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ANALYSIS OF THE DIFFERENCE IN AVERAGE ABNORMAL RETURNS OF BIG BANKS STOCKS BEFORE AND AFTER THE FEDERAL RESERVE'S INTEREST RATE CHANGES (STUDY OF EVENTS IN 2022-2024)

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Abstract
The banking sector as one of the sectors that dominate the Indonesian stock market is very sensitive to changes in interest rates so this move can affect profitability so investors will make decisions on this information. This study aims to analyze the impact of the Fed's interest rate changes on the Average Abnormal Return (AAR) of Big 4 Banks stocks in Indonesia during the 2022-2024 period. The banking sector is very sensitive to changes in interest rates so it can affect profitability so investors will make decisions on this information. The event study method was used with a pre-event window (t-5 to t-1), event day (t0), and post-event window (t+1 to t+5). The data used came from newyorkfed.com, investing.com, and idx.co.id. The results showed that there was no significant difference in AAR before and after the change in interest rates, both the increase during 2022-2023 and the decrease in September 2024, as evidenced by the significance values of the Paired Sample T-Test of 0.130 and 0.057 (> 0.05, respectively).

Keywords: Event Study, Average Abnormal Return, Fed interest rates, Big 4 Banks

1. Introduction

In the capital market, companies or other entities issue financial instruments such as stocks, bonds, and derivatives to sell to investors as a means to raise capital. The definition of the capital market in accordance with Law Number 8 of 1995 concerning the Capital Market (UUPM) is activities related to Public Offerings and trading of Securities, Public Companies related to the Securities they issue, as well as institutions and professions related to Securities. In Indonesia, the role of the capital market is accommodated by the Indonesia Stock Exchange (IDX), which is the place where the shares of listed companies are traded.

The banking sector has a very vital position in the financial system of a country, including Indonesia. Banking not only plays a role as a financial intermediary institution, but also as one of the largest contributors to the capital market. On the IDX, large banks such as Bank Mandiri, BRI, BNI, and BCA, known as the Big 4, dominate the market capitalization of the financial sector. The performance of banking stocks in Indonesia is greatly influenced by global economic dynamics and monetary policy, both domestically and abroad

Table 1. Big Banks' Weights on the Composite Stock Price Index for the August 2023 Period.

It	Code	Issuer Name	Market Cap	JCI Weight (%)
1	BBCA	Bank Central Asia Tbk.	1.120T	10,93
2	BBRI	Bank Rakyat Indonesia (Persero) Tbk.	833T	8,13
3	BMRI	Bank Mandiri (Persero) Tbk.	557T	5,43
4	BBNI	Bank Negara Indonesia (Persero) Tbk.	169T	1,65
Total			2.679T	26,14

(Source: IDX)

In the context of global monetary policy, the Federal Reserve (The Fed), as the central bank of the United States, plays a key role. One of the main policies that market participants around the world often pay attention to is the Federal Reserve's benchmark interest rate. The Federal Reserve (The Fed) aims to achieve economic stability and maintain inflation and balanced economic growth.

The factor that triggered Jerome Powell (The Fed Chairman) to wait until March 2022 to raise interest rates because he wants workers in low- and middle-income communities to benefit from a strong job market, something that became clear during the "Fed Listens" tour, a series of events involving a diverse group of Americans, from union members to small business owners, and retirees (Laura, 2024).

The Federal Reserve (The Fed) began a series of interest rate hikes starting in March 2022 to curb rising inflation, which surged due to supply chain disruptions and increased demand after the COVID-19 pandemic. The inflation rate has consistently been above the Fed's target of 2% since March 2021, which is driving these aggressive measures. By the end of 2022, the Fed had raised interest rates seven times, taking it from near zero percent to a range of 4.25%–4.5%, marking the fastest pace of rate hikes since the 1980s.

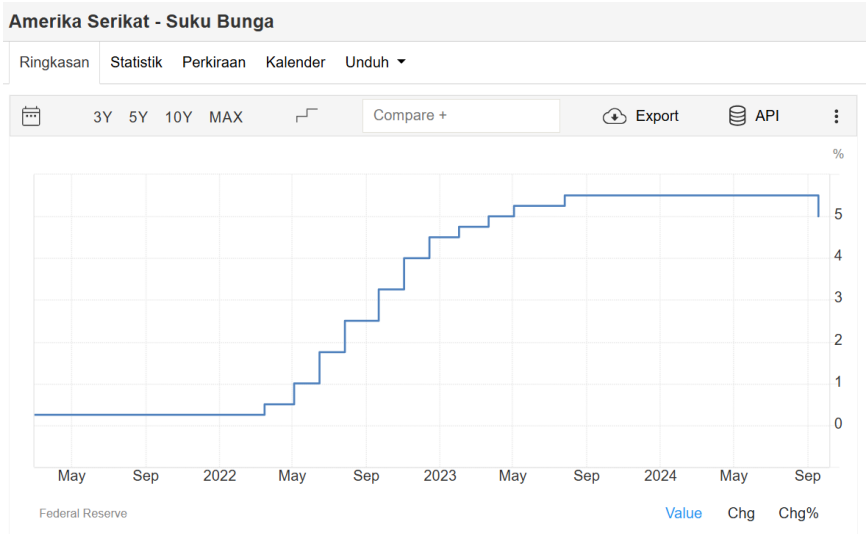

Figure 1. Historical Graph of the Fed Interest Rate (FFR) Period 2022-2023 (Source: tradingeconomics.com)

In 2023, the Fed continues to raise its interest rates, albeit at a slower pace. In July 2023, the target policy rate has risen to 5.25%–5.5%, the highest level in 22 years. Then until August 2024, the Fed will hold interest rates at 5.25%-5.5%. The main goal remains to control inflation, despite concerns about its impact on economic growth and employment.

The Fed's interest rate changes not only affect the American domestic market, but also have an impact on global capital flows, exchange rates, and liquidity in developing countries, including Indonesia (Zhang, 2021). The Fed's interest rate hikes often cause capital outflows from emerging markets to assets that are considered safer in the United States, triggering volatility in emerging markets.

On the other hand, Bank Indonesia (BI), as the central bank in Indonesia, also plays an important role in maintaining domestic economic stability through the regulation of BI's benchmark interest rate. The relationship between the Fed's interest rate and BI's benchmark interest rate is very complex. When the Fed raises interest rates, BI may have to respond by raising domestic interest rates to maintain rupiah exchange rate stability and prevent capital outflows (Bank Indonesia, 2022). According to Reza (2025), interest

rates in developing countries are an important factor that has a major impact on stock returns. From the perspective of foreign investors, if the Fed raises interest rates, there will be capital outflows or foreign investors who invest in Indonesia will sell off to increase investment downside risk, resulting in JCI will tend to be more volatile caused by Net Foreign Buy (Sell) at the Fed Funds Rate (Fed) experiencing an era of high interest rates (Anggorowati, 2024; Maruta et al., 2024). According to Lamaharani et al. (2024) and Manap et al. (2023), capital outflows can be triggered by interest rate hikes by countries that have a major influence on global economic flows, resulting in volatility.

After a series of aggressive interest rate hikes from 2022 to 2023, the Federal Reserve in September 2024 decided to lower the benchmark interest rate by 50 basis points. The move marks a significant shift in the Fed's monetary policy, which previously focused on controlling high inflation that peaked in mid-2022. This was triggered by economic data showing that inflation (Consumer Price Index) is starting to get under control near the 2% target.

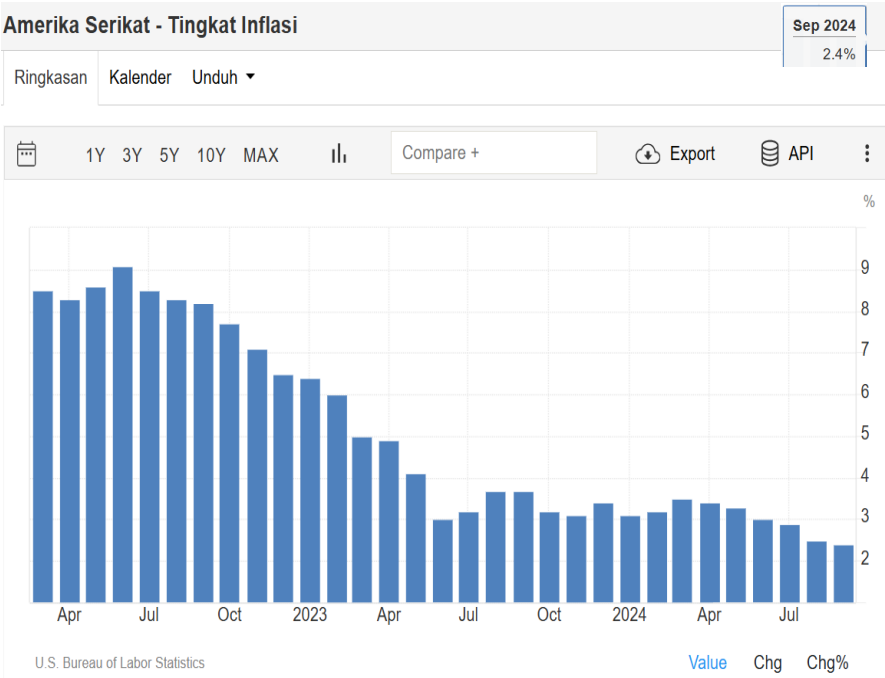

Figure 2. Consumer Price Index for March 2021-September 2024
Source: (Trading Economics)

Banking stocks in Indonesia, which are highly sensitive to changes in interest rates, often face challenges when there are changes in global interest rate policy. According to Manap et al. (2023), the Fed's interest rate policy can affect borrowing costs to reduce profitability and investment returns. According to Ameci et al. (2021), negative market sentiment can cause investors to move capital and result in excessive stock offerings. Therefore, understanding how the Fed's interest rate policy affects abnormal returns of banking stocks in Indonesia is very important, especially in the face of an increasingly complex global macroeconomic situation.

This study will examine how the abnormal differences in the stock returns of the largest banks in Indonesia before and after the Federal Reserve interest rate changes. The focus on the Big 4 Banks (Bank Mandiri, BRI, BNI, and BCA) aims to be able to provide a clear picture of whether there is a difference in the average abnormal return in the banking sector represented by the 4 banking companies with the largest capitalization and liquidity in Indonesia caused by the latest Fed interest rate policy in the 2022-2024 range.

2. Theoretical Background

2.1 Capital Markets

According to Law Number 8 of 1995 concerning the Capital Market (UUPM), the capital market is an activity related to Public Offerings and trading of Securities, Public Companies related to the Securities they issue, as well as institutions and professions related to Securities.

2.2 Signaling Theory

This theory was first introduced by Spence, M. (1973) in the study of Job Market Signaling. Signal theory is used to understand how a company's actions, such as the announcement of financial statements or a particular strategy, serve as signals to investors. According to Spence, M (1973), an effective signal is one that involves a "cost" so that only entities with a high hierarchy can transmit it.

2.3 Risk-Taking Channel of Monetary Policy

The Risk-Taking Channel of Monetary Policy Theory put forward by Valentina et al. (2012) explains how the monetary policy of the United States can affect capital flows to emerging markets through an increase or decrease in investment risk. The Fed's interest rate changes will adjust investment risks in emerging markets, including Indonesia, resulting in a decline in stock prices, especially in the banking sector which is vulnerable to changes in credit costs.

2.4 Event study

Event study is one of the studies that discusses the occurrence of a market reaction at a certain event that is usually announced as an event so that it can be used to test existing information and announcements (Hartono, 2018).

The observation period of the event study consisted of:

1) The pre-event window is the time before an event occurs.
2) An event day is the day an event occurs.
3) An event window is the time after an event occurs.

2.5 Abnormal Return

Abnormal return is the difference between the actual return and the expected return by the investor. If the AR is greater than 0, it means that the stock has a return higher than expected (positive) while if the AR is less than 0, it means that the return is below expectations (negative).

Research by Frikasih et al. (2023) is an event study study that aims to examine the differences between AR and TVA before and after the increase in FFR in JCI. This study has an observation period of 80 days and the results of this study are that there is no significant difference in abnormal market returns before and after the event.

Research by Frikasih et al. (2023) is an event study study that examines the differences between AR and TVA before and after the increase in FFR in the United States stock NASDAQ 101 index. This study has an observation period of 80 days and the results of this study are that there is no significant difference in abnormal market returns before and after the event.

Melisa's research (2022) is a study of the Covid-19 pandemic event. This study has an event window of 20 days before and after the announcement of the first case of Covid-19 in Indonesia on March 2, 2020, so that the total observation period is 40 days. In this

study, the Paired Sample T-Test and Wilcoxon Signed Rank Test were used. Overall, the results of the study were that there was no significant difference in abnormal returns between the day of the event as a whole and sectoral.

The research by Alfionita and Cahyaningdyah (2022) aims to find out whether there is a difference in the average abnormal stock returns of the tourism, hotel, restaurant, transportation, and pharmaceutical sub-sectors before and after the Covid-19 pandemic and the implementation of the New Normal in Indonesia. The observation period for this study is 10 days, consisting of 5 days before the event and 5 days after the event. The results of this study show that there is no significant difference in the average abnormal return in the tourism, hotel, restaurant, and transportation sectors. Meanwhile, there is a significant difference in the average abnormal return of the pharmaceutical sector.

Research by Meliyati et al. (2023) aims to find out whether the content of information in the first announcement of the Covid-19 pandemic in Indonesia and the revocation of the PPKM policy caused a significant difference before and after the event. The observation period for this study is 10 days, consisting of 5 days before the event and 5 days after the event. The result of this study is that there are no significant differences around the first announcement of the Covid-19 pandemic in Indonesia and the revocation of the PPKM policy.

2.6 Research Outline

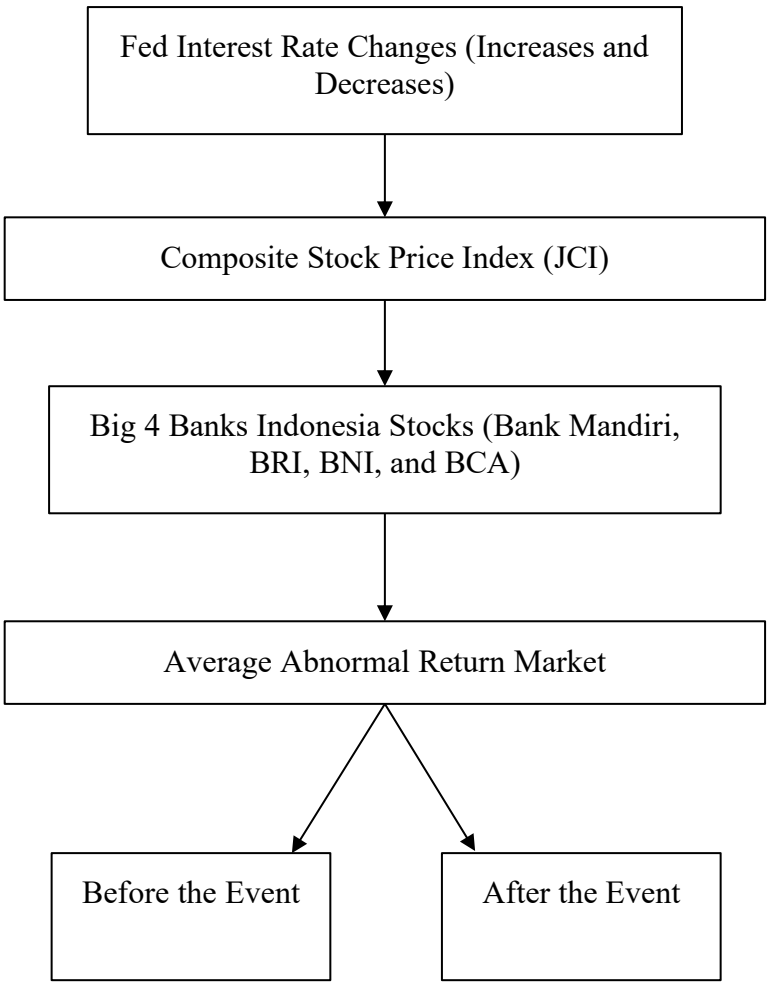

Figure 3. Conceptual Framework

2.7 Hypothesis

H0: There is a significant difference between the AAR before and after the Fed's interest rate change action during 2022-2024.

Ha: There is no significant difference between the AAR before and the AAR after the Fed's interest rate change action during 2022-2024.

Hypothesis conditions:

1) If the Asymp.Sig (2-tailed) value > 0.05 then H0 is rejected, where there is no significant difference in the average abnormal return of Big Banks stocks around the date of the Fed's interest rate change announcement.
2) If the Asymp.Sig (2-tailed) value < 0.05 then H0 is accepted, where there is a significant difference in the average abnormal return of Big Banks stocks around the date of the Fed's interest rate change announcement.

3. Methods

The data in this study were obtained from newyorkfed.com, investing.com, and idx.co.id. This study is a case study of 4 banks with the largest market capitalization and liquidity in Indonesia which are considered to have a dominant influence on the views of domestic and foreign investors on the financial sector of the Indonesian capital market.

3.1 Data Analysis Methods

The event study in this study is an observation to find out if there is a difference in the average abnormal return after and before the Fed's interest rate change event. The observation period will be carried out 5 days before the Fed's interest rate change which is called the pre-event window, the event day is the day when the interest rate change occurs, and 5 days after the Fed's interest rate change or post-event window. So that the total observation period is 10 days. According to Miller (2023), if what you want to study is the impact of the same event that is repeated, then the average of each event window (t) can be calculated. The Fed's interest rate hike will be obtained from the average data from each event window starting from March 2022 to July 2023 and the Fed's interest rate cut will be obtained on event day 18 September 2024. To facilitate this research, the author uses software in the form of Microsoft Excel and SPSS version 27.

3.2 Abnormal Return

Abnormal return is the difference between the actual return and the expected return by the investor. If the AR is greater than 0, it means that the stock has a return higher than expected (positive) while if the AR is less than 0, it means that the return is below expectations (negative). Expected return uses a market-adjusted model, the expected return that is considered the best estimate is the return of the market index at that time (Hartono, 2017).

$$AR_{i,t} = R_{i,t} - E(R_{i,t})$$

Where:

$AR_{i,t}$ = Abnormal return
$R_{i,t}$ = Actual return of the stock
$E(R_{i,t})$ = Expected Return (JCI)

$$AAR_t = \frac{\sum_{i=1}^{k} AR_{i,t}}{k}$$

Where:

AAR_t = Average abnormal return
$AR_{i,t}$ = Abnormal return

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k = Number stock

3.3 Hypothesis Testing

If the data to be used in the study is normally distributed, the test will be carried out by testing the Paired-sample T Test, while if the data used is abnormally distributed, then the test used is the Wilcoxon Signed Rank Test.

4. Results and Discussion

4.1 Descriptive Statistical Test

Table 3. AR Descriptive Statistics of Fed Interest Rate Hikes 2022-2023

	BBCA	BBRI	BMRI	BBNI	Mean	Median	Std Dev
T-5	0.005143	0.002423	0.001418	0.005297	0.003570	0.003783	0.001688
T-4	0.002968	0.001303	-0.003106	0.002926	0.001023	0.002114	0.002477
T-3	0.004605	0.005577	0.004555	-0.002118	0.003155	0.004580	0.003071
T-2	0.001014	0.005221	0.003278	0.001489	0.002750	0.002383	0.001657
T-1	-0.002510	0.003519	0.011286	-0.001530	0.002691	0.000995	0.005464
t0	-0.002005	-0.002409	-0.001089	-0.005270	-0.002693	-0.002207	0.001563
t+1	0.001698	-0.001874	0.005523	0.009120	0.003617	0.003610	0.004116
t+2	0.005122	0.000731	-0.011429	-0.004427	-0.002501	-0.001848	0.006164
T+3	-0.001303	-0.001760	-0.000133	-0.005088	-0.002071	-0.001531	0.001840
T+4	-0.000477	-0.001597	0.003355	-0.001664	-0.000096	-0.001037	0.002047
t+5	0.004483	-0.001193	0.002830	0.005497	0.002904	0.003657	0.002550

(Source: Data processed, Ms. Excel)

Descriptive statistics of abnormal returns during the t-5 to t+5 window of the Fed's interest rate hike period in the 2022-2023 period show a fluctuating pattern in the stocks of the four largest banks in Indonesia. In the period before the event day (t-5 to t-1), the average abnormal return tended to be positive, starting from 0.003570 in Q-5 and experiencing a slight decrease to 0.002691 in Q-1. This value shows that the market has begun to anticipate the policy of raising interest rates. The stability of abnormal return movements is reflected in the low standard deviation, especially in t-2 (0.001657).

On the day of the announcement (t0), the average abnormal return decreased to (-0.002693). Some stocks, such as BMRI, recorded the highest abnormal return (-0.001089), while BBNI actually experienced a significant decrease (-0.005270). This shows that there is a mixed market reaction to the Fed's interest rate policy announcement.

Post-event day (t+1 to t+5), the average abnormal return fluctuates. At t+1, the average value decreased to 0.003617, although the median remained positive (0.003610). Furthermore, the abnormal return movement is inconsistent, as seen in t+2 which shows a decline to -0.002501 before recovering at t+5 with a value of 0.002904. The increase in volatility is reflected in the standard deviation of the highest deviation at t+2 (0.006164). Overall, these results indicate that the Fed's decision to raise interest rates triggered fluctuations in the stock market, but the impact did not show a clear and significant trend, hinting that most market participants had anticipated the policy before the official announcement.

Table 4. AR Descriptive Statistics on the Fed's Interest Rate Cut September 18, 2024

	BBCA	BBRI	BMRI	BBNI	Mean	Median	Std Dev
T-5	0.007300	-0.014200	0.017300	0.000100	0.002625	0.003700	0.011475
T-4	0.000004	-0.004792	-0.014961	-0.013641	-0.008348	-0.009217	0.006208
T-3	-0.006566	0.022362	-0.005217	0.002672	0.003313	-0.001273	0.011550
T-2	0.004679	-0.002515	0.018103	0.001929	0.005549	0.003304	0.007689
T-1	0.012243	0.009772	-0.003029	0.009188	0.007044	0.009480	0.005927

t0	0.016142	-0.000395	-0.009741	0.012189	0.004549	0.005897	0.010264
t+1	0.009074	0.015912	0.007028	0.007666	0.009920	0.008370	0.003538
t+2	0.012014	0.019029	0.016321	0.004469	0.012958	0.014168	0.005503
T+3	-0.014054	0.004191	-0.003711	-0.000355	-0.003482	-0.002033	0.006717
T+4	0.009462	-0.031367	-0.025470	-0.029650	-0.019256	-0.027560	0.016719
t+5	-0.014293	-0.052111	-0.003940	-0.000468	-0.017703	-0.009116	0.020506

(Source: Data processed, Ms. Excel)

Based on descriptive statistical data on abnormal returns from the four largest banks in Indonesia (BBCA, BBRI, BMRI, and BBNI) after the Fed's interest rate cut on September 18, 2024, it can be seen that the mean abnormal return value ranges from 0.009920 to -0.019256 in the t+1 to t+5 event window. The positive mean value was recorded at t-5 (0.002625) to t+2 (0.012958) with -0.008348 at t-4, while at t+4 and t+5 there was a significant decrease to -0, 019256 and -0.017703. This suggests that there was a positive response in the short term immediately after the announcement of the rate cut, but the impact began to fade and become negative in the following days.

If viewed from the standard deviation, the highest data distribution was seen at t-5 (0.011475), which then decreased at t-4 (0.006208). This variability increased again at t+4 (0.016719), indicating the instability of returns around the period. This can indicate a market reaction that initially tends to be positive but turns volatile and tends to be negative in the medium term after the interest rate cut.

Judging from each stock, BMRI recorded the highest abnormal return on t-2 (0.018103), showing a significant positive response, while BBRI recorded a drastic decline on t+4 (-0.031367) and t+5 (-0.052111). This shows that there is a difference in the response between large bank stocks to interest rate policies, where most stocks do not maintain abnormal positive returns consistently until t+5.

Overall, the positive response at the beginning of the period (t0 to t+2) reflects the market's optimism for the Fed's interest rate cut, but this did not last long because there were other factors that affected market performance, causing abnormal returns to fall again in the following days.

4.2 Hypothesis Test Results

Table 5. Hypothesis Test Results

		Asymp.Sig (2-tailed)	Conclusion
Pair 1	AAR before the increase-AAR after the increase	0.130	No significant difference
Pair 2	AAR before decline-AAR after decline	0.057	No significant difference

(Source: Data processed, SPSS 27)

Shapiro Wilk's normality test has been carried out, each of which has a Sig. value greater than 0.05 so that the four data are distributed normally. Based on the results of the differential test of the Fed's interest rate changes in 2022-2024 so that the test will use the Paired Sample T Test to test the difference in AAR before and after the Fed's interest rate hike and decrease event, the Asymp figure is obtained. Sig (2-tailed) is valued at 0.130 and 0.057 respectively which has a > value of 0.05 so H0 is rejected. This result means that there is no significant difference in AAR before and after interest rate changes, both rising and falling.

4.3 Discussion

The difference between AAR before and after the Fed's interest rate change. This result is in line with previous research conducted by Frikasih et al. (2023) that the Fed's interest rate hike event does not contain information that has a significant difference in the abnormal return of the Indonesian stock market. Research by Frikasih et al. (2022) also stated that in the event of the Fed's interest rate hike , it did not provide a significant abnormal difference in returns on the United States stock market, namely the NASDAQ 101 index.

There is no difference in the AAR before and after the Fed's interest rate hike event because the Fed's interest rate hike is familiar information for investors. The Fed's interest rate hike is based on inflation and labor market data circulating in the US, so foreign investors have anticipated this before it happens on the event day and make the information about interest rate hikes discounted. Thus, the Fed's interest rate hike event did not make a significant difference to the return of Big 4 Banks' shares.

When there is a series of interest rate hikes by the Fed and US inflation approaching the Fed's target of 2%, the market has anticipated interest rate cuts by the Fed. Jerome Powell's speech "Reassessing the Effectiveness and Transmission of Monetary Policy" on August 23, 2024 said "The time has come for policy to adjust" hinting at the time for the Fed to cut interest rates after consecutive increases in the range of 2022 to 2023. In his speech, the Fed Chairman said that the Consumer Price Index/inflation figure that has approached 2% underlies the Fed's decision to cut interest rates by 50 bps at the FOMC Meeting on September 18, 2024. Seeing the signs that have been widely spread in the public media finally resulted in no excessive market reaction to the Fed's interest rate cut.

5. Conclusion

There was no significant difference in Average Abnormal Return due to the Fed's interest rate changes, both increases and decreases in the Indonesian capital market, especially in Big Banks stocks before and after the event. This is because the economic information that has been spread to the public is the basis for the Fed's decision to be reflected in the market to the event of interest rate changes so that there is no excessive reaction such as abnormal returns around the event day. Investors should not rush to make irrational decisions on information circulating in the media as long as the event does not change the overall fundamentals of the stock. Further research can use more variables, such as BI's benchmark interest rate, rupiah exchange rate, and Indonesian inflation data.

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