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ANALYSIS OF THE EFFECTS OF THE COVID-19 PANDEMIC ON MUTUAL FUND PERFORMANCE (USING THE SHARPE METHOD)

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ABSTRACT

The phenomenon of the COVID-19 pandemic that occurred in 2020 in Indonesia has more or less influenced the investment climate in Indonesia, especially in mutual fund investment. It is known that mutual funds are an investment that is on the rise, so this study aims to provide information regarding the impact of the COVID-19 pandemic on the performance of 4 types of mutual funds, namely equity funds, money market, fixed income, and mixed mutual funds. The performance analysis method uses risk adjusted return in this case the Sharpe Ratio. Then the best performance of mutual funds was found that money market mutual funds had the best performance with a Sharpe ratio value of 0.1325, followed by equity funds of 0.0670, mixed -0.000066, and the lowest performance of fixed income mutual funds with a Sharpe ratio value of -0.000075. The performance of stock and money market mutual funds also showed better performance than risk free performance, while the other two mutual funds were negative. However, even though the investment performance of mutual funds increased, the performance of all mutual funds was still lower than the performance of the JCI, which had a Sharpe ratio of 0.1675, so that in the final period of the research, stock investment was more profitable than investment in mutual funds. It can be concluded that for mutual funds other than stocks, it shows that COVID-19 did not significantly affect fluctuations in mutual fund returns before and after the announcement of COVID-19 in Indonesia.

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1. INTRODUCTION

In the midst of a complex situation and increasing needs, people need to make efforts to meet their daily living requirements, one of which is through investment activities [1]. According to Gitman and Joehnk, investment is defined as "any vehicle into which funds can be placed with the expectation that it will generate positive income and/or preserve or increase its value" [2]. Meanwhile, according to Sunariyah, investment is defined as the placement of capital in one or more assets, usually for a long period, with the expectation of gaining profits in the future [3].

However, sometimes investing in a single type of investment requires a large capital, while some investors have limited funds but wish to allocate them into various types of investments. To pool the funds of these investors and manage them in a diversified manner, the concept of mutual funds emerged. Mutual funds have been around since 1744 when the Dutch merchant Adriaan van Ketwich introduced the concept of "Eendragt Maakt Magt." In Indonesia, mutual funds were first introduced in 1976 with the establishment of PT. Danareksa by the government. However, it was only in 1995, through Law No. 8 of 1995, that regulations regarding mutual funds in Indonesia were enacted. In this regulation, mutual funds are defined as "a container used to collect funds from investors for further investment in securities portfolios by investment managers" [4]. Describe mutual funds as a means to gather funds from individuals with capital, the desire to invest, but limited time and knowledge [5]. These funds are then collected and invested collectively by investment managers.

According to Regulation No. 47 of 2015, mutual funds have four types of investments: fixed income mutual funds, money market mutual funds, equity mutual funds, and balanced mutual funds. Fixed income mutual funds invest 80% of their portfolio in debt securities such as bonds, while money market mutual funds invest 80% of their portfolio in money market instruments such as Bank Indonesia Certificates (SBI). Equity mutual funds, as described in the same regulation, are mutual funds that invest 80% of their portfolio in stocks. Finally, balanced mutual funds have a portfolio composition that does not

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fully meet the criteria of fixed income or equity mutual funds, or it can be said that the composition of several securities is relatively balanced and there is no over-dominant component.

The Sharpe ratio measures the level of excess return or risk premium, which can be observed from its deviation. The Sharpe method is a performance measurement based on risk-adjusted return [6]. The risk-adjusted return model is considered more accurate compared to merely comparing raw returns because it incorporates the factor of risk suitability. One of the methods used to assess mutual fund performance is the Sharpe method, which can evaluate the performance of all types of mutual funds. It is stated that the Sharpe method can be applied to measure the performance of all types of mutual funds, while the Treynor and Jensen methods require the measurement of systematic risk (β) and are only applicable to equity mutual funds [7]. The advantage of the Sharpe method is that it evaluates the performance of mutual funds based on their total risk. The data required is independent and not dependent on market data, making it practical and accurate in evaluating an investment instrument.

According to Pratomo and Ubaidilah, the performance of mutual funds can be assessed through Net Asset Value (NAV) [8]. NAV represents the value of investments and cash held, both invested funds and reserves in case customers redeem their investments, minus asset management fees and operational costs. NAV is then divided by the number of units to obtain the NAV per unit, which is the price of one unit of the mutual fund. The fluctuations in NAV are used as a barometer to assess mutual fund performance, similar to stock prices in the capital market. Additionally, NAV is a component used in performance analysis using the Sharpe method [9].

In the era of the COVID-19 pandemic, an uncertain condition emerged, causing a slowdown in the global economic climate and prospects, as stated in the IMF's 2020 annual report. Consequently, there have been shifts in investment climate and investment performance in the global market. Various government policies to tackle the pandemic, such as large-scale social restrictions regulated in Government Regulation No. 21 of 2020, and the implementation of restrictions on community activities in other local regulations, will undoubtedly affect economic growth in Indonesia. Many sectors of business were unable to operate freely or even became paralyzed due to the restrictions imposed. The impact of the COVID-19 pandemic directly affected trading in the capital market. The pandemic temporarily slowed down trading in Indonesia, as evidenced by the IHSG statistical data from 2017 to 2020, showing that in 2020, during the COVID-19 pandemic, the trading value of IHSG temporarily declined as shown in Table 1.

Table 1. Total 2017-2020 JCI Trade

Year	Trade Totals		
	Volume (Million)	Mark (billion, IDR)	Freq (Thousand)
2017	2,913,246.48	1,813,095.24	74,977.99
2018	2,983,533.13	2,047,354.54	93,593.30
2019	3,680,110.00	2,237,370.16	117,182.24
2020	2,871,220.49	2,231,483.25	166,507.51

Sumber: ojk.go.id

From the data, an indicator can be obtained showing that there has been a decline in investment value, and it can be concluded that the COVID-19 pandemic has affected investment growth in Indonesia. The author attempted to compare the performance of four types of mutual fund samples, namely equity, money market, fixed income, and balanced funds, based on data from the Financial Services Authority (OJK), during the period of 2019-2020, with their performance during the years 2020-2021, when the COVID-19 pandemic was ongoing. Each type of mutual fund has different performance characteristics, allowing us to observe which type of mutual fund was most affected by the COVID-19 pandemic, and subsequently draw conclusions about the most appropriate mutual fund types to choose in this situation.

To obtain information about the performance tendencies of various types of mutual funds during the pandemic and the differences in their performance before and during the pandemic, this research was conducted. Therefore, this study can serve as a reference for prospective investors in considering the appropriate types of mutual fund investments as their investment choices.

2. METHOD

Type and Data Source

The data used in this research is quantitative secondary data. According to Sugiyono, secondary data is data obtained by reading, studying, and understanding from other sources such as books, literature, or other documents. In this study, the data is obtained from publications by OJK (Indonesia's Financial Services Authority) and the Stock Exchange [10]. The data is collected using two data collection methods. The data used in this research consists of Net Asset Value (NAV) data of 4 types of mutual funds published on ojk.go.id for the period 2018-2020, which is then compared with the performance data for the years 2020-2022.

Analysis Method

The collected data will be analyzed using various formulas according to the theories and analytical methods selected for this research. In performing the data analysis process, the author is assisted by the SPSS program for statistical data analysis.

3. RELUST AND DISCUSSION

Research result

In this study, mutual funds selected as samples are open-ended mutual funds, namely equity funds, fixed-income funds, money market funds, bond funds, and balanced funds that were actively traded during the observation period from January 1, 2018, to March 31, 2022. The data taken represents the entire population of each type of open-ended mutual fund, totaling around 1200 mutual funds. During the observation period, the number of observed mutual funds for each type, corresponding to the population, was recorded monthly as shown in Appendix 1. These data were obtained by selecting the specific types of mutual funds from the larger dataset provided by OJK.com. Subsequently, the data was arranged as a time series, showing the Net Asset Value (NAV) and unit participation of each mutual fund from January 1, 2018, to March 31, 2022.

Tables 4.1, 4.2, 4.3, and 4.4 present the total NAV of each type of mutual fund, along with the total units of participation for each mutual fund, presented in monthly data. Then, the NAV is divided by the participation value to obtain NAV per Unit (NAV/UP) for each observed mutual fund type. After obtaining the NAV/UP values, monthly mutual fund returns are calculated. However, the return values do not yet take into account the risk factor, which is indicated through the standard deviation of returns. The risk-free benchmark is represented in Table 2, using the BI-7 days rate.

Table 2. Data Risk Free BI-7 Days Rate (Monthly) for the period February 2018 - March 2022

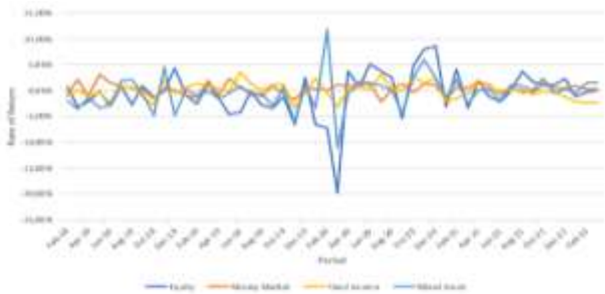
Period		BI-7 days Rate
Years	Month	(monthly)
2018	January	
2018	February	0,35%
2018	March	0,35%
2018	April	0,35%
2018	May	0,40%
2018	June	0,44%
2018	July	0,44%
2018	August	0,46%
2018	September	0,48%
2018	October	0,48%
2018	November	0,50%
2018	December	0,50%
2019	January	0,50%
2019	February	0,50%
2019	March	0,50%
2019	April	0,50%
2019	May	0,50%
2019	June	0,50%
2019	July	0,48%
2019	August	0,46%
2019	September	0,44%
2019	October	0,42%
2019	November	0,42%
2019	December	0,42%
2020	January	0,42%
2020	February	0,40%
2020	March	0,38%
2020	April	0,38%
2020	May	0,38%
2020	June	0,35%
2020	July	0,33%
2020	August	0,33%
2020	September	0,33%
2020	October	0,33%
2020	November	0,31%
2020	December	0,31%
2021	January	0,31%
2021	February	0,29%
2021	March	0,29%
2021	April	0,29%
2021	May	0,29%
2021	June	0,29%
2021	July	0,29%
2021	August	0,29%
2021	September	0,29%
2021	October	0,29%
2021	November	0,29%
2021	December	0,29%
2022	January	0,29%
2022	February	0,29%
2022	March	0,29%

From the data, it can be observed that at the end of the research period in March 2022, equity funds, money market funds, and balanced funds showed positive returns, while only fixed-income funds showed a negative return at the end of the research period. Meanwhile, during the early stages of the pandemic in March 2020, after the announcement of the COVID-19 pandemic, it can be seen that money market funds were able to grow and provide positive returns. However, mutual funds that were highly dependent on company performance, such as equity funds and balanced funds, experienced a significant decline in their rate of return. The magnitude of the rate of return can be seen in the summary in Table 3.

Table 3. Summary of Mutual Fund Data Returns for the March 2020 Period

Mutual Funds	*Rate of Return* March 2020
Equity Fund	-238.85
Money Market	15,25
Fixed Income	-50.43
Mixed Asset	-144.77

The movement of the rate of return of each type of mutual fund in this study is shown in Table 7, which presents a monthly rate of return plot during the research period. It can be observed from the graph that mutual funds influenced by issuers, such as equity and balanced funds, experience high fluctuations. A significant decline occurred in March 2020 for three types of mutual funds: equity, balanced, and fixed income funds. The balanced fund, in particular, reached its highest return in the previous month but immediately dropped to its lowest point after the announcement of COVID-19 in Indonesia. On the other hand, the money market fund, as seen in the graph, is the most stable with minimal movement (Nasution). The money market fund also did not experience a decline in returns during the announcement of COVID-19 in Indonesia.



Graph 1. Rate of Return for Money Market Mutual Funds January 2018-March 2022

Performance Analysis of Equity Fund

Equity mutual funds are mutual funds that invest at least 80% of their portfolio in equity securities (Song, 2021). In this type of mutual fund, investors are not focused on interest income like other types but rather on capital gains. Besides capital gains, this type also earns returns through dividends. In this study, the performance results of equity mutual funds during the pre-COVID-19 period can be seen in Table 4. The performance of equity mutual funds during the COVID-19 period is presented in Table 5.

Table 4. Sharpe Equity Fund Analysis for the January 2018 – February 2020 period

Period		Return	Rate of Return	BI-7 days Rate
Tahun	Bulan			
2018	January			
2018	February	13.36	0.71%	0.35%
2018	March	-58.14	-3.06%	0.35%
2018	April	-40.98	-2,22%	0.35%
2018	May	-0.33	-0.02%	0.40%
2018	June	-51.76	-2.87%	0.44%
2018	July	11.01	0.63%	0.44%
2018	August	-47.90	-2,72%	0.46%
2018	September	15.15	0.88%	0.48%
2018	October	-21.54	-1,25%	0.48%
2018	November	-1.12	-0.07%	0.50%
2018	December	73.13	4.29%	0.50%
2019	January	-15.20	-0.86%	0.50%
2019	February	-44.08	-2.50%	0.50%
2019	March	21.88	1.27%	0.50%
2019	April	-21.72	-1.25%	0.50%
2019	May	-77.76	-4.52%	0.50%
2019	June	-68.94	-4.20%	0.50%
2019	July	-2.15	-0.14%	0.48%
2019	August	-44.35	-2.83%	0.46%
2019	September	-51.93	-3.40%	0.44%
2019	October	-16.23	-1.10%	0.42%
2019	November	-97.02	-6.66%	0.42%
2019	December	33.89	2.49%	0.42%
2020	January	-93,41	-6.70%	0.42%
2020	February	-93.93	-7.22%	0.40%
Mean Return		-0.0173		
Mean risk free		0.0045		
Standar Deviasi		0.0284		
Modified Sharpe Ratio		-0.000619		

Table 5. Sharpe Equity Fund Analysis for the Period March 2020 - March 2022

Period		Return	Rate of	BI-7 days
Years	Month		Return	Rate
2020	March	-238.85	-19.79%	0.38%
2020	April	36.77	3.80%	0.38%
2020	May	6.47	0.64%	0.38%
2020	June	52.69	5.21%	0.35%
2020	Juli	40.00	3.76%	0.33%
2020	August	26.80	2.43%	0.33%
2020	September	-61.11	-5.41%	0.33%
2020	October	53.39	4.99%	0.33%
2020	November	89.77	8.00%	0.31%
2020	December	104.42	8.61%	0.31%
2021	January	-41.16	-3.12%	0.31%
2021	February	54.08	4.24%	0.29%
2021	March	-45.62	-3.43%	0.29%
2021	April	23.75	1.85%	0.29%
2021	May	-14.51	-1.11%	0.29%
2021	June	-28.93	-2.24%	0.29%
2021	Juli	-2.21	-0.18%	0.29%
2021	August	46.01	3.64%	0.29%
2021	September	21.96	1.68%	0.29%
2021	October	17.65	1.33%	0.29%
2021	November	15.22	1.13%	0.29%
2021	December	32.24	2.37%	0.29%
2022	January	-16.47	-1.18%	0.29%
2022	February	-4.11	-0.30%	0.29%
2022	March	0.39	0.03%	0.29%
Mean Return		0.0068		
Mean risk free		0.0031		
Standar Deviasi		0.0544		
Modified Sharpe Ratio		0.067038		

In March 2020, it was the lowest point of the return rate, coinciding with the onset of COVID-19 in Indonesia. After that, mutual fund returns became fluctuating but showed an increasing trend from their lowest point. In terms of risk factors, mutual funds during the COVID-19 period were actually more volatile, indicated by a total risk standard deviation of 0.0544, which was higher than the pre-COVID-19 period's standard deviation of 0.0284.

Performance Analysis of Money Market Funds (Money Market Fund)

Money market mutual funds are mutual funds that allocate 100% of their investments to money market securities (Saputri, 2022). According to POJK Number 47/POJK.04/2015, money market securities are defined as debt securities with a maturity of less than one year or money market instruments, either domestic or foreign. Examples of money market mutual fund securities include SBI, SUN, and others.

Based on the analysis of the two data periods, before and during the COVID-19 pandemic, it is evident that the performance of the Sharpe ratio for money market mutual funds was better during the COVID-19 period, with a Sharpe index value calculated using the modified Sharpe Ratio of 0.132548, compared to -0.000033 before the pandemic. It can be seen that the return and risk were actually better during the COVID-19 pandemic. The improvement in the performance of money market mutual funds is attributed to the lower risk factor, indicated by a slightly smaller standard deviation, with a pre-pandemic standard deviation of 0.0129, whereas it was 0.0094 after the pandemic. Additionally, the return during the COVID-19 pandemic increased from 0.002 to 0.004 after the pandemic.

Performance Analysis of Fixed Income Funds (Fixed Income Fund)

Fixed income mutual funds are mutual funds that allocate at least 80% of their managed securities in debt instruments (Nicolescu, 2020). Debt instruments typically provide returns in the form of interest, such as SBI, bonds, deposits, and others. These funds earn returns from the interest obligations of creditors, where the amount of interest is influenced by the prevailing bank interest rates. Fixed income mutual funds are suitable for medium to long-term investments with moderate risk. The main risk associated with this type of mutual fund is the failure of creditors to meet their payment obligations. Some examples of fixed income mutual funds in Indonesia include Sucorinvest Stable Fund, Manulife Pendapatan Bulanan II, Mandiri Investa Dana Utama, and Batavia Dana Obligasi Ultima.

In contrast to equity and money market mutual funds that have shown better returns during the pandemic, fixed income mutual funds actually demonstrated better returns in the period before the pandemic, amounting to 0.0013 or approximately 1.3%. The risk factor was also better in the pre-pandemic period, with a deviation value of 0.0156 compared to 0.0161 during the pandemic. The only factor that improved the performance during the pandemic was the reduced risk-free rate after the announcement of COVID-19. In theory, the Sharpe ratio measures excess return divided by total risk, where excess return is the return minus the risk-free rate. If the risk-free rate decreases, the numerator will increase. In this case, the BI-7 rate serves as the risk-free factor that reduces returns, and it was 1% lower during the pandemic period.

Mixed Asset Fund Performance Analysis

Balanced mutual funds are mutual funds that invest in both equity and debt securities, with an allocation ratio that does not fall under the fixed income mutual fund category (Huda, 2020). The main attraction of this type of mutual fund is portfolio flexibility. To achieve its target returns, the investment manager can allocate funds to various securities to obtain optimal returns.

It was found that the performance of balanced mutual funds during the COVID-19 period was actually better than before the announcement. Both returns and risk levels were better in the period after February 2020. As known, the Sharpe ratio is calculated as the division of excess return by total risk. Excess return is the return rate minus the risk-free rate, so when the return rate is higher, the Sharpe ratio also increases. Similarly, with risk, which is represented by the standard deviation value, when this value is smaller as the divisor, the performance will be higher. Just like the other types of mutual funds studied earlier, balanced mutual funds also show negative values in their performance. This indicates that the performance of mutual funds is still worse than the benchmark risk-free investment.

Mutual Fund Performance Comparison Analysis

After obtaining the performance data of each type of mutual fund studied, it is necessary to determine the best type of mutual fund for investment in the current period. The assessment of mutual funds can be indicated by their performance values, and in this research, the risk-adjusted return method, specifically the Sharpe Ratio, is used. The data comparing the performance of mutual funds in this study can be seen in Table 6.

Table 6. Comparison of Research Mutual Fund Performance

Mutual Funds	Period	
	Jan 2018-Feb 2020	Mar 2020-March 2022
Equity Fund	-0.000619	0.067038
Money Market	-0.000033	0.132548
Fixed Income	-0.000049	-0.000075
Mixed Asset	-0.000399	-0.000066

Based on the data in the table above, it can be seen that money market mutual funds had the best performance before the announcement of COVID-19, with a Sharpe index value of -0.000033. Meanwhile, the worst performance in the pre-COVID-19 period was for equity mutual funds with a Sharpe index of -0.000619. In the period after COVID-19, money market mutual funds still obtained the highest Sharpe index value, which was 0.132548. On the other hand, the lowest position shifted to fixed income mutual funds with an index of -0.000075. Thus, it can be said that money market mutual funds had the best performance and outperformed the risk-free benchmark. This is also supported by the consistent returns of money market mutual funds, which tend to increase.

Money market and fixed income mutual funds are actually types of mutual funds that have stable return movements. During the early stages of the pandemic, these mutual funds did not experience significant declines. This led to their returns not experiencing a sharp recovery like equity and balanced funds, which were heavily impacted by COVID-19 at the beginning of the pandemic and tried to return to their pre-pandemic positions, resulting in a sharp increase after the announcement of the pandemic. Although the returns of equity and balanced funds increased, they still did not reach the return levels before the COVID-19 pandemic. On the other hand, the performance of fixed income mutual funds remained stable, but they did experience some declines during certain periods of the COVID-19 pandemic. Consequently, when investment decisions were made during the period after the announcement of COVID-19, the performance of mutual funds like equity and balanced funds seemed more significant. Money market mutual funds, being less affected by COVID-19 and consistently increasing, had the best performance. Meanwhile, fixed income mutual funds showed the worst performance after the announcement of COVID-19, as the rising global interest rates at the beginning of 2022 put pressure on bond prices. It can be proven that the increase in global interest rates, as indicated by the rise in the FED interest rate at the beginning of 2022, inversely affected the decline in fixed income mutual fund returns. As known, fixed income mutual funds based on debt or bonds are highly influenced by inflation sentiments and global interest rate movements.

There was a drastic decline in mutual fund returns during the approach and early announcement of COVID-19. However, this significant decline did not continue indefinitely, and there was growth in mutual fund performance in Indonesia. Although there was gradual improvement during the post-announcement period, particularly in equity mutual funds, the Net Asset Value/Unit Price (NAB/UP) did not exceed the prices at the beginning of 2018. Additionally, the negative performance indices indicate that mutual fund instruments still underperformed compared to risk-free instruments. This was observed in both fixed income and balanced mutual funds.

Furthermore, a comparison was made by comparing mutual fund performance with the Indonesia Stock Exchange (IHSG) during the same period. It was observed that both the value and performance of IHSG were lower than those of obligation-based mutual funds, such as fixed income and money market mutual funds, before the COVID-19 pandemic, with a Sharpe index value of -0.000391. However, at the end of the research period, IHSG showed better performance compared to all types of mutual funds studied, with a value of 0.167512. This indicates that companies experienced a considerable recovery during the end of the research period, as shown by the positive performance of IHSG, which outperformed the performance of mutual funds. Based on graph 2, it can be seen that the IHSG return rate at the end of the research period was higher than that of all mutual funds studied.

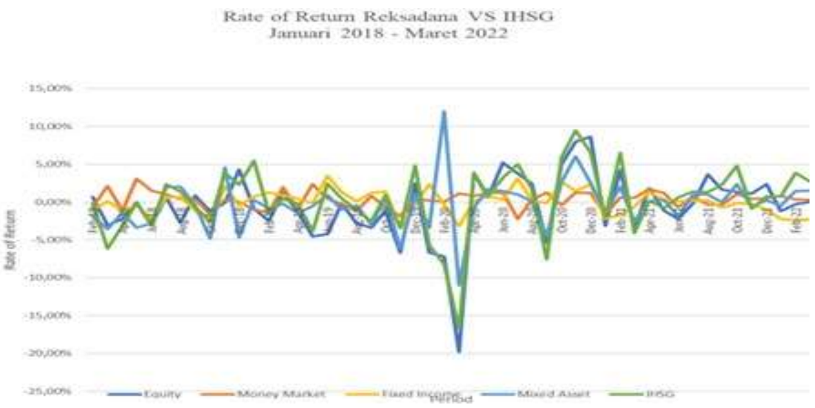


Figure 2. Mutual Fund and JCI January 2018-March 2022 Rate of Return

Tabel 7. Perbandingan Kinerja Reksa Dana dengan IHSG

INVESTMENT	Period	
	Jan 2018-Feb 2020	Mar 2020-March 2022
Equity Mutual Fund	-0.000619	0.067038
Money Market Mutual Funds	-0.000033	0.132548
Fixed Income Mutual Fund	-0.000049	-0.000075
Mixed Mutual Funds	-0.000399	-0.000066
JCI	-0.000391	0.167512

Analisis Statistik Data Reksa Dana

In this study, statistical tests were conducted on mutual fund return data to draw conclusions about the hypotheses. The first test performed was the normality test using the Kolmogorov-Smirnov test with the SPSS program. Next, hypothesis testing was carried out on the data using the paired t-test to determine whether the hypotheses are accepted or rejected. This test will indicate whether there is a significant difference between the conditions of mutual funds before the announcement of COVID-19 and during the COVID-19 period. The data being tested is the return data, which is in grouped form. The significance testing of the difference is conducted in several steps, which are outlined as follows:

1. Determining the parameter being tested
   In this study, the differentiating parameter is the return value of mutual funds, where
   $\mu 1$ = Return of mutual funds before COVID-19
   $\mu 2$ = Return of mutual funds during COVID-19
2. Applying the statistical hypothesis
   Ho = ($\mu 1 = \mu 2$) = There is no significant difference between the conditions of mutual funds before the pandemic compared to during the pandemic.
   H1 = ($\mu 1 \neq \mu 2$) = The conditions of mutual funds before the pandemic differ significantly compared to the conditions during the pandemic.
3. Determining the level of significance (alpha)
   In this study, the level of significance α is set at 0.005 = 5%. So, if the value of Sig. (2-tailed) < 0.05, then the conditions of mutual funds before the pandemic differ significantly compared to the conditions during the pandemic. If Sig. (2-tailed) > 0.05, then there is no significant difference between the conditions of mutual funds before the pandemic and during the pandemic.
4. Testing using SPSS
   To determine the value of Sig. (2-tailed), the SPSS program is used with the paired t-test, and the results are shown in Table 8.

Table 8. Mutual Fund Difference Test Results with the t-Paired test

Types of Mutual Funds	**Uji *t-paired* (*Sig.2 tailed*)**	Ho Accepted/Rejected
Equity Fund	0.005	Ho not accepted - Significant
Money Market	0.460	Ho accepted-Not Significant
Fixed Income	0.550	Ho accepted-Not Significant
Mixed Asset	0.362	Ho accepted-Not Significant

The dependent t-test results show that equity mutual funds exhibit a significant difference between the return before the announcement of COVID-19 in Indonesia and the period during the pandemic. This is indicated by the Sig. (2-tailed) value of the t-paired test, which is smaller than 0.005.

Research Discussion

Based on the previously outlined research results, it can be discussed that open-end mutual funds in Indonesia experienced better performance over time after the announcement of COVID-19 in Indonesia. This trend is similar to what occurred in New Zealand. In a previous study conducted by Puri, "Mutual Fund Resource Mobilisation and Performance Before and During COVID-19," it was stated that mutual fund performance during the COVID-19 announcement period in New Zealand initially declined but gradually improved over time [11]. A similar trend is also observed with mutual funds in Indonesia, as shown in Figure 4.2, which demonstrates that all examined mutual funds displayed better performance during the post-pandemic period. The significant decline during the early pandemic period had a considerable impact, but the situation gradually improved. For example, in the case of equity mutual funds, the return in March 2020 was at -238.85%, but it immediately improved in the following month to 36.77%.

[12] in his study titled "Financial Markets Under the Global Pandemic of COVID-19," stated that there was an increase in stock investment risk during the early COVID-19 period when the research was conducted [12]. This study also proved that the COVID-19 pandemic impacted the increased risk of mutual funds. The total risk value, represented by the standard deviation during the COVID-19 period, increased for two types of mutual funds: equity mutual funds and fixed income mutual funds. Equity mutual funds had a standard deviation of 0.0544, which was higher than the pre-COVID-19 period (0.028). Similarly, fixed income mutual funds had a higher risk during the COVID-19 pandemic, with a standard deviation of 0.0161 compared to 0.0156 before the announcement.

Stated that bond prices would decline when interest rates increase [13]. This explains the decrease in the performance and return rates of fixed income mutual funds during the late 2021 and early 2022 periods, as global interest rates, specifically The FED interest rate, increased throughout 2022. The global inflation resulting from the COVID-19 pandemic forced regulators to raise interest rates to control inflation.

On the other hand, equity mutual funds experienced a drastic decline at the beginning of the pandemic due to preventive measures taken by the government, which can be considered the main factor for the decline in issuer performance. Arifin (2001) stated that fundamental factors influence stock price movements [14]. Fundamental factors directly affect issuer performance. With the occurrence of COVID-19 and all the limitations related to issuer production, the issuers' performance was disrupted, impacting their stock values. This affected the value of the issuers' stocks. As a result, equity-based mutual funds faced the highest risk at the beginning of the COVID-19 announcement period due to the direct impact of government preventive regulations. However, as time passed and industries and economies needed to continue, equity mutual funds were able to grow and generate progressive returns. These funds achieved high return rates, allowing the influence of risk factors to be minimized in performance calculations.

All types of mutual funds displayed better performance compared to the period before the pandemic announcement, despite experiencing significant declines in March 2020, especially among those influenced by issuers. The initial decline during the pandemic can be attributed to the enforced Large-Scale Social Restrictions (PSBB) that caused several business sectors, such as tourism, to collapse [15]. This can be explained by the increasing investor confidence as global socio-economic stability, particularly in Indonesia, improved over time. A similar trend occurred in New Zealand, as described by Puri, where investor confidence improved over time after the first COVID-19 pandemic [11].

Regarding the significance of the differences between the conditions of mutual funds before and after the COVID-19 announcement, the test was conducted on the rate of return data as raw data. The test performed was the dependent t-test because the data was the same and related to the COVID-19 variable. The results in Table 4.15 indicate that money market, fixed income, and balanced mutual funds have Sig. (2-tailed) values above 0.005, meaning that these three mutual funds did not exhibit significant changes compared to the period before the COVID-19 announcement in Indonesia. However, equity mutual funds had a statistical result indicating that they showed a significant difference between the periods before and after the COVID-19 announcement in Indonesia. This indicates that COVID-19 had an impact on mutual funds, particularly equity mutual funds in Indonesia.

4. CONLUSION

From the performance calculations, it is found that the money market mutual fund has the best performance during this pandemic period. The Sharpe Ratio performance value obtained is 0.132548. The money market mutual fund provides a positive return with lower risk compared to other types of mutual funds. This is indicated by the standard deviation value of the money market mutual fund during the pandemic period, which is 0.0094, smaller than other types of mutual funds. The standard deviation also shows that the movement of this mutual fund is more stable compared to other types.

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