

# Mutual performance assessment model: Comparative analysis

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## Abstract

This study aims to determine the comparison of mutual funds performance between stock mutual funds, fixed income mutual funds and mixed mutual funds in 2015-2017 using the Jensen, Sharpe, Treynor and Black models. Using purposive sampling method, this study used a sample of 30 mutual funds consisting of 10 equity funds, 10 fixed income mutual funds, and 10 mixed mutual funds during 2015-2017. The data analysis used to test the hypothesis was the One Way ANOVA test and the Kruskal-Wallis test. The results showed that there was no difference in performance between stock mutual funds, fixed income mutual funds, and mixed mutual funds in 2015-2017 which were analyzed using the Jensen, Sharpe, and Treynor models, there was a difference in performance between stock mutual funds, fixed income mutual funds, and mixed mutual funds in 2015-2017 were analyzed using the Treynor and Black models.

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## Introduction

Investment is a way to benefit from the capital owned by someone in the future. Investing can be done in real assets and financial assets. Investing in real assets has always been commonplace. However, today many people are already interested in investing in financial assets. There are various kinds of instruments contained in financial assets, such as stocks, bonds, sukuk, and mutual funds. Direct investment can be made by buying stocks or bonds, because it is done directly without intermediaries. Unlike the case with mutual funds, which are done with intermediaries or through third parties. Getting a lot of profit from an investment is something that many people really want, especially with a small risk and not too much capital.

Mutual funds are the right choice for someone who does not want a big risk and can be done by someone with a small capital. This is because mutual funds include investments that are diversified in nature or placement in various types of securities in the capital market. Rudiyanto (2015) classifies mutual funds into four parts, these mutual funds include: money market mutual funds, fixed income mutual funds, equity mutual funds, and mixed mutual funds. Money market mutual funds are mutual funds that invest 100% in securities with maturities of less than one year. Fixed income mutual funds are mutual funds that invest a minimum of 80% in debt securities provided that the debtor will pay a number of coupons and principal of the loan within the agreed period. Equity mutual funds are mutual funds that invest a minimum of 80% in stocks, while mixed mutual funds are mutual funds that must invest based on the composition of the money market, bonds and stocks with a maximum requirement of 79% in each instrument.

Various studies related to mutual funds have often been done before, such as research conducted by Ayaluru (2016) in India regarding a comparative study of mutual fund performance regarding mutual fund risk and return using the 10 highest performance schemes offered by Reliance Mutual Funds using the Jensen, Sharpe, and Treynor methods. The results of this study are that among the selected mutual funds, Reliance SmallCap is considered a mutual fund with moderate risk and moderate returns. Meanwhile, Reliance Bank is considered a high risk mutual fund with high returns. Research conducted by Puspita (2016) regarding a comparative analysis of the performance of equity mutual funds with protected mutual funds in Indonesia using the Sharpe, Treynor, Jensen, and Treynor and Black methods in 2013-2015 states that the best stock mutual

funds performance in 2013 is Pratama Saham, while in 2014 is Batavia Dana Saham Optimal, and the year 2015 is Schroder Dana Prestasi Dinamis. In Indonesia, as research conducted by Rustendi (2017) states that at the 95% level of confidence in real return of fixed income mutual funds, stock mutual funds and mixed mutual funds in 2013 are not significantly different. Research conducted by Santosa and Sjam (2012) states that the performance of mutual fund products using the Jensen, Sharpe, Treynor, M2, and Information Ratio methods are considered to be performing well because there are mutual fund products that have a return value above the market. Research conducted by Septiyani (2016) which compared the performance of stock mutual funds, fixed income mutual funds, and mixed mutual funds in 2012-2014 using the Sharpe method found that there was no difference between the performance of stock mutual funds, fixed income mutual funds, and mixed mutual funds.

Research conducted by Yuliaty's (2013), compared the performance of mutual funds in May-August 2010 using the Treynor, Sharpe, Jensen, and Treynor and Black models with random results on the Sharpe and Treynor and Black models. This is because both models use total risk, but the Treynor and Black models use total risk combined with market risk. Another result of Yuliaty's (2013) research states that the Treynor and Jensen models will produce the same conclusion in the ranking of mutual fund selection conclusions, this is because they both use market references to calculate mutual fund risk.

Research conducted by Sari (2015) analyzed the comparison of the performance of stock mutual funds, fixed income mutual funds, and mixed mutual funds in 2012-2014 using the Sharpe, Treynor, and Jensen methods which obtained results that only with the Sharpe method were there differences between equity funds and mutual funds, fixed income, and mixed mutual funds. Research conducted by Astria (2014) states that there is no significant difference between the performance of fixed income mutual funds and mixed mutual funds and between the performance of equity funds and mixed mutual funds in the Jensen model. In addition, there is a significant difference between the performance of fixed income mutual funds with stock mutual funds, the performance of fixed income mutual funds with mixed mutual funds, and stock mutual funds with mixed mutual funds on the Treynor model and Sharpe model.

The performance of a mutual fund is a benchmark in choosing an investment in mutual funds. Thus, potential investors must know the performance of the mutual funds that will be selected as their investment. For those who do not have the knowledge and skills regarding mutual fund performance, it will result in errors in making investment decisions. In addition, many investors and potential investors do not have the time to assess the performance of a mutual fund. They sometimes immediately entrust someone without knowing the performance of a mutual fund first.

Based on the background of the problems above, the researcher is interested in comparing the performance of mutual funds. The mutual funds that will be selected are equity funds, fixed income mutual funds, and mixed mutual funds from 2015 to 2017 using Jensen's Model, Sharpe's Model, Treynor's Model and Treynor's Model and Black's Model. The three mutual funds are quite dominant mutual funds (Rustendi, 2017). This study is different from previous studies which only used two or three methods, but this study used four methods. It could be that different findings will be obtained if you use four analysis methods, namely: Jensen's model, Sharpe's model, Treynor's model and Treynor's model. The purpose of this study was to determine whether there is a difference in performance between stock mutual funds, fixed income mutual funds, and mixed mutual funds in 2015-2017 using Jensen's model, Sharpe's model, Treynor's model and Treynor's model and Black's model.

## Literature Review and Hypotheses Development

Investment is a very important part of financial planning in order to maximize the potential for money and achieve financial goals (Lina, 2015). Wijaya (2017) defines that mutual funds are a forum and pattern of managing a fund or capital for a group of investors to invest in investment instruments available in the market by buying a mutual fund unit, then the funds are managed by an investment manager into an investment portfolio whether stocks, bonds, money market or other securities or securities. Rudiyanto (2015) classifies mutual funds into four parts, these mutual funds

include: money market mutual funds, fixed income mutual funds, equity mutual funds, and mixed mutual funds. The following is an explanation of each type of mutual fund:

- a. Money market mutual funds are mutual funds that invest 100% in securities with maturities of less than one year. Examples are deposits, savings accounts, bonds with maturities of less than one year, and bonds issued with maturities of less than one year.
- b. Fixed income mutual funds are mutual funds that invest a minimum of 80% in debt securities provided that the debtor will pay a number of coupons and principal of the loan within the agreed period.
- c. Equity mutual funds are mutual funds that invest a minimum of 80% in stocks. These mutual funds are among the most difficult mutual funds to adapt to an economic cycle. Equity mutual funds will experience a decline in a state of depression and will experience triumph in economic recovery conditions (Samsul, 2015).
- d. Mixed mutual funds are mutual funds that must invest based on the composition of the money market, bonds and stocks with a maximum requirement of 79% in each instrument. According to Samsul (2015), this mutual fund is the most flexible mutual fund in adjusting to any economic conditions, this is because it can drastically shift from stocks to bonds or from bonds to stocks.

According to Rustendi (2017), mutual fund performance is the level of success or ability of an investment manager in anticipating changes in the price of a security by investing funds from an investment in a timely manner and will provide benefits in the future. Mutual fund performance assessments must also show the trade-off between returns and risks of a mutual fund (Rofiq, 2015).

## Research Methods

The population that will be used in this research is all equity funds, fixed income mutual funds, and mixed mutual funds registered with the OJK (Financial Services Authority) from January 2015 to December 2017. The sampling technique in this study uses purposive sampling. The selected sample was 30 mutual funds, consisting of 10 equity funds, 10 fixed income mutual funds, and 10 mixed mutual funds. The data source in this study used secondary data, while the data collection method used in this study was the documentary method. Apart from the documentary method, this research also uses online data retrieval methods. The data needed in this study are the monthly NAV of mutual funds, the JCI monthly data, and the monthly data on SBI interest rates for 2015-2017.

The performance evaluation of stock mutual funds, fixed income mutual funds, and mixed mutual funds in this study used Jensen's model, Sharpe's model, Treynor's model, and Treynor's and Black's model. The following is the formula for each model:

- a. Jensen's Model, Treynor's model and Sharpe's model can accept mutual funds with positive excess returns, but Jensen's model can only accept mutual funds with returns that are above the expected return. The following is the formula of Jensen's model:

$$\text{Jensen's model} = \bar{R}_p - [\bar{R}_f + \beta (\bar{R}_m - \bar{R}_f)]$$

where:

$\bar{R}_f$  = Risk free

$\bar{R}_p$  = Average return portofolio

$\bar{R}_m$  = Average return market

$\beta$  = Beta

- b. Sharpe's Model

According to Sharpe, mutual fund performance in the future can be predicted using two measures, namely the expected rate of return and the predicted variability of risk which is expressed as the standard deviation of return. The following is a formula from Sharpe's model:

$$R / V_s = (\bar{R}_p - \bar{R}_f) / \sigma_p$$

where:

$R / V_s$  = Reward to variability ratio of Sharpe model

$\bar{R}_p$  = Average portfolio return

$\bar{R}_f$  = Risk free rate

$\sigma_p$  = Standard deviation of portfolio returns

c. Treynor's Model

In evaluating mutual fund performance, Treynor uses past average return as expected return and uses beta as a measure of risk. Beta shows the size of the change in the return of a mutual fund on the market return. The following is the formula of Treynor's model:

$$R / V_t = (\bar{R}_p - \bar{R}_f) / \beta_p$$

where:

$R / V_t$  = Reward to volatility of the Treynor model

$\bar{R}_p$  = Average portfolio return

$\bar{R}_f$  = Risk free rate

$\beta_p$  = Beta portfolio as a measure of risk

d. Treynor's and Black's Model

Treynor's and Black's model really pay attention to market risk or market risk as well as specific risk or specific risk. This model in the calculation uses alpha divided by the specific risk. Alpha is obtained from the average return reduced by the minimum return. Treynor and Black's Model are also called appraisal ratios with the following formula:

$$\text{Appraisal ratio} = \alpha_p / \sigma(\bar{\epsilon}_p)$$

where:

$\alpha_p$  = Alpha portfolio

$\sigma(\bar{\epsilon}_p)$  = Portfolio specific risk, standard deviation of errors

## Results and Discussion

In this study, the data analysis method used was to test the homogeneity of variances and hypothesis testing was carried out by one way ANOVA and Kruskal-Wallis tests. The homogeneity of variances test aims to determine whether or not it has the same variance in the sample used. If the sample does not have the same variance, then One Way ANOVA cannot be performed. Testing on samples that do not have the same variance will be tested with the Kruskal-Wallis test. Based on the homogeneity of variances test, tests that can be done using the One Way ANOVA test are Jensen's model and Treynor's model. Meanwhile, Sharpe's model and Treynor's and Black's model used the Kruskal-Wallis test. Hypothesis testing is as follows:

a. Testing of equity funds, fixed income mutual funds, and mixed mutual funds using Jensen's model.

H01: There is no significant difference in performance between equity funds, fixed income mutual funds, and mixed mutual funds with Jensen's model.

Ha1: There is a significant difference in performance between equity funds, fixed income mutual funds, and mixed mutual funds with Jensen's model.

The results of the One Way ANOVA test based on Jensen's model of the variable stock mutual funds, fixed income mutual funds, and mixed mutual funds are as follows:

**Table 1.** One Way ANOVA Jensen's Model Test Results

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.536	2	.268	2.097	.129
Within Groups	11.124	87	.128		
Total	11.660	89			

Resource: output SPSS 21, 2018

Based on the One Way ANOVA test results table, it can be seen that the significance value is 0.129, the value is above the alpha value = 0.05 or  $0.129 > 0.05$ , meaning that H01 is accepted, then there is no difference in performance between equity funds, fixed income mutual funds, and mutual

funds. mix on Jensen's model. a. Testing of stock mutual funds, fixed income mutual funds, and mixed mutual funds with Sharpe's model. H02: There is no significant difference in performance between equity funds, fixed income mutual funds, and mixed mutual funds with Sharpe's model. Ha2: There is a significant difference in performance between stock mutual funds, fixed income mutual funds, and mixed mutual funds with Sharpe's model. The Kruskal-Wallis test results based on Sharpe's model of the variable stock mutual funds, fixed income mutual funds, and mixed mutual funds are as follows:

**Table 1.** Kruskal-Wallis Sharpe's Model Test Results

	Sharpe's
Chi-Square	4.335
df	2
Asymp. Sig.	.114

Resource: output SPSS 21, 2018

Based on the table of Kruskal-Wallis test results, it can be seen that the significance value is 0.114, the value is above the alpha value = 0.05 or  $0.114 > 0.05$ , meaning that H02 is accepted, then there is no difference in performance between equity funds, fixed income mutual funds, and mutual funds. mix on Sharpe's model.

- b. Testing of equity funds, fixed income mutual funds, and mixed mutual funds with Treynor's model.  
 H03: There is no significant difference in performance between equity funds, fixed income mutual funds, and mixed mutual funds with Treynor's model.  
 Ha3: There is a significant difference in performance between equity funds, fixed income mutual funds, and mixed mutual funds with Treynor's model.

The results of the One Way ANOVA test based on Treynor's model of the variable stock mutual funds, fixed income mutual funds, and mixed mutual funds are as follows:

**Table 2.** One Way ANOVA Treynor's Model Test Results

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.000	2	.000	.777	.463
Within Groups	.013	87	.000		
Total	.013	89			

Resource: output SPSS 21, 2018

Based on the One Way ANOVA test results table, it can be seen that the significance value is 0.463, the value is above the alpha value = 0.05 or  $0.463 > 0.05$ , meaning that H03 is accepted, so there is no difference in performance between equity funds, fixed income mutual funds, and mutual funds. blends on Treynor's model. a. Testing of stock mutual funds, fixed income mutual funds, and mixed mutual funds with Treynor's and Black's models. H04: There is no significant difference in performance between equity funds, fixed income mutual funds, and mixed mutual funds with Treynor's and Black's models. Ha4: There is a significant difference in performance between stock mutual funds, fixed income mutual funds, and mixed mutual funds with Treynor's and Black's models. The results of the Kruskal-Wallis test based on Treynor's and Black's model of the variable stock mutual funds, fixed income mutual funds, and mixed mutual funds are as follows:

**Table 3.** Kruskal-Wallis Treynor's and Black's Model Test Results

	Treynor's dan Black's
Chi-Square	15.977
df	2
Asymp. Sig.	.000

Resource: output SPSS 21, 2018



Based on the table of the Kruskal-Wallis test results, it can be seen that the significance value is 0.000, this value is below the alpha value = 0.05 or  $0.000 < 0.05$ , meaning that H04 is rejected, then there is a difference in performance between equity funds, fixed income mutual funds, and mutual funds. a mix on Treynor's and Black's models.

Comparison of the performance of equity mutual funds, fixed income mutual funds, and mixed mutual funds using Jensen's Model Based on the results of research using the One Way ANOVA test on the performance of equity funds, fixed income mutual funds, and mixed mutual funds using Jensen's model, it has a significance value of 0.129. The significance value is above alpha, which is 0.05, which means that there is no significant difference between the performance of equity funds, fixed income mutual funds, and mixed mutual funds using Jensen's model. When viewed from the average performance of each variable, the average stock mutual fund performance in Jensen's model is 0.00074, while the average fixed income mutual fund performance is 0.00432 and the average mixed mutual fund performance is 0.00387.

The three mutual funds performance averages show that the difference is not too far away, meaning that this result has not been tested significantly for the three mutual funds using Jensen's model. This research is supported by Sari's research (2015) which analyzes the performance comparison of stock mutual funds, fixed income mutual funds and mixed mutual funds in 2012-2014. The result of the research is that there is no difference in performance between equity funds, fixed income mutual funds, and mixed mutual funds using Jensen's model. In addition, it is also supported by research conducted by Yuliaty (2013) which states that the Jensen model will produce the same conclusions in the ranking of mutual fund selection conclusions, this is because it uses market references to calculate mutual fund risk.

a. Comparison of the performance of equity funds, fixed income mutual funds, and mixed mutual funds using Sharpe's Model.

Based on the results of research using the Kruskal-Wallis test on the performance of stock mutual funds, fixed income mutual funds, and mixed mutual funds with Sharpe's model has a significance value of 0.114. The significance value is above alpha, which is 0.05, which means that there is no significant difference between the performance of equity funds, fixed income mutual funds, and mixed mutual funds using Sharpe's model. When viewed from the average of each variable, the average stock mutual fund performance on Sharpe's model is 0.19463, while the average performance of fixed income mutual funds is 0.34094 and the average mixed mutual fund performance is 0.16408. The three mutual funds performance averages show that the difference is not too far away, meaning that this result is tested there is no significant difference in the three mutual funds using Sharpe's model.

This research is supported by research by Septiyani (2016) regarding a comparative analysis of the performance of equity mutual funds, fixed income mutual funds, and mixed mutual funds in Indonesia in 2012-2014. The result of the research is that there is no difference in performance between equity funds, fixed income mutual funds, and mixed mutual funds using Sharpe's model. Unlike the case with research conducted by Sari (2015) regarding the comparative analysis of the performance of equity mutual funds, fixed income mutual funds, and mixed mutual funds in 2012-2014. The results of the research are that there are differences in the performance of equity funds, fixed income mutual funds, and mixed mutual funds using Sharpe's model.

b. Comparison of the performance of equity mutual funds, fixed income mutual funds, and mixed mutual funds using Treynor's Model.

Based on the results of research using the One Way ANOVA test on the performance of equity funds, fixed income mutual funds, and mixed mutual funds with Treynor's model, it has a significance value of 0.463. The significance value is above alpha, which is 0.05, which means that there is no significant difference in performance between equity funds, fixed income mutual funds, and mixed mutual funds using Treynor's model. When viewed from the average of each variable, the average stock mutual funds performance in Treynor's model is -0.00574,

while the average performance of fixed income mutual funds is 0.03005 and the average mixed mutual funds performance is -0.00037.

The three mutual funds performance averages show that the difference is not too far away, meaning that this result has not been tested significantly for the three mutual funds using Treynor's model. This research is supported by Sari's research (2015) regarding the comparative analysis of the performance of equity mutual funds, fixed income mutual funds, and mixed mutual funds in 2012-2014. The result of the research is that there is no difference in performance between equity funds, fixed income mutual funds, and mixed mutual funds using Treynor's model. In addition, this study is also supported by research conducted by Yuliaty (2013) which states that the Treynor model will produce the same conclusions in the ranking of mutual fund selection conclusions, this is because it uses market references to calculate mutual fund risk.

- c. Comparison of the performance of equity mutual funds, fixed income mutual funds, and mixed mutual funds using Treynor's and Black's Model.

Based on the results of research using the Kruskal Wallis test on the performance of stock mutual funds, fixed income mutual funds, and mixed mutual funds with Treynor's and Black's model, it has a significance value of 0.000. The significance value is below alpha, namely 0.05, which means that there is a significant difference in performance between equity funds, fixed income mutual funds, and mixed mutual funds. by using Treynor's and Black's model. When viewed from the average of each variable, the average stock mutual fund performance in Treynor's model is 5.64753, while the average fixed income mutual fund performance is 35.15755 and the average mixed mutual fund performance is 6.08091. The three mutual funds performance averages show that the difference is too far away, meaning that these results test that there are significant differences in the three mutual funds using Treynor's and Black's models.

This study also states that the best stock mutual fund performance based on Treynor's and Black's 2015 model is Schroder Dana Prestasi Plus, while 2016 and 2017 is the OSO Sustainability Fund. This research is supported by research conducted by Puspita (2016) which states that the best stock mutual fund performance in 2013 is Pratama Saham, while in 2014 it is Batavia Dana Saham Optimal, and in 2015 is Schroder Dana Prestasi Dinamis. That is, research conducted by the author and conducted by Puspita (2016) states that the best stock mutual funds performance based on Treynor's and Black's 2015 model are mutual funds from Schroder Investment Management Indonesia. This research is also supported by research by Yuliaty (2013) which compared the performance of mutual funds in May-August 2010 using the Treynor, Sharpe, Jensen, and Treynor and Black models with random results on the Treynor and Black models. This is because the model uses total risk combined with market risk.

## Implication and Conclusion

Based on the results of data analysis and discussion of research results to determine the differences between the performance of stock mutual funds, fixed income mutual funds, and mixed mutual funds in 2015-2017 using Jensen's model, Sharpe's model, Treynor's model, and Treynor's and Black's model, the following conclusions can be drawn:

1. Based on the results of Jensen's One Way ANOVA test, the significance value is 0.129 which shows a greater value than 0.05, meaning that there is no difference in performance between equity funds, fixed income mutual funds, and mixed mutual funds using Jensen's model.
2. Based on the results of the Kruskal-Wallis test on Sharpe's model, the significance value is 0.114 which shows a value greater than 0.05, meaning that there is no difference in performance between equity funds, fixed income mutual funds, and mixed mutual funds using Sharpe's model.
3. Based on the results of the One Way ANOVA test on Treynor's model, the significance value is 0.463 which shows a greater value than 0.05, meaning that there is no difference in performance between equity funds, fixed income mutual funds, and mixed mutual funds using Treynor's model.
4. Based on the results of the Kruskal-Wallis test on Treynor's and Black's models, the significance value is 0,000 which shows a smaller value than 0.05, meaning that there is a

difference in performance between stock mutual funds, fixed income mutual funds, and mixed mutual funds using Treynor's and Black's models.

Based on the results of research conducted by researchers, there are several implications the researcher wants to convey, namely as follows:

1. For Investors

Investors who want to invest in mutual fund products should know the performance of the mutual funds to be purchased and consult with investment managers or parties who are more knowledgeable about mutual funds so that mistakes and regrets do not occur after investing in mutual fund products.

2. For Further Researchers

For further researchers, it is better to use an assessment method other than the four methods that the author has done in this study. In addition, the period of years is much longer than the author did in this study and not only use stock mutual funds, fixed income mutual funds, and mixed mutual funds, but other types of mutual funds should also be used in further research.

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