a significant percentage being placed on the 1000-1693 RON pension interval.

If we take into consideration the district distribution of the number of pensioners in Romania during 2013, we can observe that the districts with the highest number of pensioners are Timiş, Bihor, Cluj, Dolj, Argeş, Braşov, Prahova, Iaşi, Bacău and

Bucureşti, while a smaller number of pension beneficiaries are registered in Mehedinţi, Sălaj, Bistriţa-Năsăud, Harghita, Covasna, Giurgiu and Călăraşi.

At the end of 2014, the geographical distribution of the number of pensioners in Romania is almost similar to the one registered in the previous year, with small changes for two districts, respectively Botoşani and Caraş-Severin.

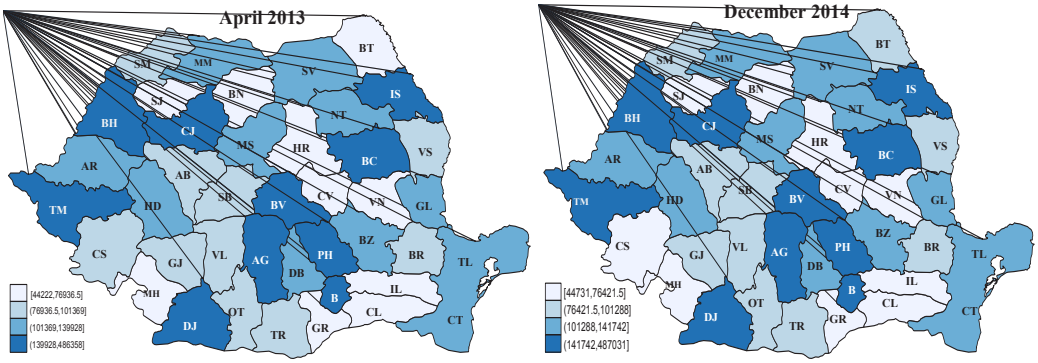

Figure no. 1: **Distribution by districts of the number of pensioners per total social security contributions in Romania**

Source: own process of statistical data published by the National House of Public Pensions in Stata 11

In Serbia, there are three main types of pensions granted by companies, respectively old-age, disability and survivor pensions.

The general trend of the number of pensioners according to a specific type of insurance during 2002-2010 highlights that all three major categories registered significant increases, especially among employees (with about 44.000 persons), while self-employment pensioners have only slightly improved, with almost 10.000 people.

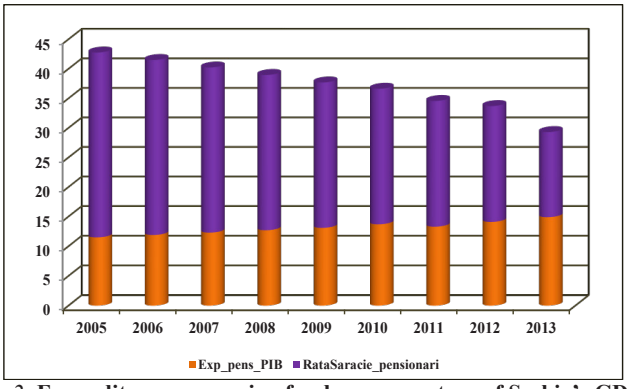

Figura no. 2: **Expenditures on pension funds as percentage of Serbia's GDP and at-risk-of-poverty rate for pensioners**

Source: own process of data published by the Statistical Office of the Republic of Serbia

If we take into account only the old-age pension schemes, we can observe that during 2005-2013 the number of pension beneficiaries has significantly increased, from about 950000 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 unfavorable 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.

In order to improve socio-economic conditions and reduce at-risk-of-poverty rate for elderly people, especially pensioners, Serbia has slightly increased the expenditures on various pension funds as percentage of GDP during 2005-2013. Thus, the expected positive effects were accomplished and the poverty rate for pensioners has significantly decreased from 31.2% in 2005 to 14.4% in 2013.

2. Literature review on post-employment benefits

The economic literature defines employee benefits as a set of incentives given by employers (firms) in order to recruit and maintain their workers, as well as to increase labor and resource productivity and security within the framework of a specific job.

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.

Thus, *employee benefits* comprise all forms of advantages given by an economic entity in exchange for the service performed. *Short term employee benefits* represent a different type of advantages, other than those for contract termination, that are totally payable within twelve months from the end of the period in which workers perform a specific service (we can include here wages, paid annual leave or social security contributions). The *post-employment benefits* are those types of advantages payable after the contract termination and comprise pensions, post-employment life insurance and other retirement benefits.

The International Accounting Standard - IAS 26 - *Accounting and Reporting by Retirement Benefit Plans* defines retirement benefit plans as "arrangements whereby an entity provides benefits for employees on or after termination of service (either in the form of an annual income or as a lump sum) when such benefits, or the contributions towards them, can be determined or estimated in advance of retirement from the provisions of a document or from the entity's practices".

Pensions represent one of the most important labor market institutions, assuring a high and increasing percentage of income for pensioners. The internal perspective on labor markets highlights that pensions generate incentives which promote labor 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 în 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 labor 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 labor productivity.

3. Methodology and data

In order to identify and assess the shaping factors of pension systems in Romania and Serbia we developed a complex set of double-log macroeconometric models, based on various macroeconomic and pension specific indicators. The models were processed based on random and fixed effects through least squares method, respectively *OLS (Ordinary Least Squares)* for the fixed effects models *(FE – Fixed Effects Models)* and *GLS (Generalized Least Squares)* in the case of random effects models *(RE – Random Effects Models)*. Moreover, we used the *MLE – Maximum Likelihood Estimator* to consolidate and verify the accuracy of estimated coefficients through a different method and we processed all developed models using robust standard errors.

Taking all these into consideration and based on the literature review we developed four sets of double-log models especially based on random effects and maximum likelihood estimations. The first set of econometric models focuses on total gross domestic product in absolute terms (GDPtot), along with other indicators, respectively unemployment (UR), net earnings (NE) and the educational level (EDtert), while the second set is centered on the use of per capita GDP (GDPcap) along with the same labor market indicators in different combination.

As regarding the use of pension specific indicators, we took into account the number of pension beneficiaries overall types of pensions (PBT), respectively the number of old-age pensioners (PBOA), individually and cumulated with the survivor pension (PBOAS), total and according to gender.

The specific form of developed models is as follows:

Modelul _1

$$PBT_{it} = \beta_0 + \beta_1 GDPtot_{it} + \varepsilon_{it}$$

Modelul _2

$$PBT_{it} = \beta_0 + \beta_1 GDPtot_{it} + \beta_2 UR_{it} + \varepsilon_{it}$$

Modelul _3

$$PBT_{it} = \beta_0 + \beta_1 GDPtot_{it} + \beta_2 UR_{it} + \beta_3 NE_{it} + \varepsilon_{it}$$

Modelul _4

$$PBT_{it} = \beta_0 + \beta_1 GDPtot_{it} + \beta_2 UR_{it} + \beta_3 NE_{it} + \beta_4 EDtert_{it} + \varepsilon_{it}$$

respectively:

$$PBT_{it} = \beta_0 + \beta_1 GDPcap_{it} + \varepsilon_{it}$$

$$PBT_{it} = \beta_0 + \beta_1 GDPcap_{it} + \beta_2 UR_{it} + \varepsilon_{it}$$

$$PBT_{it} = \beta_0 + \beta_1 GDPcap_{it} + \beta_2 UR_{it} + \beta_3 NE_{it} + \varepsilon_{it}$$

$$PBT_{it} = \beta_0 + \beta_1 GDPcap_{it} + \beta_2 UR_{it} + \beta_3 NE_{it} + \beta_4 EDtert_{it} + \varepsilon_{it}$$

where:
PBT = Pension Beneficiaries, total types of pensions; this pension specific indicator is used alternatively with the number of old-age pensioners (PBOA), individually and cumulated with the survivor pension (PBOAS), total and according to gender;
GDPtot = total Gross Domestic Product in absolute terms, mil. Euro;
GDPcap = per capita Gross Gomestic Product, Euro;
UR = Unemployment Rate, %;
NE = Net Earnings, Euro;
EDtert = First stage of tertiary education, programmes that are theoretically based/research preparatory or giving access to professions with high skills requirements (level 5A).

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 are processed through Stata 12 econometric package.

4. Results and discussions

The results obtained after processing these models based on GLS for random effects and maximum likelihood estimations are almost similar regarding the coefficients, slightly differences being registered only in the case of standard errors of parameters associated with every model.

Thus, we can observe that the level of statistical significance for the coefficients estimated through least squares (GLS) and maximum likelihood (MLE) methods is very high, mostly at 0.1%. At the same time, if we analyze the values of Wald tests for multiple regression models (especially model 5 and model 7), we can point out that all explanatory variables have a significant joint influence on pension specific indicators as dependent variables, these results being extremely important for correct specification of the model. Nevertheless, we used the correlation matrix and Stata algorithms for the multicollinearity hypothesis and Breusch Pagan test for homoscedasticity, the results being thus valid.

Through the perspective of the results obtained we can highlight the importance of economic activity in shaping pension systems in Romania and Serbia, the empirical analysis suggesting that there is evidence to attest that a 1% increase in the level of total GDP could lead to a 0.846% increase in the number of pension beneficiaries (all types of pensions), while the similar improve in per capita GDP could induce a significant increase in the number of pensioners by 1.714%.

Moreover, an increase in unemployment rates may induce a perception of uncertainty for a specific job or the impossibility of finding one at an advanced age, these elements could then lead to an early retirement decision, thus increasing the number of pensioners. At the same time, an improvement in the level of net earnings represents a significant incentive to remain active within the labor market, thus reducing the total number of pension beneficiaries with about 1.4%, according to the results presented in table 1. Still, the per capita income increase implies an improvement of living standards and the assurance of financial resources vital for after-retirement period, thus leading to an increase in the total number of pensioners.

Table 1: Results of the models developed for the shaping factors analysis of pension systems in Romania and Serbia, according to the total number of pension beneficiaries (all types of pensions: old-age, anticipated old-age, survivor)

	Model 1 RE	Model 2 MLE	Model 3 RE	Model 4 MLE	Model 5 RE	Model 6 MLE	Model 7 RE	Model 8 MLE
log_GDP_total	0.846***	0.846***	0.735***	0.735***	1.612***	1.612***	1.433***	1.433***
	(0.05)	(0.05)	(0.06)	(0.06)	(0.19)	(0.16)	(0.30)	(0.25)
log_UR			-0.219*	-0.219**	0.443**	0.443***	0.352	0.352*
			(0.09)	(0.08)	(0.15)	(0.13)	(0.19)	(0.16)
log_NE					-1.458***	-1.458***	-1.329***	-1.329***
					(0.30)	(0.27)	(0.35)	(0.30)
log_Educ_tert							0.026	0.026
							(0.03)	(0.03)
Constanta	5.606***	5.606***	7.338***	7.338***	11.545***	11.545***	12.060***	12.060***
	(0.56)	(0.53)	(0.86)	(0.79)	(1.03)	(0.91)	(1.24)	(1.05)
sigma_u								
Constanta		0.000		0.000		0.000		0.000
		(0.05)		(0.03)		(0.02)		(0.02)
sigma_e								
Constanta		0.147***		0.124***		0.076***		0.075***
		(0.02)		(0.02)		(0.01)		(0.01)
R-squared	0.9458	-	0.9612	-	0.9854	-	0.9860	-
Wald / LR	279.08	52.46	371.66	58.49	942.46	76.04	917.18	76.87
N observations	18.000	18.000	18.000	18.000	18.000	18.000	18.000	18.000

	Model 1 RE	Model 2 MLE	Model 3 RE	Model 4 MLE	Model 5 RE	Model 6 MLE	Model 7 RE	Model 8 MLE
log_GDP_cap	1.741***	1.735***	1.204***	1.177***	-2.514***	-2.514***	-1.762***	-1.762***
	(0.43)	(0.03)	(0.29)	(0.26)	(0.47)	(0.41)	(0.46)	(0.39)
log_UR			-0.747***	-0.729***	-0.957***	-0.957***	-0.756***	-0.756***
			(0.14)	(0.13)	(0.07)	(0.06)	(0.09)	(0.07)
log_NE					2.969***	2.969***	1.902***	1.902***
					(0.36)	(0.32)	(0.47)	(0.40)
log_Educ_tert							0.085**	0.085***
							(0.03)	(0.02)
Constanta	0.143	0.143	6.433*	6.625**	7.157***	7.157***	10.590***	10.590***
	(3.68)	(.)	(2.56)	(2.32)	(1.10)	(0.97)	(1.48)	(1.26)
sigma_u								
Constanta		0.298		0.034		0.000		0.000
		(0.18)		(.)		(0.03)		(0.02)
sigma_e								
Constanta		0.334***		0.261***		0.110***		0.086***
		(0.06)		(0.04)		(0.02)		(0.01)
R-squared	0.5023	-	0.8238	-	0.9696	-	0.9816	-
Wald / LR	16.15	9.46	70.15	30.95	446.43	62.88	693.73	71.92
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

5. Conclusion

The empirical analysis performed within this paper aimed to identify and analyze the shaping factors of pension systems in Romania and Serbia, integrating the economic literature into several macroeconometric models that focused on post-employment benefits granted by various entities in the case of the two countries considered.

The comparative analysis of employee benefits granted by companies 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.

From the empirical perspective, our results point out that there is a positive impact of the economic activity in shaping the pension systems for the two countries considered, an improvement in the living standards could thus lead to an increase in pension beneficiaries due to a certain level of income for pensioners after their retirement. Nevertheless, labor market instabilities reflected mainly through a high level of unemployment could lead to an increase in the number of pensioners for Romania and Serbia.

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