

# KEY ELEMENTS TO DEFINE A SUCCESSFUL PENSION FUNDS MARKET. THE POLISH EXPERIENCE.

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*Abstract: The mandatory private pension represents a step forward in order to improve the quality of future life. Due to the problems occurred in the public pension system and the continuous debate regarding the number of participants, the lottery organization and schedule, the legal framework for the minimum rate of return, the possibilities of transfer between funds, we focused on the most developed market in the region, the Polish one, hoping to find the classical pattern for success.*

*Keywords: Mandatory private pension, investment policy, Polish market.*

## 1. The most important goals of the study

As we have previously emphasized, we look forward to define possible correlations between the Romanian and the Polish pension funds markets. Starting with the evolution of the funds number, the legal framework, we hope to rely on the Polish second pillar success in order to outline a profitable experience for our market.

Depending on the different phases of evolution, we should carefully appreciate the changes occurred in the last ten years for the Polish markets.

Another issue is the flexibility of this market, because we have already faced problems regarding this phenomenon for the Polish first Pillar. For example, Marcin Kawiński & Dariusz Stańko (2007) found out that due to labour market flexibility and (macro) pension finance sustainability there is a proposition to change the pattern of the 1<sup>st</sup> pillar to guarantee a minimum and universally available anti-poverty pension (that would be probably means tested) rather than keeping up high standard retirement based on fixed condition (i.e. period of contribution)<sup>183</sup>. Even this isn't our aim for the present study, we can easily predict that a change in the architecture of the first pillar will determine different behaviors for the second and third pillars.

## 2. The input data and the methodology of the study

The analyzed period was April 2002 – November 2006, using monthly data made public by the Polish Committee of Insurance and Pension Fund Supervision (KNUIFE).

We tried explaining the evolution of the private pension funds with the help on an econometric model:

$$AU = \alpha + \beta TB + \lambda S + \varepsilon$$

Where: AU = accounting unit

TB = bonds and treasury bills weight in investments portfolio

S = shares listed on a stock exchange weight in investments portfolio

$\varepsilon$  = residual

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<sup>183</sup> Marcin KAWIŃSKI & Dariusz STAŃKO, Labour flexibility and pension schemes in the European Union , 5<sup>th</sup> International Research Conference on Social Security, "Social security and the labour market: A mismatch?" , Warsaw, 5-7 March 2007

$\alpha$  = constant

$\beta, \gamma$  = determinative variables coefficients

To simplify the model we considered the following hypothesis:

- we did not take into account the inflation level and the economical growth;
- the political decisions were not included;
- We left aside the fact that some of the second pillar funds managers are also managers of the third pillar funds (sometimes a manager asks the competent commission for a dual authorization). In this case it occurs the problem of setting different investment policies, depending on the existence of multiple choices, one second pillar fund and one third pillar fund. Additionally, it should be underlined that the Polish Commission approved from the beginning the possibility for a manager to establish two mandatory private pension funds;
- the existence of a minimal rate of return;
- There are two kinds of lotteries, one similar with the Romanian existing one (everybody is provided a number of undecided in respect to the former market share), and another one, established since 2004 in Poland (the lottery participants are selected on financial criteria). So, at present, only the selected funds participate in the lottery – those which have generated rates of return higher than the weighted average rates during the two past accounting periods and whose assets have not exceeded 10% of the total value of all funds. All funds meeting these criteria participate in the lottery to the same extent. The lottery is carried out on the last working day of January and July every year by the ZUS. As a result, the largest funds (Commercial Union – known in Romania as AVIVA, Polsat, and ING N-N Polska) haven't had the access to new more members. A similar approach was tried in Romania by Aviva, the British insurer hoping to bring much more members by eliminating from the Lottery the two biggest pension funds: Allianz Tiriac and ING.

The election of the determinative variables (TB and S) was made considering that the weight of these two assets in investment portfolio is overcoming 90%. Even the Romanian pension funds didn't start the investments (there are not, for the moment, transfers from the public budget), the probability for those two types of assets is sure to be high.

### 3. Empirical results

To remove the influence of those pension funds that disappeared and the new ones that appeared during the analyzed period, we chose to take only those which were active the entire period, which are: AIG OFE, Allianz Polska OFE, Bankowy OFE, Commercial Union OFE BPH CU WBK, OFE „DOM”, OFE Ergo Hestia, Generali OFE, ING Nationale-Nederlanden Polska OFE, Pekao OFE, OFE Pocztylion, OFE Polsat, OFE PZU „Złota Jesień”, OFE Skarbiec-Emerytura.

The eliminated pension funds were small ones, such as Winthertur OFE, that had a market share of 3.50% in 2004.

Considering the accounting unit growth, which is the most eloquent vision of each pension fund's profitability, this was around 198% - 171% for the five analyzed years and in the year 2006 the 15% average increase in the value of an accounting unit was the best annual result ever achieved by pension funds.

Ordering the pension funds by the average rate of return (Table no. 1) we can see that the best rate of return was obtained by ING Polska and the lowest rate of return by Allianz Polska, fact which can be explained through the investment portfolio structure.

In this analysis considering the bills and treasury bonds and shares listed on a stock exchange weight we noticed a slight difference between the weights of the two assets in the investment portfolio of ING Polska – where the shares weight is higher the shares weight in Allianz Polska investment portfolio. This could be an explanation for the obtained rate of return.

Pension Fund	Annual rate
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	of return
Allianz Polska	12.9
Pekao	13.6
Skarbiec-Emerytura	14.1
Ergo Hestia	14.4
Pocztylion	14.4
Commercial Union	14.7
Bankowy	15.1
Polsat	15.3
PZU Złota Jesień	15.3
Generali	15.6
AIG	15.9
DOM	15.9
ING N-N Polska	16.1

*Table no. 1<sup>184</sup>: The average rate of return for the pension funds*

Before going to estimate the regression parameters the multiple regression hypothesis there were verified. The regression model  $AU = \alpha + \beta TB_i + \lambda S_i + \varepsilon_i$  could be written with the matrixes help:

$$Y = aX + e, \text{ where } Y = \begin{pmatrix} AU_1 \\ \dots \\ AU_n \end{pmatrix}; X = \begin{pmatrix} 1 & TB_1 & S_1 \\ \dots & \dots & \dots \\ 1 & TB_n & S_n \end{pmatrix}; a = \begin{pmatrix} \alpha \\ \beta \\ \lambda \end{pmatrix}; e = \begin{pmatrix} e_1 \\ \dots \\ e_n \end{pmatrix}$$

The multiple regression hypotheses are<sup>185</sup>:

- Hypothesis no 1.  $E(e) = 0$ ;
- Hypothesis no 2.  $\text{Var}(e) = E(ee^T) = \sigma^2 I$ ;
- Hypothesis no 3.  $X$  is a not - random matrix
- Hypothesis no 4.  $\text{rank}(X) = 2+1 < n$
- Hypothesis no 5.  $e \rightarrow N(0, \sigma^2 I)$

With the help of E-views statistic tests we verified the hypothesis.

Coming back tot the first model, from its confidence point of view, there were 6 pension funds: DOM, AIG, Commercial Union, Ergo Hestia, Skarbiec-Emerytura and Pekao, for which the obtained rate of return is in strong connection with the bills, treasury bonds and shares weight in investment portfolio.

The model confidence was appreciated examining the determination coefficient (Multiple R – which shows the percent in which the determining variables are influencing the determinate variable), the Fisher - Snedecor test (F test – shows the model global confidence; for values grater then 1 of F test confirm true the hypothesis  $H_1: \beta, \gamma \neq 0$ ) and not least the values of  $t$  test and  $p$  – value for  $\alpha, \beta$  and  $\gamma$ . All this results, statistical speaking, are showing the model credibility.

Pension Fund	Multiple R	F test	Significance
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<sup>184</sup> Source: Polish Insurance and Pension Funds Supervisory Commission

<sup>185</sup> ANDREI, T., (2003). Statistica si econometrie, Editura Economica, Bucuresti, [AND 2003]

			<i>F</i>
DOM	0.692648	3.227685	0.101557000
AIG	0.659642	2.696096	0.135464228
Commercial Union	0.800375	6.238438	0.027830797
Ergo Hestia	0.683449	3.067868	0.110472112
Pekao	0.772090	5.166000	0.041867081
Skarbiec-Emerytura	0.621773	2.205918	0.180758574

**Table no. 2<sup>186</sup>: The model confidence**

The model showed it self as being partial accurate, meaning that the treasury bills and shares weight is explaining only a part of the accounting unit evolution (about 50%), for 5 others pension funds, which are Allianz Polska, Bankowy, Polsat, PZU Złota Jesień, ING N-N Polska.

Pension Fund	Multiple R	F test	<i>Significance F</i>
Allianz Polska	0.586263	1.832967	0.229006
Bankowy	0.498617	1.158092	0.367714
Polsat	0.520270	1.298994	0.331293
PZU Złota Jesień	0.486967	1.087978	0.387761
ING N-N Polska	0.563279	1.626580	0.262931

**Table no. 3<sup>187</sup>: The model confidence**

For the two others pension funds Generali and Pocztylion, the model did not work as expected, in other words, the weight of the considered assets does not represent the most important impact on the obtained rate of return. The Multiple R values (about 30%) show clearly that there are other important elements, which are explaining the accounting unit evolution that we did not take initially in account.

Pension Fund	Multiple R	F test	<i>Significance F</i>
Generali	0.382011	0.598035	0.575735838
Pocztylion	0.306191	0.362082	0.708537644

**Table no. 4<sup>188</sup>: The model confidence**

## Conclusions

In conclusion, beside the two pension funds: Generali and Pocztylion, the model that we built-up showed itself as being confident. The rate of return obtained by the analyzed pension funds is in a strong relationship with the investment portfolio structure and as mentioned we can strongly say that the more risky funds (a bigger weight for shares in investment portfolio against other funds less risky) had accomplished a bigger rate of return.

Discussing the rate of return, we support the idea of a relative minimum guarantee, due to the Polish reality, market that is “facing” nowadays a rate of return between 12% and 17% for the past five years.

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<sup>186 4, 5</sup> Surce: authors processings

Indeed, we shall have no provided data for the next two years, but this is similar to other markets and should not represent an issue to worry for.

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