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# FACTORS OF EFFICIENCY OF OPEN INVESTMENT FUNDS IN 1997-2015

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**ABSTRACT.** The deepening economic and financial crisis in 2011 highlighted a number of negative phenomena arising from the current state of development of world's financial markets. The problems of the Euro area, the specter of its decay, and continuous rating downgrades of EU Member States undermined the confidence in the markets. This was also reflected on the example of the market of investment funds. A key element becomes a rapid identification of investment areas burdened with the largest and smallest exposure to price fluctuations in market factors.

This paper identifies and characterizes important legal, fiscal, socio-economic factors and effectiveness of investing into the investment funds in 1997-2015, which apart from strictly micro- and macroeconomic aspects are of considerable importance in this area.

***JEL Classification:*** G14, H21, E44

***Keywords***: investment funds, efficiency, investing, risk, European Union, uncertainty.

## Introduction

Collective investment funds are considered to be one of the most successful and effective financial innovations. They can be found in almost all economies of the world, where they play a role or powerful economic strength, or a small financial institution of marginal importance (Khorana *et al.*, 2005). The differences in the meaning of these entities in the economies of individual countries are the result of the interaction of many factors, which by influencing the market of these institutions, inhibit or intensify its development.

In the literature, a comprehensive taxonomy of factors affecting market development investment funds has not been developed, and mostly one focused on the related microeconomic, not macroeconomic issues.

Factors affecting the development of the investment funds market can be divided into economic, including macro-economic and micro-economic ones, legislative, fiscal, and socio-psychological.

The second and third of the above groups is the issue of our paper. This is due to the fact that generally macro and micro-economic factors are considered. A significant impact of tax and legal elements and socio-psychological ones on the effectiveness of the funds themselves is often neglected (although it might be considerable).

## 1. Literature review

In the literature there are many publications, mostly international ones which are devoted to investment funds, and most importantly, their effectiveness. It seems that the most important works in this area are those written by J. L. Treynor (1965), W. F. Sharpe (1966), and M. C. Jensen (1968). Although the above mentioned authors conducted a detailed analysis of the US investment funds market, thus the results they received contributed to the development of research on the effectiveness of investment funds of global markets, including Europe. Also S. J. Kon and F. C. Jen (1979) worked over this subject. They conducted a study on a large group of 47 funds, taking into account the efficient market hypothesis. The research done by M. Grinblatt and S. Titman (1989) was conducted in a slightly different direction. Indeed, they showed that effectively managed funds were those whose managers had a very aggressive investment purposes.

If, in turn, we consider our home market, the research on investment funds was carried out mainly by T. Miziołek (1997), E. Ostrowska (2003) and K. Perez (2012). The first of them conducted the study on the effectiveness of nine funds in 1997 focusing on the achieved rate of return, Sharpe's, Treynor's or even Jensen's measures. One of the main conclusions of his works was the lack of effectiveness of the surveyed funds. The works by E. Ostrowska concern the similar issue. However, her findings were a bit more optimistic with regard to the results of the national investment funds. K. Perez in his works runs a fairly deep analysis on the problems of the investment funds market both domestic and foreign ones and, most importantly devotes attention to the factors of development of that market sector.

Considering the research strictly in the context of the analysis of the factors efficiency, one should primarily pay attention to the economic factors. In this regard, the research was already conducted by A. Demirgüc-Kunt and R. Levine (2004), who studied the indicators of financial market development of forty-one countries. Similar research was done by D. Fernando, L. Klapper, Sulla and V. D. Vittas (Ferndando *et al.*, 2003) who analyzed the activities of institutions of commone investment in the nineties of the twentieth century in the forty-developed and economically developing countries.

Legal and tax regulations were analyzed by R. La Porta, F. Lopez-de-Silanes, Shleifer A. and R. W. Vishny (La Porta *et al.*, 1998). They found that in countries with weaker investor protection, measured by the nature of regulation and the effectiveness of law enforcement, financial markets were smaller and had lower range. By examining the state of the legal system and its impact on the development of the market of investment funds among fifty countries, A. Khorana, Servaes H. and P. Tufano (Khorana *et al.*, 2005) constructed indicators of the efficiency of the legal system, corruption and the risk of breach of contract. Bergstresser D. and J. Poterba (2002) dealt with investment results after taking into account taxes and their importance for capital inflows to mutual funds. J. P. Garland (1987) stated that taxes were the biggest cost that was associated with investing in mutual funds – more than the transaction costs and management fees.

## 2. Financial markets and the policy of investment funds

The influence of financial market size on investment fund market should be considered from two points of view.

Firstly, investment funds, which are financial intermediaries between savers and debtors, generate demand for financial instruments traded in financial markets. The higher the assets of investment funds which invest in a particular market, and the higher share of funds in the aggregate demand for financial instruments, the greater the importance of investment funds for the size of the financial market and its changes.

Secondly, the structure of the financial market, and in particular the integrity and level of trust of savers for it and to the various classes of entities in the market, determine the division of streams savings between direct and indirect financing. This division will depend on many factors specific to the market, among which the most important is the level of protection for savers investing in investment funds in comparison to the protection of investors investing directly in the market and the availability and monitoring costs of the way of spending the funds entrusted by the funds and by issuers.

The breakdown of savings between different classes of financial intermediaries is also determined by these factors. As a result, from the point of view of savers, the higher the benefits offered by investment funds, in particular those relating to the availability of funds, to protect investors, the size of the fees and rates of return, compared to the substitute financial instruments (bank deposits, life insurance), the more resources will be broadcast on the financial market through investment funds (Warzała, 2014; Jędruchniewicz, 2015).

At the same time when assessing the impact of size changes of the financial market to changes in the investment fund market, it is worth bearing in mind that from the point of introduction of the legal environment and changes in regulations regarding shape; financial and investment funds market followed a similar period, stimulating the development of both of these markets, and thanks to it, legal factors acted with similar intensity and in the same direction both on the financial market, as well as for the investment fund market. Considering the influence of the size of the financial market investment fund market should be noted that due to the variety of funds market and the size of entities operating in the financial market offering products complementary or subsidiary to each category of funds is necessary to consider the impact of changes in financial market into different categories of funds carried out their investment policy. Percentage share of each category of funds in the markets of European countries has been shown in *Table 1*.

Table 1. The share of national markets in the European market of investment funds and funds for the generic structure of national markets from 1997 to 2014

| Country | Share of funds in European market | | Share of debt funds | | Share of monetary market funds | | Share of balanced funds | | Share of equity funds | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1997 | 2014 | 1997 | 2014 | 1997 | 2014 | 1997 | 2014 | 1997 | 2014 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Austria | 2,1% | 1,4/% | 66,2% | 54,4 | 1,7% | 0,2% | 24,1% | 12,8% | 7,3% | 14,7 |
| Belgium | 1,7% | 1,0/% | 19,7% | 9,6% | 4,4% | 1,0% | 26,2% | 17,7% | 43,1% | 42,4/% |
| Czech | 0,0% | 0,1% | 10,2% | 38,8% | 15,4% | 0,8% | 68,5% | 23,7% | 5,2% | 13,3/% |
| Denmark | 0,6% | 2,0% | 52,8% | 52,3% | Bd | bd | 1,4% | 6,5% | 45,3% | 40,9/% |
| Finland | 0,2% | 0,8% | 18,4% | 29,8% | 28,2% | 17,0% | 21,4% | 11,5% | 31,7% | 39,2/% |
| France | 23,7% | 14,0% | 27,0% | 20,9% | 33,9% | 25,1% | 18,9% | 25,1% | 19,5% | 27,8/% |
| Greece | 1,2% | 0,1% | 27,4% | 23,7% | 60,9% | 15,9% | 8,3% | 22,0% | 3,3% | 21,9/% |
| Spain | 8,4% | 2,0% | 40,6% | 44,3% | 37,2% | 3,2% | 11,0% | 30,9% | 10,4% | 21,6/% |
| The Netherlands | 3,2% | 0,7% | 19,8% | 27,3% | 10,0% | bd | 8,6% | 17,2% | 41,0% | 42,9/% |
| Luxemburg | 20,4% | 27,3% | 42,8% | 34,2% | 17,3% | 9,5% | 6,0% | 18,2% | 21,5% | 32,4/% |
| Germany | 7,0% | 13,9% | 47,9% | 21,6% | 11,0% | 0,9% | 2,8% | 24,6% | 37,7% | 48,9/% |
| Poland | 0,0 | 0,4% | 3,5% | 25,5% | 0,7% | 28,0% | Bd | 7,2% | 34,8% | 23,9/% |
| Portugal | 1,2% | 0,2% | 23,6% | 26,1% | 21,2% | 15,9% | 17,3% | 10,0% | 8,0% | 12,2/% |
| Romania | Bd | 0,1% | Bd | 45,5% | Bd | 0,7% | Bd | 2,4% | Bd | 1,3/% |
| Slovakia | Bd | bd | Bd | 48,6% | Bd | 2,3% | Bd | 39,2/% | Bd | 9,9/% |
| Slovenia | Bd | bd | Bd | 4,5% | Bd | 1,7% | Bd | 28,9/% | Bd | 63,0/% |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|
| Sweden | 2,2% | 2,2% | 10,1% | 10,1% | Bd | 6,7% | 12,4% | 30,9/% | 76,7% | 58,3/% |
| Hungary | 0,0 | 0,2% | 64,0% | 34,5% | Bd | 40,0% | 7,7% | 2,3/% | 22,0% | 4,1/% |
| Italy | 9,9% | 2,2% | 42,1% | 33,4% | 27,6% | 3,7% | 6,0% | 53,1/% | 19,6% | 9,7/% |

*Source*: EFAMA Fact Book 2013, Investment Company Investment Company Institute 2013, 17.03.2014.

In 1997-2014 the net assets managed by the European investment funds increased from $2,112 billion to $8,486 billion. At the same time the highest percentage increase in assets was recorded in the countries that have been members of the European Union since 2004, i.e. In Poland (40.13%), the Czech Republic (about 16.90%) and Hungary (by 15.12%). However, those countries in 1997 had poorly developed markets investment funds whose combined market share in Europe was only 0,078% of assets held by European investment funds. Among the countries with developed market for investment funds, the most dynamic growth in assets under management was recorded in 1997-2014 in Ireland (up 56,07%), Denmark (up 7,67%) and Luxembourg (up 6,13%) .

At the same time a noticeable change in the investigation period was a gradual shift of the assets from debt funds and money market funds to those which invest part of funds (balanced) or whole (equity) of the assets in equities. The assets accumulated in 1997 in debt funds and money market funds accounted for 30,3% and 19,7% of total net assets, while at the end of December 2014 their share was respectively 20,1 and 11,1%.

Due to the diversity of investment policies pursued by four specified categories of investment funds, it seems reasonable to assume that changes in financial market structure affect in different ways the funds that invest their assets in debt instruments and those investing in equity. At the same time it should be noted that funds belonging to the category of balanced funds invest assets both in debt instruments and equity.

Considering the potential funds investing in equity, one should take into account two features that characterize the market of such instruments (Borkowski, 2011):

- equities market size, i.e. the value of instruments issued that are the subject of trading, which is equal to the capitalization of stock exchanges operating in a given market,
- depth market equities, i.e. the liquidity of equity securities which are the subject of trading.

The Structural funds are the Community budget funds allocated for a specific purpose. This means, among other things, that they are governed by EU institutions, primarily the European Union. However, in accordance with the principle of partnership, in the decision-making process on spending and control, the large role is played by the member states. One can say about several stages of the structural funds. The first covers programming, or setting goals and directions of spending and is the most important from the point of view, that is a real transfer of funds within the agreed programs and control of their spending by the European Union and the member states.

After the accession to the European Union Poland was covered for the period 2004-2006 of the goal of EU structural policy, which is to promote development and structural adjustment of underdeveloped regions. From that moment our country, as a country with a relatively lower level of economic development, obtained the right to use support from the structural funds and the Cohesion Fund. During the accession negotiations it was agreed that between 2004 and 2006 from these sources Poland could take advantage of 11 368,6 million in price from 1999, which amounted to 12 809 709 283 euro in prices in 2004 (source: Ministry of Finance). Including domestic funds the money was allocated to improve the

competitiveness of the economy, increase employment and elimination of differences between regions.

When examining the impact of the market size of equity instruments on the development of investing funds, one should pay attention to the fact that the investment policies of individual funds is determined by the size of assets invested in instruments of issuers established in the country of residence of the fund. The smaller and less diverse market equities, the greater part of the funds' assets invested outside their territory, but there are no available data to verify the correctness of the above.

From the point of view of the economy as a whole, the size of savings accumulated in the economy is critical to the volume of investments (Pyka, 2001). The savings at this level are defined as the difference between gross national income and total expenditure on consumption and play a key role in increasing investment and fixed assets in the economy.

In the micro-economic dimension savings are money for consumption in the future (Harrod, 1939) and the saving itself is the process of dividing current income between current and future consumption, assuming that the money saved is invested in such a way to at least protect their real value. Propensity to save is measured as part of the gross disposable income which is not spent on current consumption and is in fact the entity tendency to postpone consumption in the future. Among the motives of saving there are those arising from:

- creating reserves for unforeseen circumstances (Kotlikoff, 1989),
- preparation for the relationship between income and consumption needs different than the current ones[1],
- intention to meet consumer needs in the future and then their limitations,
- desired sense of independence,
- intention of providing capital for speculation,
- intention of collecting assets which are the subject of inheritance (Kotlikoff & Summers, 1981),
- intention to ensure a good start for children (Kurz, 1984),
- pure avarice (Keynes, 1985).

Among the key factors affecting the level of propensity to save the followings are pointed out (Borkowski, 2011):

- demographic factors; the number and age of people in the household, especially children, shape the size of the actual and projected expenditure and affect the propensity to save, motivated by the intention to educate children; in addition to the foregoing the propensity to save in a household is affected by age, correlated with the stage of career and achieved revenues,
- employment structure and the current and expected rate of unemployment; as a rule, the self-employed and professionals connected with performing of irregular incomes have a higher propensity to save arising from the precautionary motive than people who are employed (Fisher, 1956); current and anticipated due to the economic situation unemployment level affects the propensity to save in such a way that jobless households consume previously accumulated savings, and household exposed to the risk of unemployment exhibit a higher propensity to save in conditions of high or rising unemployment, motivated by the desire to maintain the life interest (Machowicz, 2000),
- composition of public expenditure and its changes; changes in the spending structure influence on the decisions made by households in two ways; firstly, change in the size of transfers affect the level of disposable income of households receiving them and, consequently, their propensity to save (Liberda, 2000); secondly, changes in social policy

[1] In light of research the precautionary motive is the main motive of saving in the US; cf.

priorities for financing certain types of public goods (education, education, health) affect the intensity of precautionary saving motive and consequently the propensity to save,
- shape the social security system; systems based on solidarity between the generations (redistributive) in principle propensity to save is lower than in systems based on distributions of capital accumulated in the course of work, particularly because they supported them by appropriate social policies to promote additional forms of retirement saving,
- the current level and expectations with respect to inflation, the growth of which creates uncertainty as to the future real value of income and assets and leads to increased propensity to save,
- the level of urbanization, which affects, on the one hand on the level of development of financial markets and the availability of savings and credit products, on the other one on the formation and distribution patterns of consumption.

One of the fundamental roles investment funds play in the financial market is to mobilize savings to transmit them from the entities with cash excess to the entities reporting the need for capital.

Consequently, the demand for funds services and other financial intermediaries will be influenced by the size of new savings gathered by households and the development of the domestic market due to the inflow of funds will be connected with the emergence of new savings in the market and the popularity of mutual funds as a way of saving.

It is assumed that the degree of use of financial instruments as a hoarding process depends on three groups of factors:
- demographic,
- psychological,
- income.

The demographic factors influencing the propensity to invest their surpluses in financial instruments include age, education, sex and marital status. Within the age there is the tendency to invest in financial instruments, in particular in equities (Wang & Hanna, 1997). At the same time, this tendency is higher, the higher the education of the saver (Baker & Haslem, 1974). The portfolio of financial instruments also depends on gender and marital status. Single men are more likely to invest in real estate, stocks and debt securities issued by corporations, while single women are focused on investments in treasury securities (Haynes & Helms, 1992).

Psychological factors have an impact on the perception of their own situation: the material one and its prospects against the background of the economic situation. Persons expecting the improvement of their financial situation and the economic situation of the country are more likely to invest in the equity financial instruments (Claycamp, 1963). Not without significance is the degree of development of financial intermediaries market, trust invested by institutions of potential capital providers and the degree of transparency of intermediaries, particularly in terms of costs incurred by savers (Lease *et al.*, 1974).

As for the income factors the most important are: the size of current income and the size of the assets, which are considered as important determinants of the size of assets, including invested in the financial market. With the increase in income the size of part of the proceeds invested in equity growa and at the same time the total value of such investments made by the household (Cohn *et al.*, 1975). The increase in wealth, understood as the total net assets translates into savings and change in the structure in favor of instruments with higher risk and higher expected rate of return, also characterized by lower liquidity (Mentel & Brożyna, 2015). In addition, households that achieve above-average incomes have a lower risk of averse investment and they are willing to invest a greater portion of their savings in financial instruments with a higher risk (Wachter & Yogo, 2008).

From the point of view of aggregate demand for shares of investment funds, the amount of funds deposited by savers in financial instruments depends on the level of wealth of the society. As a rule, the wealthier countries, the total value of financial instruments issued is higher. At the same time increase society's wealth is a factor conducive to the development of the financial market (Demirgüc-Kunt & Levine, 2004).

Investment funds, like other financial instruments are luxury goods. Theoretically, the demand for them should have a positive flexibility, meaning that it grows at least linearly with the increase in disposable income.

A measure of the degree of affluence is the size of gross domestic product per capita. This measure, despite the clear advantages of allowing to make a comparison of the average level of affluence also has drawbacks, the biggest of which is that it does not reflect the income gap and property existing within society (Hussein & Thirlwall, 1999).

## 3. Legislative and fiscal factors in the light of investment efficiency of OFE (Open Retirement Fund)

Among the legal and tax factors shaping domestic markets investment funds one should distinguish domestic factors and non-domestic ones. Non-domestic factors act with similar intensity in at least two national markets as opposed to domestic factors operating exclusively within the national market.

This group of factors also included the size of the taxation of investments in investment funds, in particular with regard to other instruments which can serve identical economic functions (allocation of capital). Apart from the fiscal functions of taxation, it should be emphasized that a particularly important impetus for shaping the size of the investment funds market is the introduction of taxes that perform non-tax functions, particularly affect the allocation between consumption and investment. Consequently, taxation fulfilling the fiscal function must be included in the strictly legal factors, and in the situation where the state deliberately influences the allocation of income of the population between consumption and investment then the taxation should be considered as a factor of macroeconomic nature. Taking into account the fact that the main motive of taxes is the fiscal policy, the size and the object of taxation as a factor of legal-tax nature was classified.

Legal factors determining the demand for financial instruments vary greatly and one can distinguish two groups among them. The first includes rules on the scope and shape of the entitlements to issuers of equity and debt securities and regulations aimed at eliminating information asymmetries between the issuer and the buyer financial instrument. Their current shape is derived from historical conditions, in particular the extent to which the state protects the rights associated with private property and what gives them precedence over the public domain.

The second group of factors of a legal nature determining the propensity of investors to entrust the assets of issuers of financial instruments is the state's ability to enforce the powers of investors in the event of a breach of these conditions (jurisdiction and applicable law). Without a doubt, only properly designed legal system which protects the interests of purchasers of the securities, which shapes their powers with respect to the issuers and which ensures their implementation with the support of state coercion is a necessary condition for the creation of a strong and diverse financial markets, the existence of which it is unnecessary for the development of the investment funds market.

## 4. Socio-economic factors

The most diverse group of factors that influence the development of domestic investment funds are the socio-psychological factors. Due to the complexity of investment

products such as funds, investment funds, level of education and knowledge of financial markets and entities operating on it can affect the development of the size of the demand for asset management services, and consequently the size of the investment funds market.

The level of trust towards financial markets and institutions acting on it are important for the growth in popularity of mutual funds as a way of collecting funds. A higher level of trust in financial markets leads to higher savings invested through the financial market in the structure of savings. Trust in the institutions involved in asset management is a function of the length of the functioning of these institutions in the country – the most developed markets of investment funds are those in which the oldest investment funds operate (Borkowski, 2011).

The above-mentioned factors affecting the banks' policy regarding the granting of loans to companies, allow a better understanding of the determinants of activity funds. Upon the occurrence of difficulties in obtaining financing within the banking system, the funds are in fact one of the main sources of financing for development, or transformation of enterprises.

This is despite the fact that crises affect as strongly on banks and funds. When discussing the impact of the crisis on funds it must be emphasized that this effect is related primarily to the decline in the value of businesses during the recession. This is particularly important for those funds that deal with long-term investments. This issue was discussed by Małgorzata Mikita who emphasized that due to the financial crisis, the companies that may be interested in funding through funds face the problem that has affected most companies, namely – a drop in demand for their products. Therefore, the dynamic growth of these companies is difficult, sometimes even inhibited (Mikita, 2009).

The described difficult situation of companies is reflected from the perspective of prices and profit rates, which can count this type of funds due to their investments. As a result, in times of crisis, the value of equity held by the funds declines the most rapidly. This issue was also discussed the already quoted by M. Mitek who stresses that in case of crisis or prolonged downturn the risk that the value of the company will not grow increases. This leads to an increase in risk associated with financing and makes it difficult to estimate future profits they can gain funds (Mikita, 2009).

In addition to the difficulties associated with the risk of long-term decline of the capital invested in the firm, during the crisis funds are also exposed to other losses. They affect mainly those funds that were planning to take profits on investment, and which in the preferred asset valuation were interrupted by the crisis. The crisis also affects negatively on those funds which specialize in transactions excavation, or funds that are planning to raise capital for further investment. The last of these issues is especially worth mentioning as in the conditions of a global crisis one can notice a decrease in investor confidence to all financial institutions (Mikita, 2009).

In spite of this trend experts on the subject agree that the phenomenon of the crisis may have a positive impact on funds. This is particularly strong in the case of these funds which are in the process of selection of portfolio companies. Such funds after the outbreak of the crisis or the recession, thanks to the decline in value of the companies can make favorable investments, and then after the crisis realize gains from it. In addition, the positive impact on market dynamics funds have also the consequences of the crisis, or recession, affecting banks, forcing them to reduce their lending activity. In such circumstances, the more they reduce the number of loans, the bigger possibility that companies will seek capital just in its funding. It is worth noting that the increase of restrictiveness in allowing loans also affects the conditions thereof. This was pointed out also by A. Kazimierczak who emphasizes that the increase in the restrictiveness of banks regarding loans also means an increase in collateral required by banks and higher interest margin and loans (Kaźmierczak, 1997).

## 5. Evaluation of the effectiveness of investment funds operating in the Polish market

An assessment of the condition of the investment fund market in the context of the factors efficiency strictly discussed in the publication is quite difficult. It is possible an overall view of the market and there is no possibility of individual variation in the funds themselves. This is mainly due to the fact that under the conditions of a uniform investment policy of the fund group it is hard to make their division. The reason is that in a given country there are uniform legal and tax rules, as well as economic and sociological ones. Any grouping or classification of funds is more in terms of financial performance than any determinants affecting environment, conditions for their functioning than the achieved efficiency in economic terms.

Therefore, while making the analysis on the basis of factors related to the efficiency of management it should be noted that among the methods for measuring results achieved by investment funds, the most known and used methods start from the simplest – the rate of return of units with a standard deviation which is a measure of risk, to methods based on the CAPM. Of course, before such an analysis it is necessary to group funds relating to its investment policy. Therefore, separately there will be analyzed the results of equity funds, bond, money market and balanced funds. In this case the analysis applies to the years 2011-2015. Narrowing of the time horizon is due to the fact that not all the funds operate long enough to be able to take into account the full period under consideration, i.e. the years 1997-2015.

For the linear ordering of investment funds of the Polish market, in terms of the effectiveness of asset management a method of zero unitarisation (MUZ) has been applied. This method involves the construction of ranking objects based on the synthetic variable (aggregate) which were calculated according to the formula (Kukuła, 2000):

$$Q_i = \sum_{j=1}^{s} z_{ij}, \qquad (1)$$

where:
$s$ – numer of variables,
$z_{ij}$ – value of normalized variable.

The method of standardizing a variable in the MUZ method depends on its nature, i.e. whether it is a stimulant, destimulant or nominant. In these considerations funds ordering was based on features that were only stimulants, so their normalization was conducted according to the following formula:

$$z_{ij} = \frac{x_{ij} - minx_{ij}}{maxx_{ij} - minx_{ij}}, \qquad (2)$$

where:
$x_{ij}$ – the original value of variable.

The higher the value of the synthetic variable the higher an object is in the rank. As already mentioned, funds organization was based on the indicators of efficiency, i.e. Jensen's, Sharp's, Alpha Sharp's, Treynor's, Modigliani's indicators, IR information index, effective interest rate and an average risk premium. The rankings of investment funds were conducted separately for each of the four groups of funds: equities, bonds, monetary market and balanced ones. The results are shown in *Table 2*.

Table 2. Value of synthetic variable in MUZ method for equity funds

| Fund name | Value of synthetic variable |
|---|---|
| 1 | 2 |
| Equity funds | |
| BPH FIO Parasolowy BPH Subfundusz Akcji | 4,71 |
| BPH FIO BPH Subfundusz Akcji Dynamicznych Spółek | 4,58 |
| Novo FIO Subfundusz Novo Akcji | 4,45 |
| Investor Parasol FIO Subfundusz Investor Akcji | 4,28 |
| Skarbiec FIO Subfundusz Akcji Skarbiec Akcja | 4,26 |
| Legg Mason Parasol FIO Subfundusz Akcji | 4,24 |
| PZU FIO Parasolowy subfundusz PZU Akcji KRAKOWIAK | 4,20 |
| Aviva Investors Fundusz Inwestycyjny Otwarty Subfundusz polskich akcji | 4,16 |
| UniFundusze FIO subfundusz UniKorona Akcje | 3,96 |
| Investor Parasol FIO Subfundusz Investor Top 25 Małych Spółek | 3,83 |
| Pionier FIO subfundusz Pionier Akcji Polskich | 3,82 |
| Arka BZ WBK FIO subfundusz Arka Akcji Polskich | 3,80 |
| Investor Parasol FIO Subfundusz Investor Akcji Dużych Spółek | 3,40 |
| NN Parasol FIO Subfundusz Akcji | 3,31 |
| Millennium FIO Subfundusz Akcji | 2,79 |
| Bond funds | |
| Uni Fundusze SFIO Subfundusz UniWIBID Plus | 3,70 |
| Inwestor Parasol FIO Subfundusz Inwestor Obligacji | 3,56 |
| Pionier FIO Subfundusz Pionier Obligacji Plus | 3,55 |
| Novo FIO Novo Obligacji Przedsiebiorstw | 3,42 |
| PZU FIO Parasolowy Subfundusz PZU Papierów Dłużnych POLONEZ | 3,38 |
| Legg Mason Parasol FIO Subfundusz Obligacji | 3,18 |
| UniiFundusze FIO Subfundusz UniKorona Obligacji | 3,15 |
| BPH FIO Parasolowy BPH Subfundusz Obligacji 1 | 3,08 |
| Aviva Investors FIO Subfundusz Aviva Investors Obligacji | 3,07 |
| Skarbiec FIO Subfundusz Instrumentów Dłużnych Skarbiec Obligacja | 3,02 |
| Arka BZ WBK FIO Arka Obligacji Europejskich | 2,87 |
| Skarbiec FIO Subfundusz Dłużnych Papierów Wartościowych Skarbiec Depozytowy | 2,87 |
| KBC Parasol FIO Subfundusz Papierów Dłużnych | 2,77 |
| ING Parasol FIO Subfundusz obligacji | 2,76 |
| Arka BZ WBK FIO Subfundusz Arka Obligacji Skarbowych | 2,65 |
| Funds of monetary market | |
| Investor Parasol FIO Subfundusz Investor Płynna Lokata | 4,26 |
| ING Parasol FIO Subfundusz Gotówkowy | 4,20 |
| Arka BZ WBK FIO Subfundusz Arka Gotówkowy | 4,19 |
| Legg Mason Parasol FIO Subfundusz Pieniężny | 4,07 |
| Allianz FIO Subfundusz Allianz Pieniężny | 3,75 |
| Skarbiec FIO Sunfundusz Pieniężny Skarbiec Kasa | 3,73 |
| PKO Parasolowy FIO Subfundusz Skarbowy | 3,69 |
| Aviva Investors FIO Subfundusz Aviva Investors Depozyt Plus | 3,68 |
| SKOK FIO Rynku Pieniężnego | 3,56 |
| Millennium FIO Subfundusz Depozytowy | 3,46 |
| Pioneer FIO Subfundusz Pioneer Pieniężny | 3,32 |
| BPH FIO Parasolowy BPH Subfundusz Skarbowy | 3,22 |
| KBC Parasol FIO Subfundusz Pieniężny | 3,06 |

| 1 | 2 |
|---|---|
| UniFundusze FIO Sunfundusz UniKorona Rynku Pieniężnego | 2,93 |
| MetLife FIO Parasol FIO Subfundusz Pieniężny | 2,74 |
| Balanced funds | |
| KBC Parasol FIO Subfundusz Aktywny | 4,17 |
| Arka BZ WBK FIO | 4,14 |
| NN Parasol FIO Subfundusz Zrównoważony | 4,00 |
| PZU FIO Parasolowy Subfundusz PZU Zrównoważony | 3,98 |
| Novo FIO Subfundusz Novo Zrównoważonego Wzrostu | 3,83 |
| Pioneer Zrównoważony Rynku Amrykańskiego FIO | 3,77 |
| PKO Zrównoważony FIO | 3,71 |
| UniFundusze FIO Subfundusz UniKorona Zrównoważony | 3,68 |
| BPH FIO Parasolowy Subfundusz BPH Aktywnego Zarządzania | 3,61 |
| Credit Agricole FIO Subfundusz Credit Agricole Stabilnego Wzrostu | 3,56 |
| Investor Parasol FIO Subfundusz Investor Zrównoważony | 3,54 |
| SuperFund SFIO Subfundusz B | 3,52 |
| Pioneer FIO | 3,26 |
| Skarbiec FIO Sunfundusz Zrównoważony Skarbiec Waga | 3,02 |
| SuperFund SFIO Subfundusz C | 3,00 |

*Source*: own study.

## Conclusions

The dynamic development of funds led to a huge increase in the share capital held by them. Globalization, eliminating barriers have led to a huge flow of capital between countries. The main role in these flows play different types of investment funds. These funds have accelerated the globalization processes at the same time adapting to them. They played a large role in the creation of transnational corporations. Contributed to increasing the role of portfolio capital in global markets (Bojańczyk, 2008).

Almost ninety percent of investors holding units or investment fund, which operate in Poland, are the individuals, so we can still notice small affluence of Polish society and its low tendency to accumulate savings in the long term, which represents a serious obstacle to the further development of domestic investment funds. Neither the numerous advantages of investing in mutual funds nor actions taken by fund managers in order to interest potential investors, nor increased competition in the European fund market, nor well-constructed regulations are able to change this the situation in the near future. Currently, one can only hope that, following further economic development of Poland, already in the structures of the European Union, the society becomes more affluent and will gain knowledge about the functioning of the financial market and the benefits of saving, and will gradually provide the necessary domestic economy long-term capital (Perez, 2012 ).

Regardless of tax factors European investments funds market will not be developed without a stable economic position and prosperity in the equity markets. Only attractive rates of return are able to attract investment funds to new investors and new assets and raise awareness of advantages that come with investing money in investment funds.

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