Individual Choice of a Pension Fund in Russia: Are the Investment Results of the Fund Important?

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ABSTRACT

The paper presents the econometric assessment of the influence on the market positions of the fund of nominal yield volume and the Sharpe ratio formed in the pension savings investment by non-state pension funds in the Russian Federation. Using pair and multiple regression models and also a fixed effects model, the authors did not find any statistically important correlation between the investment results and insured persons' choice of a pension fund. The results of the study point to weak stimuli for the participants of the pension sphere to improve the investment process quality and deformation of competition in the pension services market.

Keywords: Yield, Sharpe Ratio, Competition
JEL Classifications: G23, D40, D12

1. INTRODUCTION

The state funding of pension obligations through placing of pension contributions in the financial market requires solving a classical problem of the relationship between the agent and the principal. The problems occurred due to the necessity to use services provided by financial institutions (agents) to invest pension savings of the future pensioners (principals) (Philippon, 2012). The long-term period between the time when a person pays pension contributions and the time when a person receives a pension even deepens the problem. The reduction of a risk of the agent's opportunist behaviour requires forming efficient stimuli to keep the beneficiary's interests (Financial Services Authority, 2012). Potentially, a conflict of interest between the savers and financial institutions during the investment of pension savings can arise because of the amount of yield and a risk during pension assets placing and also the value of expenses payable for the agent's services (Pitt-Watson et al., 2014).

A classical recipe of fair management of the relationship between the agent and the principal is to create a competitive environment. It is believed that if the principal can choose among several agents to conclude a contract with and has the right to change the agent

then sufficient motivation for the agent's fair behaviour is provided automatically (Philippon, 2012). With more suppliers of financial services in the market, the competition among them becomes more intense which makes the consumer win more.

From this point of view it is quite logical that most countries, while creating a cumulative model of the pension system, took into consideration functioning of several independent financial intermediaries: Pension funds, pension accounts management companies (MCs), banks, insurances companies and even the enterprises of the real economy providing various pension plans (Tapia and Yermo, 2007). It was expected that due to their work a competitive pension market would be formed where home economics would get an access to services which are optimal with cost and quality consideration.

As the result of the Pension Reform in the Russian Federation, since 2003, the citizens have started to form obligatory pension savings. The legislation gave a citizen the right to choose an organisation which could invest pension savings in financial assets. In different times, their number was changing but on average there were almost 100 of non-governmental pension funds and about 50 MCs, including a governmental one. The

article is to find out whether Russians considered the results of an institution's previous investments when choosing a financial institution. The answer to this question will let find out how competition stimulates the participants of the Russian market to raise the efficiency of pension savings management. Will negative effects for the consumer occur as a result of assets concentration in the pension industry, dominance of a number of organisations in the pension market or even full monopolization of the process of placing pension contribution into the financial instruments? Is it efficient to appeal, in the competition for a client in Russia, to rational motives for yield maximization, risk minimization and expanses of investment or use mainly "non-price" methods of marketing: An image of an organization, its size, brand awareness etc.? Section 1 of the paper presents a brief literary review on the issue studied; Section 2 provides mathematical models on the basis of the Russian empirical data. Section 3 presents the results of the study.

2. A LITERATURE REVIEW

The studies of the peculiar features of the competitive environment in the pension system are carried out in four major conceptual directions. In the first one ("quazi-market"), the specific character of the pension insurance market is explained by the fact that it is not a full-working market in its traditional meaning. The second direction evaluates the scale effect, its influence on the expenses and cost of services in the system. The third direction considers the anomalies of the pension industry through the prism of various aspects of behavioral economics. The fourth direction connects the phenomena occurring in the pension market with information problems ("information asymmetry"). Every approach makes attempts to evaluate the deformation of the market using quantitative methods. The scientific research in the abovementioned approaches is not carried out in isolation; most of the works have a closely-related character.

A. Pension system as a "quazi-market":

Scholars such as Impavido et al. (2009) and Valdés-Prieto (2007) describe the pension industry using the term "quazi-market" paying particular attention on the peculiarities of supply and demand. Among the participants of the branch are not only commercial firms but also non-commercial organizations and also governmental companies. The motivation of the last two groups of economic entities is, as a rule, different from the market one (Tumanyants, 2014; Bateman and Thorp, 2007). The demand for the financial services in the pension system with obligatory savings has a specific character because the consumer often does not pay in "ready cash" and only redistribute a part of the target budget savings formed by taxes for labour and/or state allocations.

In case, the participation in the funding part of the pension system is voluntary, the companies providing the pension insurance services have to compete with other financial institutions for the savings of home economics (Claessens, 2009). That provides the necessary motivation level to reduce expenses in the pension industry even if there is no perfect competition (Benediktsson et al., 2001).

In professional pension plans the competition level is traditionally lower because of the significant and often dominant influence of the employers on the choice of a pension plan and its terms, which mainly has a negative impact on the transparency and risk level (Clark and Bennett, 2001; van der Merwe, 2004).

A funding pension system, while joining social and political risks with financial ones, takes a special place different from the market of any other product or service in any national economics. Severinson and Stewart (2012) argue in favor of the presence of several companies in the pension services market with the intention to minimize the influence of operations with pension savings on the situation of the fund market and diversify management risks, and also to preserve pension institutions' independence from political influence. Their research especially underlines that the government' strengthening of the restrictions on investment activity leads to its unification and decrease the profit from competition. Kominek (2012) comes to the same conclusion based on the analysis of the work of Polish pension funds. Competitive relations promotion is encouraged by the decrease of administrative barriers to enter the branch, first of all, license requirements (van der Merwe, 2004).

B. Scale effect in pension industry:

A separate research direction is connected with the assessment of the effect of economy on the scale and influence of the pension market structure on the amount of expenses and prices in the field. For example Agostini et al. (2014) analyzed the quarterly data about the work of the funds in Chili for 8 years and found a positive effect of the scale in the pension industry in this country. Funds merger in this country (their number decreased from 21 in 1994 to 6 in 2012) let the funds reduce operating expenses but led to a small growth in prices for their services for the consumers. Consolidation of small and medium Danish pension funds also led to the growth in expenses efficiency (Bikker, 2013). In the study by Acemoglu et al. (2008) it is shown theoretically and empirically that the competition does not always lead to the expenses optimization. The authors illustrated that result of the study also on the basis of the pension services market.

Using a regression analysis of almost 5000 surveys of pension funds with defined benefits of different countries during the period from 1990 to 2008, Dyck and Pomorski (2011) found a higher efficiency of large-scale pension plans in comparison with small ones. The result was achieved due to both lower expenses and higher yield. Bauer et al. (2010) studied 463 American pension funds with defined benefits during the period from 1990 to 2006 and 248 American funds with defined contributions from 1997 to 2006, and on the contrary, recognized small pension funds to be more competitive. They lose to large-scale funds in unit costs but get higher yield due to investments into American companies of small capitalization. In view of tight liquidity of the assets

of these emitters, large-scale funds cannot use high expansion rates of this sector of the American economy.

C. Pension market from the view of behavioral economics: Barr and Diamond (2010) explain the pension market long-run declination from the optimal position by the imperfection of decision-making process by home economics. The excessive volume of diverse information about financial products provokes rather passive behaviour of the consumers, than their wish to puzzle out in the firm's offers. For example in Sweden there are about 700 existing pension funds. The abundance of offers leads to the fact that most Swedes do not make their individual choice, relying on the options provided automatically. Loewenstein and Ubel (2008) underlined the impetuosity in decision-making process by home economics, their dependence from certain circumstances in which the decision is made and even the way to present the source information. Thaler and Sunstein (2008) call the idea of Homo Economicus a fiction, and prove that people just are not used to behave in a rational way but they make mistakes systematically. That is why people should not be given the right of choice. The choice must be made by an expert for them. The researchers called their approach "libertarian paternalism."

Tapia and Yermo (2007), based on a large number of empirical studies, also doubt that most of the individuals can make right decisions from a strategic view. In the same paper the authors determined negative dependence between a number of alternatives of home economics and a number of the participants of pension programmes who make their individual choice. In Latin American and Central and Eastern European countries, where the investment menu offers quite a limited choice of variants (from 2 to 5), the total of those who had made an individual choice is at least 85%. Whereas, in Sweden and Australia, it does not reach even 10%. The consumer who had once made a choice, in the future changes the counteragent voluntary very really as it takes some efforts, if not material than at least time ones. As a result, the demand for financial products in pension provision sphere is characterized by high inertness that prevents competitive relationship to develop.

Pitt-Watson et al. (2014) studied 23 researches and paid attention to the fourfold difference in the expenses volume between pension funds close to each other in characteristics, and that, in their opinion, proves the absence of competition in the sphere. They explain it by the following reasons:

• Full costs of the services proved by financial institutions are not declared to the customers;
• The customers often rely on the employer's choice of a pension plan;
• The customers do not pay much attention to the expenses.

The last point is proved by the authors by the fact that the annual cost of expenses is perceived as a small value. However, taking into consideration a long-term character of pension savings, annual costs influence the final result dramatically. For example an annual charge of 1.5 with the existing level of yield would result in a 37% "tax"

for 6 years. Barr and Diamond (2010) estimate 1% of the annual assets cost paid by a client to be 19.6% loss of the total volume of savings for 40 years.

At the same time the results of the study by Palme et al. (2007) are not so much simple. The authors found the evidence which proves the pension programmes participants' rational behavior and contradicts it at the same time. In particular, the population's lack of foresight to their pension savings can be a result of not the problems to get and analyze information or decision-making process but the result of waiting for the state support of their financial status in their old age. Caliendo and Gahramanov (2013) show in their paper that level of income of those families which do not make savings does not differ dramatically during the whole life from those who make pension savings regularly.

D. Information asymmetry in pension system:
The precondition for the individual rational behavior is made extremely rarely in the sphere of pension accounts management. One of the reasons is that the customers do not have an access to all necessary information which can be the result of the following factors (Barr and Diamond, 2010; Bogle, 2014; World Bank and International Monetary Fund, 2005):

• Information is not free of charge; even if there is a necessity to buy it, it takes time to search information and study it;
• Low information transparency of pension institutions;
• A high level of information uncertainty about the future status of financial markets and the results of pension saving investing;
• Physical limitations, because all information necessary for the analysis consists of a huge amount of data.

However, even it is, for instance, not difficult to get the information, problems rise while right processing and interpretation by the individuals. The problem of a low level of the financial awareness by the most part of the population is still actual for all countries in the world. For example, as the inquiries of the Americans show, more than half of them do not see any difference between shares and obligations (Orszag and Stiglitz, 2001). As a rule, the right choice in the pension insurance sphere requires to compare various kinds of information that may turn to be not an easy task (Bogle, 2014; Loewenstein and Ubel, 2008).

When the criteria to choose a counteragent in the pension market are earning yield and risk, a widespread mistake of a consumer becomes orientation to more actual measures of these indexes for the last period (World Bank and International Monetary Fund, 2005; Thaler and Sunstein, 2008). In view of high volatility, short-term indicators are less representative in comparison with the data for a long time period. For 9 years, the mean place of Russian MC which got the best yield from pension savings for that period is just 18.5; only three, including the leader, from 54 investment portfolios have a mean place in yield <20 (Tumanyants and Utuchenkova, 2014).

As a result, the information asymmetry effect rises inevitably in the markets with financial mediators (Sy, 2009; Pitt-Watson et al., 2014). Information problems, and also the peculiarities described

in section 1.3 of this paper, stipulate the price insensitivity of the volume of demand for the services provided by financial institutions in the sphere of pension provision. To sum up, even if there are some independent suppliers of services in the pension sphere it does not mean that the market will function as a full one.

The analysis of the main conceptions let to suppose that the activity of some independent investment institutions in the modern pension market in Russia do not lead to the improvement of the "contract" conditions for future pensioners when talking about yield, risk and investment expenses. The existing character of relationship "agent-principal" in the Russian pension industry, despite their formally competitive character, does not have stimulus for financial agent to improve the mentioned parameters of their services for the clients. The sense of the hypothesis tested is in the fact that the share of the investment institution in the pension market in Russia does not depend from the level of its activity in investing pension funds.

The hypotheses is supported by the proof of irrational behaviour of the Russian home economics and limitation of positive impact on the customers from some suppliers of financial services in the sphere of pension provision, supplementing foreign studies on this problem. As far as the authors know, this is the first study of the problem based on the empirical data in Russia.

3. ECONOMETRIC ANALYSIS OF COMPETITION IN THE MODERN PENSION MARKET IN RUSSIA

The existing model of pension system in Russia includes unfunded and funded components. The employer's contribution for the financing of pension savings since 2002 are accumulated on the individual account of the person insured in the Pension Fund of the Russian Federation (PFR). Since 2005 the employee could resend his/her pension savings for investment in the financial market, into one of the MCs or in one of the non-state pension funds (NPF). If the employee did not express his/her will the savings were automatically sent over to the State Corporation Bank for Development and Foreign Economic Affairs (Vnesheconombank). Once a year, the employee could change the organization investing his/her pension savings. Table 1 shows that during that time, with stagnating number of clients of state and private MCs, the number of clients increased sharply.

An active flow of clients resulted in the fact that the share of NPF increased from 1.1 to 28.2% for 9 years. The impulse for this

study is the aspiration to understand whether over 20 millions of Russians took into consideration the previous results of its work in the financial market, when making a decision to conclude a contract with a certain NPF?

A. Methods and logics of the study:

Despite several dozens of service suppliers existing in the Russian pension market, there is a need to define to what extent the competition among them for a client motivates financial institutions to prove their work. Among the potentially possible factors influencing the choice of NPF, we can name the level of yield and risk of pension investments, cost of services and quality of clients care and service. In contrast with an absolute majority of the countries, the Russian NPF do not have premium from the assets volume. According to the Russian Law, the amount of services provided by NPF is limited within 15% from the annual yield.

The volume of return and yield, published by NPF, includes the compensation of all expenses and reflects a net financial result from pension savings investments allocated on the client's account. Therewith, the expenses of financial institutions are not an independent tool of competition in Russia. That is why we refused from the approach used in the mutual research by the World Bank and International Monetary Fund (2005), where the relationship between yield and cost of services provided by Hungarian pension funds was considered. The absence of a direct sustainable correlation has shown that the clients of the funds were ready to suffer higher expenses without compensation if they got additional benefits. An obvious contradiction to the principals of rational behavior let come to the conclusion about the absence of competition in the pension market in Hungary.

Until quite recently, pension payment in the frames of obligatory pension insurance was not provided. The participants of this pension programme are the citizens born in 1967 and later. Before, during 3 years the contributions to the cumulative part of a pension were paid to men and women born in 1953 and 1957 and later. However, the first payments to those age groups were made only since 2012 and due to a small volume of savings; the majority of pensioners got the payments in a lump sum. Thus, the difference in service in pension payment could not influence the choice of a pension fund by a potential client. Therefore, it is logical to suppose that yield and risk of investment activity of NPF becomes the main criterion to choose an NPF in Russia.

Table 1: Choice of the participants of pension savings programme, million people (percentage)

Organization	2005	2006	2007	2008	2009	2010	2011	2012	2013
Non-state pension funds	0.60 (1.1)	0.90	1.88	3.62	5.68	8.72	11.88	16.57	22.19
		(1.5)	(3.0)	(5.3)	(8.2)	(12.5)	(16.1)	(21.8)	(28.2)
MCs	0.69 (1.2)	0.79	0.86	0.92	0.86	0.68	0.63	0.59	0.53
		(1.3)	(1.4)	(1.4)	(1.3)	(0.9)	(0.9)	(0.8)	(0.7)
Vnesheconom bank	54.52 (97.7)	57.63	59.96	63.16	62.54	60.63	61.33	58.94	56.08
		(97.2)	(95.6)	(93.3)	(90.5)	(86.6)	(82.9)	(77.4)	(71.1)
Total	55.81	59.32	62.70	67.70	69.08	70.03	73.96	76.10	78.80

Source: Review of pension saving investments in 2013//the Ministry of finance of the Russian Federation, MC: Management company

A traditional index uniting these two aspects of the operations in financial market is the Sharpe ratio. Nevertheless, most population evaluates the competitiveness of financial institutions by nominal yield from the savings contributed. That is why, as well as in the research by the IMF (2007); we used both indexes in the regression studied. An important positive correlation between nominal yield and/or the Sharpe ratio in pension savings investment into NPF, on the one side, and the share of a certain NPF in the pension savings investment market will give the evidence that the efficiency of investment is a valid tool of competition for clients capture. In this case competitive relationship becomes a stimulus for financial institutions to provide high yield, including per unit of a risk (Koulis and Botsaris, 2009). This means that the depositor gain from the work of several independent companies in the pension sphere.

To increase the results validity, besides a model of linear regression, a doubly logarithmic model was made (Barros et al., 2008; Glans, 2008) and a logarithmic-linear model (Pitselisa et al., 2015). In the conditions of high passivity of home economics' behaviour the market shares of financial institutions can change very weakly, but clients' reaction on the results of their investment activity, initially, can come out in the dynamics of the percentage of NPF in the market, which let evaluate the logarithm of the market share. The logarithm of the regressors in the doubly logarithmic model gives a possibility to test a guess of the clients' increased sensitivity not to yield volume the Sharpe ratio, but to their changes. In other words, the clients can become more sensitive to the tendencies of investment results to change, rather than to the results. Besides, logarithm indexes let reduce the risk of heteroscedasticity of the data (Bikker et al., 2012). Following Tuladhar (2009), we used in modeling not only a least-square method but also a model of fixed effects.

According to the order existing in Russia, the change of an organization which invests the pension savings of an insured person can be made next year after an application is submitted to the PFR. Thereafter, we think that the information about the yield and the Sharpe ratio for t-year become available for clients in $t + 1$ year, in the same year a client, if finding out a more optimal variant for him/herself, submit an application to the PFR, and in the $t + 2$ year his/her pension account is transferred to a new NPF. We made two groups of a model: In the first one the dependent variable is presented by the market share (Share, in share) of clients of i-NPF in the total number of clients of all the NPF in $t + 2$ year; in the second one – a number of clients of i-NPF (Client, in number of persons) in $t + 2$ year. The yield indexes were used as regressors (Yield, in percentage per year) and the Sharpe ratio (Coeff_Sharp, percentage point per unit of standard declination) for t-year.

B. Information base of the study:

In contrast with the study carried out by the IMF (2007), we included in the regressors not only the annual yield but also the cumulative yield from 2005 to t-year (Yield_cum, in percentage for the period). Kominek (2012) proved in the study the use of the cumulative yield of pension funds by the fact that clients can quite logically prefer to estimate the investment results of NPF for a more long-run time period. As NPF started to work with pension savings in different years and some of NPF stopped that work in the period analyzed, then a set of organizations investing pension savings used to change all the time. That is why the empirical basis of the study is presented by the data on NPF which provided that service during the whole period analyzed. The clients of 39 NPF, included in the selection, make from 60% to 80% of clients of all NPF, which let characterizing the selection as e representative one. The NPF, included in the selection, took part in 18 mergers with other funds during the period studied. Aimed at using in the calculations the correct values we deducted from the index of Share and Client NPF per year when the merger of another fund took place, the value of the fund joined. Thereafter the data values were not corrected because we considered that those clients who turned to be in NPF not by their own choice but as a result of the merger, in future had a chance to evaluate the results of the new fund's investment and change that fund for another one if they wanted.

The control variables in the regressions were presented by the data on the number of clients of NPF (Client_base, number of persons), size of assets of NPF (asset, million rubles) in t-year and also the life of NPF in the market (Experience, number of years) by $t + 1$ year. With other equal conditions the control variables must have a positive influence of the market share of NPF. In log-log models the experience variable was not used because its value in all NPF rises up to the same level.

The information source is the annual data of the Federal Service for Financial Markets of the Russian Federation and the Central Bank of the Russian Federation for the period from 2005 to 2013. The characteristics of the values are listed in Table 2. Starting since 2014, the state has imposed a moratorium on the change of NPF till the end of the procedure of NPF selection into the guaranteed pension savings system being created. In this connection, there is no sense to use the data after 2013.

C. The results of modeling:

The heteroscedasticity-adjusted results of assessment of coefficients of pair and multiple regressions (Tables 3-8)

Table 2: Descriptive statistics in NPF

Variable	Mean value	Mid-point	Standard deviation	Minimal value	Peak value
Client	215545	40421	413768	118	2492093
Share	0.017	0.003	0.031	0.00001	0.163
Yield_cum	48.495	45.4369	24.719	11.5982	130.808
Yield	9.574	9.0	8.949	0.000	62.37
Coeff_sharp	6.167	5.685	3.023	2.312	21.808
Asset	21554.8	1868.38	77051.4	120.571	773474
Client_base	236711	68287	424769	5068	2519687
Experience	12.769	13.000	2.803	4.000	18.000

NPF: Non-state pension fund

Table 3: The results of assessment of correlation between the market share of NPF and the results of investment activity of NPF over the period of 2005-2013 (a linear regression model)

Dependant variable: Market share of NPF (Share, share from the total number of citizens insured in NPF)						
Method/model	Least-squares					Fixed effects
Regressor	(1)	(2)	(3)	(4)	(5)	(6)
Yield_cum	$4.92×10^{-5}$			$−9.32×10^{-5}$	−0.0003**	$−4.41×10^{-5}$
	$(8.05×10^{-5})$			$(8.16×10^{-5})$	(0.0001)	$(6.96×10^{-5})$
Yield		0.0002		0.0001	0.0003**	$6.826×10^{-5}$
		(0.0002)		(0.0001)	(0.0001)	$(5.631×10^{-5})$
Coeff_sharp			−0.0017	0.002	0.0004	0.0011*
			(0.001)	(0.001)	(0.0006)	(0.0006)
Asset					$−8.78×10^{-8}$	$−9.425×10^{-9}$
					$(1.34×10^{-8})$	$(1.325×10^{-8})$
Client_base					$6.018×10^{-8}$***	$−9.646×10^{-9}$
					$(7.268×10^{-9})$	$(1.12×10^{-8})$
Experience					0.0008	−0.301
					(0.0006)	(0.208)
Constant	0.015***	0.016***	0.007	0.008	0.0015	0.031***
	(1.732)	(0.004)	(0.005)	(0.006)	(0.005)	(0.0096)
Standard error of regression	0.031	0.033	0.031	0.031	0.0178	0.0079
R^2	0.002	0.002	0.027	0.032	0.677	0.164
Number of cases	195	234	195	195	195	195

*P<0.1; **P<0.05; ***P<0.01. NPF: Non-state pension fund

Table 4: The results of assessment of correlation between the market share of NPF and the results of investment activity of NPF over the period of 2005-2013 (a doubly logarithmic model)

Dependant variable: Variation of the market share of NPF in the total number of persons insured in all NPF (l_share, in percentage to the previous year)						
Method/model	Least-squares					Fixed effects
Regressor	(1)	(2)	(3)	(4)	(5)	(6)
l_Yield_cum	0.174			0.116 (0.375)	−0.669**	−0.1699
	(0.273)				(0.289)	(0.291)
l_Yield		−0.003		−0.063 (0.105)	0.0769*	0.0685
		(0.088)			(0.0438)	(0.049)
l_Coeff_sharp			0.145	0.156	−0.0409	−0.1077
			(0.322)	(0.553)	(0.231)	(0.204)
l_Asset					−0.0208	0.0273
					(0.1306)	(0.272)
l_Client_base					1.236***	−0.0229
					(0.209)	(0.339)
Constant	−6.308***	−5.538***	−5.905***	−6.194***	−17.00***	−4.823**
	(0.999)	(0.284)	(0.545)	(1.198)	(1.567)	(2.213)
Standard error of regression	2.096	2.041	2.097	2.072	1.194	0.619
R^2	0.002	0.000	0.001	0.004	0.674	0.053
Number of cases	195	191	195	152	152	152

*P<0.1; **P<0.05; ***P<0.01. NPF: Non-state pension fund

show the absence of statistically important correlation between the results of investment activity of and NPF and its status in the market. The coefficients with Yield_cum and Yield variables in the multiple regression model (5) Table 3 are statistically significant at 95% confidence level for the share of clients of i-NPF (Table 3), however, the values of these coefficients are very small and they have even a negative value for a cumulative yield which is contrary to the common sense. The same situation is found in the doubly logarithmic model (Table 4). The change of the annual yield of i-NPF by 1% with a probability of 90% leads to its market share change only by 0.08%.

Models 1-4 show the importance of the coefficients with regressors for the equation estimating their influence on the number of clients of NPF (Table 6) and also the rate of changes of clients of NPF (Tables 7 and 8). But a low coefficient of the R^2 determination indicates a bad quality of the models. Besides, a negative volume of the coefficient with the yield variable (Tables 6 and 7) and its logarithm (Table 8) is contrary to the common sense. The frames of the fixed effects model revealed a positive and statistically important influence of the change of the cumulative yield of i-NPF on the rates of changes of the number of its clients (Table 7), however, the singularity of this variant and not a high coefficient of the R^2 model do not give enough evidence to disprove the hypotheses suggested.

Table 5: The results of assessment of correlation between the market share of NPF and the results of investment activity of NPF over the period of 2005-2013 (a logarithmic-linear model)

	Dependant variable: Variation of the market share of NPF in the total number of persons insured in all NPF (l_share, in percentage to the previous year)					
Method/model	Least-squares					Fixed effects
Regressor	(1)	(2)	(3)	(4)	(5)	(6)
Yield_cum	0.0009			−0.0021	−0.01	0.0044
	(0.0059)			(0.0072)	(0.00768)	(0.0069)
Yield		−0.007		−0.0009	0.0085	−0.002
		(0.0079)		(0.00787)	(0.00675)	(0.0044)
Coeff_sharp			0.0407	0.0499	−0.031	0.016
			(0.0519)	(0.0622)	(0.052)	(0.019)
Asset					8.6×10^{-7}	3.038×10^{-7}**
					(2.26×10^{-6})	(1.33×10^{-7})
Client_base					2.94×10^{-6}***	1.938×10^{-7}
					(7.07×10^{-7})	(3.27×10^{-7})
Experience					0.034	−0.173**
					(0.096)	(0.087)
Constant	−5.701***	−5.679***	−5.907***	−5.854***	−6.183***	−3.794***
	(0.413)	(0.329)	(0.398)	(0.431)	(0.904)	(0.915)
Standard error of regression	2.098	2.075	2.095	2.105	1.702	0.571
R^2	0.0001	0.001	0.004	0.004	0.359	0.07
Number of cases	195	234	195	195	195	195

**P<0.05; ***P<0.01. NPF: Non-state pension fund

Table 6: The results of assessment of correlation between the number of clients of NPF and the results of investment activity of NPF over the period of 2005-2013 (a linear regression model)

	Dependant variable: Number of clients of NPF (Client, number of people)					
Method/model	Least-squares					Fixed effects
Regressor	(1)	(2)	(3)	(4)	(5)	(6)
Yield_cum	3459.2**			1983.78	−513.37	759.92
	(1715.2)			(1622.73)	(909.6)	(768.6)
Yield		−2170.71*		−2916.97***	−105.68	−20.767
		(1122.74)		(1057.30)	(778.14)	(489.018)
Coeff_sharp			35896.4**	28515.7*	5024.9	4130.47
			(16437.5)	(16892.7)	(7683.24)	(4160.49)
Asset					0.07	0.1212
					(0.163)	(0.116)
Client_base					0.81*** (0.169)	1.043***
						(0.0699)
Experience					15056.6*	−5823.65
					(8797.95)	(8971.44)
Constant	47,792.2	212,854***	−5820.04	−32,551.7	−175,140*	−21,851.0
	(57,071.1)	(58,815)	(71,682)	(69,520.0)	(97,791.7)	(93,705.8)
Standard error of regression	405,884.2	386,446.6	400,320.8	400,084.0	203,969.6	99,359.85
R^2	0.043	0.003	0.069	0.0795	0.765	0.75
Number of cases	195	234	195	195	195	195

*P<0.1; **P<0.05; ***P<0.01. NPF: Non-state pension fund

4. CONCLUSION

The modeling results show the absence of a significant correlation between the efficiency of investment activity of a financial institution and its status in the pension service market which proves the hypothesis developed. When choosing NPF the Russians follow the factors which are not connected with the quality of pension saving management among which there can be an image of NPF, marketing policy efficiency, scale and qualification of the agent network, relationship of NPF with big employers, etc. The study results indicate weak motivation for efficient placing of pension savings into NPF in Russia. That means that getting the highest yield (an optimal balance of yield and risk) is not an instrument for competition in the pension market in Russia and the depositors do not win from a possibility to choose an organization managing their pension savings.

The same results were found in a study of the pension markets in Poland and Hungary (IMF, 2007; World Bank and IMF, 2005) and also in the Latin American seven countries (Tuladhar, 2009). The importance and a universal character of the problem of a

Table 7: The results of assessment of correlation between the number of clients of NPF and the results of investment activity of NPF over the period of 2005-2013 (a doubly logarithmic model)

	Dependant variable: Variation of number of persons insured in NPF (l_Client, in percentage to the previous year)					
Method/model	Least-squares					Fixed effects
Regressor	(1)	(2)	(3)	(4)	(5)	(6)
l_Yield_cum	0.905***			0.858**	0.0822	0.766**
	(0.277)			(0.376)	(0.298)	(0.2936)
l_Yield		−0.299***		−0.198* (0.106)	−0.059	−0.024
		(0.0866)			(0.045)	(0.0479)
l_Coeff_sharp			0.776**	0.362 (0.543)	0.166	−0.003
			(0.311)		(0.235)	(0.179)
l_Asset					0.0001	0.1304
					(0.1306)	(0.275)
l_Client_base					1.194***	−0.013
					(0.216)	(0.334)
Constant	7.228***	11.149***	9.291***	7.137***	−3.385**	6.926***
	(0.990)	(0.297)	(0.532)	(1.194)	(1.6099)	(1.903)
Standard error of regression	2.071	2.092	2.092	2.041	1.18	0.606
R^2	0.0497	0.019	0.0299	0.073	0.694	0.344
Number of cases	195	191	195	152	152	152

*P<0.1; **P<0.05; ***P<0.01. NPF: Non-state pension fund

Table 8: The results of assessment of correlation between the number of clients of NPF and the results of investment activity of NPF over the period of 2005-2013 (a logarithmic-linear model)

	Dependant variable: Variation of number of persons insured in NPF (l_Client, in percentage to the previous year)					
Method/model	Least-squares					Fixed effects
Regressor	(1)	(2)	(3)	(4)	(5)	(6)
Yield_cum	0.015**			0.012	0.003	0.0038
	(0.0066)			(0.00791)	(0.0076)	(0.0069)
Yield		−0.011		−0.01496*	−0.0038	−0.001
		(0.007)		(0.00788)	(0.0067)	(0.0044)
Coeff_sharp			0.1221**	0.075	−0.009	0.008
			(0.519)	(0.0649)	(0.051)	(0.019)
Asset					$1.22×10^{-6}$	$3.538×10^{-7}$***
					$(2.31×10^{-6})$	$(1.33×10^{-7})$
Client_base					$2.82×10^{-6}$***	$1.818×10^{-7}$
					$(7.32×10^{-7})$	$(3.28×10^{-7})$
Experience					0.069	0.181**
					(0.097)	(0.088)
Constant	9.867***	10.569***	9.8635***	9.677***	8.986***	8.021***
	(0.4189)	(0.335)	(0.3997)	(0.4304)	(0.932)	(0.92)
Standard error of regression	2.0896	2.12	2.09197	2.087	1.69	0.572
R^2	0.033	0.002	0.0303	0.045	0.383	0.337
Number of cases	195	234	195	195	195	195

*P<0.1; **P<0.05; ***P<0.01. NPF: Non-state pension fund

weak reaction of the consumers of pension products to their quality are proved by the attempts of a number of countries to find the ways to solve it. In Poland, the state used a lottery to divide the clients who did not make their own choice among small pension funds which had shown good investment results. In Macedonia such citizens are divided by the government between two existing pension funds using a special technique comparing the yield of competitors for the previous period. In Armenia the citizens, who cannot make a choice by themselves, are divided between two existing funds in proportion to citizens who had made their choice. As competition in the pension market does not perform a function to regulate a conflict of interest in "principal-agent" relationship then some countries have chosen a way of centralization of management of pension savings in hands the state institutions. Sovereign investment pension funds exist in 23 countries.

A small number of NPF which worked with pension savings during the whole period analysed and a moratorium on pension savings imposed by the government since 2014 determined quite a small number of cases, which limits the quality of the statistic analyses carried out in the paper. Nevertheless, the hypotheses proposed in the future can be tested in the total choice of NPF and MCs, and also using in the models additional control variables, for example a form of ownership – NPF/MC; their affiliation to a large financial industrial group, network size and the expenses for advertisement of NPF. The study carried out provides the basis for investigation of a complex

of determinants of a consumer's choice in the Russian pension market.

The necessity to increase the efficiency of savings placement in funding of pension obligations in Russia requires making a reform in the national model of pension system taking into consideration the results of the study carried out and international experience. It seems appropriate to turn to a centralized order of pension savings investment in the frames of the unified nationwide fund. That will allow decreasing administrative and regulative expenses of functioning of a cumulative component of the pension system in comparison with the centralized model existing in Russia (Agostini et al., 2014). However, the efficiency of the centralized model is determined by the level of the governmental accountability to the society, transparency and formalization of the savings investment procedures, political elite's readiness to follow the population's long-term interests. In Russia, the fulfillment of these circumstances is not guaranteed. Partly, this gap can be filled with the state recognition of a passive investment strategy for such a unified fund (Sy, 2009), and its portfolio structure is determined normatively by stock index (benchmark). The experience of the Latin American countries shows that the reduction of risks in index investment can be also promoted by the differentiation of the investment portfolio structure for different age groups of the population. Nevertheless, the problem of the preference of centralized investment of obligatory pension savings in comparison with a decentralized, "competitive" one requires to be studied separately.

5. ACKNOWLEDGMENTS

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