Performance Of Equity Mutual Funds According To Sharpe, Treynor And Jensen Methods Periode 2013-2015

**Abstract.** This study aims to determine the performance of the Fund shares based Risk-Adjusted Return by Sharpe, Treynor, Jensen and compare the performance of the Fund shares with the benchmark performance in the study period. Benchmark performance in this study using Composite Stock Price Index. The sampling technique used purposive sampling techniques and obtained 15 Product Mutual Fund shares as the study sample. The variable in this study is the return of Mutual Fund shares, the market return and risk-free profit. Methods of data analysis using the method of Sharpe, Treynor, Jensen. The results showed for the method of Sharpe in 2013, there were 7 Mutual funds that had positive performance and 11 performing equity funds outperform the benchmark. In 2014 all equity fund has a positive performance and outperform the benchmark. In 2015 there were equity fund with a positive performance and a 6-performing equity funds outperform the benchmark. For the method of Treynor, in 2013 there were 2 Equity funds with positive performance and 11 performing equity funds outperform. In 2014 there were 14 equity fund with a positive performance and 14 performing mutual funds outperform. In 2015 there are no equity fund with a positive performance and there are 6-performing equity funds outperform. For the method of Jensen, in 2013 there were 9 Equity funds with positive performance and second-performing equity funds outperform. In 2014, there were 7 Equity funds with positive performance and 7-performing mutual funds outperform. In 2015 there were 2 Equity funds with positive performance and second-performing equity funds outperform.

**Keywords:** Risk-Adjusted Return Method Sharpe, Treynor, Jensen.
I. INTRODUCTION

Investment is essentially the placement of the funds on the present in the hope to gain an advantage in the future. Generally, investments are divided into two categories, namely: investment in financial assets and investments in real assets. Investments in financial assets are carried out in the financial markets, for example in the form of certificates of deposit, commercial paper, money market securities, and others. Investments can also be made in the stock market, for example in the form of shares, bonds, warrants, options, and others. While investment in real assets can take the form of purchase of productive assets, the establishment of the factory, the opening of the mining, plantation, and others (Barid, Wajdi, Ummah, & Erika Sari, 2017).

The capital market today has grown very rapidly and become something very important and valuable; capital market is an alternative for investors to invest. One of the advantages of the capital market is its ability to provide long-term capital and indefinitely. The capital market has a very important role both in terms of the demand for capital by a company which is called the issuer as well as in terms of the supply by the capital market through public or commonly called investor (Mursidki, 2015). Both parties in the capital market are equally benefit so that the capital markets continue to develop, even the stock market has become a benchmark of modernity. That is, a nation or state is then entitled to the modern title if its capital market is already advanced (Fajarianto, 2017).

There are three main things that underlie the investment, namely: first, there are future needs, or the needs of the present, which has not been able to be fulfilled at this time, the second, there is a desire to increase the value of assets and the need to protect the value of assets already owned, third, because of inflation (Pratomo and Nugraha, 2009).

Each investment option to generate returns in the future is risky because it involves the future of uncertainty, which means it contains an element of risk for investors. A rational investor before making an investment decision, at least have to consider two (2) terms, the expected revenues and risks involved in alternative investments that he carried on. One of the media of investment frequently chosen by investors is the type of mutual fund (Setiawan & Budiyanto, 2015).

In Indonesia, mutual funds first appeared when the government established PT. Danareksa in 1976. At that time, PT. Danareksa is issued a mutual fund as certificates of Danareksa. In 1995, the government issued capital market regulations which include provisions regarding a mutual fund through Act No. 8 of 1995 on the Capital Market. The issuance of these laws has been the momentum of the rise of mutual funds in Indonesia that began with the publication of closed mutual funds by PT. BDNI Mutual Funds.

Investing in stocks is recorded to have a fairly high rate of return in the long term, but in addition, investment in stocks has the highest risk (Sari & Wajdi, 2017). Stock mutual fund have a composition of 80% of its portfolio in stocks, then the movement of NAB of the stock mutual fund will be identical to the movement of the stock market. So the stock mutual fund has a high rate of return, but also has a high risk anyway.

Many investors are choosing the type of stock mutual funds but are not matched by the ability of investors to analyze stock mutual funds that have good potential. This is coupled with a lack of information circulating on the analysis of the performance of stock mutual funds that exist today. The movement of the stock market of unstable is also an obstacle for investors to pick the best mutual fund shares especially in 2014, the Indonesian stock market experienced great upheavals, one of which is due to the change of
government that led many investors hesitate to invest. Therefore it is necessary to analyze the performance of the good investment managers, and carefully before investing. The performance of mutual funds can be measured by simply counting the total income basis or better yet is to involve also risk assessment. Performance measurement that involves the risk factors will provide more detailed information to investors about the extent to which the results or performance provided by the Investment Manager is associated with the risk taken to achieve such performance.

To address these problems, it is important to do a research on the analysis of the performance of mutual fund shares updates to help investors to gather information and compare the performance of each Mutual Fund shares. Given this research is expected that investors is equipped with valid information to choose Mutual Fund shares that could potentially generate optimal profits.

For new investors who want to invest in mutual funds, it is important for them to know of the mutual fund from which investment management company which has the best performance. Mutual funds are said to have a good performance if it gives high returns with reasonable risk and good. With the presentation of the performance of stock mutual funds in Indonesia is expected to be able to give an objective picture of the condition of the performance of stock mutual funds in Indonesia. Therefore, the author will do a study entitled: "Analysis of the Performance of Mutual Funds by Sharpe, Treynor and Jensen’s Method (Study of the Mutual Fund Shares for the Period of 2013-2015)".

### A. Mutual Fund

According to the Capital Market Law No. 8 of 1995 Article 1, paragraph (27), Mutual Funds is a vehicle used to collect funds from public investors to be invested in a portfolio of securities by the investment manager. In other words, the mutual fund is a vehicle to invest collectively to be placed in the portfolio based on investment policies established by the investment manager. According to Sawidji Widoatmojo (2015), Mutual Funds are defined as securities issued by an investment manager and then sold to investors, with the sale proceeds are used to create portfolios in order that investment risk decreases, but with the advantage that relatively large.

Mutual Funds are basically created to simplify the management of investments, particularly for individual investors. We do not invest in mutual funds, but we are investing through mutual funds so that we have the capital that can be allocated to investment instruments that we know or that are difficult for us to do alone.

### B. Types of Mutual Funds

According to Supervisory Agency of Capital Market and Financial Institution (now becomes Financial Services Authority), Mutual Funds in Indonesia based on the portfolio is comprised of four categories, namely:

1. Money Market Mutual Funds

   Money market mutual fund is invested 100% in the money market. Money market mutual funds are mutual funds short-term (less than one year). Instruments included in the category of money market mutual funds include deposits, Bank Indonesia Certificates (SBI), bonds and other debt securities with a maturity of less than one year. Judging from the level of risk, money market mutual funds are mutual funds that have the lowest risk level than other types but the money market mutual funds is also possible to produce a negative value but very small. In contrast to other types of mutual funds whose value is always changing every day, money market mutual funds generally have short-term fixed prices. The investment return of money market mutual funds is almost
similar to the deposits for most of the investment portfolios of money market mutual funds are comprised of deposits. The purpose of the money market mutual funds is generally for the protection of capital and to provide high liquidity and capital maintenance.

2. Fixed-Income Mutual Funds

Fixed-income mutual funds are mutual funds that invest at least 80% of the portfolio managed in debt securities. Debt securities are generally providing income in the form of interest, such as deposits, Bank Indonesia Certificates (SBI), bonds and other instruments. Fixed income mutual funds are an attractive option for investors who specifically want to invest in bonds. Fixed income mutual funds are mutual funds medium-term and long-term (over three years) which has a medium risk but the risk is owned by fixed income mutual funds is greater than the risk of the money market mutual funds. Distribution of profits in fixed income mutual funds are in the form of cash (dividend) paid on a regular basis, for example monthly, 3 monthly or yearly. In this respect, it is similar to the payment of interest on deposits that may be considered as regular income. Fixed income mutual funds aim to generate stable rate of return.

3. Equity Mutual Funds

Stock mutual funds make their investment with stocks. These mutual funds have a higher risk than the risk of money market mutual funds and fixed income mutual funds but stock mutual funds have a high return rate. According to BAPEPAM (Supervisory Agency of Capital Market and Financial Institution) regulations IV.C.3, stock mutual funds are mutual funds with a portfolio of a minimum of 80 percent of total assets are invested in stocks. In Indonesia, only a small part of investors to invest in shares, although it is not easy to invest in stocks, many constraints faced by investors, is one of them, lack of time and knowledge to invest in stocks. Stock mutual funds are created to assist investors in making investment in stocks. Stock mutual funds are mutual funds for the long term. The purpose of investing in stock mutual funds is to be free of the hassle of investing in stocks, such as managing stocks, select the type of the right stocks, limited time to control stock performance over time, wants to get a dividend, investors want to get a capital gain on the appreciation that so large in stock prices, and to invest in stock mutual funds because they want to get dividends and capital gains.

4. Discretionary Mutual Funds

Mixed mutual fund has its own characteristics that are different from other types of mutual funds for mixed mutual fund can make investments in the form of debt or equity securities, while other types of mutual funds have restrictions on the allocation that can be done. Mixed mutual fund is an alternative option for investors to invest, which in addition to investing also simultaneously consist of equity securities and debt securities. The rate of return and risk of mixed mutual funds are in the middle between fixed income mutual funds and stock mutual fund. For investors who are less daring accept high risks, this mixed mutual funds is alternative to invest as a replacement for stock mutual fund.

C. Measurement of Performance of Mutual Funds

1. Sharpe Method

Performance measurement, by this method, is based on a premium over the risk or the so-called risk premium. Premium over the risk is the difference between average performances generated by mutual funds with an average risk-free investment performance that is assumed by an
average interest rate of Bank Indonesia Certificates (SBI). In addition to a positive return, with Sharpe, returns of mutual funds should also be above the level of return of risk-free instrument. The greater the Sharpe ratio, the better the performance of mutual funds. Sharpe method can be formulated as follows:

$$SRD = \frac{RRD - RRF}{\sigma RD}$$

where:
- $SRD$ = Sharpe ratio value of mutual fund
- $RRD$ = Average return of mutual fund
- $RRF$ = Average return of risk-free investment
- $\sigma RD$ = Standard deviation of return of mutual fund

2. Treynor Method

Treynor method is similar to Sharpe, both of which use the same risk premium but the difference is that in Treynor method beta ($\beta$) divisor is used which is the risk of fluctuation relative to market risk. Treynor method is formulated as follows:

$$TRD = \frac{RRD - RRF}{\beta}$$

where:
- $TRD$ = Treynor ratio value of mutual fund
- $RRD$ = Average return of mutual fund
- $RRF$ = Average return of risk-free investment
- $\beta$ = Portfolio $\beta$ (market risk or systematic risk)

3. Jensen Method

This method, is based Capital Asset Pricing Models (CAPM). Different with treynor method, Jensen method of using data of each period from time to time. Jensen method is formulated as follows:

$$\alpha = (R_p - R_f) - \beta_p (R_m - R_f)$$

Where:
- $\alpha$ = The measure of performance of the mutual fund
- $R_p$ = Average return of mutual fund
- $R_f$ = Average return of risk-free investment
- $R_m$ = Average return of market (IHSG)
- $\beta_p$ = Portfolio $\beta$ (market risk or systematic risk)

II. Method

A. Population and Sample

The population in this study is all stock mutual fund listed on the Indonesia Stock Exchange for the period 2013-2015. Purposive sampling technique is used in sampling for this study. The sample used in this study is the product of the best mutual funds for the period of 2015 according to the website www.howmoneyindonesia.com

B. Data Collection Technique

In accordance with the data used, i.e. secondary data, this study uses documentary technique as data collection technique. Data was collected through:

2. Recording levels of BI rate in the observation period for January 2013 to December 2015 from web www.bi.go.id.

F. Data Analysis Technique

Data obtained from various sources were analyzed by descriptive quantitative. The data collected is processed with formulas according to the operational
definition of the relevant variables using Microsoft Excel to facilitate data processing. The steps undertaken are:

1. Collecting data on the weekly NAB of each stock mutual fund that was sampled. Then the data on the movement of the Composite Stock Price Index and the BI rate during the measurement period is collected.

2. Calculating the return of each stock Mutual Fund and the average return of the Composite Stock Price Index as a benchmark as well as the risk free which is based on the BI rate.

3. Calculating the risk based on the standard deviation (σ) and Beta (β).


For method Sharpe returns of mutual funds minus the BI rate is calculated. Results of the excess return are then compared with the standard deviation. Standard deviation is the overall risk of a mutual fund and can be calculated using the formula MS Excel (= STDEV (...)); STDEV (return Mutual Funds). The formula used to Sharpe method was as follows:

\[ 	ext{SRD} = \frac{\text{RRD} - \text{RRF}}{\sigma_{RD}} \]

where:
- SRD = Sharpe ratio value of mutual funds
- RRD = Average return of mutual funds
- RRF = Average return of risk-free investment
- \( \sigma_{RD} \) = Standard deviation of return of mutual funds


Calculations for the performance of mutual funds are similar to Sharpe method namely by calculating the excess return obtained from the return of mutual funds minus the BI rate. However, the comparator is in the form of beta, which is the level of systematic risk of a company. Here the beta can be measured by using MS Excel Linear Regression (= slope (y, x)), where y is the market return and x is the return of mutual funds. The higher the beta, the higher the potential risks that can occur. The formula used is as follows:

\[ \text{TRD} = \frac{\text{RRD} - \text{RRF}}{\beta} \]

where:
- TRD = Treynor ratio value of mutual funds
- RRD = Average return of mutual funds
- RRF = Average return of risk-free investment
- \( \beta \) = beta of multiple linear regression equation


Jensen method is derived from Capital Asset Pricing Model (CAPM). The first step is to calculate mutual fund returns by subtracting the value of the current NAB from the value of the previous NAB and then the result is divided by the value of the previous NAB. Second, the return earned minus the BI rate, which is then added to the beta as systematic risk. Jensen method can be calculated with the following formula:

\[ \alpha = (\text{Rp} - \text{Rf}) - \beta \text{p}(\text{Rm} - \text{Rf}) \]

where:
- \( \alpha \) = Jensen's measure of the performance of mutual funds
- Rp = Average return of mutual funds
- Rf = Average return of risk-free investment
- Rm = Average market return
\[ \beta = \text{Portfolio's beta (market risk or systematic risk)} \]

### III. RESULT AND DISCUSSION

The population in this study is all stock mutual fund listed on the Indonesia Stock Exchange. Based on data obtained there are as many 206 stock mutual fund which are still active and are listed on the Indonesia Stock Exchange until February 29, 2016.

This study using purposive sampling method for sampling and as many as 15 products of stock Mutual Fund are obtained to be used as a sample.

1. **Calculation of the Weekly Return of the Stock Mutual Fund**
   
   Return of each mutual fund is calculated based on the net asset value which has been published on the website kontan.co.id.
   
   \[ R_d = \frac{\text{NAB}_t - \text{NAB}_{t-1}}{\text{NAB}_{t-1}} \]

2. **Calculation of average weekly return of the benchmark Composite Stock Price Index**
   
   The average index of weekly returns of the benchmark Composite Stock Price Index in this study serves as a comparator (benchmark) to declare the performance of the mutual fund whether mutual fund is outperform or underperform. The average weekly index is obtained from the web www.finance.yahoo.com. The following is the calculation of weekly return of Composite Stock Price Index.
   
   To calculate weekly return of Composite Stock Price Index, the following formula can be used:
   
   \[ R_m = \frac{\text{IHSG}_t - \text{IHSG}_{t-1}}{\text{IHSG}_{t-1}} \]

3. **Calculation of Average Weekly BI Rate**
   
   Certificate of Bank Indonesia or BI rate is set by Bank Indonesia, in this study, it will serve as a risk-free rate. A weekly average of BI rate is obtained by the following calculation:
   
   a. **Calculate weekly return of BI rate**
      
      The first step before calculating weekly return is calculating the daily return of BI rate by the following formula:
      
      \[ R_f = \frac{\text{BI Rate}_n}{n} \]
   
   b. **Calculate Weekly Average Return of Risk-Free Investment**
      
      After the return of the BI rate per week is known, then to calculate the average weekly return of a risk-free investment the following formula is used:
      
      \[ R_f = \frac{\sum R_f}{n} \]

4. **The calculation of Standard Deviation**
   
   Standard deviation is a variable that must be determined before calculating mutual fund performance and the benchmark performance by Sharpe method. Calculation of standard deviation can be done using Microsoft Excel or the following formula:
   
   \[ \sigma = \frac{\sum (X - \mu)^2}{n - 1} \]
   
   \[ \mu = \frac{\sum X}{n} \]

5. **The Calculation of Beta**
   
   Beta is a variable that must be found before calculating the performance of mutual funds and the performance of the benchmark by using Treynor method. Beta (\( \beta \)) can be calculated by the following formula:
   
   \[ \beta = \]

6. **Performance Measurement by Sharpe Method**
   
   Performance measurement, by this method, is based on a premium over the risk or the so-called risk premium.
Table 1
Results of Study by Sharpe Method

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The above table shows that in 2013 there were 11 stock mutual funds which are outperform over the benchmark. In 2014, all stock mutual funds had positive performance and outperform over the benchmark. In 2015, there were six stock mutual funds which are outperforming over the benchmark. The greater the results obtained, the better the performance of stock mutual fund because it provides a high return on individual risk incurred. A mutual fund that has a positive value and outperform over the performance of Composite Stock Price Index is the most appropriate for investment.

7. Performance Measurement by Treynor Method

Treynor method is similar to the method Sharpe, i.e. share in the use of risk premium, but the difference is that in Treynor method divisor beta (β) is used which is the risk of fluctuation, relative to market risk.

Table 2
Results of Study by Treynor Method

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8. Performance Measurement by Jensen Method

Jensen method is based on the development of Capital Asset Pricing Model (CAPM). In contrast to measurement by Treynor method which uses the average performance for certain sub-period, Jensen method uses data every period of time. In Jensen method, the higher positive value of α (alpha), the higher, or the better, the performance of mutual funds. Jensen method is to assess the performance above the market's performance in accordance with its risk.
In the calculation using the method of Jensen, which is shown in the table above, it appears that in 2013 there were 9 stock mutual funds which outperform over the benchmark. In 2014 there were 7 mutual fund shares that have a positive performance and outperform over the benchmark. While in 2015 there were 2 stock mutual funds which outperform over the benchmark. The greater the results obtained, the better the performance of stock mutual funds because it provides a high return on individual risk incurred. A mutual fund that has a positive value and outperform over the performance of Composite Stock Price Index is the most appropriate for investment.

IV. CONCLUSIONS

The results of this study indicate that by Sharpe method, in 2013, there were 7 stock mutual funds had a positive performance, and 11 stock mutual funds which are outperform over the benchmark. In 2014 all stock mutual funds had positive performance and outperform over the benchmark. In 2015 there was no stock mutual fund had positive performance and there are 6 stock mutual funds which is outperform over the benchmark.

In the method of Jensen, in 2013 there were 9 stock mutual funds which outperform over the benchmark. In 2014 there were 7 stock mutual funds which are outperform over the benchmark. While in 2015 there were 2 stock mutual funds which outperform over the benchmark.

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