Testing Estimate Treynor Index to the Investment Funds on Capital Market in Bosnia and Herzegovina

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Abstract: The slow process of privatization in Bosnia and Herzegovina has had an adverse impact on the rapid growth of the capital market. Expectations that investment funds have an important role in the restructuring of companies have proved unreal, since they are, by their decision, more focused on portfolio investment, rather than strategic investment. This paper will investigate the level of development of the fund industry by calculating specific market performance and the Treynor index for a given group of mutual funds.

Key words: mutual fund; treynor index; BIFX; capital market

JEL codes: G1, G2, G23

1. Introduction

Investment funds are specialized institutions for portfolio management, and the main goal is to attract a larger number of small and uninformed investors on the financial market, which can play a significant role in the privatization process. In most economies in transition, investment funds were held in the form of privatization investment funds, whose privatization involved the free distribution of the purchasing power of citizens (Šoškić, 2006, p. 401). Investment funds invest to set their goals, and issue shares which give investors the right to a proportionate portion of the revenue that funds realize (Bodie et al., 2006, p. 704). This paper is structured in three parts. The first parts concern the analysis of the business performance of the fund industry in the financial market of the Federation of B&H. The second part refers to the date used and the calculation methodology of the Treynor index. The last part refers to the concluding observations and recommendations.

2. Condition and Performance of Investment Funds in the Capital Market of Bosnia and Herzegovina

One of the most important indicators of the performance of investment funds is the net asset value per share. A fund management company is responsible for calculating the net asset value of the fund; the management company may also transfer clearing operations to another person, by a contract which pays the person a commission (Republic of Srpska Securities Commission, 2015, p. 43). The chart below illustrates the relationship between the average price and the net asset value and net asset value per share of closed-end investment funds in the capital market of the Republic of Srpska.

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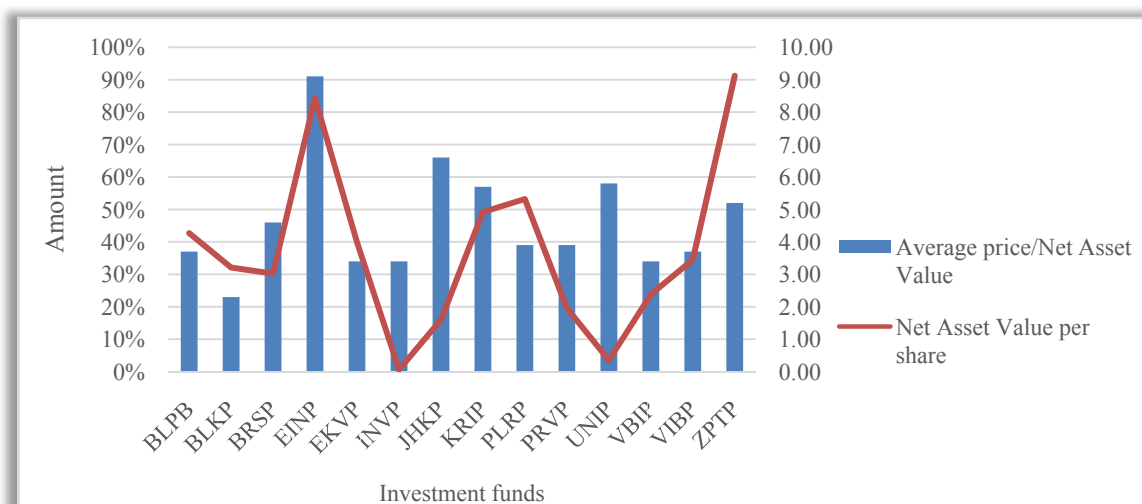
Figure 1   The Movement Parameters Average Price/Net Asset Value and Net Asset Value Per Share of Closed Investment Funds in the Republic of Srpska in 2015

Source: Republic of Srpska Securities Commission (2015). The report on the state of the securities market for 2015, p. 47 (The date adjusted by author)

The figure above shows that the ratio of average share prices for closed-end funds and the average net asset value was below 100%, which means that the cost share of funds was below their net asset value per share. The Gini coefficient of concentration is a measure of the relative concentration, which is associated with the Lorenz curve in the first quadrant of the coordinate system, by connecting the dots from 0.0 to 1.1 points. The Table 1 shows the calculation of the Gini coefficient of concentration regarding the net asset value of investment funds in the capital market of the Federation of Bosnia and Herzegovina.

Table 1   Calculation of the Gini coefficient of Concentration of Net Asset Value and Total Investment IF in FB&H for the Period: 2007-2015

Years	Ginijev koeficijent koncentracije NVI	Normirani ginijev koeficijent NVI
2007.	1.04	1.15
2008.	1.03	1.11
2009.	1.04	1.10
2010.	1.04	1.10
2011.	1.04	1.11
2012.	1.03	1.10
2013	0.51	0.54
2014	0.55	0.58
2015	0.60	0.64

Source: Calculation by author based on date from the annual Report of the Securities Commission of Federation of Bosnia and Herzegovina.

Regarding the concentration of the net asset value of investment funds, indicators with the highest value were recorded in 2007 (1.04), then in 2009, 2010 and 2011, the same value of 1.04. On the other hand, the lowest value was recorded in 2013 (0.51). Given that the Gini coefficient of concentration ranges from 0 to 1, where 0 indicates perfect distribution to all members, while 1 means that the whole is concentrated in only one member, leads to the conclusion that from 2007 to 2012, the capital market of the Federation of B&H was represented by a strong

concentration in terms of net asset value of the funds. In 2013, there was a slight fall in the concentration ratio; in 2014 there was slight growth and in 2015, the concentration ratio stood at 0.60.
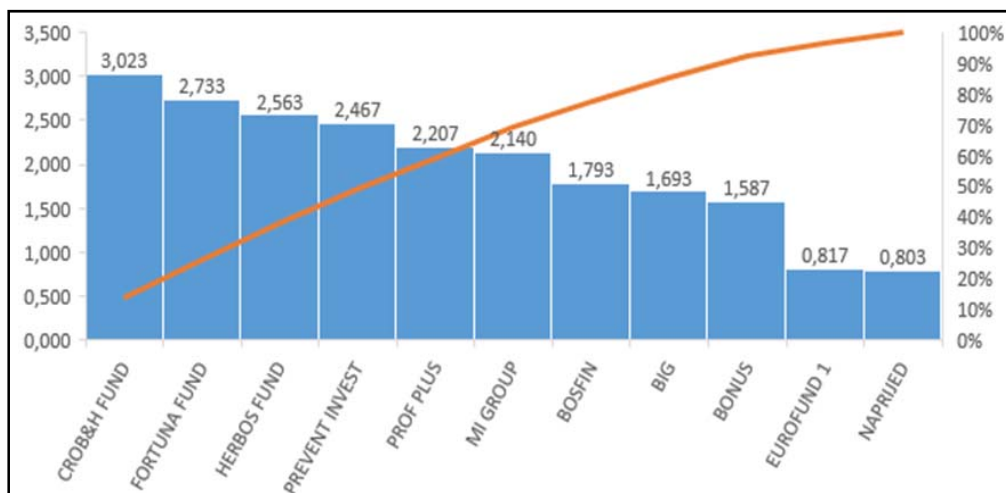

Figure 2   Moving Average Price of Shares of Funds from December 2013 to December 2015
Source: Calculation based on the Report of the Commission for Securities of the Federation of
Bosnia and Herzegovina for 2015, p. 53.

Figure 2 shows that the highest average price of shares of closed-ended investment funds was achieved by the CROB&H Fund at around 3.02 Euros, on the other hand, the lowest value was recorded by closed investment fund NAPRIJED at only 0.80 cents. It is also important to note that the market price of shares of funds, ranges from 12 to 68% of their net book value (Securities Commission of Federation of Bosnia and Herzegovina, 2015, Annual Report in 2015, p. 54). In emerging markets, especially in countries in transition, such as Bosnia and Herzegovina, liquidity plays a key role because investors require an exit strategy: they would prefer to buy shares of a company that can exit the market or sell shares if assessments are at risk.

3. Methodology

The Treynor index refers to the characteristic line, that represents a regression line that explains the relationship between the rate of return of the observed securities or portfolio (Pp), and the yield rate of the market in general or the market portfolio, and is expressed as follows:

$$P_p = \propto_p + \beta_p P_t + \varepsilon_p \tag{1}$$

Where is:

$\propto_p$ – intercept on the ordinate;

β_p – coefficient beta of the portfolio; and

ε_p – residual.

Treynor introduced measures portfolio performance using a beta coefficient and assuming a single index model and the systematic risk of the portfolio, in general, it is explained. The Treynor index was obtained in a similar manner as the Sharp index:

$$T_i = \frac{\bar{P}_p - P_f}{\beta_p} \tag{2}$$

Where is:

$\bar{P}_p$ – the average yield of the portfolio;

P_f – the interest rate on risk-free assets; and

β_p – coefficient beta of the portfolio.

The Treynor index is based on the portfolio risk premium as the difference between the average rate of return of the portfolio and the interest rates on risk-free assets. When calculating the index, the Treynor risk premium is determined based on the systematic risk of the portfolio. Therefore, the Treynor index measures the performance of the portfolio, taking into account the rate of return and systematic risk of the portfolio. The benchmark for evaluating portfolio performance is no longer CML at Sharpe Index, but the Security Market Line — SML. The Treynor Index measures the angle of the line that runs from the risk-free interest rate, to the respective portfolios in the coordinate system: specifically the average rate of return of the portfolio and the coefficient beta. Therefore, this index measures the rate of return per unit of its portfolio exposure, and where the risk is limited to the systematic part, a rate of performance only to the risk premium (Šoškić, D., 2006, p. 372-373).
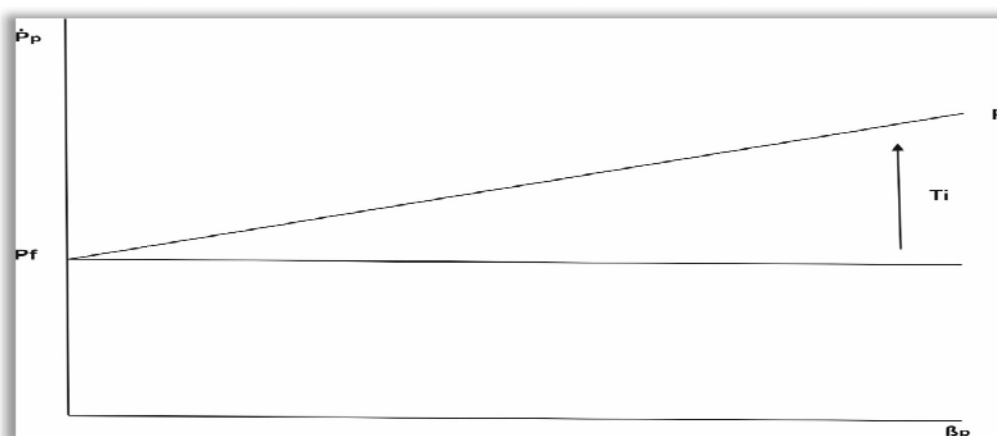

Figure 3   Treynor Index
Source: Šoškić D. (2006). Securities — Portfolio Management and Investment Funds, p. 373.

The Treynor index measures only the depth, or the efficiency of portfolio management regarding the size of the risk premium per unit of systematic risk, but it does not take into account the width of the effectiveness of portfolio management, i.e., the size of assets and the number of positions in the portfolio managed.

4. Data

Data that relates to the calculate Treynor index is the market data of the official statistics of the Sarajevo Stock Exchange and relates to the period of January, 2009 to December, 2015. This study will make use of a risk-free, weighted average interest rate of 1.871% on the bonds of the Federation of Bosnia and Herzegovina, that are due on 5 May 2021). Closed-ended investment funds, which will be calculated on the Treynor index, are composed of stock index BIFX. BIFX is a benchmark index SASE that tracks the price movement of investment funds (former privatization investment funds) listed on the SASE.

4.1 Empirical Results

The results of a part of the capital market in the Federation of Bosnia and Herzegovina, namely the structure of mutual funds within the stock exchange index BIFX, for the period of 5 January 2015 to 13 October 2016, led to the following results, which are presented in Table 2.

Table 2   Calculation of Market Performance and Treynor Index Mutual Funds in the Capital Market of the Federation of Bosnia and Herzegovina from 05 January 2015 to 13 October 2016

(in EUR)

Name of fund	Symbol	Market performance					
		Average return	Std. deviation	Average turnover	Coefficient beta	Market capitalization 2015	Treynor index
ZIF Investment group	BIGFRK3	-0.001%	2.28%	18.622	1.09	12,260.540	-0.027
ZIF Bonus Sarajevo	BNSFRK2	-0.004%	4.16%	38.231	0.31	2,117.301	-0.100
ZIF Bosfin Sarajevo	BSNFRK2	0.007%	8.19%	98.474	0.17	3,119.893	-0.103
ZIF Crobih Mostar	CRBFRK1	-0.003%	3.01%	18.857	0.39	4,999.465	-0.050
ZIF Eurofund-1 Tuzla	EFNFRK1	-0.01%	6.33%	13.728	0.42	1,505.125	-0.054
ZIF Fortuna fund	FRTFRK1	-0.002%	3.27%	26.542	0.13	3,517.438	-0.148
ZIF Herbos fund Mostar	HRBFRK2	-0.004%	2.27%	44.236	0.24	4,235.568	-0.081
ZIF MIGroup Sarajevo	MIGFRK2	-0.018%	6.28%	43.608	1.23	2,747.113	-0.033
ZIF Naprijed Sarajevo	NPRFRK2	-0.009%	2.94%	4.488	0.07	1,314.904	-0.251
ZIF Prof Plus Sarajevo	PRPFRK2	-0.001%	3.776%	19.232	2.36	4,623.202	-0.008
ZIF Prevent Invest Sarajevo	PVNFRK3	0.005%	5.473%	6.288	1.02	3,460.082	-0.013

Source: Calculation by Author

Regarding the average return, all closed-end funds achieved a negative value for the observed period, except Prevent Invest Fund, which recorded a positive value of only 0.05%, the coefficient beta of 1.02 and a negative value of Treynor index (-0.013). Negative values of funds and values just above zero on one side allows for the theoretical assumptions of many approaches and models for measuring risk, which include the premise that the long-term average return is equal to zero. On the other hand, as mentioned, it is the illiquid shares of funds that are not traded for several months, and whose portfolio is poorly structured, that matter. In terms of coefficient beta as a measure of systematic risk, the highest values were realized by Prof Plus investment fund (2.36) and MI Group of 1.23. It is also important to note that a small number of funds have a monopoly position regarding market dominance, so that the obtained values are unreliable, because of the number of days without trading, and the lack of interest of investors.

Regarding the portfolio structure of closed-end funds in the capital market of Bosnia and Herzegovina, there were no significant changes that would affect the increasing liquidity of securities and thus, attract investors. Consequently, the poor liquidity of the portfolio of funds, creates very poor demand by investors, which leads to low stock prices. The relations, risk premium yields of investment funds, and market volatility is a good analytical framework for investors, who must take into account other factors that affect the formation of investment strategies of investors, such as risk aversion (Alihodžić A., p. 11).

5. Conclusion

In regards to investment activities and resources, domestic capital markets do not have enough capacity to support the rapid development of economic activities in Bosnia and Herzegovina. Commercial banks' excess resources are directed towards the sector of the Government issuing bonds or treasury bills. Institutional investors are almost not present in the capital market. In the market of investment funds of the Federation of Bosnia and Herzegovina, there is a present concentration regarding the net asset value of a smaller number of investment funds. Therefore, the capital market is dominated by a small number of investment funds, in order to make certain restrictions on the structure and amount of investments within prescribed limits.

Further perspectives of investment funds in the capital market of Bosnia and Herzegovina would be conditioned by the possibility of finding high-quality capital and major companies in which they could invest. Therefore, without a good quality offer of securities in the capital market of Bosnia and Herzegovina, the legal framework does not significantly affect the further development of the fund industry. The legal provisions concerning the activities of investment funds should incorporate provisions against potential fraud, as well as the obligations of investment advisors. Therefore, for the further development of the capital market in Bosnia and Herzegovina, it is necessary to consolidate the related laws, then eliminate the issues concerning the fragmentation of markets; the lack of accurate and timely information about the company's operations; market liquidity; limitation instruments for trading; the limited number of securities and expensive trading. In Bosnia and Herzegovina, investment funds could play an important role in the completion of the process started towards privatization.

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