

Comparative Analysis of the Performance between Sharia and Conventional Equity Mutual Funds Using Sharpe and Treynor Method

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Abstract:- This study aims to determine the performance comparison between sharia and conventional equity mutual funds for the period 2016-2020 used Sharpe and Treynor methods. The samples in this study are sharia and conventional equity mutual funds that have managed funds between 100-500 billion Rupiah, and managed by the same Investment Manager. This type of research is descriptive quantitative research with comparison. The research method used is the Independent Sample t-Test and Mann Whitney u-Test. Furthermore, data processing is carried out using the Eviews 10 application. The results showed that there was a significant difference between the average return of sharia and conventional equity mutual funds using the Sharpe method, while using the Treynor method, there was no significant difference. Thus, it is hoped that this research can be one of the considerations for investors in choosing equity mutual funds to invest in accordance with the risk profile and expected rate of return of each investor.

Keywords:- Equity Mutual Funds, Independent Sample T-test, Mann Whitney U-test, Sharpe, and Treynor.

I. INTRODUCTION

There's no one who can definitely know good or bad economic conditions in the future, including economists. Currently the world is facing the Covid-19 pandemic which has made many countries experience an economic crisis, even for countries with strong economic fundamentals. One way that humans do to ensure that their primary, secondary, or tertiary needs are met in the present and future is by investing, in carrying out investment activities, it is never separated from two things, namely return and risk.

Mutual funds as an alternative investment to get a competitive rate of return adjusted to the risk profile of investors, even if the investor or potential investor does not have the skills to manage a profitable portfolio of mutual funds.

Indonesia as a country with the largest Muslim population in the world, then investment products based on sharia principles, especially sharia mutual funds also experience growth, based on statistics released by the Directorate of Sharia Capital Markets of the Indonesia Financial Service Authority (OJK) that in 2020 the percentage of the number of sharia mutual funds to the total number of mutual funds recorded at the OJK has increased, namely 289 sharia mutual funds from a total of 2,219 mutual funds or

13.02% compared to 2019, which recorded 265 sharia mutual funds from a total of 2,181 mutual funds or 12.15%.

The presence of sharia mutual funds can be an investment choice for people who want to invest their funds according to Islamic/sharia principles. There are several different things between sharia and conventional mutual funds, among other things, the collected money is managed based on sharia principles, there is a cleansing process, and sharia mutual funds are supervised by 2 parties that is OJK and Sharia Supervisory Board (DPS) from each Investment Manager company.

The measurement of mutual fund portfolio performance that includes the element of risk that is generally widely used is the Sharpe, Treynor, and Jensen methods. The Sharpe method is measured by comparing the return and risk of a portfolio known as the standard deviation. Therefore, the Sharpe method is more suited to a well-diversified portfolio of mutual fund products, because it is more accurate in calculating the risk of mutual fund products.

The Treynor method aims to find performance measures that are applied to many investors without considering the risk profile. He also suggests using the risk component of market fluctuations and the risk arising from fluctuations in individual securities.

There are differences in the results of previous studies comparing performance of sharia and conventional equity mutual funds, some previous studies have stated that sharia equity mutual funds have better performance than conventional equity mutual funds, some other studies say that sharia equity mutual funds have a worse performance than conventional equity mutual funds, there are also research results that conclude there is no significant difference between the performance of sharia and conventional equity mutual funds. With the differences in the results of the study, it also attracted the attention of author to conduct research on this matter for the 2016-2020 period for equity mutual funds that have managed funds between 100-500 billion Rupiah.

At the end of 2019, capital market industry players and the public in Indonesia were shocked by the case that happened to the insurance company Jiwasraya, which is a state-owned insurance company. The case has harmed many parties other than the company itself and its customers, has also harmed the state, and lost investor confidence in the capital market, because it has placed part of its investment in equity or conventional mutual funds.

Based on this description, the author is interested in bringing up the title "Comparative Analysis of the Performance between Sharia and Conventional Equity Mutual Funds Using Sharpe and Treynor Method "

II. TEORITICAL REVIEW

Definition of portfolio according to (Jogiyanto 2014) as a collection of financial assets in a unit owned by an investor, investment company / financial institution. A portfolio investment is an investment in two or more assets. Investment Managers who manage mutual funds need to apply the portfolio concept by diversifying to reduce the possible risks that occur in managing mutual funds. Investment diversification is one strategy to reduce risk in the sense that investors invest their money in various investment instruments (Zubir 2013).

Investment according to (Quadratullah 2019) can be classified in 2 forms, namely investment in (1) financial assets or financial assets such as stocks, bonds, or mutual funds (2) investment in real assets such as buying buildings, machines, or knowledge used to produce goods and/or services.

Referring to the Capital Market Law No. 8 of 1995 that "Mutual Funds are containers used to collect funds from the investor community to be further invested in securities portfolios by investment managers". According to (Coleman 2016) mutual fund investment is an important topic because mutual funds are one of the largest groups of investors, and in some developed countries own a third or more of equity. Most investments are contracted through mutual funds, which have large resources and skilled managers. Based on the management principle, there are 2 types of mutual funds, namely sharia and conventional mutual funds.

According (Nanang and Marsoem 2019) that conventional Mutual Funds are mutual funds that can invest in all types of securities such as stocks, bonds and deposits, with investment restrictions as determined by the Financial Services Authority. Meanwhile, Sharia mutual funds are mutual funds that can only invest in securities that are in accordance with Sharia principles in the capital market and also the investment limits set by the the Financial Services Authority.

III. METHOD

The author uses descriptive quantitative research methods with comparative studies, the sampling technique using purposive sampling technique.

The population used in this study is sharia and conventional equity mutual funds registered with the OJK for the 2016-2020 period, and has asset under management between 100 billion to 500 billion Rupiah at the end of December 2020. The population of sharia equity mutual funds is 12 while the conventional one is 42. While the sample is mutual funds that are active from 2016 to 2020, publish monthly NAV data, is one of the mutual fund products managed by the same Investment Manager.

The purposive sampling technique used as the sample selection was adjusted to the known population characteristics. The steps taken to determine the sample are:

- Choose sharia and conventional equity mutual funds that have received an effective statement since 2016 and have not been disbanded until the end of 2020.
- The sample owns and publishes monthly NAV data from 2016 to 2020.
- The sample selected for each mutual fund, both sharia and conventional, amounted to 1 mutual fund product managed by the same Investment Manager.

Based on the criteria of the target population above, the author chose based on purposive sampling 7 (seven) sharia and conventional equity mutual funds as samples in this study.

There are 2 (two) approaches that have been used in evaluating the performance of portfolio managers, namely a single index performance measure and return attribution model. Despite its popularity, single index performance measures do not determine how or why portfolio managers may have outperformed or underperformed against their benchmarks. Two popular measures are the Sharpe ratio and the information ratio.

Sharpe ratio measurement is done by comparing the risk premium portfolio, namely the difference between the average return on the mutual fund portfolio minus the risk free rate using the standard deviation as the denominator. Sharpe's ratio is formulated as follows:

$$\text{Sharpe Ratio (SR)} = \frac{(R_p - R_f)}{\sigma_p}$$

Description:

R_p : Return of portfolio during the observation period.

R_f : The level of return of the risk-free instrument during the observation period.

σ_p : Standard deviation of portfolio.

The Treynor ratio is also calculated based on risk premiums such as the Sharpe ratio. However, in the treynor ratio used as the denominator is beta (β) which is the risk of fluctuations relative to the market. The Treynor ratio is formulated as follows:

$$\text{Treynor Ratio (TR)} = \frac{(R_p - R_f)}{B_p}$$

Description:

R_p : Return of portfolio during the observation period.

R_f : The level of return of the risk-free instrument during the observation period.

B_p : Beta of portfolio.

The normality test in this study uses the Eviews 10 application, namely the Jarque-Berra Test (JB Test) with a significant level (α) 5%, then if the p-value > significant level (α), then H_0 is accepted, meaning that the residual data is normally distributed, and if the p-value < the real level (α), then

H_1 is accepted, meaning that the residual data is not normally distributed.

Homogeneity test to find out data from research results in two groups or populations have different or the same variance values. The variance value is said to be homogeneous if the significance level ≥ 0.05 , if the significance level is < 0.05 then the data has a different variance value (not homogeneous). Test the homogeneity of the data with Eviews using Levene's Test.

Hypothesis testing in this study uses the Independent Sample T-test which is used to ascertain whether there is a significant difference between the two independent samples at the 5% (α) level assuming the data is normally distributed. If the data is not normally distributed, then the Mann Whitney U-test will be carried out to analyze whether there is a significant difference between 2 (two) independent samples and not normally distributed at a significance level (α) of 5%.

IV. RESULT AND DISCUSSION

In the following, the author presents the selected objects based on the criteria set in the research sample, for sharia equity mutual funds, i.e : Batavia Dana Saham Syariah, HPAM Syariah Ekuitas, Manulife Syariah Sektorial Amanah Kelas A, Principal Islamic Equity Growth Syariah, Sucorinvest Sharia Equity Fund, TRIM Syariah Saham, Treasure Saham Berkah Syariah. As for conventional equity mutual funds, i.e : Batavia Dana Saham Optimal, HPAM Ultima Ekuitas 1, Manulife Institutional Equity Fund, Principal Total Return Equity Fund, Sucorinvest Maxi Fund, TRIM Kapital, Treasure Fund Super Maxxi.

The results of the descriptive analysis showed that the amount of data used in this study was 70 data samples consisting of 35 samples from sharia equity mutual funds, while the other 35 samples came from conventional equity mutual funds. The following are the results of the descriptive analysis obtained, i.e :

- The average Sharpe index in sharia type mutual funds has a value of -0.6580, while the conventional type has a value of 0.2873, for the median value of the sharia type has a value of -0.0249 and the conventional type with a value of 0.0881. Sharia mutual funds have the highest maximum value of 7.1922, while the maximum value for conventional mutual funds is 9.4600. The minimum or lowest value of the sharia type is -18.6257, while the minimum value of the conventional type is -22.0373. The standard deviation obtained for the sharia type is 3.8158 and the conventional has a value of 4.7454.
- The Treynor index average between sharia and conventional equity mutual funds with the acquisition of sharia value is -0.2817, while conventional is -0.0608, the median value for the sharia type has a value of 0.0113 and the conventional type has a value of 0.0340. The maximum value of the Treynor index of sharia mutual funds is 0.7676 and the minimum value of sharia is -9.2364, while the maximum value for conventional mutual funds is 0.8731 and the minimum value for conventional mutual funds is -3.9951. The standard deviation of sharia mutual funds is

greater than that of conventional, which is 16004, while in conventional it is 0.7099.

The results of the normality test were carried out by the Jarque-Bera test with a significance level of $\alpha=0.05$, with the hypothesis H_0 being accepted if the mutual fund data were normally distributed, H_1 is accepted if the mutual fund data is not normally distributed.

Following are the results of the Jarque-Bera test for Sharpe and Treynor ratio data:

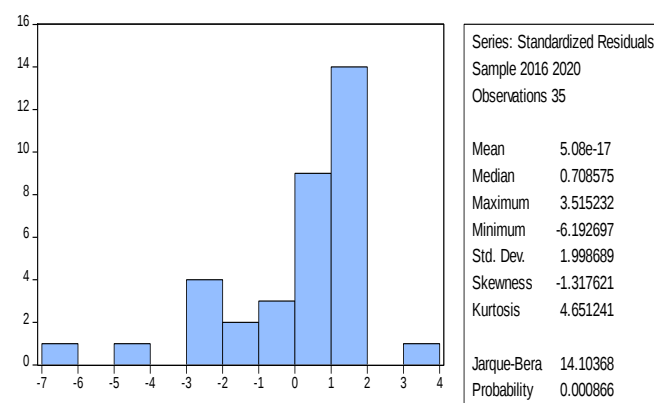


Fig.1 : Sharpe Ratio Normality Test With Jarque-Bera

The Jarque-Bera probability value for the Sharpe ratio is 0.000866 using the Random Effect Model. Selection of Random Effect Model after Sharpe ratio data was tested by Chow and Haussman tests. Because the probability value is smaller than the significance level of 0.05, This means that the assumption of normality is not met or H_1 is accepted, so that the Mann Whitney test can be carried out on hypothesis testing.

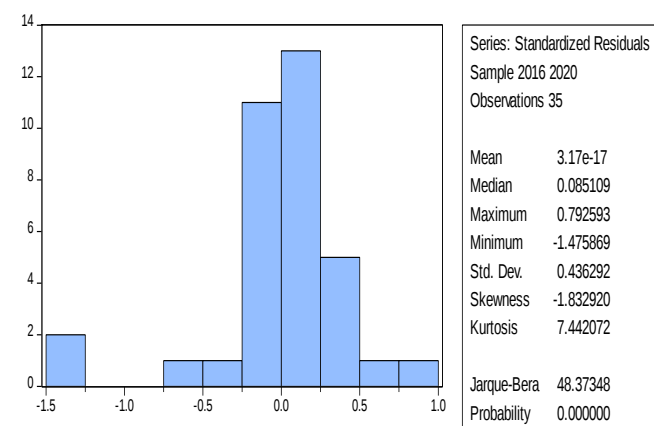


Fig. 2: Treynor Ratio Normality Test With Jarque-Bera

The Jarque-Bera probability value for the Treynor ratio is 0.000000 using the Common Effect Model. The selection of the Common Effect Model after the Treynor ratio data was tested with the Chow and Haussman tests. Because the probability value is smaller than the significance level, which is 0.05, this means that the normality assumption is not met or H_1 is accepted, so that in testing the hypothesis, the Mann Whitney test will be used.

Next, the author will present the results of the homogeneity test using the Levene test, which are as follows:

A. Test for Equality of Variances Between Series

Method	df	Value	Probability
F-test	(34, 34)	1.546594	0.208722
Levene	(1, 68)	0.237500	0.627584

Table I : Sharpe Ratio Homogeneity Test Results

The Sharpe variable has a calculated F value of 0.237500, a probability value of 0.627584, and a Ftable value in this study of 1.546594. Because the value of Fcount < Ftable (0.237500 < 1.546594) and the probability level is greater than (0.627584 > 0.05), then the Sharpe variable for the two populations is said to have the same variance and the hypothesis test will use the same population variance assumption (equal variance assumed).

B. Test for Equality of Variances Between Series

Method	df	Value	Probability
F-test	(34, 34)	5.081735	0.0000
Levene	(1, 68)	1.706393	0.1959

Table II : Treynor Ratio Homogeneity Test Results

The Treynor variable has an Fcount value of 1.706393, a probability value of 0.1599, and a Ftable value in this study of 5.081735. Because the value of Fcount < Ftable (1.706393 < 5.081735) and the probability level is greater than (0.1959 > 0.05), then the Treynor variable for the two populations is said to have the same variance and the hypothesis test will use the same population variance assumption (equal variance assumed).

Testing the hypothesis of this study using the Mann Whitney test because the sample data are not normally distributed. with the hypothesis H_0 is accepted if there is no significant difference between the performance of sharia and conventional mutual funds, and H_1 is accepted if there is a significant difference between the performance of sharia and conventional mutual funds.

In the following, the author present hypothesis testing using the Mann Whitney test for Sharpe and Treynor Ratios.

C. Test for Equality of Medians Between Series

Method		df	Value	Probability
Wilcoxon/Mann-Whitney			0.880957	0.3783
Variable	Count	Median	Mean	Std. Dev.
Sharia	35	-0.024900	-0.658014	3.815809
Convent	35	0.088100	0.287331	4.745423
All	70	0.070950	-0.185341	4.300894

Table III : Mann Whitney Test Results for Sharpe Ratio

From the table above, the results show that both the median value and the average Sharpe ratio of sharia equity mutual funds are negative, while conventional mutual funds are positive. Tests on the Sharpe ratio variable show a significance value greater than (0.3783 > 0.05). Thus, H_0 is rejected, which means that there is a significant difference between the performance of sharia equity mutual funds and conventional equity mutual funds based on the Sharpe method.

D. Test for Equality of Medians Between Series

Method		df	Value	Probability
Wilcoxon/Mann-Whitney			0.822226	0.4109
Category Statistics				
Variable	Count	Median	Mean	Std. Dev.
Sharia	35	0.011300	-0.281674	1.600405
Convent	35	0.034000	-0.060763	0.709943
All	70	0.015000	-0.171219	1.234027

Table IV : Mann Whitney Test Results for Treynor Ratio

From the table above, it is found that the median Treynor ratio of sharia and conventional equity mutual funds is positive, while the average value of both types of mutual funds is negative. Tests on the Treynor ratio variable show a significance value greater than (0.4109 > 0.05). Thus, H_0 is accepted, which means that there is no significant difference in performance between sharia equity mutual funds and conventional equity mutual funds based on the Treynor method.

V. CONCLUSION

The Sharpe index value using the Mann Whitney test for sharia equity mutual funds shows a median value of -0.024900 and an average value of -0.658014 while conventional equity mutual funds show a median value of 0.088100 and an average value of 0.287331, This shows that investing in conventional equity mutual funds will be more profitable than investing in sharia equity mutual funds, so that there is a significant difference in performance between the two types of mutual funds. The results of this study are in line with the results of research (Lestari 2015) which found that the performance of conventional equity mutual funds is better than the performance of sharia equity mutual funds based on the calculation of the Sharpe index, and there is a significant difference between the performance of conventional and sharia equity mutual funds.

The Treynor index value with the Mann Whitney test for sharia equity mutual funds shows a median value of 0.011300 and an average value of -0.281674 while conventional equity mutual funds have a median value of 0.034000 and an average value of -0.060763, This indicates that the two types of equity mutual funds on average provide lower returns than risk-free instruments. These results indicate that there is no difference in performance between sharia and conventional equity

mutual funds that are sampled in this study based on the Treynor index. The results of this study are in line with the results of research from (Nanang and Marosem 2019) that there is no significant difference between the performance of sharia and conventional equity mutual funds based on the calculation of the Treynor index.

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