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WILL THE WINNER STILL BE THE WINNER? A STUDY OF EQUITY MUTUAL FUND PERFORMANCE IN INDONESIA

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Abstract. In this study, we explore the consistency of Indonesian Rupiah (IDR) – denominated equity mutual funds offered in Indonesia from 2007 to 2017 from various holding periods, namely one year, three years, and five years. Two questions are addressed. Will the winning mutual funds be the winner in the following period? Is the performance of a longer period more persistent than that of the shorter period? Using the nominal return from these eleven years, we find that the equity mutual funds in Indonesia earn no stable performance. The winner will not always be the winner in the following observed period. In addition, no evidence is found that long-term performance would result in a better persistence than that of the shorter time frame.

Keywords: equity mutual fund, performance consistency, Indonesia.

JEL Classification: G10, G11.

Introduction

The preference to invest in equity mutual fund (later will be stated as equity fund) in Indonesia is increasing. Based on data from Indonesia Financial Services Authority (OJK), the asset under management (AUM) of Rupiah (IDR)-denominated equity funds offered in Indonesia has grown 242.1% from IDR37.7 trillion in year-end 2007 to IDR128.9 trillion in year-end 2017. At the same time, the number of equity funds has increased by 291.2% from 57 funds in 2007 to 223 funds in 2017.

Investors can allocate money in stocks either directly by investing in the stock market or indirectly by buying equity funds. Investing in individual stocks will be exposed to unsystematic risk. To eliminate this, investors need to diversify their portfolios (Frensidy et al., 2017). As an alternative, individual investors can choose to invest in equity fund, not directly in stock market, because the fund manager is considered better trained on timing and stock selection (Angelidis et al., 2013; Frensidy, 2016; Glode, 2011; Grau-Carles et al., 2018; Rao et al., 2017; Robiyanto et al., 2019; Turtle & Zhang, 2012). The prevailing regulation regarding equity fund says the proportion of stocks in each equity fund should be at least 80% (the other proportion could be cash or money market instruments). Therefore, both direct and indirect investing eventually have

a similar fundamental exposure, namely volatility of the stock market (systematic risk).

Based on risk-return trade-off, investors would prefer to invest in an asset class as long as the return is higher than the risk. In this case, predictability of the future return is really important to manage the expected cash flows. Investors could use the historical performance of the equity fund to predict what will happen in the future. Therefore, to get a better result, investors should put their funds in equity funds on the long-term horizon (more than one year). However, in response to the higher return, the risk of holding in a long time also increases. In general, for individual investors (mostly unsophisticated ones in Indonesia), this condition could be uncomfortable or even deceitful. No reliable and recent scientific study has addressed this issue about the reliability of historical fund performance.

Some studies have tried to investigate the persistence of more than one type of mutual fund performance i.e. Antonakakis et al. (2018), Grau-Carles et al. (2018), Matallín-Sáez et al. (2019), Shive and Yun (2013), Vidal-García et al. (2016), Wattanatorn et al. (2020). However, the shortcomings of the previous researches are they use sample (not population), the population or sample data is not long enough (for example, it was only two years),

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and the data was not analyzed from different time frames (for example, the time frame of performance was only one year).

Research on sampling will be exposed to sampling risk and it is subject to how the sample is taken. Different and extended time frames (one year, three years, and five years) could reduce the event error that may cause a certain time frame (for example, one year only). In other words, certain investors could only be short-term opportunists exploiting certain events (for example, the presidential election in Indonesia) that affects the volatility of certain stocks. Because of this, the persistence of short-term performance could be different from that of longer-term performance. Older data may have different conditions that cannot be compared to current findings. For example, research in the 1960s about the US mutual fund will be subject to a certain racial issue that is already solved in the US. About the period of data taken, the most recent research on mutual fund performance was in 2017, but it was based on the performance of the equity fund manager, not on that of an equity fund.

The goal of this study is to observe the performance persistence of the equity fund population (not only a sample) in various and long enough time frames (one, three, and five years) of the most recent equity funds (from 2007 to 2017). Any investors (both institutional and individual investors) would find this research helpful when allocating money in equity funds according to the investor's risk tolerance, goals, and investment time frame. For academic purposes, Deb (2019) says that it is an important step to test the efficient market hypothesis by assessing the existence and persistence of mutual funds.

Below is the hypothesis test that we employ to achieve the objective of the study:

H₁: There is the persistence of equity fund performance.

1. Literature review

Mutual fund performance is an interesting topic for both academicians and practitioners in the financial world. According to Deb (2019), importance occurs because of its significant effect on wealth. Some studies have been conducted regarding mutual fund performance. Babalos et al. (2015) studied the US equity mutual funds, and found the existence of size and return trade-off. Angelidis et al. (2013) develop an approach to measure mutual fund performance. This approach employs a factor exposure-based approach for measuring the – static and dynamic – timing capabilities of mutual fund managers. Angelidis et al. (2013) argue that market timing capabilities have a significant impact on excess return variance, while Dumitrescu and Gil-Bazo (2018), Fortin and Michelson (2010), Vidal-García (2013) indicate that the performance of the mutual fund is persistent. Fortin and Michelson (2010) investigate the performance of all funds, comprising three groups of bond funds, equity funds, and one class of balanced funds,

while Vidal-García (2013) investigates the performance of European equity mutual funds. This finding also supported by Filip (2018). While Fortin and Michelson (2010), Robiyanto et al. (2019) and Filip (2018) analyze the performance of all funds, Deb (2019), Pangestuti et al. (2017), Widodo and Robiyanto (2018) only test the performance of equity funds.

A different result is given by Fan and Addams (2012) who examine the market performance of US-based international mutual funds that invest only in the capital markets outside the US from 2005 to 2009. They conclude that the relative performance of each fund develops more like a random walk than a stable and continuous trend. Fan and Addams (2012) examine data of the last twelve years of the US-based international mutual funds. We will examine this issue on the Indonesia-based equity fund.

Regarding equity funds in Indonesia, Pangestuti et al. (2017), Robiyanto et al. (2019), Widodo and Robiyanto (2018) discovers that the winner of Indonesian equity funds will be the winner in the next period. However, we find the shortcomings of Pangestuti et al. (2017), Widodo and Robiyanto (2018) as they only tested the consistency of equity funds for a one-year time frame. This short-term persistence is in line with some of the previous researches (Christiansen et al., 2020; Deb, 2019; Jeon et al., 2017; Rao et al., 2017; Vidal-García et al., 2016). On the contrary, Deb (2019) finds that among the best performing growth funds and the worst-performing small-cap funds show persistence in the long run-time period (Rodriguez & Joseph McCarthy, 2015). In addition, Deb (2019) says that there is a consistency of performance, at least over funds with a short time horizon. The processes that they employ are first, they employ the four-factor model over a base quarter to rank mutual fund performance, second, they assign funds into one of the deciles according to the alpha of base-period, and third, they see the subsequent quarter performance. However, in this study, we do not classify the types of equity funds.

For the benefit of research on mutual funds to potential investors, Deb (2019), Nguyen et al. (2018), Rodriguez and Joseph McCarthy (2015) and Rao et al. (2017), Vidal-García et al. (2016) suggest that investors should consider more than recent past performance before choosing from the available mutual funds. They should also consider other issues such as recent trends in the overall stock market and the investment policy stated in the prospectus of mutual funds. Ibbotson and Kaplan (2015) find that the investment policy explains about ninety percent of the inconsistency in returns of a typical fund across time. While Matallín-Sáez et al. (2016) find that the persistence of mutual fund performance depends on sub-periods used in the study.

Our study differs from previous studies in terms of the objects and time frames studied. When investigating equity fund performance, we explore the population of equity funds in Indonesia for the observed period (2007–2017). As mentioned earlier, different and extended time frames

(one year, three years, and five years) could reduce the event error that may cause a certain time frame (for example, one year only). We feel that the last eleven years is long enough because the mutual fund industry just started in Indonesia in 1996. This is consistent with Christiansen et al. (2020) that say mutual fund performance requires a combination of data and judgment, and also consistent with Filip (2018) and Christiansen et al. (2020).

2. Method

The population of this research is all equity funds in Indonesia from the most recent data that are obtained from Otoritas Jasa Keuangan or the Indonesian Financial Service Authority (OJK) and the Indonesia Stock Exchange (IDX). We see that the equity fund in Indonesia grows 242.1% from IDR37.68 trillion in 2007 to IDR128.9 trillion in 2017. At the same time, the number of funds increases 291.2% from 57 funds in 2007 to 223 funds in 2017. All equity funds with different attributes such as diverse sectors and different strategies (for example, passive or indexing and aggressive) are included.

Rao et al. (2017) observe some specific features of mutual funds and the effect of these on the general performance of the mutual fund. His research significantly contributes the present literature by presenting new evidence on the causal effects of certain mutual fund characteristics of a mutual fund on the total performance by using: (a) various time frames, (b) various features, and (c) more contemporary facts. Filip (2018) and Christiansen et al. (2020) did a relative similar study with Rao et al. (2017), but by using only short-term performance. Consistent with Rao et al. (2017), this research will consider two of these three categories, namely diverse periods and the most recent data. This research does not investigate the different attributes of equity funds.

We separate the gross return of equity funds based on the observation period, namely one year, three years, and five years. The definition of gross return is the increase/decrease of the mutual funds' net book value (NBV) in the observed period, as stated below.

$$\text{Gross return} = (\text{NBV}_{t=1} - \text{NBV}_{t=0}) / \text{NBV}_{t=0}.$$

The definition of NBV in equity funds refers to the total value of assets minus its total liabilities divided by several outstanding units or shares. In addition, the gross return may still be subject to relevant fees and expenses that are not investigated in this research.

The test of persistence is carried out with the following steps. First, we include all equity funds that are offered during that relevant period. There was no survivorship bias here as all mutual funds offered in 2007 were included in the following period. Researches about the effect of survivorship bias on mutual fund performance are well documented in finance literature. Fortin and Michelson (2010) include a survivorship bias when researching the persistence of mutual fund, but Hanke et al. (2018) have found that none survivorship bias happened. Wattanatorn

et al. (2020) notify that some fund managers frequently terminate their worst underperforming funds. Based on research on a sample free of survivorship bias, Nguyen et al. (2018) demonstrate that the predictability in equity funds' mean and risk adjusted-returns can be explained by common factors in stock returns and investment expenses. Nguyen et al. (2018) also add that stock selection skill cannot affect the consistency of mutual fund performance. This also supported by Rao et al. (2017) and Wattanatorn et al. (2020).

In this paper, all equity funds with both passive and active investing are incorporated. The fund manager is required to cover some costs in aggressive investing. Deb (2019) and Wattanatorn et al. (2020) finds that compared to a passively managed fund, the actively managed fund is more consistent with a world of rational and value-maximizing investors that compete with each other. However, according to Fama and French (2010), there is a constraint on the returns of active investing. One of the factors is the amount of transaction fee.

Second, we calculate the gross return of the observed period, namely one year, three years, and five years. The gross return is a representation of asset performance. In this paper, the risk-adjusted return is not used. In general, there are two types of risk-adjusted returns, which are related to total risk (Sharpe ratio) and systematic risk (Treyner ratio) (Devaney et al., 2016; Robiyanto et al., 2017; Zulkafli et al., 2017). Kourtis (2016) says that the Sharpe ratio is better to see equity fund performance. To identify superior performance, investors can use Alpha Jensen. In summary, stock selection and market timing are factors that affect the existence of alpha. To separate the impact of both stock picking and market timing on the alpha, Treyner (2012) modify Alpha Jensen to measure the market-timing capability.

Third, we calculate the median return of all equity funds in each period. Median return is used, instead of mean return, to reduce the effect of outliers, which might skew the mean of the gross return. The skewness is essential to be reduced. When skewness is combined with poor judgment, it can have adverse effects. For example, just before the 2008 crisis, positive skewness (the mean was higher than the median) existed in the equity market, and because of this, investors invested massively. Later, they exited the capital market after noticing the negative skewness in the market (the mean was lower than the median), investors sold at the bottom price.

Fourth, we group whether each equity fund is the winner (if the return is equal to or above the median return), or the loser (if the return is below the median). After that, we classify the winner and loser funds into 6 (six) clusters. They are (1) the winner in the current period that is the winner in the following period, (2) the winner in the current period that is the loser in the following period, (3) the winner in the current period that does not exist anymore in the following period, (4) the loser in the current period that is the winner in the following period, (5) the loser in

the current period that is the loser in the following period, and (6) the loser in the current period that is not offered anymore in the market.

As an additional clarification, the equity fund could also be benchmarked against the relevant stock market indexes (such as Jakarta Composite Index (JCI) in the Indonesia Stock Exchange (IDX) or JKSE Index) or the top 45 most liquid stock traded in the IDX (LQ45)). We can further investigate this issue in the next research on whether the equity funds can outperform the relevant stock index.

Fifth, we test the consistency of the performance of each fund using the Chi-square test. In detail, we check if the winner will be the winner in the following relevant period and the loser will lose again in the next period. For example, the one-year return 2008 was compared to the one-year return of 2007, the three-year return of 2008 to 2010 was compared to the three-year return of 2005–2007, and the five-year return of 2008–2012 was compared to that of 2003–2007. For that purpose, we also gather the data of three-year return and a five-year return of all equity funds ended on 31 December 2007.

The formula for Chi-Square χ^2 is stated below:

$$\chi^2 = [\Sigma(O-E)^2]/E,$$

where O symbolizes the observed frequency and E is the expected frequency. In this stage, we can observe the performance persistence of each time frame (one year, three years, and five years) from various periods.

3. Result and discussion

3.1. Descriptive and Chi-Square result

Table 1 displays the annual growth of the number of equity funds from the year 2007 to the year 2017. We can see that the number of equity funds offered increases significantly from year to year, except in 2010 and 2011.

Table 1. The growth of equity funds (source: Infovesta, processed by the authors)

Year	Number of Equity Funds Offered	Annual Growth (%)
2017	223	22.5
2016	182	25.5
2015	145	16.9
2014	124	30.5
2013	95	23.4
2012	77	18.5
2011	65	3.2
2010	63	-7.4
2009	68	25.9
2008	54	54.3
2007	35	

Table 2 provides information about the median gross return of all equity funds in a particular period. We can

see that the returns (both mean and median) of equity investing are uncertain. For example, the table shows that equity fund managers could make the big return of 55.9% (median) and 53.4% (mean) in 2007, but one year later in 2008, they lost a huge amount of money of 52.9% (median) and 52.7% (mean).

Table 2. The mean and median of equity fund return and JKSE return (source: Infovesta and Yahoo Finance, processed by the authors)

Period	Equity Fund Return		JKSE Return (%)
	Median (%)	Mean (%)	
1 Year			
Jan to Dec 2017	12.7	12.1	20.0
Jan to Dec 2016	10.9	9.1	15.3
Jan to Dec 2015	-14.0	-14.5	-12.1
Jan to Dec 2014	27.4	25.8	22.3
Jan to Dec 2013	-4.4	-2.8	-1.0
Jan to Dec 2012	9.7	9.9	12.9
Jan to Dec 2011	-1.3	-0.7	3.3
Jan to Dec 2010	33.4	33.8	46.0
Jan to Dec 2009	97.8	96.4	87.0
Jan to Dec 2008	-52.9	-52.7	-50.6
Jan to Dec 2007	55.9	53.4	52.1
3 Years			
Jan 2015 to Dec 2017	7.3	3.8	21.6
Jan 2014 to Dec 2016	20.4	18.4	23.9
Jan 2013 to Dec 2015	3.4	5.5	6.4
Jan 2012 to Dec 2014	33.6	35.5	36.8
Jan 2011 to Dec 2013	7.5	8.8	-13.5
Jan 2010 to Dec 2012	48.4	50.5	70.3
Jan 2009 to Dec 2011	168.1	173.4	182.0
Jan 2008 to Dec 2010	29.3	31.8	34.7
Jan 2007 to Dec 2009	50.7	48.6	40.4
Jan 2006 to Dec 2008	25.3	16.3	16.6
Jan 2005 to Dec 2007	189.7	174.4	174.5
5 Years			
Jan 2013 to Dec 2017	32.0	31.3	47.2
Jan 2012 to Dec 2016	30.5	30.3	38.6
Jan 2011 to Dec 2015	19.0	18.8	24.2
Jan 2010 to Dec 2014	81.7	84.2	106.2
Jan 2009 to Dec 2013	192.0	202.8	215.3
Jan 2008 to Dec 2012	43.8	50.2	57.2
Jan 2007 to Dec 2011	115.1	115.0	111.7
Jan 2006 to Dec 2010	240.9	233.6	218.2
Jan 2005 to Dec 2009	235.4	206.4	153.4
Jan 2004 to Dec 2008	146.3	116.9	95.9
Jan 2003 to Dec 2007	588.6	529.4	546.2

The skewness of performance is also uncertain as sometimes the mean is higher than the median, but in another year it is the contrary. For example, for the year 2013, the mean of fund performance (-2.8%) is higher than the median (-4.4%). However, it is contrary to the year 2014. The median was 27.4% and the mean was 25.8%.

Comparing the performance of equity funds to that of the Jakarta Composite Index (JKSE), we find vague results. The JKSE return in 2017 was 20%, but the median and mean the return of equity funds was only 12.7% and 12.1% respectively. The prevailing regulation could be the main cause of this so that equity funds cannot fully invest in stocks. It means that in the bullish equity market, the equity fund cannot fully capitalize on it. In the regulation, twenty percent of assets under management could be allocated in either cash or money market instruments.

Contrary to performance in 2017, the median and mean performance of equity funds (27.4% and 25.8%, respectively) in 2014 was better than the return of JKSE (22.3%). The reason for this could be the number (and the proportion) of stocks held in the equity funds is different from the number and weight of the stocks in the composite index. The composite index consists of hundreds of stocks, but the number of stocks in equity funds usually ranges from 20 to 40 stocks.

In the year of the bearish market (2008, 2013, and 2015), the composite index consistently performed better than both the median and mean return of equity funds.

3.2. Hypothesis testing result

We employ the Chi-square test to check the independence between the relevant periods (for example, the one year with the following one-year period) using a 5% significance level. Below is the hypothesis test that we use:

H_1 : There is the persistence of equity fund performance.

The contingency table presented in Table 3 shows that the equity fund returns are not always consistent for any time frame (one year, three years, and five years). Therefore, we can conclude that there is no reliability that a longer period equity funds (five years) will produce a more persistent performance than that of shorter-term (one year and three years) as the persistence results are mixed during the relevant observed period.

Interestingly, persistence existed in the one-year time frame (the year 2010, the year 2011, and year 2012). However, in the three-year time frame (beginning 2010 to ending 2012 compared to the previous three-years period), persistence did not exist. The different results happened in the other period. The one-year return from 2014, 2015, 2016, to 2017 did not show persistence. Conversely, the three-year time frame showed persistence in the relevant period (January 2014 to December 2016 and January 2015 to December 2017).

For the consistency of the five-year return, only the period of January 2008 to December 2012 when compared to January 2003 to December 2007 shows consistency.

Table 3. The summary of results (source: Infovesta and Yahoo Finance, processed by the authors)

Table Number	Period	Pearson Chi Sq.	p-value	Persistent?
	1 Year			
Table 4	Jan to Dec 2017	0.890	0.641	No
Table 5	Jan to Dec 2016	3.705	0.157	No
Table 6	Jan to Dec 2015	0.738	0.691	No
Table 7	Jan to Dec 2014	1.272	0.529	No
Table 8	Jan to Dec 2013	2.321	0.313	No
Table 9	Jan to Dec 2012	7.133	0.028**	Yes
Table 10	Jan to Dec 2011	8.111	0.017**	Yes
Table 11	Jan to Dec 2010	18.743	0.000***	Yes
Table 12	Jan to Dec 2009	3.286	0.193	No
Table 13	Jan to Dec 2008	4.512	0.105	No
	3 Years			
Table 14	Jan 2015 to Dec 2017	7.244	0.027**	Yes
Table 15	Jan 2014 to Dec 2016	6.403	0.041**	Yes
Table 16	Jan 2013 to Dec 2015	1.135	0.567	No
Table 17	Jan 2012 to Dec 2014	7.817	0.002***	Yes
Table 18	Jan 2011 to Dec 2013	6.177	0.046**	Yes
Table 19	Jan 2010 to Dec 2012	2.461	0.292	No
Table 20	Jan 2009 to Dec 2011	5.810	0.055*	No
Table 21	Jan 2008 to Dec 2010	11.111	0.004***	Yes
	5 Years			
Table 22	Jan 2013 to Dec 2017	0.381	0.827	No
Table 23	Jan 2012 to Dec 2016	1.467	0.480	No
Table 24	Jan 2011 to Dec 2015	2.667	0.264	No
Table 25	Jan 2010 to Dec 2014	1.613	0.446	No
Table 26	Jan 2009 to Dec 2013	5.810	0.055*	No
Table 27	Jan 2008 to Dec 2012	10.422	0.005***	Yes

Note: *** significant at 1% level of significance; ** significant at 5% level of significance; * significant at 10% level of significance.

However, the one-year period and three-year period in the relevant period show mixed results for consistency.

If we use a 10% significance level, we can see that the number of persistent equity funds will be larger. For example, the three-year time frame (2009 to 2011) and the five-year time frame (2009 to 2013) will change from not persistent to persistent. The result summary of the Chi-square tests shown in Table 3.

Table 4 to Table 27 shows the details of the data grouped in the relevant period. Based on Table 4 we can see that from 182 mutual funds in 2016, 91 mutual funds are the winners, 91 mutual funds are the losers. In the following period (2017), from 91 winning mutual funds, 47 mutual funds still become the winners, while 42 mutual funds changed to a loser, and 2 mutual funds are defunct. From 91 loser mutual funds, 41 mutual funds upgraded

its performances and become the winner, and 47 mutual funds still become a loser, while 3 mutual funds are defunct. About 51.648% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 4. One year persistent result for 2016 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (2017)	Winner	Loser	Total
Winner	47	41	88
Loser	42	47	89
Defunct	2	3	5
Total	91	91	182

In Table 5 we can see that from 145 mutual funds in 2015, 73 mutual funds are the winners, 72 mutual funds are the losers. In the following period (2016), from 73 winning mutual funds, 33 mutual funds still become the winners, while 39 mutual funds changed to a loser, and 1 mutual fund is defunct. From 72 loser mutual funds, 36 mutual funds upgraded its performances and become the winner, while 31 mutual funds still become a loser, and 5 mutual funds are defunct. About 44.137% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 5. One year persistent result for 2015 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (2016)	Winner	Loser	Total
Winner	33	36	69
Loser	39	31	70
Defunct	1	5	6
Total	73	72	145

In Table 6 we can see that from 124 mutual funds in 2014, 62 mutual funds are the winners, 62 mutual funds are the losers. In the following period (2015), from 62 winning mutual funds, 29 mutual funds still become the winners, while 31 mutual funds changed to a loser, and 2 mutual funds are defunct. From 62 loser mutual funds, 27 mutual funds upgraded its performances and become the winner, while 31 mutual funds still become a loser, and 4 mutual funds are defunct. About 48.387% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 6. One year persistent result for 2014 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (2015)	Winner	Loser	Total
Winner	29	27	56
Loser	31	31	62
Defunct	2	4	6
Total	62	62	124

In Table 7 we can see that from 95 mutual funds in 2013, 48 mutual funds are the winners, 47 mutual funds are the losers. In the following period (2014), from 48 winning mutual funds, 23 mutual funds still become the winners, while 22 mutual funds changed to a loser, and 3 mutual funds are defunct. From 47 loser mutual funds, 21 mutual funds upgraded its performances and become the winner, while 25 mutual funds still become a loser, and 1 mutual fund is defunct. About 50.526% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 7. One year persistent result for 2013 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (2014)	Winner	Loser	Total
Winner	23	21	44
Loser	22	25	47
Defunct	3	1	4
Total	48	47	95

In Table 8 we can see that from 77 mutual funds in 2012, 39 mutual funds are the winners, 38 mutual funds are the losers. In the following period (2013), from 39 winning mutual funds, 16 mutual funds still become the winners, while 22 mutual funds changed to a loser, and a mutual fund is defunct. From 38 loser mutual funds, 21 mutual funds upgraded its performances and become the winner, while 15 mutual funds still become a loser, and 2 mutual funds are defunct. About 40.259% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 8. One year persistent result for 2012 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (2013)	Winner	Loser	Total
Winner	16	21	37
Loser	22	15	37
Defunct	1	2	3
Total	39	38	77

In Table 9 we can see that from 65 mutual funds in 2011, 33 mutual funds are the winners, 32 mutual funds are the losers. In the following period (2012), from 33 winning mutual funds, 20 mutual funds still become the winners, while 13 mutual funds changed to a loser, and none mutual fund is defunct. From 32 loser mutual funds, 11 mutual funds upgraded its performances and become the winner, while 17 mutual funds still become a loser, and 4 mutual funds are defunct. About 59.923% of the mutual funds studied have persistence, while the rests did not have persistence.

In Table 10 we can see that from 63 mutual funds in 2010, 32 mutual funds are the winners, 31 mutual funds

Table 9. One year persistent result for 2011 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (2012)	Winner	Loser	Total
Winner	20	11	31
Loser	13	17	30
Defunct	–	4	4
Total	33	32	65

are the losers. In the following period (2011), from 32 winning mutual funds, 20 mutual funds still become the winners, while 11 mutual funds changed to a loser, and 1 mutual fund is defunct. From 31 loser mutual funds, 9 mutual funds upgraded its performances and become the winner, while 17 mutual funds still become a loser, and 5 mutual funds are defunct. About 58.730% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 10. One year persistent result for 2010 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (2011)	Winner	Loser	Total
Winner	20	9	29
Loser	11	17	28
Defunct	1	5	6
Total	32	31	63

In Table 11 we can see that from 68 mutual funds in 2009, 34 mutual funds are the winners, 34 mutual funds are the losers. In the following period (2010), from 34 winning mutual funds, 23 mutual funds still become the winners, while 10 mutual funds changed to a loser, and 1 mutual fund is defunct. From 34 loser mutual funds, 6 mutual funds upgraded its performances and become the winner, while 20 mutual funds still become a loser, and 8 mutual funds are defunct. About 63.235% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 11. One year persistent result for 2009 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (2010)	Winner	Loser	Total
Winner	23	6	29
Loser	10	20	30
Defunct	1	8	9
Total	34	34	68

In Table 12 we can see that from 54 mutual funds in 2008, 27 mutual funds are the winners, 27 mutual funds are the losers. In the following period (2009), from 27 winning mutual funds, 17 mutual funds still become the winners, while 10 mutual funds changed to a loser, and

Table 12. One year persistent result for 2008 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (2009)	Winner	Loser	Total
Winner	17	11	28
Loser	10	15	25
Defunct	0	1	1
Total	27	27	54

none mutual fund is defunct. From 27 loser mutual funds, 11 mutual funds upgraded its performances and become the winner, while 15 mutual funds still become a loser, and 1 mutual fund is defunct. About 59.259% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 13. One year persistent result for 2007 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (2008)	Winner	Loser	Total
Winner	11	6	17
Loser	7	8	15
Defunct	–	3	3
Total	18	17	35

In Table 13 we can see that from 35 mutual funds in 2007, 18 mutual funds are the winners, 17 mutual funds are the losers. In the following period (2008), from 18 winning mutual funds, 11 mutual funds still become the winners, while 7 mutual funds changed to a loser, and none mutual fund is defunct. From 17 loser mutual funds, 6 mutual funds upgraded its performances and become the winner, while 8 mutual funds still become a loser, and 3 mutual funds are defunct. About 54.285% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 14. Three years persistent result for beginning of 2012–end of 2014 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (Beg 2015–End 2017)	Winner	Loser	Total
Winner	23	16	39
Loser	13	13	26
Defunct	–	6	6
Total	36	35	71

In Table 14 we can see that from 71 mutual funds in 2012–2014, 36 mutual funds are the winners, 35 mutual funds are the losers. In the following period (2015–2017), from 36 winning mutual funds, 23 mutual funds still become the winners, while 13 mutual funds changed to a loser, and none mutual fund is defunct. From 35 loser mutual funds, 16 mutual funds upgraded its performances and

become the winner, while 13 mutual funds still become a loser, and 6 mutual funds are defunct. About 50.704% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 15. Three years persistent result for beginning of 2011–end of 2013 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (Beg 2014–End 2016)	Winner	Loser	Total
Winner	15	18	33
Loser	15	8	23
Defunct	–	4	4
Total	30	30	60

In Table 15 we can see that from 60 mutual funds in 2011–2013, 30 mutual funds are the winners, 30 mutual funds are the losers. In the following period (2014–2016), from 30 winning mutual funds, 15 mutual funds still become the winners, while 15 mutual funds changed to a loser, and none mutual fund is defunct. From 30 loser mutual funds, 18 mutual funds upgraded its performances and become the winner, while 8 mutual funds still become a loser, and 4 mutual funds are defunct. About 38.333% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 16. Three years persistent result for the beginning of 2010–end of 2012 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (Beg 2013–End 2015)	Winner	Loser	Total
Winner	14	10	24
Loser	12	14	26
Defunct	1	2	3
Total	27	26	53

In Table 16 we can see that from 53 mutual funds in 2010–2012, 27 mutual funds are the winners, 26 mutual funds are the losers. In the following period (2013–2015), from 27 winning mutual funds, 14 mutual funds still become the winners, while 12 mutual funds changed to a loser, and 1 mutual fund is defunct. From 26 loser mutual funds, 10 mutual funds upgraded its performances and become the winner, while 14 mutual funds still become a loser, and 2 mutual funds are defunct. About 52.830% of the mutual funds studied have persistence, while the rests did not have persistence.

In Table 17 we can see that from 53 mutual funds in 2009–2011, 27 mutual funds are the winners, 26 mutual funds are the losers. In the following period (2012–2014), from 27 winning mutual funds, 16 mutual funds still become the winners, while 11 mutual funds changed to a loser, and none mutual fund is defunct. From 26 loser mutual funds, 8 mutual funds upgraded its performances and become the winner, while 13 mutual funds still become a

Table 17. Three years persistent result for the beginning of 2009–end of 2011 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (Beg 2012–End 2014)	Winner	Loser	Total
Winner	16	8	24
Loser	11	13	24
Defunct	–	5	5
Total	27	26	53

loser, and 5 mutual funds are defunct. About 54.716% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 18. Three years persistent result for the beginning of 2008–end of 2010 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (Beg 2011–End 2013)	Winner	Loser	Total
Winner	9	8	17
Loser	14	8	22
Defunct	1	7	8
Total	24	23	47

In Table 18 we can see that from 47 mutual funds in 2008–2010, 24 mutual funds are the winners, 23 mutual funds are the losers. In the following period (2011–2013), from 24 winning mutual funds, 9 mutual funds still become the winners, while 14 mutual funds changed to a loser, and 1 mutual fund is defunct. From 23 loser mutual funds, 8 mutual funds upgraded its performances and become the winner, while 8 mutual funds still become a loser, and 7 mutual funds are defunct. About 36.170% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 19. Three years persistent result for the beginning of 2007–end of 2009 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (Beg 2010–End 2012)	Winner	Loser	Total
Winner	9	6	15
Loser	6	5	11
Defunct	1	4	5
Total	16	15	31

In Table 19 we can see that from 31 mutual funds in 2007–2009, 16 mutual funds are the winners, 15 mutual funds are the losers. In the following period (2010–2012), from 16 winning mutual funds, 9 mutual funds still become the winners, while 6 mutual funds changed to a loser, and 1 mutual fund is defunct. From 15 loser mutual funds, 6 mutual funds upgraded its performances and become the winner, while 5 mutual funds still become a

loser, and 4 mutual funds are defunct. About 45.161% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 20. Three years persistent result for the beginning of 2006–end of 2008 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (Beg 2009–End 2011)	Winner	Loser	Total
Winner	10	5	15
Loser	3	4	7
Defunct	–	4	4
Total	13	13	26

In Table 20 we can see that from 26 mutual funds in 2006–2008, 13 mutual funds are the winners, 13 mutual funds are the losers. In the following period (2009–2011), from 13 winning mutual funds, 10 mutual funds still become the winners, while 3 mutual funds changed to a loser, and none mutual fund is defunct. From 13 loser mutual funds, 5 mutual funds upgraded its performances and become the winner, while 4 mutual funds still become a loser, and 4 mutual funds are defunct. About 53.846% of the mutual funds studied have persistence, while the rests did not have persistence.

In Table 21 we can see that from 21 mutual funds in 2005–2004, 11 mutual funds are the winners, 10 mutual funds are the losers. In the following period (2008–2010), from 11 winning mutual funds, 10 mutual funds still become the winners, while 1 mutual fund changed to a loser, and none mutual fund is defunct. From 10 loser mutual funds, 2 mutual funds upgraded its performances and become the winner, while 4 mutual funds still become a loser, and 4 mutual funds are defunct. About 66.667% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 21. Three years persistent result for the beginning of 2005–end of 2007 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (Beg 2008–End 2010)	Winner	Loser	Total
Winner	10	2	12
Loser	1	4	5
Defunct	–	4	4
Total	11	10	21

Table 22. Five years persistent result for beginning of 2008–end of 2012 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (Beg 2013–End 2017)	Winner	Loser	Total
Winner	11	10	21
Loser	8	8	16
Defunct	1	2	3
Total	20	20	40

In Table 22 we can see that from 40 mutual funds in 2008–2012, 20 mutual funds are the winners, 20 mutual funds are the losers. In the following period (2013–2017), from 20 winning mutual funds, 11 mutual funds still become the winners, while 8 mutual funds changed to a loser, and 1 mutual fund is defunct. From 20 loser mutual funds, 10 mutual funds upgraded its performances and become the winner, while 8 mutual funds still become a loser, and 2 mutual funds are defunct. About 47.5% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 23. Five years persistent result for the beginning of 2007–end of 2011 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (Beg 2012–End 2016)	Winner	Loser	Total
Winner	8	7	15
Loser	4	6	10
Defunct	1	–	1
Total	13	13	26

In Table 23 we can see that from 26 mutual funds in 2007–2011, 13 mutual funds are the winners, 13 mutual funds are the losers. In the following period (2012–2016), from 13 winning mutual funds, 8 mutual funds still become the winners, while 4 mutual funds changed to a loser, and 1 mutual fund is defunct. From 13 loser mutual funds, 7 mutual funds upgraded its performances and become the winner, while 6 mutual funds still become a loser, and none mutual fund is defunct. About 53.846% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 24. Five years persistent result for the beginning of 2006–end of 2010 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (Beg 2011–End 2015)	Winner	Loser	Total
Winner	8	4	12
Loser	3	6	9
Defunct	1	2	3
Total	12	12	24

In Table 24 we can see that from 24 mutual funds in 2006–2010, 12 mutual funds are the winners, 12 mutual funds are the losers. In the following period (2011–2015), from 12 winning mutual funds, 8 mutual funds still become the winners, while 3 mutual funds changed to a loser, and 1 mutual fund is defunct. From 12 loser mutual funds, 4 mutual funds upgraded its performances and become the winner, while 6 mutual funds still become a loser, and 2 mutual funds are defunct. About 58.333% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 25. Five years persistent result for the beginning of 2005–end of 2009 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (Beg 2010–End 2014)	Winner	Loser	Total
Winner	6	3	9
Loser	2	4	6
Defunct	1	1	2
Total	9	8	17

In Table 25 we can see that from 17 mutual funds in 2005–2009, 9 mutual funds are the winners, 8 mutual funds are the losers. In the following period (2010–2014), from 9 winning mutual funds, 6 mutual funds still become the winners, while 2 mutual funds changed to a loser, and 1 mutual fund is defunct. From 8 loser mutual funds, 3 mutual funds upgraded its performances and become the winner, while 4 mutual funds still become a loser, and 1 mutual fund is defunct. About 58.823% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 26. Five years persistent result for the beginning of 2004–end of 2008 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (Beg 2009–End 2013)	Winner	Loser	Total
Winner	5	1	6
Loser	3	4	7
Defunct	–	3	3
Total	8	8	16

In Table 26 we can see that from 16 mutual funds in 2004–2008, 8 mutual funds are the winners, 8 mutual funds are the losers. In the following period (2009–2013), from 8 winning mutual funds, 5 mutual funds still become the winners, while 3 mutual funds changed to a loser, and none mutual fund is defunct. From 8 loser mutual funds, 1 mutual fund upgraded its performances and become the winner, while 4 mutual funds still become a loser, and 3 mutual funds are defunct. About 56.25% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 27. Five years persistent result for the beginning of 2003–end of 2007 as current period (source: Infovesta and Yahoo Finance, processed by the authors)

Following Period (Beg 2008–End 2012)	Winner	Loser	Total
Winner	8	1	9
Loser	1	3	4
Defunct	–	4	4
Total	9	8	17

In Table 27 we can see that from 17 mutual funds in 2003–2007, 9 mutual funds are the winners, 8 mutual funds are the losers. In the following period (2008–2012), from 9 winning mutual funds, 8 mutual funds still become the winners, while 1 mutual fund changed to a loser, and none mutual fund is defunct. From 8 loser mutual funds, 1 mutual fund upgraded its performances and become the winner, while 3 mutual funds still become a loser, and 4 mutual funds are defunct. About 64.705% of the mutual funds studied have persistence, while the rests did not have persistence.

Table 4 to Table 27 shows that the performance of the mutual fund tends to move randomly. Past performance cannot become a benchmark for future performance. As shown in Table 3 which summarized these tables, only one persistent performance occurred for a long time frame which is a five-year time frame, three persistent performances occurred for a medium time frame which is the three-year time frame and five persistent performances occurred for short time frame which is the one-year time frame. Overall, the persistence level of the five-year time frame is 56.576%; the three-year time frame is 50.053%; the one-year time frame is 53.039%.

This finding is consistent with Filip (2018), which found many variations regarding the performance of mutual funds. The findings of this study are neither supporting nor opposing the efficient market hypothesis. This paper is consistent with Fan and Addams (2012) saying that the performance of the mutual fund is more like a random walk, not a persistent trend. Also, consistent with the finding of Hanke et al. (2018) that equity funds do not have performance persistence. Moreover, this finding also supports Deb (2019), Kiyamaz and Simsek (2017) and Christiansen et al. (2020) found that the variation in performance persistence tends to be induced by varying the time frame is robust to weighting schemes and sample periods.

Conclusions

The purpose of the paper was to observe the performance persistence of the equity fund population (not only a sample) in various and long enough time frames (one, three, and five years) of the most recent equity funds (from 2007 to 2017). Taking the abovementioned observations into consideration, it should be noted that hypothesis H_1 regarding the persistence of equity fund performance should be rejected. In specific, there is no certainty that the winner will become the winner in the observed period. Investors usually search the historical return information for any funds that they intend to invest in. However, based on this research, they should be conscious that the positive past returns will not be always repeated in the next period. This finding could also prove that the suggestion of the OJK to state “the past returns will not represent the future returns” in the mutual fund prospectus is make sense and worthy.

This paper makes several contributions to the finance literature. Most importantly, a long-term historical performance cannot be considered as a more reliable measurement than the short-term one. There is no evidence that the performance of a longer time frame (three years or five years) will be more persistent than that of a shorter time frame. Both the long-time frame and short-time frame show mixed results of persistence for various periods.

Several limitations come along with this study, in this study, our population still lacks certain attributes/issues such as fund size and growth versus value funds. Also, in this study, equity funds categorized as both sharia and conventional equity funds are not analyzed. In Indonesia, especially during the past three years, the sharia mutual fund was being flourished. Hence, this would be interesting if, in future research, equity funds separated to be non-sharia equity funds and sharia equity funds, and the results of the future study can be used as a reference for Muslim investors, the majority of the Indonesian population.

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Author contributions

Budi Frensidy and Reynardo Nainggolan conceived the study and were responsible for the design and development of the data analysis. Budi Frensidy and Reynardo Nainggolan were responsible for data collection and analysis. Budi Frensidy and Reynardo Nainggolan and Robiyanto Robiyanto were responsible for data interpretation. Budi Frensidy and Reynardo Nainggolan and Robiyanto Robiyanto wrote the first draft of the article.

Disclosure statement

The authors declare that there is no conflict of interest.

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