Equity fund performance using persistence analysis

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Abstract

The research was carried out to determine and analyze the performance persistence of annual and biennial equity fund in 2016 - 2018 using the Sharpe and Sortino method. The population consists 101 equity funds. in 2016 65 samples calculated by Sharpe method and 54 samples calculated by Sortino method, in 2017 74 samples calculated by Sharpe method and 62 samples calculated by Sortino method , and in 2018 86 samples calculated by Sharp method and 74 samples calculated by Sortino method. Persistence testing using Malkiel's (Z-test), Brown's Goetzmann's odds ratio (OR), and Kahn's Rudd's X2 test. The results showed that there is persistence equity fund performance in 2016-2017 . But there is no persistence equity fund performance in 2017 - 2018 and 2016-2018 . This is due to changes in the performance of stock that affect the performance of equity fund.

Keywords: Persistence; malkiel's (z-test); brown's goetzmann's odds ratio (or); kahn's rudd's x test

INTRODUCTION

Investment is not a new thing for the people of Indonesia, the development of the times, the development of technology and information, the level of education and the level of income are also very influential in choosing the form of investment and can change the mindset of the community in the selection of investment instruments. Investing a number of funds in real assets (land, gold, machinery or buildings) and financial assets (deposits, stocks or bonds) are investment activities that are generally carried out for investors who are more willing to bear the risk, investment activities undertaken can include financial assets that are more complex such as warrants, options, and futures as well as international equity (Tandelilin, 2010: 2).

Mutual funds collect funds and reduce risk by diversifying. According to the Capital Market Law 1995 Article 1 paragraph 27 mutual funds are defined as a container used to collect funds from the investor community for further investment in securities portfolios by investment managers. Based on this concept, it is clear that mutual funds are a collection of funds from the public that are invested in stocks, bonds, time deposits, short-term debt instruments, and so on. These mutual funds have different names in various countries, in the United States known as Mutual funds, while in the UK are known as Unit Trusts, and in Japan are known as Investment Trusts (Darmadji and Fakhrudin, 2011: 166).

The available mutual funds in Indonesia vary depending on the securities instruments that make up the mutual fund portfolio. According to Darmadji and Fakhrudin (2011: 169) there are 4 types of mutual funds, namely: money market funds, fixed income funds, equity funds and mixed mutual funds

This research makes equity funds as research objects, because compared to other mutual funds, the value of net assets has increased every year. Equity funds provide a rate of return of around 16.76% per year if averaged for all equity funds offered to the people of Indonesia, while fixed income funds provide a rate of return of about 11.39% per year on average. Surely this rate of return is higher than depositing funds in banks with an average rate of return of around 5% per year (www.infovesta.com).

Research purposes

To find out whether or not there is a persistence in annual and biennial of equity funds performance using the Sharpe method.

To find out whether or not there is a persistence in annual and biennial of equity performance funds using the Sortino method.

Review of literature

Mutual funds are companies that receive money from savers and use it to buy shares, long-term bonds, or short-term debt instruments issued by businesses or government units. (Brigham and Houston, 2010: 197). Savers in question are investors.

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Money market funds are mutual funds that only invest in debt securities with maturities of less than one year. The aim is to maintain liquidity and maintain capital. Fixed income funds are fixed funds that invest at least 80% of their assets in the form of debt securities. This mutual fund has a relatively greater risk than money market funds. The aim is to produce a stable rate of return. Equity fund is a mutual fund that invests at least 80% of its assets in the form of equity securities. Because the investment is carried out in shares, the risk is higher than the previous two types of mutual funds but produces a high rate of return. Discretionary funds are mutual funds that invest in equity securities and debt securities Darmadji and Fakhrudin (2011: 169).

The Sharpe Index bases its calculations on the concept of a capital market line (capital market line) as a guideline that is by dividing the portfolio risk premium by its standard deviation. Thus the Sharpe index can be used to measure the risk premium for each unit of risk in the portfolio.

According to Sourd (2007: 31), the Sortino Ratio is in principle the same as the Sharpe Ratio, only the risk-free rate of return is replaced with the Minimum Acceptable Return (MAR) and the standard deviation is replaced with the standard return portfolio deviation below the MAR or commonly called the downside deviation.

Performance persistence is performance sustainability, where mutual funds are outperformed in an outperformed period in the next period, and mutual funds that are underperformed in an underperformed period in the next period. (Waelan, 2009: 222).

Waelan (2009) conducted a persistence research on the performance of equity funds using the Jensen model for performance measurement and Pearson correlation for persistence measurement. The results showed that there was performance persistence for monthly, quarterly, six monthly, annual, biennial and three year periods. Short-term performance is proven to provide little benefit for predicting the next period's performance. While long-term performance can be used to forecast performance in the next period.

Research conducted by Luiz Ferruz, José Luis Sarto and María Vargas (2003) who used the Sharpe model as a performance measurement and Malkiel's (Z-test), Brown's and Goetzmann's odds ratio (OR) and Kahn's and Rudd's X2 tests to test persistence. The results show that there is persistence at a significant level in the database used in the study. The history of mutual fund performance provided is an investment strategy that will yield higher returns than can be achieved if persistence does not occur.

Research methods

The object of this study were all equity funds listed on the Indonesia Stock Exchange for the period of 2016 - 2018. The population in this study were all equity funds listed on the Indonesia Stock Exchange in the 2018 period, totaling 101 mutual funds.

Data analysis techniques

The data analysis technique used in this study is a quantitative analysis used to analyze the performance of stock mutual funds with the Sharpe and Sortino method using the Microsoft Excel 2013 program and persistence test to determine whether there is persistence using the SPSS 21 program.

Persistency analysis

The persistence test researcher used the contingency table methodology based on comparison of performance ratings for two consecutive periods, to identify the two subsets of winners and losers based on the median, if mutual fund performance is above the median then includes "winners" winners and if it is below the median, then it includes "losing" losers (Luis Ferruz, 2003: 7). WW is the winner of the portfolio in two consecutive periods, WL is the portfolio which in the first period wins and the second period loses, LW is the portfolio which in the first period loses and the second period wins, LL is the portfolio that loses in two consecutive periods.

RESULTS AND DISCUSSION

Persistence test

After classifying equity funds with the winner loser method, then the test is using the Malkiel's (Z-test), Brown's and Goetzmann's odds ratio (OR) and Kahn's and Rudd's X^2 tests. The test is carried out to test whether the performance of equity funds in the annual and biennial periods is persistent. Based on the predetermined problem formulation, the results shown in tables 1 and 2 are as follows:

Table 1. Performance Persistence Test Results Based on the Sharpe Method First Annual Period (2016-2017), Second Annual (2017-2018), and Biennial (2016-2018)

Persistence	Malkiel	Brown Goetzmann			Kahn Rudd	
Period	Z test	ODD ratio	ln ODD ratio	σln ODD ratio	Z test	X^2 test
2016-2017	**2.121**	5.060	1.621	0.538	**3.016**	**9.608**
2017-2018	**1.151**	1.925	0.655	0.471	**1.389**	**1.947**
2016-2018	**1.061**	1.984	0.685	0.504	**1.360**	**1.868**

Table 2. Performance persistence test results based on the sartino method first annual period (2016-2017), second annual (2017-2018), and biennial (2016-2018)

Persistence	Malkiel	Brown Goetzmann				Kahn Rudd
Periode	Z test	ODD ratio	ln ODD ratio	σln ODD ratio	Z test	X^2 test
2016-2017	**2.117**	5.641	1.730	0.596	**2.902**	**8.963**
2017-2018	**0.180**	1.138	0.129	0.508	**0.254**	**0.065**
2016-2018	**0.192**	1.346	0.297	0.546	**0.544**	**0.297**

The persistence of annual performance of equity funds based on the sharpe method

The 2016-2017 annual performance showed a Malkiel Z test of 2,121. At the 5% significance level of the Z table value of 1.96, the calculated Z value> Z table value or 2.121> 1.96, persistence occurs. Whereas the value of Brown's and Goetzmann's Z tests was 3,016. At the 5% significance level the table Z value is 1.96, the calculated Z value> Z table value or 3.016> 1.96, then persistence occurs. And for the value of Kahn's and Rudd's X2 test is 9,608. At the 5% significance level, the X2 value of the table is 3.84, the calculated X2 value> X2 value of the table or 9,608> 3.84, then persistence occurs.

For the 2017-2018 persistence, the Malkiel Z test is 1,151. At the 5% significance level of the Z table value of 1.96, the calculated Z value < Z table value or 1.151 <1.96, there is no persistence. Whereas the value of Brown's and Goetzmann's Z tests was 1,389. At the 5% significance level of the Z table value of 1.96, the calculated Z value <Z table value or 1.389 <1.96, there is no persistence. And for the value of Kahn's and Rudd's X2 test is 1,947. At the 5% significance level X2 table value of 3.84, X2 value count <X2 table value or 1947 <3.84, then there is no persistence.

The results of the first annual persistence test (2016-2017) showed persistence and the second annual persistence test (2017-2018) showed no persistence, meaning that the annual performance of equity funds using the Sharpe method did not persistence.

The persistence of biennial performance of equity funds based on the sharpe method

The biennial performance of 2016-2018 shows the Malkiel Z test value of 1.061. At the 5% significance level of the Z table value of 1.96, the calculated Z value <Z table value or 1.061 <1.96, there is no persistence. As for the Brown's and Goetzmann's Z test values of 1,360. At the 5% significance level of the Z table value of 1.96, the calculated Z value <Z table value or 1,360 <1.96, then there is no persistence. And for the value of Kahn's and Rudd's X2 test of 1,868. At the 5% significance level, the X2 value of the table is 3.84, the X2 value is calculated <X2 table value or 1.868 <3.84, then no persistence can occur.

The results of the biennial persistence test (2016-2018) showed no persistence, meaning that the biennial performance of equity funds using the Sharpe method did not persistence.

The persistence of annual performance of equity funds based on the sortino method

The 2016-2017 annual performance showed a Malkiel Z test of 2,117. At the 5% significance level of the Z table value of 1.96, the calculated Z value> Z table value or 2.117> 1.96, persistence occurs. Whereas the value of Brown's and Goetzmann's Z tests was 2,902. At the 5% significance level of the Z table value of 1.96, the calculated Z value> Z table value or 2.902> 1.96, persistence occurs. And for the value of Kahn's and Rudd's X2 test of 8,963. At the 5% significance level, the X2 value of the table is 3.84, the calculated X2 value> X2 value of the table or 8,963> 3.84, then persistence occurs.

For 2017-2018 persistence, the Malkiel Z test is 0.180. At the 5% significance level of the Z table value of 1.96, the calculated Z value <Z table value or 0.180 <1.96, then there is no persistence. As for the Brown's and Goetzmann's Z test values of 0.254. At the 5% significance level the table Z value is 1.96, the calculated Z value <table Z value or 0.254 <1.96, then there is no persistence. And for Kahn's and Rudd's X2 test's value is 0.065. At the 5% significance level X2 table value of 3.84, X2 value count <X2 table value or 0.065 <3.84, then there is no persistence.

The results of the first annual persistence test (2016-2017) showed persistence and the second annual persistence test (2017-2018) showed no persistence, meaning that the annual performance of equity funds using the sortino method did not persistence.

The persistence of biennial performance equity funds based on sortino method

The biennial performance of 2016-2018 shows the Malkiel Z test value of 0.192. At the 5% significance level of the Z table value of 1.96, the calculated Z value <Z table value or 0.192 <1.96, there is no persistence. As for the Brown's and Goetzmann's Z test values of 0.544. At the 5% significance level of the Z table value of 1.96, the calculated Z value <Z table value or 0.544 <1.96, there is no persistence. And for the value of Kahn's and Rudd's X2 test is 0.297. At the 5% significance level X2 table value of 3.84, X2 value count <X2 table value or 0.297 <3.84, then there is no persistence.

The results of the biennial persistence test (2016-2018) showed no persistence, meaning that the biennial performance of equity funds using the sortino method did not persistence.

CONCLUSION

Analysis of the Malkie's (Z-test), Brown's and Goetzmann's Odds Ratio (OR) and Kahn's and Rudd's X2 first annual (2016-2017) equity funds performance using the Sharpe and Sortino methods is persistence.

Analysis of the Malkie's (Z-test), Brown's and Goetzmann's Odds Ratio (OR) and Kahn's and Rudd's X2 second annual (2017-2018) equity funds performance using the Sharpe and Sortino methods is no persistence.

Analysis of the Malkie's (Z-test), Brown's and Goetzmann's Odds Ratio (OR) and Kahn's and Rudd's X2 biennial (2016-2018) equity funds performance using the Sharpe and Sortino methods is no persistence.

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