

THE RELATIONSHIP OF PENSION FUNDS WITH FINANCIAL MARKETS DEVELOPMENT

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Abstract

This paper empirically explores the impact of pension funds on market development. The goal of the paper is to link the credit rating of a country and the development of the financial market. At the same time, we will make a link between the structure and size of pension funds and the development of financial markets across countries. The development of the market is expressed with the help of the FD index, the size of pension funds as a size related to GDP, the structure of pension funds, as a participation of shares or bonds in relation to total assets and in relation to GDP, and the size of funds is expressed in relation to the GDP of the country. The research question states: "Does the size and structure of pension funds influence the development of the financial market in the country"? The methodology applied consists of qualitative research techniques, such as analysis, comparative analysis, correlation between the two observed variables and synthesis. Thus, this research was provided during the summer of 2019. The selected group of countries was based on two criteria based on data from 2018: OECD countries and the others. Methodology used is based on some previous research related to the financial development index. The research refers to looking for answers to the question of what is the dependence like between the structure and size of pension funds on one hand, and the development of the financial market on the other. The contribution of the paper is reflected in the explanation of the possibilities that pension funds with their structure and size offer to the development of the financial market in the country. The result shows that pension funds can provide a significant support for financing the development of the country, local communities, but that between certain phenomena, such as the size and structure of funds and the size of the economy and the development of the financial market, there is only a poor determination. This paper has intentions to offer a special strategy for creating a portfolio and it is an initial step towards further analysis and directions on the portfolio management.

Keywords: pension funds; investment funds, development of the financial market

JEL classification: D53, E44

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1. Introduction

Searching for the answer to the question of the preferred structure and size of pension funds, the structure and size of pension funds in the world have been analysed. The tendency of this paper is through a detailed analysis of the structure of pension funds in the world, to determine the regularity between the size and structure of pension reserve funds and the size and degree of development of the financial market, that is, the country and GDP. In this regard, the main hypothesis is: "The size and structure of pension funds have an impact on the size and structure of the financial system of a particular country." Thus, the method of induction was used - from individual experiences to general. From the main hypothesis arises the auxiliary hypothesis:

H1: "Greater participation of equity securities in pension funds' portfolios has a positive impact on the development of the financial market."

H2: "Greater participation of debt securities in pension funds' portfolios has a positive impact on the development of the financial market."

H3: "Greater participation of equity securities in pension funds' portfolios has a positive impact on the GDP of the country."

H4: "Greater participation of debt securities in pension funds' portfolios has a positive impact on the GDP of the country."

H5: "The size of pension funds in relation to GDP has a positive impact on the development of the financial market."

H6: "The size of pension funds has a positive impact on the GDP of the country."

The aim of this paper is to make contributions to the wider academic analysis in general and to offer recommendations for creating the optimal structure and size of pension funds in developing markets, that is, to offer the direction of development of pension funds. In light of the above, the methodology used consists of qualitative research techniques, such as analysis, comparative analysis, correlation between the two observed variables and synthesis.

2. Literature review

It is a fact that equity prices are found to be positively correlated with pension funds (OECD, 2018). Also, pension fund financial assets have positive impacts on stock market depth and liquidity, as well as private bond market depth (Meng and Pfau, 2010). There are researches on this topic, which looks into the influence of election regime in developing countries. For example, Tabassam, Hashmi, and Rehman, (2016) examine the effect of political unrest on the Pakistani economy by using election regime and strikes as political instability proxies. They have shown that political instability has a negative effect on economic growth. Some other researchers have examined the relation between the dividend decision and market characteristics, tax policy, and investors' preferences. Empirical results refer to the decision of whether to pay or not pay dividends, and not how much to pay (Mladenoska, 2017, p. 39). A large number of authors dealt with the assessment of the impact of financial development on eco-

conomic growth, inequality and economic stability (Levine, 2005; Demirgüç-Kunt and Levine, 2009). Financial development includes improvements in the functions provided by financial systems such as: (i) pooling of savings; (ii) the allocation of capital for productive investments; (iii) monitoring of these investments; (iv) risk diversification; and (v) the exchange of goods and services (Levine, 2005). Each of these financial functions can influence decisions on savings and investments and the efficiency of allocation of funds. As a result, finances affect the accumulation of capital and total factor productivity, i.e. to three factors determining the economic growth. To the extent that financial development reduces information asymmetries and financial constraints and promotes risk sharing, development can increase the ability of financial systems to absorb shock and reduce cycle amplification through a financial accelerator (Bernanke, Gertler and Gilchrist, 1999), reducing macroeconomic volatility and inequality.

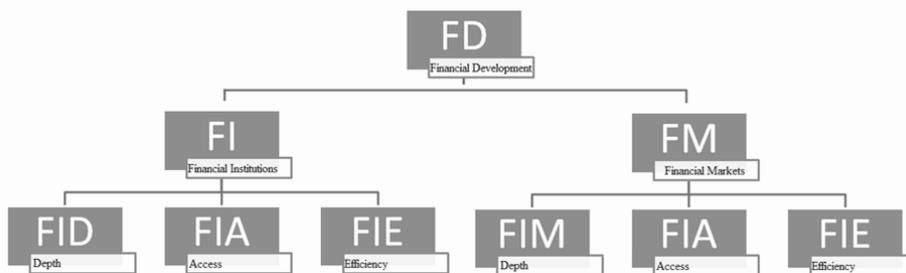
Numerous studies have been conducted in order to analyse the ratio of private loans to GDP. Most of the empirical literature since the 1970s brought closer financial development to two measures of financial depth - the ratio of private loans to GDP and, to a lesser extent, the capitalization of the stock market, also in relation to GDP. For example, in an influential industrial study, Rajan and Zingales (1998) use both measures to show that higher financial development facilitates economic growth. On the macroeconomic volatility side, financial development, measured by private loans to GDP of banks and other financial institutions, plays a significant role in easing the instability of production, consumption and investment growth, but only to a certain point. Most researchers in this field use variations of these measures to examine the role of the financial system in economic development.

Financial sectors have developed around the world and modern financial systems have become intertwined with multi-dimensional processes. For example, while banks are still usually the largest and most important in the market, there are also investment banks, insurance companies, investment funds, pension funds, venture capital investment companies and many other non-bank financial institutions that play a significant role in the financial market. In this regard, financial markets have developed in ways that allow individuals and firms to diversify their savings, and companies can raise money by issuing stocks, bonds and financial derivatives, bypassing traditional bank lending. The constellation of such financial institutions and markets makes it easier to provide financial services. In addition, an important characteristic of financial systems is reflected in the approach to money and efficiency. Large financial systems have limited use if they are not available to large enough population and companies. Even if financial systems are significant and have broad reach, their contribution to economic development would be limited if they were scattered and inefficient. This was confirmed by Čihák et al. (2012) and Aizenman, Jinjark and Park (2015). Therefore, the diversity of financial systems in different countries implies that multiple indicators for measuring financial development need to be considered.

In order to overcome the shortcomings of individual indicators as a substitute for financial development, a number of indexes have been created that show that financial institutions and financial markets are developed in terms of their depth, access and efficiency, which culminates in the final financial development index (Figure 1). This index was originally

developed in the context of the IMF's commentary on staffing "Rethinking Financial Deepening: Stability and Growth in Emerging Markets" (Sahay et al., 2015). The sub-index and the final total index were built for 183 countries ranging from 1980 and 2013. Financial development is defined as a combination of depth (size and market liquidity), access (ability of individuals and companies to access financial services) and efficiency (the ability of institutions to provide financial services with low costs and sustainable income, and the level of activity of capital markets). This wide multidimensional approach to the definition of financial development follows the matrix of the characteristics of the financial system developed by Čihák with associates. (2012).

Figure 1. Pyramid of the Financial Development Index



Source: IMF staff, based on Čihák and et al. 2012

Contribution of the FD index is multiple. First, the statistics of the World Bank, i.e. an updated version of the Global Financial Development Database (GFDD) introduced by Čihák and co-authors, with additional data from the database of debt securities of the Bank for International Settlements (BIS), then the Dealogic corporate debt database and the IMF's Financial Access Survey. In addition, an overview of the development of the financial market is summed up through information in several simple indices. Bearing in mind the wealth of information about the properties of the financial system, there are 105 different indicators in the GFDD and 46 indicators in FinStats. Accordingly, it is not possible to track all these different indicators individually, especially in empirical work. Even if it were possible, no single indicator, when used alone, would provide a comprehensive understanding of the level of financial development. The sub-indices and the final index link these different indicators and provide a comprehensive assessment of individual characteristics of financial systems and the overall level of financial development. As a result, the indices allow determining where the disadvantages in financial development are inconsistent or which aspects of financial development affect the macroeconomic results, which could then be further explored using the analysed data from FinStats or GFDD. In the discussion, we will discuss some of the constraints and shortcomings of the index in order to show to what extent the structure and size of pension funds influence the index result. The goal is to determine whether by "replicating" a certain country by the structure and size of the index, it is possible to further develop the financial market. In this respect, the term "emerging market" implies countries that are characterized by institutional turbulence, low level of corporate governance and economic development in relation to developed countries. Hoskisson and associates as transition countries are including all the countries of the Western Balkans (Hoskisson et al., 2000, pp. 249-267). For

illustration purposes, the institutional heritage of communism in these markets is reflected in a large, undisciplined and inefficient administration, bureaucratic access to institutions and corruption (Haramija and Njavro, 2016). Namely, “bureaucratic and restrictive authorities opened the way for corruption and bribery of civil servants because most citizens thought that this was the only way to achieve the desired goal” (Dimitrova-Grajzl and Simon 2010, p. 206). Even a superficial review of the Western Balkans statistics agencies confirms the continuation of such practice i.e. the growth of employees in the areas financed from the budget: in administration, public administration, education and art. On the other hand, there is a clear reduction in the number of employees in the manufacturing industry. In addition, relevant research also confirmed the high level of corruption as a consequence of the communist system in the new EU Member States in relation to the “old” members. Also, when researching trusts in institutions is observed, transition countries are at the bottom of such lists (Bjørnskov, 2007). In addition, in all small and open economies, such as the Western Balkans countries, the capabilities of monetary policy are limited by a number of factors (Benazić and Rami 2016, p. 1039). Therefore, in parallel with the weak development of the financial market, the criticism of the transition is based on the fact of a significant increase in poverty and deterioration, mainly, of the middle class (Cifrić, 1996, p. 137).

3. Research methodology

The methodology applied consists of qualitative research techniques, such as analysis, comparative analysis, and synthesis. The paper presents the data provided by The National Bureau of Economic Research (2019), Organization for Economic Co-operation and Development (2019), and data on credit ratings of countries published by the three most famous rating agencies in the world. For each observed country, the percentage of assets of pension funds in equities, debt securities, the percentage of assets in cash and deposits, as well as the percentage of investments in other classes of assets and in uncorrelated assets were taken into account. At the same time, the amount of GDP for each country, the amount of the FD index, and the size of pension funds as a percentage of GDP were observed. In the end, a credit rating for each country was presented in accordance with the ratings obtained from the agencies: Moody's, S&P and Fitch. In the end, where possible, credit ratings for each individual rating were presented (Prime - first-class rating; High grade; upper credit rating; Upper medium grade; upper middle class; Lower medium grade; lower middle class; Non-investment grade; - non-investment grade; speculative - speculative bonds and Highly speculative - high speculative bonds).

In this paper, only pension investment funds are investigated i.e. PAYG Pension Funds are not linked to the Financial Markets, since they do not invest assets in the financial market.

Table 1. Overview of the credit rating, structure and size of pension funds, indicators of market development and GDP by country (OECD 2018).

Country	Moody's ratings	S&P ratings	Fitch ratings	GDP (in USD)	FD Index	Assets as a % of GDP	Equity	Bills and bonds	Cash and deposits	CIS	Other
Australia	Aaa	AAA	AAA	1.427.767	0,85	130,2	58,3	4,8	11,2		25,7
Austria	Aa1	AA+	AA+	459.401	0,64	6,0	35,5	44,4	7,1		13,1
Belgium	Aa3	AA	AA-	536.055	0,58	7,8	41,5	45,1	5,7		7,7
Canada	Aaa	AAA	AAA	1.733.706	0,86	154,7	30,5	31,7	4,3		33,5
Chile	A1	A+	A	299.887	0,47	72,0	40,8	58,4	0,2		0,5
Czech Republic	A1	AA-	AA-	244.540	0,37	8,8	0,6	76,9	19,1	2,1	1,3
Denmark	Aaa	AAA	AAA	354.683	0,64	218,5	25,7	29,9	2,0	4,1	38,4
Estonia	A1	AA-	AA-	29.527	0,33	17,5	36,1	59,5	4,1		0,4
Finland	Aa1	AA+	AA+	276.553	0,66	60,5	39,5	28,0	3,5		29,1
France	Aa2	AA	AA	2.794.696	0,76	-	38,1	22,4	34,5		5,0
Germany	Aaa	AAA	AAA	4.029.140	0,7	6,9	6,2	51,9	3,8		38,1
Greece	B1	B+	BB-	218.057	0,54	0,8	11,4	58,7	7,8	20,8	1,3
Hungary	Baa3	BBB	BBB	156.393	0,44	5,9	7,2	60,1	3,7	26,6	2,4
Iceland	A3	A	A	26.684	0,54	164,6	30,5	44,0	10,0		15,5
Ireland	A2	A+	A+	366.448	0,69	184,7	32,3	40,9	2,9		23,9
Israel	A1	AA-	A+	365.599	0,57	59,0	18,1	65,1	7,1		9,6
Italy	Baa3	BBB	BBB	2.086.911	0,8	-	20,1	45,0	6,2		28,8
Japan	A1	A+	A	5.070.626	0,87	28,8	10,5	30,4	8,0		51,1
South Korea	Aa2	AA	AA-	1.655.608	0,86	30,1	3,1	44,2	16,6	6,3	29,8
Latvia	A3	A	A-	34.286	0,29	13,8	27,9	61,7	7,1		3,4
Lithuania	A3	A	A-	52.468	0,26	7,2	45,9	46,2	5,2		2,7
Luxembourg	Aaa	AAA	AAA	68.993	0,75	2,9	29,1	60,0	4,1		6,7
Mexico	A3	BBB+	BBB+	1.199.264	0,41	26,6	21,5	75,6	0,9		2,0
Netherlands	Aaa	AAA	AAA	909.887	0,71	184,2	31,7	43,6	3,3		21,4
New Zealand	Aaa	AA	AA	205.997	0,61	25,8	33,2	23,8	7,0	34,5	1,6
Norway	Aaa	AAA	AAA	441.439	0,69	10,5	36,9	54,2	2,4		6,5
Poland	A2	A-	A-	549.478	0,47	10,1	85,2	7,4	5,9	0,0	1,4
Portugal	Baa3	BBB	BBB	237.962	0,69	11,4	20,4	58,1	6,3		15,1
Slovakia	A2	A+	A+	106.940	-	-	2,2	57,8	12,1	23,5	4,4
Slovenia	Baa1	A+	A-	54.969	0,39	6,9	1,9	59,6	12,3	24,6	1,7
Spain	Baa1	A-	A-	1.437.047	0,88	13,6	13,2	45,5	11,0	21,8	8,5
Sweden	Aaa	AAA	AAA	554.659	0,72	90,2	13,9	14,5	0,9	65,2	5,4
Switzerland	Aaa	AAA	AAA	709.118	0,94	-	31,1	30,6	5,0		33,3
Turkey	Ba3	B+	BB	713.513	0,83	14,3	13,1	50,5	25,2		11,3
United Kingdom	Aa2	AA	AA	2.808.899	0,82	105,3	13,1	28,0	2,2	28,5	28,3
United States	Aaa	AA+	AAA	20.513.000	0,87	145,3	33,0	21,6	2,4	33,3	9,8
Namibia	Ba1	0	BB+	14.148	0,45	91,7	65,1	24,0	8,1		2,8
Hong Kong	Aa2	AA+	AA+	360.315	0,73	43,5	63,4	20,9	11,5		4,1

Country	Moody's ratings	S&P ratings	Fitch ratings	GDP (in USD)	FD Index	Assets as a % of GDP	Equity	Bills and bonds	Cash and deposits	CIS	Other
Mauritius	Baa1	0	0	14.033	0,43	4,7	56,0	32,4	8,7		2,9
Pakistan	B3	B-	B-	306.987	0,23	0,1	49,3	34,1			16,6
Papua New Guinea	B2	B	B+	20.767	0,23	18,0	48,7	23,6	11,2	-	16,5
Peru	A3	BBB+	BBB+	228.944	0,38	22,7	43,0	43,6	6,0		7,5
Malawi	0	0	B-	6.885	0,08	11,8	41,8	37,1	9,8	-	11,3
Colombia	Baa2	BBB-	BBB	336.940	0,44	25,3	40,4	49,5	2,2		7,9
Jamaica	B3	B	B+	15.424	0,27	28,5	33,5	52,6	1,2		12,7
Trinidad and Tobago	Ba1	BBB+	0	23.284	0,34	19,8	32,3	43,4	6,2		18,1
North Macedonia	0	BB-	BB	12.374	0,28	9,4	30,3	61,3	8,2		0,2
Armenia	B1	0	B+	12.533	0,25	1,9	28,1	41,1	30,0		0,9
Romania	Baa3	BBB-	BBB-	239.440	0,31	4,9	23,0	68,3	8,7		0,1
Zambia	0	B-	B-	25.778	0,12	3,5	22,3	21,8	8,0	7,6	40,3
Croatia	Ba2	BBB-	BB+	59.971	0,41	26,8	21,9	73,4	4,4		0,3
Kenya	0	B+	B+	89.591	0,19	13,1	19,8	40,4	4,2		35,5
South Africa	Baa3	BB	BB+	376.679	0,62	95,3	19,5	9,3	4,0	15,9	51,3
Thailand	Baa1	BBB+	BBB+	490.120	0,73	7,1	18,4	56,4	12,3	12,0	1,0
Bulgaria	Baa2	BBB-	BBB	63.651	0,38	12,9	17,4	60,9	5,9	12,9	3,0
Indonesia	Baa2	BBB-	BBB	1.005.268	0,36	1,9	17,3	45,2	27,8		9,7
Uganda	0	B	B+	27.855	0,12	9,3	16,8	72,6	4,7		5,9
Malta	A3	A-	A+	14.270	0,57	42,0	12,3	11,3	4,9	28,5	43,0
Russia	Baa3	BBB-	BBB-	1.576.488	0,51	6,1	11,5	68,8	14,8		4,9
India	Baa2	BBB-	BBB-	2.689.992	0,41	1,1	11,3	84,5	2,6		1,7
Nigeria	0	B	B+	397.472	0,24	6,5	10,7	76,1	10,1		3,1
Suriname	B2	B	B-	3.840	0,22	11,3	10,2	33,7	18,5	1,4	36,3
Malaysia	A3	A-	A-	347.290	0,66	0,3	9,4	79,5	6,6	1,5	3,1
Brazil	Ba2	BB-	BB-	1.909.386	0,57	24,6	8,5	35,9	0,1		55,5
Serbia	0	BB	BB	47.564	0,27	0,8	8,5	84,1	7,4		-
Egypt	B3	B	B+	249.471	0,31	1,7	7,4	71,8	2,8		18,0
Maldives	0	0	B+	4.809	0,18	9,3	3,8	91,1	5,2		-
Costa Rica	B1	B+	B+	60.816	0,27	18,8	3,0	92,1	3,4		1,5
Ghana	0	B	B	51.815	0,15	5,4	1,7	69,6	13,9	1,2	13,6
Panama	Baa1	BBB	BBB	66.031	0,35	0,9	0,4	55,1	43,4		1,2
Singapore	Aaa	AAA	AAA	346.621	0,71	80,2	0,2		3,2		96,6
Uruguay	Baa2	BBB	BBB-	60.933	0,25	27,4	0,2	77,6	6,8	-	15,5
Dominican Republic	Ba3	BB-	BB-	81.103	0,18	12,4	-	99,9	0,0		0,1
Albania	B1	B+	0	15.121	0,21	0,1	-	94,7	3,4	-	1,9
Bosnia and Herzegovina	B3	B	0	18.170	0,26	7,0	44,9	34,6	7,7	-	12,9

Source: authors calculation

Using the Excel program, the correlation coefficients and determinations for the following variables are presented as follows:

- X-axis - country credit rating and Y-axis market development (FD index)
- X-axis - participation of equity securities in funds and Y-axis market development (FD index)
- X-axis - the share of debt securities in funds and Y-axis market development (FD index)
- X axis - participation of equity securities in funds and Y-axis amount of GDP
- X-axis - the share of debt securities in funds and Y-axis amount of GDP
- X-axis - the size of pension funds in relation to GDP and Y-axis market development (FD index)
- X-axis - the size of pension funds in relation to GDP and Y-axis amount of GDP

4. Discussion of the current conditions and trends

Elaborating developing markets, we note that, as in all Western Balkan countries, as well as in Bosnia and Herzegovina (BiH), non-economic factors in the region play the most important role in determining the value of trade between countries (Trivić and Klimczak, 2015, p. 57). Economic instability arises from frequent reforms in which the economic growth and the social impact of changes, low rates of domestic and foreign investment, foreign trade deficit and low GDP are completely ignored. For example, there are a number of socio-economic issues in BiH that have not yet been resolved and whose improvement involves complex and demanding solutions (Amidžić et al., 2016, p. 57). Also, many buyers of public companies saw privatization as an opportunity to acquire certain assets without entrepreneurial activities and/or creating a new value. As a consequence of such moves, a number of former public companies were shut down after a long-standing bankruptcy process. The better variant still exists, but the market value of such companies is significantly lower than that of a few years ago. As a consequence, a large number of working-age population are jobless and new jobs are not created (Šokčević and Dugalić, 2007).

The capital market in BiH has passed the stages since the establishment of two stock exchanges, rise, fall and re-awakening through the increased significance of debt securities, but it is still underdeveloped and inactive according to the structure of market materials and the number of market instruments. Also, the banking sector is at the middle level of development and the main aggregates are based on it. Despite this, despite all constraints, institutional investors on domestic stock exchanges can create a portfolio of securities that would give them the desired return with low exposure to market risk (Grujić, 2017, p. 437). Such interest of institutional investors, along with the stability of the national currency and the foreign currency exchange rate, can be a desirable feature of the financial market. However, precisely the fixed foreign currency exchange rate can create an illusion. In 1999, Bosnia and Herzegovina adopted a system of Currency Board. Truthfully, this move has given results in the field of reducing inflation in the country and was a significant contribution to the regulation of the situation in the financial sector. The Currency Board implies a fixed foreign currency exchange rate, the possession of foreign currency reserves in a

stable currency at the level necessary to cover the amount of money (bank notes and coins) and unlimited internal convertibility i.e. the possibility of converting domestic currency into the reserve currency (and vice versa) at the fixed exchange rate. In that respect, linking the Convertible Mark to the Euro was “anchor that kept the BiH ship from unnecessary wanderings on the stormy sea of transition”. Debt crises and experiences of countries in transition over the past two decades point to the fact that the entry of foreign capital with borrowing in foreign markets can lead the country to major problems. For example, fixing a foreign currency exchange rate, although unpopular, still represents a certain security of the system. Leaving the fixed foreign currency exchange rate in BiH would lead to a depreciation of the Convertible Mark in relation to strong currencies. As a consequence, the debts expressed in Dollars or Euros would increase in relation to GDP.

Talking about the development of the domestic financial market, we can say that bonds are gaining in importance on the domestic market. Experiences from developed markets show that the secondary market of municipal bonds is significantly more passive and less liquid in relation to the stock market or the government bond market (Van Horne and Wachowicz, 2014), which to some extent may present the lack of this financial instrument. Besides that, as a clear lack and danger of obtaining money through the issuance of municipal bonds, the fact that this financial instrument is underdeveloped in terms of the market is stated, and that the procedure for obtaining money for the issuer is significantly longer compared to the bank loan. Namely, it takes even several months from the date of making the decision on borrowing, until the announcement of the decision on admission of bonds to the official stock exchange market. Experiences of developed capital markets, as well as countries in transition, show that municipal bonds, in addition to refreshing and diversifying the market, increase competitiveness among financial instruments. In addition to local communities, there is a direct benefit for the state, which is one of the synergetic effects of the appearance of municipal bonds on the capital market. At the same time, it is natural that the number of “smaller” companies, which are “by the power of the law” - privatization, listed on the stock exchange - is reduced under the influence of the amended legislation. It implies that the majority owner who holds 95 percent of the ownership in the company can buy the rest, change the legal form of the company and de-list it. In addition, a smaller number of listed companies does not imply a less developed capital market. Stock Exchanges in the region have more listed shares than the Stock Exchanges in Austria, Slovenia, the Czech Republic, Poland, Hungary and the turnover on those Stock Exchanges is incomparably lower than on European Stock Exchanges. For example, 98 shares and 3,304 bonds is listed on the Vienna Stock Exchange. In addition, there are 4,826 structural products on this Stock Exchange. Therefore, it is natural that the number of listed shares decreases, and parallel with this, the offer of bonds is increasing. When it comes to the domestic market, we must point out that in BiH there are only two pension funds: the Pension Reserve Fund of Republika Srpska and the European Pension Voluntary Fund. Both are based in Banja Luka and they are primarily oriented towards the Banja Luka Stock Exchange. According to the OECD methodology, the Pension Reserve Fund of Republika Srpska is the Sovereign Pension Reserve Fund (OECD 2018) while the European Pension Voluntary Fund is a Social Security Reserve Fund. The difference is in the “filling” of the fund. The Sovereign Pension

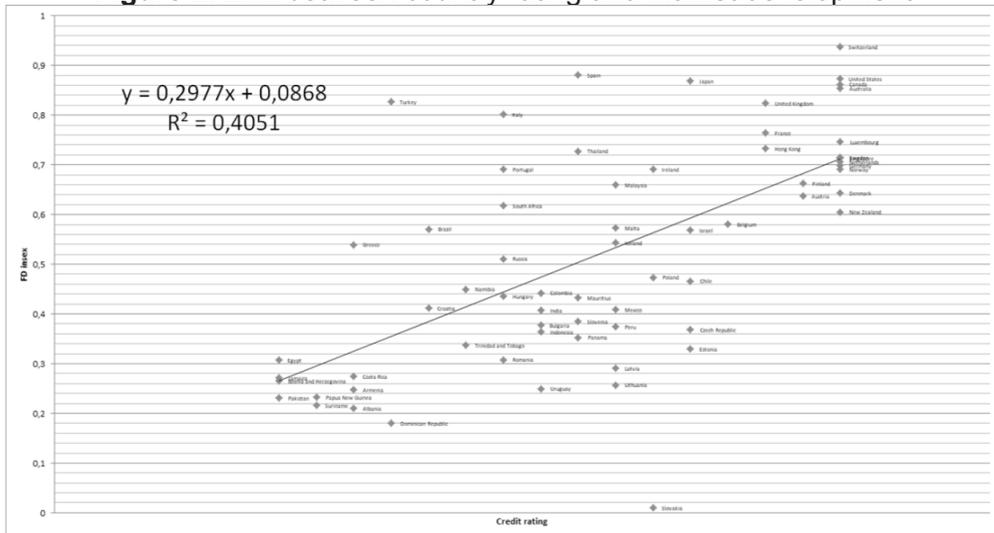
Reserve Fund is a closed investment fund, and the Social Security Reserve Funds are filled in on the basis of “entry” of new members into the fund. The total assets they manage are about 240 million Euros, of where about 92 million are in cash, bonds, deposits and treasury bills and the rest in shares and unincorporated property.

5. Empirical results and discussion

The FD index shows how new indexes are compared with traditional measures and key stylized facts about financial development around the world. Observing market development and credit rating it is noticed that the function is increasing, $y = 0.2977x + 0.0868$ and that the value of R^2 is 0.4051 i.e. the determination coefficient is 40.51 or the correlation between the two observed variables is 0.64 (Figure 2), which presents weak link between the credit rating of the country, i.e. the rating of government bonds and the development of the financial market. The same methodology was further compared (Table 2):

- a) participation in stocks and market development (FD index),
- b) participation of debt securities in funds and market development (FD index),
- c) participation in equity securities and in GDP,
- d) participation of debt securities in funds and GDP,
- e) the size of pension funds in relation to GDP and market development (FD index) and
- f) the size of pension funds in relation to GDP and GDP.

Figure 2. Link between country rating and market development



Source: authors calculation

Table 2. Correlation and determination by country

Relationship	Correlation	Determination
Participation in equity funds and market development (FD index)	13.0%	1.7%
Participation of debt securities in funds and market development (FD index)	-39.3%	15.5%
Participation in equity and GDP holdings	0.8%	0.0%
Participation of debt securities in funds and GDP	-19.6%	3.9%
Size of pension funds in relation to GDP and market development (FD index)	43.1%	18.6%
Size of pension funds in relation to GDP and GDP	26.8%	7.2%

Source: authors calculation

It is noticed that there is no significant correlation, nor determination between the observed variables. However, when countries are grouped by rating from a rating agency to the same groups (Prime, High grade, Upper medium grade, Low medium grade, Non-investment grade, Speculative, Highly speculative), we come to significantly different results. When the results from the main table are adjusted by groups, we get the following view.

Table 3. Overview of the structure and size of pension funds, indicators of market development and GDP by country by country groups according to credit rating.

Rating description	Equity securities	Debt securities	Cash and deposits	Other assets	Other	GDP (USD)	FD Index	Assets as% of GDP
Prime	27.48	33.33	4.13	34.28	26.41	2.607.917	0.75	87.44
High grade	33.46	33.27	11.57	17.38	16.73	1.270.218	0.72	36.17
Upper medium grade	27.75	50.55	6.68	11.13	11.31	595.750	0.46	43.88
Lower medium grade	17.37	54.76	11.03	16.25	9.73	680.803	0.50	14.08
Non-investment grade	48.71	33.68	7.14	0.00	10.47	18.716	0.39	55.71
Speculative	13.71	67.52	7.54	0.00	11.23	470.651	0.42	14.72
Highly speculative	20.78	55.63	8.86	3.88	13.42	89.728	0.23	8.66

Source: Authors' calculation

It was noticed that countries with speculative credit rating have almost two-thirds in debt securities and non-investment countries have almost half of their assets in debt securities of value. It is important to emphasize that developed countries have more

investment alternatives, and more than a third of their assets is invested in other forms of property. From this, we can conclude that pension funds in developed countries are more likely to be exposed to risky financial instruments. On the other hand, countries in the post-transition period, naturally, have many more equity securities than the market, and the funds invest more in these securities. Finally, analysing sorted results should not be lost from the vision and effects of geographical diversification. Namely, funds in Scandinavian countries are well known for investing significantly in other developed markets. In this regard, when considering the geographic distribution of the pension fund assets, we note that about 2/3 of the assets were invested in US markets.

Considering that these analyses are carried out again only based on the group in which certain countries belong (prime, high grade, lower medium grade, lower medium grade, non-investment grade, speculative and highly speculative), we come to significantly different results. New results are a consequence of the fact that in the X-axis we have only seven sizes, which greatly increases the correlation coefficient and the determination between the observed phenomena because the “scattering” is smaller. Namely, the rating of the credit rating neglects the rating of rating agencies, such as “stable”, “negative” or “on track”.

Table 4. Credit rating grading and group description

Agency Moody's	Agency S&P	Agency Fitch	Description
Aaa	AAA	AAA	Prime
Aa1	AA+	AA+	High grade
Aa2	AA	AA	
Aa3	AA-	AA-	
A1	A+	A+	Upper medium grade
A2	A	A	
A3	A-	A-	
Baa1	BBB+	BBB+	Lower medium grade
Baa2	BBB	BBB	
Baa3	BBB-	BBB-	
Ba1	BB+	BB+	Non-investment grade
Ba2	BB	BB	Speculative
Ba3	BB-	BB-	
B1	B+	B+	Highly speculative
B2	B	B	
B3	B-	B-	

Caa1	CCC+	CCC	Substantial risks
Caa2	CCC		Extremely speculative
Caa3	CCC-		In default with little prospect for recovery
Ca	CC		
C	C		
/	D	DDD	In default
/		DD	
/		D	

Source: Yago, G. and Trimbath, S., (2003) „Beyond Junk Bonds: Expanding High Yield Markets“, Oxford University Press on Demand. p. 11

We noticed that there is a weak link between debt securities participation in the funds and market development (the correlation coefficient is -0.604 and the coefficient of determination is 0.365), the size of pension funds in relation to GDP and market development (0.631; 0.398), and the size of pension funds compared to GDP and GDP (0.696, 0.485).

Table 5. Correlation and determination of observed sizes by groups of countries according to credit rating

Relationship	Correlation	Determination
participation in equity funds and market development (FD index)	15.0%	2.2%
participation of debt securities in funds and market development (FD index)	-60.4%	36.5%
participation in equity and GDP holdings	-5.2%	0.3%
the participation of debt securities in funds and GDP	-48.3%	23.3%
the size of pension funds in relation to GDP and market development (FD index)	63.1%	39.8%
the size of pension funds in relation to GDP and GDP	69.6%	48.5%

Source: authors calculation

Analysing the obtained results, we can argue that our findings show there is a weak link between debt securities participation in the fund and market development, the size of pension funds in relation to GDP and market development, and the size of pension funds in relation to GDP and the size of GDP. For example, pension funds in countries with Prime Credit Rating have about one-third of their portfolio debt securities while countries with a somewhat weaker rating have almost half of their assets in debt securities of value.

Observing the structure of the portfolio of pension funds both in developed and emerging markets, it is natural that the pension fund has at least one-third of the debtor in bonds. Transferred to the Republika Srpska framework we can argue that, for example, the Pension Fund of the Republic of Srpska in its form and manner

of functioning is a closed investment fund, which is established by a special law, and from investment funds differs in that there is only one founder-owner - the PIO Fund Republic of Srpska and was established in the form of a joint stock company controlled by the Management Company, whose sole founder/owner is also the PIO Fund. As such, the pension fund can be a generator of local community development because it can invest in bonds issued by the local community in its prospectus and investment policy. The role of pension funds in the success of issuing bonds in emerging markets is important. Thus, pension funds have a significant impact and can be a significant support to finance the development of local communities. At the same time, investment in a pension fund, on the principle of investing in the third instalment of pension insurance, also has a synergistic effect when using tax relief. When investing in pension funds, tax incentives stimulate employers and workers to create savings for the third time when disposable income falls, and citizens who have this kind of savings will not make so much social pressure on the budget in the future as they have additional income. Secondly, the legal investment constraints and the EPF investment policy that emerges from them is quite conservative and primarily supported (an important feature of all pension funds in the world) on investing in long-term government securities.

On the other hand, retirement funds simply have to invest a significant part of the assets they manage in bonds, and therefore in municipal ones, thus directly increasing the opportunity for municipal development. The investment objective of the pension fund is everywhere - the realization of a continuous and stable return on investment in securities. The investment horizon of investment of pension funds is a long time. Hence, municipal bonds represent an almost ideal instrument for investing pension funds. According to that, pension funds can be seen as a generator of local community development, but not capital markets. Without a doubt, funding for projects related to economic development, the local community, can be secured by issuing bonds in which pension funds can also participate. Despite this, it should be borne in mind that, as a consequence of geographical diversification, which is preferred by the pension funds, the investment in the already developed markets is encouraged. In this connection, the pension funds cannot by themselves be considered as a generator of financial market development.

In order to test the hypotheses in detail, we divided the observed sample into OECD countries and "others" according to similarities of pension systems in different countries. In addition, the selected group of countries is divided (shortened) according to similarities of pension systems in different countries.

Table 6. Correlation and determination

Relationship	All countries		OECD		Others	
	Correlation	Coefficient of determination	Correlation	CD	Correlation	CD
Participation in equity funds and market development (FD index)	13,0	1,7	-10,4	1,1	5,6	0,3
Participation of debt securities in funds and market development (FD index)	-39,3	15,5	-51,8	26,8	-19,2	3,7
Participation in equity and GDP holdings	0,8	0,0	-0,3	0,0	-22,0	4,8
Participation of debt securities in funds and GDP	-19,6	3,9	-29,8	8,9	19,6	3,8
Size of pension funds in relation to GDP and market development (FD index)	43,1	18,6	34,4	11,9	49,6	24,6
Size of pension funds in relation to GDP and GDP	26,8	7,2	23,7	5,6	-4,0	0,2

Source: authors calculation

6. Conclusions and limitations

Country's financial development is defined as a combination of depth, market access, and market efficiency. We believe that some contribution to science has been made in two ways. In order to determine to what extent the pension funds and how they affect financial development and economic growth, it is shown that the pension funds in the countries with Prime credit rating have about one-third of the portfolios in debt securities, while countries with somewhat lower rating have almost half of the assets in debt securities of value. In addition, the trend suggests that developed financial markets are characterized by a wide range of investment instruments as well as derivatives, facilitating dispersion and diversification. In addition, given the approach to financial instruments and the efficiency of the market, we can claim that funds in developed markets are more exposed to risky bonds. It would probably be advisable for investment managers to make them more aware of trends in the financial markets.

This paper has intentions to offer a special strategy for creating a portfolio and is an initial step towards further analysis and directions on the portfolio management. By using the methods explained in this paper, we were able to find that relating to equity holdings in pension fund portfolio and financial market development, the correlation was 13.0% and the determination was 1.7%. When a group of countries ranked by investment grade, high grade, upper middle grade, lower middle grade,

non-investment grade, speculative and highly speculative, there is a correlation of 15.0% and a 2.2% determination. Therefore, there is not even a weak link between the participation of equity securities in the portfolio of pension funds and the development of the financial market. The correlation of the participation of debt securities in the portfolio of pension funds and the level of development of the financial market is 11.5% and the determination is 1.3%. Similarly, when we look at the country's investment rating, we observe a correlation of 8.9% or a 0.8% determination. Hence, we cannot claim that the greater participation of debt securities in the portfolio of pension funds has a positive impact on the development of the financial market. Considering the participation of equity securities in the portfolio of pension funds and the amount of GDP of the country, there is a negative correlation, i.e. -39.3%, and the determination coefficient is 15.5%. When we look at groups this relationship is even more significant (-60.4% and 36.5%) and we can say that there is a negative weak link between these two phenomena.

According to the analyses and results there is a link between the participation of debt securities and GDP. Based on the analysis of available data, it was found that the correlation between the participation of debt securities in the portfolio of pension funds and the GDP of the country is -39.7%. Therefore, the determination is 15.7%. When we group the country by credit rating we get the correlation -60.2% and the determination of 36.2%. Based on this we can conclude that there is a weak negative link between these two phenomena. Finally, it has been established that there is virtually no link between the size of pension funds in relation to GDP and the development of the financial market. The coefficient of correlation between individual countries is 0.8% and when we consider credit rating it is 5.2%. The most significant link is the size of the pension funds and the GDP of the country, but it cannot be called a weak one. There is a correlation of -19.6%, or -48.3% when we look at countries according to credit rating. In accordance with the aforementioned, the third and fourth auxiliary hypotheses have been partially confirmed: "Greater participation of equity securities in portfolio of pension funds has a positive impact on the GDP of the country" and "Greater participation of debt securities in portfolio of pension funds has a positive impact on the GDP of the country".

At the end, we are aware that using one-year data is very questionable and a longer period is more representative. However, there are no significant changes in the fund architecture for several years so this method is appropriate but using a longer period can be very interesting for future research. Besides, the task for the next paper is to upgrade this method through the use of official sources of data and calculating the ratio between different types of securities in the portfolio. Also, as a representative of market development, it is also appropriated to use market capitalization or turnover ratio instead of the FD index. In this paper, these parameters are ignored, because there is just one stock exchange - Nasdaq Nordic that provides financial services and operates securities markets in the Nordic, Baltic, and Caucasian regions of Europe.

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