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PERFORMANCE EVALUATION OF INVESTMENT (MUTUAL) FUNDS

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Abstract. The efficiency of an investment fund is one of the main components in evaluating the performance of the fund. This study seeks for introducing and comparing risk and performance evaluation ratios. The paper is aimed at testing the worked out ratios and at distinguishing between the best ones for the purpose of evaluating the performance of Lithuanian mutual funds. Scientific studies show that a standard deviation, alpha, beta, Sharpe and Treynor ratios are mostly employed for identifying the performance of mutual funds that are also compared with their benchmark index to establish if these funds are outperformed and if is it worth paying management fees to investment banks for managing mutual funds. Historical data were selected for the period from 2012-01-02 to 2013-10-15 analysing the prices of monthly funds. The paper points out the areas of a practical application of the proposed model for investment fund valuation, which may not only provide valuable outcomes for practitioners but also may inspire further research on this article.

Keywords: investments, financial decision, investment (mutual) funds, diversification.

JEL Classification: O32, Q01, Q55.

INVESTICINIŲ FONDŲ VEIKLOS VERTINIMAS

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Santrauka. Investicinių fondų efektyvumas – vienas pagrindinių fondų veiklos rezultatų vertinimo komponentų. Šiuo tyrimu siekiama nustatyti rizikos ir veiklos vertinimo rodiklius ir juos palyginti tarpusavyje. Straipsnio tikslas – apskaičiuoti rodiklius ir išrinkti, kuriuos iš jų geriausia naudoti norint įvertinti Lietuvos investicinių fondų veiklą. Moksliniai tyrimai rodo, kad standartinis nuokrypis, alfa, beta, Sharpe ir Treynor rodikliai yra dažniausiai naudojami norint nustatyti investicinių fondų veiklos rezultatus. Investiciniai fondai lyginami su jų lyginamuoju indeksu, norint nustatyti, ar verta mokėti valdymo mokesčius investiciniams bankams už investicinių fondų valdymą. Tyrimui pasirinkti istoriniai mėnesio duomenys nuo 2012-01-02 iki 2013-10-15.

Reikšminiai žodžiai: investavimas, finansinis sprendimas, investiciniai fondai, diversifikavimas.

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Introduction

In principle, investment funds may play a role in either stabilizing or destabilizing the financial system. Their provisioning of liquidity in the marketplace, coupled with their ability to provide effective risk diversification to a wide range of investors, certainly adds to their systemic robustness, as does their contribution to correct pricing through the frequent trading of management companies and monitoring financial assets. However, investment fund management companies, directly or via their clients, may also engage in herding behaviour thus pushing asset prices away from their fundamental values.

Mutual fund fees are paid for the services provided to investors by the fund. Because the main service provided by a mutual fund is portfolio management, fees should reflect fund risk-adjusted performance. It follows that there should be a positive relation between before-fee risk-adjusted expected returns and fees.

The target of the survey is the objects that are mutual funds registered in Lithuania or Lithuanian capital mutual funds and its' historical data for analysis; also for a theoretical part, scientific papers on investment management and mutual funds are used.

The article mainly focuses on establishing relations between the fees and performance of the mutual fund and on working out the best ratios for performance evaluation.

The major goal of the paper can be achieved by setting the following objectives:

- to analyse scientific papers on investment management and performance evaluation;
- to find and understand the principle of the main performance evaluation ratios;
- to analyse Lithuanian mutual funds using historical data;
- to find relations between price and performance;
- to describe the ratio closely related to the performance of the mutual fund.

The article suggests the answers to the following hypothesis:

- H1: Do mutual funds with high fees show better results in the market?
- H2: Are all main ratios of performance evaluation equal looking for an answer what mutual fund is the best one?

1. Study area

Mutual funds pool money from individuals and organizations to invest in stocks, bonds and other assets in different industry sectors and regions of the world.

The financial sector plays a crucial role in the economy where growth accelerates it as a whole and is imperative in the case of developing economies. The financial sector had witnessed a number of changes in the recent past. Financial markets have become more efficient by providing more promising solutions to investors. In this connection, mutual funds have made its own market (Raju 2013).

It can be difficult to profit from the predictability of most stock markets, because transaction costs such as bid-ask spreads and commissions prohibit investors from exploiting much of predictability by using individual securities (Mazumder, Miller 2008). When trying to manage transaction costs and commission payments, it is always better to invest in mutual funds or set it only from funds than manage personal investment portfolios by selecting securities. Mutual funds have become a vital investment vehicle for both individual and institutional investors. The recent integration of international markets has made it possible for international funds to grow at an increasing rate, especially after 1990.

Given the desire of investors to seek diversification in their asset portfolios and considering the modest performance of the US equity markets since 2000, it is no surprise that many investors have sought to diversify their holdings by investing in international equity funds (Arugaslan *et al.* 2008).

Mutual fund fees are paid for the services provided to investors by the fund. Because the main service provided by a mutual fund is portfolio management, fees should reflect fund risk-adjusted performance. It follows that there should be a positive relation between before-fee risk-adjusted expected returns and fees (Gil-Bazo, Ruiz-Verdu 2009).

The main objective of introducing a mutual fund is to provide a wide variety of investment portfolios. Investors can buy directly from mutual fund companies or through mutual fund brokers. The money collected from investors is invested by the fund manager in different types of securities depending upon the objective and need of the investor. The types of security could range from shares, debentures to money market securities. In return to this, investors are able to receive income as dividend or interest based on the number of the units owned by them. The level of risk involved is reduced to a certain extent due to the prominent support of fund managers. Thus, a mutual fund is the most suitable investment vehicle for the common person as it offers an opportunity to invest in a diversified, professionally managed portfolio at a relatively low cost (Gomatheeswaran, Rojan 2013).

Diversification has been broadened with the revolution, and the mutual fund has become a major investment destination by yielding more returns. Mutual funds are a cost-effective way to diversify the investment portfolio across different asset categories and industry sectors. Instead of buying and monitoring potentially dozens of stocks, investors could buy a few mutual funds to achieve broad diversification at a fraction of the cost. For example, equity funds

offer an indirect way to invest in dozens of companies in different industry sectors while balanced funds offer exposure to both stocks and bonds. Further diversification is possible within each asset category. For example, investors could buy mutual funds that specialize in certain industries within equities such as technology and energy. Similarly, international funds and emerging market funds are convenient ways to diversify geographically.

1.1. Types of investment funds

1.1.1. Money market funds

Money market mutual funds are not a particularly glamorous sector of the financial universe. They are a collection of short term, highly rated investments designed to keep investor funds safe and liquid while earning interest at a rate slightly higher than what might be available from commercial bank accounts (Locke, L. G., Locke, V. R. 2012).

Most money funds maintain a stable redemption value of shares, usually set at a value equal to one, and pay dividends that reject the prevailing short-term interest rates (Ennis 2012).

Money market funds now have the ability to pose substantial systemic risk that has become highly visible in the wake of the Lehman Brothers failure in 2008 when a single money market fund "broke the buck" and was unable to redeem its shares at $1. The result of that one money fund failure was a short term credit market in chaos.

1.1.2. Bond/Income funds

Bonds has been an important asset class yet, and therefore is known little about the ability of bond market investors to select bonds that outperform other bonds with similar characteristics. The main evidence for an important category of investors and mutual funds is that bond mutual funds are roughly half as large as equity mutual funds in terms of total net assets (TNA) (Cici, Gibson 2012).

Scientific literature gives a description of each of the categories. High quality corporate bond funds are defined as the funds seeking income by investing at least 65% in corporate debt securities rated *A* or higher. The remaining 35% can be invested in any type of the fixed income security. General corporate funds are defined as the funds seeking income by investing in the fixed income securities. Funds within this objective may hold a variety of issues, including government bond funds, high quality corporate securities, mortgages, asset backed securities, bank loans and junk bonds, but the overall quality of the portfolio is investment grade. The government funds are defined in a similar manner. General government bond funds are funds that pursue income by investing in a combination of mortgages, treasuries and agency securities, but no minimum percentage is required within any category. The objective of government treasury funds is to seek income by generally investing 80% in US Treasury securities (Comer, Rodriguez 2011).

1.1.3. Balanced funds

Balanced funds allocate investments across different asset classes, typically between stocks and bonds. They are usually required to maintain with varying degrees of flexibility and are the specified ratio of debt and equity investments. In broad terms, two types of investment strategies are available to balanced funds that invest in both stocks and bonds and, hence, can deliver performance through allocation decisions across asset classes (generally referred to as market-timing skills) or by identifying investment opportunities with each asset class (referred to as security-selection skills) or both. While both types of strategies can contribute to fund performance, the structure of decision rights that facilitates one or the other strategy is different (Dass *et al.* 2013).

The objective of these funds is to provide a balanced mixture of safety, income and capital appreciation. The strategy of balanced funds is to invest in a combination of fixed income and equities. A typical balanced fund might have a weighting of 60% equity and 40% fixed income. The weighting might also be restricted to a specified maximum or minimum for each asset class.

The fund is characterized by the investment policy which, depending on the situation on financial markets, offers changeable participation – from 0% up to 100% – in the portfolio of such assets as equity or debt instruments (Krawiec 2013).

1.1.4. Equity funds

The funds that invest in stocks represent the largest category of mutual funds. Generally, the investment objective of this class of the funds is a long-term capital growth with some income. There are, however, many different types of equity funds because there are many different types of equities. A great way to understand the universe of equity funds is to use a style box (Fig. 1), an example of which is presented below.

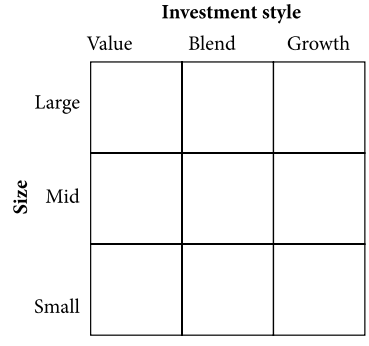

Fig. 1. A style box

The idea is to classify the funds based on both the size of the companies invested in and the investment style of the manager. The term value refers to a style of investing that looks for high quality companies out of favour with the market. These companies are characterized by low P/E and price-to-book ratios and high dividend yields. The opposite of value is growth, which refers to the companies that have had (and are expected to continue to have) a strong growth in earnings, sales and cash flow. A compromise between value and growth is blend, which simply refers to the companies that are neither value nor growth stocks and are classified as being somewhere in the middle.

For example, the mutual fund that invests in large-cap companies that are in a strong financial shape but have recently seen the fall of their share prices would be placed in the upper left quadrant of the style box (large and value). The opposite of this would be a fund that invests in start-up technology companies with excellent growth prospects. Such a mutual fund would reside in the bottom right quadrant (small and growth).

1.1.5. Global/International funds

An international fund (or foreign fund) invests only outside your home country. Global funds invest anywhere around the world, including your home country.

It is tough to classify these funds as either riskier or safer than domestic investments. They do tend to be more volatile and have unique country and/or political risks. But, on the flip side, they can, as a part of a well-balanced portfolio, actually reduce risk by increasing diversification. Although the world economies are becoming more inter-related, it is likely that another economy somewhere is outperforming the economy of your home country.

International funds mostly invest in equities and bonds of the firms located in the countries outside of the home country. The recent integration of international markets made it possible for international funds to grow at an increasing rate, especially after 1990 (Mazumder, Miller 2008).

1.1.6. Index funds

Index funds are the last but certainly not the least important ones. This type of the mutual fund replicates the performance of broad market indexes.

In general, an index fund consists of a combination of several stocks so that the price tracks the movement of the target stock index (for instance, the S&P 500 on the New York Stock Exchange, the FTSE 100 on the London Stock Exchange, or TOPIX on the Tokyo Stock Exchange). As a result, all of the stocks composing the stock index should be included in the fund in order to create a perfect index fund (for instance, the S&P 500 has 500 stocks, the FTSE 100 has 100 stocks, and TOPIX has all the stocks listed on the first section in the Tokyo Stock Exchange, that is, about 1700 stocks). However, index funds must be rebalanced in response to changes in the proportions with which composite issues and individual issues are included in the stock index in order to maintain continuity with the stock index in the future period (Orito *et al.* 2010).

The performance of the fund is directly related to the performance of the index, except the tracking error that occurs when there is a deviation between the returns of an index fund as compared to returns on the index. The deviation is due to transaction costs for buying and selling stocks and the payment of asset management fees. Tracking error is one of the good measures to compare performance among funds as lower the tracking error better the fund. Index funds are suitable for investors who want to make money on the stock market but do not have time to track individual stocks for trading themselves (Inder, Vohra 2012).

An investor in an index fund figures that most of managers cannot beat the market. An index fund merely replicates the market return and benefits investors in the form of low fees.

1.1.7. Specialty funds

Also, mutual funds can be classified according to the style of its specific securities selection. These funds have proved to be popular but do not necessarily belong to the categories described before. This type of funds reaches broad diversifications to concentrate on a certain segment of the economy.

1.1.8. Sector funds

Sector investments can provide substantial portfolio diversification benefits. Exchange-traded sector funds make it easy for investors to invest in sectors to achieve sector diversification (Meric *et al.* 2010).

Sector funds are targeted at the specific sectors of the economy such as financial, technology, health, etc. Sector funds are extremely volatile.

1.1.9. Regional funds

Regional funds invest in a specific area of the world. This may mean investing in a region (for example, emerging markets) or an individual country (for example, only Brazil). An advantage of these funds is that they make it easier to buy stock in foreign countries, which is otherwise difficult and expensive. Just like for sector funds, regional funds has the high risk of loss that occurs if the region goes into a bad recession.

On average, the regional mutual funds of emerging markets are smaller in size and have expense ratios that are lower than international mutual funds, but their portfolios

are turnover at a higher frequency. The regional exposure of these funds is concentrated in three regions, the Pacific region, Latin America and Emerging Europe (Rodriguez, Torrez 2008).

1.1.10. Socially responsible funds

Socially Responsible Investment (SRI) is an investment approach that includes investors' ethical, religious, social or other normative preferences into the investment decision. For many investors, by far the most convenient method of investing in this way is to buy into a SRI managed fund. SRI equity funds may include or exclude stocks from their portfolio holdings depending on a firm's behaviour or involvement in particular activities or industries. A company's stock may be excluded from the portfolio if the company is involved in undesirable business activities, for example, alcohol production or unnecessary deforestation. Similarly, stock may be included if the company possesses a certain attribute, for example, has progressive hiring practices or produces renewable energy. These mechanisms are known as negative and positive screening, respectively. Some SRI funds implement the "best of sectors" approach where portfolios are built from a representative cross section of the companies that are deemed the best socially responsible performers within each of their respective industries (Humphey, Lee 2011).

The concept of socially responsible investing (SRI) has been receiving an increasing interest in academic literature. While accompanying this trend, a significant number of socially responsible mutual funds have been created worldwide. The financial performance of socially responsible funds provides a partial answer to the question of whether ethical standards are inconsistent with the wealth maximization paradigm used in mainstream finance. The central issue of debate therefore concerns the impact of social screening on mutual fund performance (Cortez *et al*. 2009).

Socially-responsible funds invest only in the companies that meet the criteria of certain guidelines or beliefs. Most socially responsible funds do not invest in industries such as tobacco, alcoholic beverages, weapons or nuclear power. The idea is to get competitive performance while still maintaining healthy conscience.

It is relatively simple to measure the raw performance of a mutual fund. All mutual funds must report their raw or unadjusted performance and their self-selected benchmark index for various periods of time, or holding periods (Costa, Jakob 2011).

For a management company, the assessment of management efficiency is an important part of the investment process. A thorough analysis of management efficiency helps in identifying reasons for deviation from the benchmark as well as assesses portfolio risks. Timely analysis allows the adjustment of the current strategy when necessary. The developing criteria of efficiency in portfolio management might affect fundamental approaches to portfolio strategies.

The development of techniques for assessing efficiency is based on a wide range of knowledge coming from the stock market, as well as from the investor's psychology. A deep and comprehensive analysis of information from the stock market is necessary for correct assessment (Sergeeva, Nikirova 2012).

There are three key aspects of fund management. Asset allocation and security selection are the first two important aspects of fund management, but understanding fund performance is an additional critical piece of information regarding portfolio management. It is easy to measure the raw performance of a mutual fund, but both practitioners and academics have struggled with how to accurately measure risk-adjusted mutual fund performance. Because of this performance measurement issue, many investors choose passively managed index funds in an attempt to simply match the performance of the market (Costa, Jakob 2010).

Asset allocation models are the vehicles investment managers use to meet clients' financial goals and objectives. A well-researched and closely monitored model can go a long way in enhancing the credibility of the asset management firm. Research teams have to do an in-depth analysis of various asset classes available on the market and drill down to identify investment ideas that will produce optimum return with right risk (Vasanth 2013).

There are three main types of investment management showing relation between investment fund strategy and investment style. A purely passive investment approach would imply that the stocks underlying an index are merely bought and held. There should be no substantial change in the underlying assets of an index except for technical reasons such as the initial public offerings (IPOs), mergers, capital increases and changes in the free float (Ranaldo, Haberle 2008).

In one of the earliest theoretical expositions of investments, Fisher (1930) justifies the present value as the basis for value and derives the determinants of interest rates. As described in Rubinstein (2006), Irving Fisher's theses lay the foundation for the 20th century modem finance theory that follows. Graham and Dodd (1934) present a fundamental approach to investments that suggest a variety of factors that should be significant to the problem of security selection. Rubinstein (2006) lists the shortcomings of the Graham-Dodd fundamental approach: the lack of incorporating risk, diversification and informational efficiency in the determination of stock values. The mean-variance theory of Markowitz (1952), the capital asset pricing model (CAPM) of Sharpe (1964) and the efficient market hypothesis of Fama (1970) introduce these concepts only many years later (Freud *et al.* 2013).

2. Data and methods used

2.1. Evaluation of investment fund performance

The performance measurement of a managed portfolio has attracted a remarkable interest in economic and financial literature. From a general view, two vital approaches to performance measurement may be recognized and followed. The first approach considers the returns of managed portfolios, and its purpose is to define and interpret conventional reward-to-risk measures under symmetric conditions. The second approach investigates the returns of managed portfolios and concentrates on utilizing and introducing the measures which make it possible to infer the choices made by investment managers under asymmetric conditions (Baghdadabad, Glabadanidis 2013).

Traditional studies on mutual fund performance measure the value of active fund management by testing the ability of fund managers to earn abnormal returns relative to a factor model that adjusts to the risk level of the fund. Empirically, this is usually implemented by contemporaneously comparing daily or monthly fund return to various financial market indices through regression analysis (Comer *et al.* 2009).

2.2. Risk evaluation ratios

Risk ratios quantify the risk volatility of stock and represent that risk with simple numbers. The five commonly accepted risk ratios are alpha, beta, r-squared, standard deviation and the Sharpe ratio. Alpha and beta are two of the easiest to understand, and therefore are used for the proper evaluation of investment risk.

Alpha is a risk ratio that applies to mutual funds. This number quantifies how much value the portfolio manager brings to the mutual fund. Alpha compares the contents of mutual fund investment with a benchmark index. This is a fancy way of saying that alpha examines how the fund might perform without management. What might happen if the fund were left alone to track along with the market benchmark? The performance of the introduced benchmark is subtracted from the actual performance of the fund. The difference is the alpha. A positive number means how much value a fund manager adds to the mutual fund. A negative number means that the fund manager is causing the fund to underperform:

$$\alpha = r_a - r_f - \beta \cdot (r_b - r_f), \quad (1)$$

r_a – rate of return,
r_b –rate of return of the benchmark index,
r_f – risk-free rate,
β – beta ratio.

Beta is calculated using regression analysis as the tendency of security return to respond to swings in the market. A beta of 1 indicates that security price will move along with the market. If beta is less than 1, it means that security will be less volatile than the market. A beta of greater than 1 indicates that security price will be more volatile than the market. For example, if stock beta is 1.2, it is theoretically 20% more volatile than the market:

$$\beta_a = \frac{Cov(r_a, r_b)}{Var(r_b)}, \quad (2)$$

r_a – fund rate of return,
r_b – rate of return of the benchmark index,
$Cov(r_a, r_b)$ – covariance between rates or return,
$Var(r_b)$ – value at risk of the benchmark index.

Standard deviation is a statistical measurement that sheds light on historical volatility. For example, volatile stock will have high standard deviation while the deviation of a stable blue chip stock will be lower. Large dispersion tells us how much return on the fund deviates from the expected normal returns:

$$\sigma = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n}}, \quad (3)$$

x_i – rate of return,
$\bar{x}$ – average rate of return,
n – number of periods.

2.3. Performance evaluation ratios

The Sharpe ratio to measure the performance of large and small company stocks along with corporate bonds over different holding periods and has been built on the previous research that cites the effects of serial correlation and non-normality in the creation of estimation error in the calculation of the Sharpe ratio (Johnston *et al.* 2011).

The Sharpe Ratio plays an important role in the Modern Portfolio Theory and the influential Efficient Market Hypothesis (Coats, Page 2009).

The Sharpe ratio provides a measure of fund excess returns relative to its volatility. Expressed in its usual form, the Sharpe ratio is:

$$S = \frac{r_f - r_a}{\sigma}, \quad (4)$$

r_a – fund return,
r_f – risk free rate,
σ – standard deviation.

Similar to the Sharpe Ratio, the Treynor Ratio is a measurement of efficiency utilizing the relationship between annualized risk-adjusted return and risk. Unlike the Sharpe Ratio, the Treynor Ratio utilizes "market" risk beta instead of a standard deviation of the total risk. Good performance efficiency is measured by a high ratio.

The Treynor Ratio is calculated by dividing the mean excess return of each fund by its beta:

$$T = \frac{r_i - r_f}{\beta}, \quad (5)$$

r_i – average rate of return,
r_f – risk-free rate of return,
β – beta.

Alpha ratio measures investment performance on a risk-adjusted basis. It is the difference between the fund's expected returns based on its beta and actual returns. Alpha takes the volatility or price risk of the investment fund and compares its risk-adjusted performance to the benchmark index.

A positive alpha of 1.0 means the fund has outperformed its benchmark index by 1%. Correspondingly, a similar negative alpha would indicate an underperformance of 1%. The formula for alpha is expressed as follows:

$$\alpha = R_p - [R_f + (R_m - R_f)\beta], \quad (2)$$

R_p – realized return of the portfolio,
R_m – market return,
R_f – risk-free rate.

3. Data analysis

For analysis, ten mutual funds registered in Lithuania and available for Lithuanian investors have been chosen. Historical data were selected for the period from 2012-01-02 to 2013-10-15 analysing the prices of monthly funds. The first two tables (Table 1, Table 2) show the main information about mutual funds, including fund return against benchmark index return and all fees of funds.

To find the answer to the first hypothesis, obtaining fee-adjusted return and minus index performance are needed.

Table1. Mutual fund performance

Name	Return	Index return
Citadele Baltic Sea Equity Fund	25.40%	43.16%
Finasta Baltic Fund	9.86%	43.16%
Finasta New Europe TOP20 sub-fund	35.25%	14.11%
Finasta Vitality fund	29.99%	10.10%
OMX Baltic Benchmark Fund	36.80%	43.16%
Prudentis Global Fund	32.69%	22.96%
DnB NORD Stock Fund	21.99%	16.01%
SEB Global Fund	33.01%	26.30%
SEB Europe Fund	27.09%	20.78%
SEB Actively managed 100 fund	22.49%	20.78%

Having discounted all fees from mutual fund performance, only six funds have outperformed indexes. Finasta New Europe TOP20 fund has showed the best results and generated 17.39% more than the index. The worst results have been presented by Finasta Baltic Fund where the index outperformed this fund the most and made 37.55 %.

While improving the first hypothesis, Finasta New Europe TOP20 fund should have the highest fees and Finasta Baltic Fund – the lowest ones. The third table shows there are no relations between fund taxes and performance. Also, the best performed fund is cheaper than the worst. Thus, in conclusion, the first hypothesis is negative.

The second part of the practical task is to calculate the main performance evaluation ratios and to analyse which of the ratios are the most correct and/or all ratios will show the same result of mutual fund performance. As scientific literature discloses, the main ratios are standard deviation, alpha, beta, Sharpe and Treynor ratios. Table 4 shows all calculations and now we can to do analysis da all ratios give as the same answer, if not, which of these ratios is the most correct.

Table 2. Commission fees for mutual funds

Name	Type	Buying fee	Management Fee	Selling Fee
Citadele Baltic Sea Equity Fund	Equity fund	2.00%	2.00%	0.00%
Finasta Baltic Fund	Equity fund	2.00%	2.00%	0.25%
Finasta New Europe TOP20 sub-fund	Equity fund	2.00%	1.50%	0.25%
Finasta Vitality fund	Equity fund	5.00%	0.50%	0.00%
OMX Baltic Benchmark Fund	Equity fund	2.00%	1.00%	1.00%
Prudentis Global Fund	Balanced fund	3.00%	1.25%	0.00%
DnB NORD Stock Fund	Equity fund	2.50%	2.75%	0.00%
SEB Global Fund	Equity fund	1.00%	1.50%	0.00%
SEB Europe Fund	Equity fund	1.00%	1.40%	0.00%
SEB Actively managed 100 fund	Fund of fund	1.00%	1.25%	0.00%

First, mutual funds from the best to the worst one must be grouped and then compared with the ratios, which will provide an answer to the second hypothesis.

Table 5 shows that the alpha ratio gives us the best results. However, no relations between all these ratios can be observed. Thus, the second hypothesis is also negative and answers to the question which ratio of the analysed ones is the best. In this case, the alpha ratio performed best. To sum up all information, to find the most appropriate formula for calculating the performance evaluation of mutual

Table 3. Fee-adjusted performance

Name	Return against index	Total fees	Fees adjusted return against index
Citadele Baltic Sea Equity Fund	–17.76%	4.00%	–21.76%
Finasta Baltic Fund	–33.30%	4.25%	–37.55%
Finasta New Europe TOP20 sub-fund	21.14%	3.75%	17.39%
Finasta Vitality fund	19.89%	5.50%	14.39%
OMX Baltic Benchmark Fund	–6.36%	4.00%	–10.36%
Prudentis Global Fund	9.73%	4.25%	5.48%
DnB NORD Stock Fund	5.98%	5.25%	0.73%
SEB Global Fund	6.71%	2.50%	4.21%
SEB Europe Fund	6.31%	2.40%	3.91%
SEB Actively managed 100 fund	1.71%	2.25%	–0.54%

Table 4. Calculations of performance evaluation ratios

Name	Standard Deviation	Alpha	Beta	Sharpe	Treynor
Citadele Baltic Sea Equity Fund	3.9409	–0.1602	0.7316	0.2535	1.3656
Finasta Baltic Fund	2.4459	–0.6723	0.6484	0.1056	0.3981
Finasta New Europe TOP20 sub-fund	4.4332	0.8861	0.7442	0.2888	1.7203
Finasta Vitality fund	5.3048	0.8530	0.6881	0.2146	1.6547
OMX Baltic Benchmark Fund	2.9320	–0.2285	1.0127	0.4353	1.2603
Prudentis Global Fund	2.6045	0.4567	0.8942	0.4329	1.2610
DnB NORD Stock Fund	2.0590	0.4520	0.6016	0.3540	1.2116
SEB Global Fund	2.8544	0.3734	0.8732	0.4015	1.3124
SEB Europe Fund	3.3025	0.6597	0.3752	0.2879	2.5342
SEB Actively managed 100 fund	2.6685	0.5296	0.3162	0.3220	2.7172

Table 5. Comparison between return and performance evaluation ratios

Name	Fees adjusted return against index	Rank				
		Standard Deviation	Alpha	Beta	Sharpe	Treynor
Finasta New Europe TOP20 sub-fund	17.39%	9	1	4	6	3
Finasta Vitality fund	14.39%	10	2	6	9	4
Prudentis Global Fund	5.48%	3	5	2	2	8
SEB Global Fund	4.21%	5	7	3	3	6
SEB Europe Fund	3.91%	7	3	9	7	2
DnB NORD Stock Fund	0.73%	1	6	8	4	7
SEB Actively managed 100 fund	–0.54%	4	4	10	5	1
OMX Baltic Benchmark Fund	–10.36%	6	9	1	1	9
Citadele Baltic Sea Equity Fund	–21.76%	8	8	5	8	5
Finasta Baltic Fund	–37.55%	2	10	7	10	10

funds, risk and performance ratios must be combined or the multi-criterion method must be applied.

Conclusions

For writing this article, scientific literature has been analysed thus overlooking the main principals and theories. Scientific analysis suggests two hypotheses that may be improved or denied.

The analysed source of scientific papers allows making a conclusion that the importance of investment (mutual) funds is investing in funds investors could get wide diversification with low transaction cost and mutual funds' fees.

In response to the above issues, conclusion theorist gives us the brief classification and types of mutual funds, including equity, bond/income and balanced funds.

Scientists provide us with the main performance methods of mutual fund evaluation like standard deviation, alpha, beta, Sharpe and Treynor ratios.

The analysis of registered Lithuanian capital investment funds seeks for finding an answer to our hypothesis. Not all funds have outperformed benchmark indexes, and therefore sometimes it is better to invest into index bunds or manage investment portfolio by ourselves. A hypothesis about the relationship between mutual fund performance and its transaction costs and fees has been denied.

Performance evaluation ratios have been calculated to find if all these ratios are of equal correct evaluating performance; however, only the alpha ratio has showed the best result while other ratios have no relations between its values and mutual fund performance.

For evaluating the performance of mutual funds, combining risk and performance ratios or employing the multi-criterion method is required.

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