WILL "THE HAWK" MAKE THE MARKET RANDOM WALK?

Novi Swandari Budiarso*
Winston Pontoh
Sam Ratulangi University, Jl. Kampus Bahu, Manado, Indonesia, 95115
**novi.sbudiarso@unsrat.ac.id*

A R T I C L E I N F O

Article history:
Received March 15, 2024
Revised April 22, 2024
Accepted May 7, 2024

Key words:
Market Return; Interest Rate; Hawkish Stance; Efficient; Random Walk

DOI:
https://doi.org/ 10.33508/jako.v16i2.5445

A B S T R A C T

***Research Purposes**. Objective of study is examining market efficiency in Indonesia under high interest rates issue.*
***Research Methods.** Observation period on Indonesia stock composite index starts from June 7, 2023 to February 29, 2024. Several procedures are applied in objective of hypothesis testing, which are: (1) mean difference test supported by Cohen's test and normality test by Anderson-Darling in terms of detecting how market returns differ in the two observation periods; (2) runs test runs test in terms of detecting the randomness of market returns after the risk-free rate; (3) ARIMA is supported by the Augmented Dickey-Fuller test in terms of detecting whether randomness is just noise (or white noise); and (4) variance ratio test in terms of confirming the results of runs test and ARIMA to determine whether the market returns are efficient or just a noise.*
***Research Results and Findings.** Consistent with efficient market hypothesis, findings show that the market condition during the effective interest rate period of 6% has higher returns, riskier, better risk-return trade-off, and less efficient. During that period, noise seemed to play a role in creating market gaps. This study concludes that monetary policy in maintaining high effective interest rates cannot determine whether the market is more efficient. As implication, the high effective interest rate tends not to result in a shift in investor behavior to allocate stock investments to risk-free assets. This study contributes to develop the finance and accounting science, especially in the fair presentation of financial information including investment decisions.*

A B S T R A K

***Tujuan Penelitian.** Tujuan riset ini untuk mengkaji efisiensi pasar di Indonesia di bawah isu penetapan suku bunga efektif yang tinggi.*
***Metode Penelitian.** Periode pengamatan indeks komposit di Indonesia adalah sejak tanggal 7 Juni 2023 sampai dengan tanggal 29 Februari 2024. Beberapa prosedur yang diterapkan dalam tujuan pengujian hipotesis adalah: (1) uji beda rata-rata yang didukung dengan uji Cohen dan uji normalitas Anderson-Darling digunakan untuk mendeteksi perbedaan keuntungan pasar dalam dua periode observasi; (2) runs test digunakan untuk mendeteksi keacakan pengembalian pasar setelah tingkat pengembalian bebas risiko; (3) ARIMA yang didukung uji Augmented Dickey-Fuller digunakan untuk mendeteksi keacakan derau (atau derau putih); dan (4) uji variance rasio untuk mengkonfirmasi hasil runs test dan ARIMA untuk menentukan apakah pengembalian pasar adalah efisien atau hanya sekedar derau.*
***Hasil Penelitian dan Temuan Penelitian.** Konsisten dengan hipotesis pasar efisien, temuan menunjukkan bahwa kondisi pasar pada periode suku bunga efektif 6% memiliki pengembalian lebih tinggi, lebih berisiko, imbal risiko-pengembalian yang lebih baik, dan kurang efisien. Selama periode tersebut, derau/kebisingan tampaknya berperan dalam menciptakan kesenjangan pasar. Penelitian ini menyimpulkan bahwa kebijakan moneter dalam mempertahankan suku bunga efektif yang tinggi tidak dapat menentukan apakah pasar lebih efisien. Implikasinya, kenaikan suku bunga efektif cenderung tidak mengakibatkan pergeseran perilaku investor untuk beralih pada investasi bebas risiko. Penelitian ini berkontribusi untuk mengembangkan ilmu keuangan dan akuntansi, khususnya dalam penyajian informasi keuangan secara wajar termasuk keputusan investasi.*

INTRODUCTION

The interest rate is a macroeconomic indicator that reflects the rate of return on risk-free assets. Interest rates are also often the main tool in controlling the rate of inflation (Warjiyo & Zulverdi, 1998; Haryono et al., 2000; Mutmainnah & Mahfiyah, 2023). However, changes in effective interest rates also have an inverse impact on stock returns in the capital market as reported by Tursoy (2019), Gu et al. (2022), and Javangwe & Takawira (2022). This circumstance implies that a possibility for shifting investors' interest into risk-free assets will happen if the stock investment does not offer an opportunity for an optimal risk-return trade-off. In the context of the efficient market hypothesis (EMH), information about changes in effective interest rates becomes an urgent for investment decisions of the investors in the market.

This study is motivated by information on changes in the effective interest rate set in Indonesia. Since the COVID-19 pandemic struck in 2020, the Indonesian Government has routinely evaluated the application of interest rates until they reached the lowest point of 3.50%. However, since the inflation rate began to increase in early 2022, the determination of the effective interest rate has begun to change. Information from the Central Bank of Indonesia shows that the effective interest rate will be at its highest point at the end of 2022, which is 5.50%. Since 2023, the effective interest rate has continued to change until it reached 5.75% and at the end of the year, it was at 6.00%. On February 21, 2024, the Central Bank of Indonesia apparently did not change monetary policy so that the interest rate setting did not change or remained at 6%. Figure 1 describes that the trend of the prices of stock composite (or IHSG) in those periods (the interest rate of 5.75% and 6%) tends to increase, especially in the period since the effective interest rate became 6%. Based on phenomenon, this study aims to examine market efficiency in Indonesia in the context of EMH-weak form under the urgency of determining effective interest rates which refers to a Hawkish stance. As a novelty, this study provides a method to clarify whether the randomness of returns in Indonesia is efficient or just noise during two Hawkish periods. The remains of this study are proceed as follows, reviews the relevant literature to develop the hypothesis, explains the method of analysis, discusses the results, and finally concludes the contributions, implications, limitations, and suggestions for further studies in the same field.

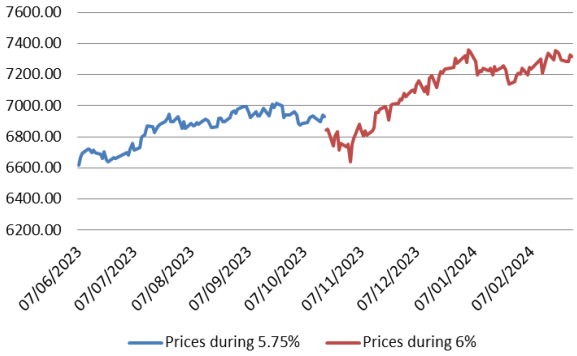

Figure 1. IHSG in Different Periods of Interest Rate

LITERATURE REVIEW

The Efficient Market Hypothesis and Interest Rate

The basic assumption of the efficient market hypothesis is that current market prices are a reflection of current information (Fama, 1970). Fama (1970) explains several types of information, which are reflected in historical market prices (weak form), publicly published information (semi-strong form), and the availability of relevant and comprehensive information (strong form). Fama (1970) states that the market will be efficient if previous market prices are independent of current stock prices.

Fama (1970) explained that information plays a significant role in the capital market because it is closely related to expected return and risk. This implies that information is important for investors in obtaining profits with inherent risk factors. For example, Sumanti & Pangemanan (2012) find that exchange rate fluctuations tend to trigger negative sentiment from investors in the capital market. Rahayu (2017) finds that investors tend to overreact to positive information when the market is in a bullish position compared to a bearish one. Novitasari & Handayani (2020) find that investors tend to respond with positive sentiment to any information disclosed on operations risk management and also the risk of corporate empowerment. Zuhroh & Putri (2021) found that investors in Indonesia reacted positively after the announcement of the COVID-19 pandemic so that stock returns and trading activity were higher than in the period before the pandemic was announced. Diana (2022) finds that information about asset ownership as reflected in firm size is a trigger for underpricing. Asyari & Arieftiara (2022) find that investors will not react to information about carbon emissions disclosure but will be different if there is environmental performance disclosure. On the other hand, Putikadea & Siregar (2023) find that carbon emission disclosure greatly

determines investors' reactions to shares in the basic materials sector. In contrast, Zidniilman & Devia (2023) explain that investors' ability to sort information tends not to result in overreaction. This condition is exactly with the evidence by Rachmawati (2019), Sayudha & Rasmini (2021), and Indrawan & Dewi (2023) when the Central Bank of Indonesia announced a policy to change the effective interest rates. Reversely, Mahendra & Rasmini (2019) find that investors tend to be more reactive in responding to information about interest rate increases if there is a possibility of abnormal returns. Gayatri et al. (2024) also find that markets tend to be efficient in the semi-strong form because investors respond positively to information about policy changes in interest rates.

Malkiel (1989, 2003) explains that changes in effective interest rates have an impact on investors' investment preferences. Malkiel (2003) explains that changes in effective interest rates tend to have a negative impact on stock returns, causing mean reversion in the EMH assumption. This condition is similar to cases in Turkey from January 2001 to April 2017 when investor's preferences changed as the impact of the policy of setting effective interest rates is deregulated in following the dynamic market model (Tursoy, 2019). Case in China, Gu et al. (2022) find that the central bank's policy to control the capital market through increasing interest rates resulted in a decrease in stock prices from January 2005 to February 2018 due to a shift in attention from investors. In South Africa over the period from 1980 to 2020 or the era of an open economy, Javangwe & Takawira (2022) find that an increase in interest rates which is triggered by the risk of the exchange rates resulted in stock prices dropping because investment portfolios tended to prefer risk-free assets.

Interest Rates and Stock Returns in Indonesia

Consistent with Malkiel (1989, 2003), some empirical evidence in Indonesia also shows that changes in effective interest rates tend not to be in the same direction as stock returns. During the 2014 to 2018 period, Nugroho & Hermuningsih (2020) found that the increase in effective interest rates was significant and not in line with the returns of the construction and building firms. Jihadi et al. (2021) also find that changes in interest rates are significant and not in the same direction as stock returns from firms listed in LQ45 from January 2015 to December 2019. Similarly, Ramadhanti & Pramesti (2023) also find that market returns from the composite index tended to have a negative relationship with changes in the effective interest rate from 2015 to 2019. Audy et al. (2022) found that the market return of the BUMN-20 Index from July 2016 to June 2021 had a unidirectional relationship with interest rate policy, especially during the COVID-19 pandemic. Akerina & Putri (2023) found that an increase in the effective interest rate in the period 24 October 2022 to 28 April 2023 tends to have a varied impact where apart from several indices experiencing increases, there are also several indices experiencing decreases. Mourine & Septina (2023) found that an increase in interest rates in the period 2015 to 2020 tends to result in stock returns in the pharmaceutical sector tending to experience a significant decline.

Market Efficiency in Indonesia

Furthermore, empirical evidence also shows that market efficiency conditions in Indonesia have mixed results. Legowo & Machfoedz (1998) found that in both bullish conditions (in 1989) and normal conditions (in 1992), the market in Indonesia remained valid in the weak form even though returns tended to be more efficient in the normal condition era. Khoirunnisa' & Alteza (2012) find that the Jakarta Islamic Index from 2003 to 2007 tended to be inefficient as market prices slowly responded to the dividend announcement information so that investors could obtain abnormal returns. Dewi & Artini (2014) find that information on dividend announcements during 2013 did not result in the market in Indonesia becoming efficient. Kiky (2018) finds that market conditions in Indonesia tended to be inefficient from June 2017 to December 2017 because market prices did not timely absorb information (including the determination of effective interest rates). Utami (2018) finds that market returns in Indonesia from 1 January 2006 to 30 November 2017 were efficient and reflected information on conditions before, during, and after the global economic crisis. Agustin (2019) finds that the return of the Sharia Index in Indonesia from January 3 2017 to February 8 2019 indicated that it did not reflect timely information so it tended to be inefficient. Mubarok & Fadhli (2020) argue that market conditions from February 1996 to March 2020 did not follow a random walk, thus providing opportunities for investors to gain profits. From 2018 to 2019, Yulianti & Komara (2020) found that bullish and bearish periods in Indonesia were not enough to cause the market to become more efficient. Hadianto et al. (2021) found that market returns from January 2014 to December 2018 were a random walk which was reflected through increased trading activity. Consistently, Mukharomah et al. (2022) also find that the condition of the LQ45 Index

over the period 2017 to 2020 is efficient. Pasaribu (2022) found that market conditions in Indonesia tended to be inefficient both before (11 March 2019 to 6 March 2020) and during (9 March 2020 to 9 March 2021) the COVID-19 pandemic. Rodoni et al. (2022) argue that returns of Conventional and Sharia shares in Indonesia tend to more quickly reflect information about the financial crisis (January 2015 to December 2019) and the COVID-19 pandemic (January 2020 to August 2021). Budiarso & Pontoh (2023) found that market conditions in Indonesia still tend to be efficient even though there has been a shift in the effective interest rate from 3 January 2022 to 9 October 2023. Pontoh & Budiarso (2023) find that market conditions in Indonesia are quite efficient throughout 2020 to 2021 in reflecting information on the COVID-19 pandemic. Juliana et al. (2023) found that returns for the 2017 to 2020 period in Indonesia tended to be efficient in a weak form in line with developments in information entering the capital market (including the COVID-19 pandemic). In the long term, Sari et al. (2024) found that the market index in Indonesia from 2010 to 2023 was quite efficient in reflecting information that occurred throughout those periods so that the return pattern was mean reversion. Based on the results of the literature review, the hypothesis of this study is stated as follows.

H_0: Market is not random walk under Hawkish stance

H_1: Market is random walk under Hawkish stance

RESEARCH METHODS

This study observes the stock composite index in Indonesia (IHSG) from 7 June 2023 to 29 February 2024 which is divided into two periods. The first period is 7 June 2023 to 18 October 2023 (90 market days) or the interest rate period is 5.75% while the second period is 19 October 2023 to 29 February 2024 (90 market days) or the interest period is 6%. As the series data, this study employs the market returns of the IHSG (or the ratio of the difference between the current price and the previous price over the previous price) and the effective interest rate from the Central Bank of Indonesia based on 365 days per year. Following the capital asset pricing model (CAPM) concept, the interest rate is incorporated into the market return, which is notated by MR-RF.

Furthermore, several procedures are applied in objective of hypothesis testing. First, the mean difference test supported by d-test is conducted in order to determine the MR-RF difference as the impact of changes in interest rates. The d-test is based on Cohen (1992) and used in term to detect the effect size of the changes of effective interest rates. Cohen (1992) classifies the effect sizes as 0.2 (small), 0.5 (medium), and 0.8 (large). The formula of d-test is noted as follows.

$$d = \frac{x_1 - x_2}{\sqrt{[(s_1^2 + s_2^2)/2]}} \quad \text{.....(1)}$$

The x_1 and x_2 are the mean while s_1 and s_2 are the standard deviations of paired samples. As support, the normality test by Anderson-Darling (A^2) is applied with the formula as follows.

$$A^2 = -N - \frac{1}{N}\sum_{i=1}^{N}(2i-1)\left[\left(lnF(Y_i) + ln(1 - F(Y_{N+1-i})\right)\right] \quad \text{....(2)}$$

The Y_i is the time series data and $F(Y_i)$ is the cumulative function of the standard normal distribution. Second, runs test (z) is performed in term to detect the randomness of MR-RF. The formula of z is noted as follows.

$$z = \frac{U - \mu}{\sigma} \quad \text{.....(3)}$$

The U is the number of runs, μ is the expected number of runs, and σ is the expected deviation number of runs. Third, the Autoregressive Integrated Moving Average (ARIMA) is applied in terms of detecting the noise (e_t). The formula of ARIMA is noted as follows.

$$y_t' = 1 + \alpha_1 y_{t-1}' + \alpha_2 y_{t-2}' + \cdots + \alpha_p y_{t-p}' + e_t + \theta_1 e_{t-1} + \theta_2 e_{t-2} + \cdots + \theta_q e_{t-q} \quad \text{.....(4)}$$

The best ARIMA model is selected based on the smallest value of the Akaike Information Criteria (AIC) and the Corrected Akaike Information Criteria (AICc). In supporting the results of ARIMA, the Augmented Dickey-Fuller (ADF) test is applied in terms to detect stationary data (y_t) with the formula as follows.

$$\Delta y_t = \alpha + \beta_t + \gamma_{yt-1} + \varepsilon_t \quad \text{.....(5)}$$

Fourth, following Lo & MacKinlay (1988), the variance ratio (VR) test is conducted to confirm the results of the runs test and ARIMA where σ^2 is the variances of returns for the observed period with k as lags. The formula of VR is noted as follows.

$$VR(k) = \frac{\sigma^2(k)}{\sigma^2(1)} \quad \text{.....(6)}$$

RESULT AND DISCUSSION

Result

The Market Returns During Hawkish Stance

Table 1 presents the behavior of MR-RF in two periods of the highest interest rates in Indonesia. The descriptive statistic shows that the mean of MR-RF during the period of 6% of interest rate is greater than period of effective interest rate is 5.75%. Standard deviation (SD) also shows that the MR-RF during the implementation of the 6% interest rate tends to be more volatile than the previous period. The result of the coefficient of variation (CV) indicates that a Hawkish period of 6% has a better risk-return trade-off. Moreover, during the effective rate of 6%, the MR-RF is indicated to have better performance in leptokurtic compared to the 5.75% interest period with a platykurtic pattern.

Table 1. Descriptive statistics

	MR-RF (5.75%)	MR-RF (6%)
Mean	0.000363	0.000605
SD	0.004294	0.006957
CV	1183.11	1149.22
Skewness	-0.27	-0.23
Kurtosis	-0.49	0.17

Source: Processed data (2024)

Table 2 shows that normality testing with the A^2 test for both periods has statistical values of 0.440 and 0.292 with significance above 1%, 5%, and 10 %. The results indicate that the MR-RF for both periods is normally distributed and also did not experience any extraordinary returns (outliers). Figure 2 depicts the normality of MR-RF in the effective interest rate periods of 5.75% and 6%.

Table 2. Mean difference test

Normality test	A^2	Sig.
MR-RF (5.75%)	0.440	0.285
MR-RF (6%)	0.292	0.599
Paired samples test		
Difference	-0.00024	
t-stat.	-0.267	
d	-0.028	
Sig.	0.790	

Source: Processed data (2024)

Furthermore, the mean difference of MR-RF between the two periods of interest rates is -0.00024 with a t statistic of -0.267. The result of the paired samples test indicates that the t statistic produces a significance level of 0.790 or above 1%, 5%, and 10%. Moreover, the result of Cohen's test only gives the d-value for -0.028 or small effect.

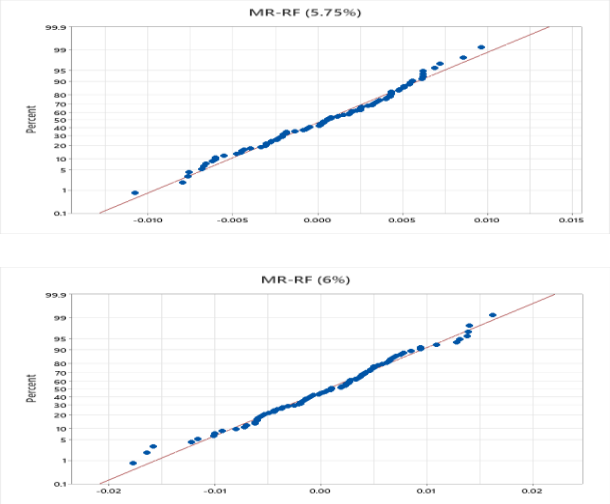

Figure 2. Normality test on MR-RF

The mean difference result implies that the effective interest rate from 5.75% to 6% did not provide significant changes to the market index. Statistically, the effect of the change on setting higher interest rates is small. Another fact is that although market returns in the effective interest rate period were 6% higher, the difference with market returns in the previous period was insignificant.

Market efficiency during Hawkish stance

Table 3 shows that the z statistics of MR-RF for the two periods are 1.825 (at rate of 5.75%) and 3.319 (at rate of 6%). At the 1% and 5% significance levels, the z statistic for the effective interest rate period of 5.75% is insignificant. In contrast, the z statistic during the implementation of 6% as an effective interest rate is significant at the 1%, 5%, and 10% levels. The findings imply that there is a change in Indonesian market efficiency as different effective interest rates are implemented, or in other words, the market became less efficient when the effective interest rate changed from 5.75% to 6%.

Table 3. Runs test

	MR-RF (5.75%)	MR-RF (6%)
Mean	0.000363	0.000605
≤ mean	43	43
> mean	46	46
Observed	54	61
Z-stat.	1.825	3.319
Sig.	0.068	0.001

Source: Processed data (2024)

Table 4 presents the findings of this study on MR-RF of both periods by ADF test. The results at differencing of level 0 shows that MR-RF in both periods have t statistics of -8.9630 and -13.1976 with

support of test critical values at the 1%, 5%, and 10% levels. The results show that the significance values of MR-RF for the interest rate periods of 5.75% and 6% are 0.0000 and 0.0001, respectively. At levels of 1%, 5%, and 10%, MR-RF data can be concluded to be stationary.

Table 4. ADF Test (differencing 0)

	MR-RF (5.75%)	MR-RF (6%)
t-stat.	-8.9630	-13.1976
Test critical values		
1%	-3.5074	-3.5065
5%	-2.8951	-2.8947
10%	-2.5847	-2.5845
Sig.	0.0000	0.0001

Source: Processed data (2024)

Confirming the result of ADF test, Figure 3 describes clearly the data stationary by Autocorrelation Function (ACF) and Partial Autocorrelation Function (PACF). The patterns of ACF and PACF indicate that the residuals of each ARIMA model are independent.

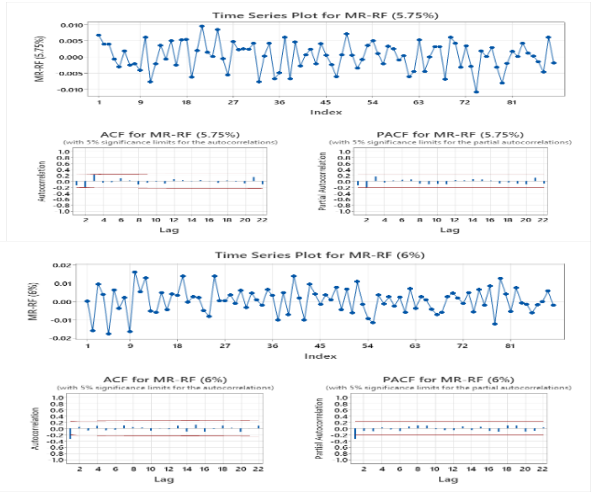

Figure 3. ACF and PACF of MR-RF

Furthermore, Table 5 presents the result of AICc and AIC as the base of selecting best model of ARIMA. This study selects the ARIMA (2,0,0) for MR-RF in period of interest rate of 5.75% where the best values of AICc and AIC are -716.757 and -717.233, respectively. In the period with an interest rate of 6%, the selected ARIMA pattern for MR-RF is the 0,0,1 or ARIMA (0,0,1) with the best AICc and AIC values of -638.280 and -638.563, respectively.

Table 5. AICc and AIC

MR-RF	Model	Log.L	AICc	AIC
5.75%	p = 2, q = 0	362.617	-716.757	-717.233
	p = 1, q = 2	363.061	-715.399	-716.122
	p = 0, q = 2	361.869	-715.262	-715.738
	p = 0, q = 1	360.740	-715.198	-715.480
	p = 1, q = 0	360.220	-714.158	-714.441
	p = 1, q = 1	359.760	-711.043	-711.520
	p = 2, q = 1	360.643	-710.563	-711.286
	p = 2, q = 2	360.670	-708.316	-709.340
6%	p = 0, q = 1	322.281	-638.280	-638.563
	p = 1, q = 0	321.744	-637.206	-637.488
	p = 1, q = 1	322.267	-636.059	-636.535
	p = 0, q = 2	322.267	-636.059	-636.535
	p = 2, q = 0	322.042	-635.607	-636.083
	p = 1, q = 2	322.629	-634.536	-635.259
	p = 2, q = 1	322.327	-633.931	-634.654
	p = 2, q = 2	322.414	-631.805	-632.829

Source: Processed data (2024)

Table 6 presents the result of ARIMA. The results show that the statistical values for the Chi-Square (CS) for all lags are insignificant. Monetary policy in the form of setting effective interest rates of 5.75% and 6% seems to have an interesting impact in the market. Since lag 12, the MR-RF pattern in each period begins to show a tendency towards symptoms of a basic random pattern called noise or white noise. This condition indicates that investor behavior tends to start being reactive in responding and anticipating information about changes in effective interest rates. However, the justification for determining whether the application of interest rates in the Hawkish stance is just noise requires further testing. This study performs the VR test to provide further results.

Table 6. ARIMA

		MR-RF (5.75%)	MR-RF (6%)
Model (2,0,0)			
Constant		0.000470	
AR1		-0.183	
AR2		-0.240	
Model (0,0,1)			
Constant			0.000633
MA1			0.3816
AICc		-716.757	-638.280
AIC		-717.233	-638.563
CS sig.	Lag 12	0.610	0.954
	Lag 24	0.942	0.992
	Lag 36	0.841	0.998
	Lag 48	0.802	0.990

Source: Processed data (2024)

Table 7 provides the results of the VR test on MR-RF for the interest rate periods of 5.75% and 6%. The VR test is carried out to confirm whether the random pattern from the ARIMA model is just noise or a random walk pattern. In the VR test, the lags used are 3, 6, 12, 24, 36, and 48 to define the start time of the noise. As a basis for decisions, the results of the joint test are used as a reference to conclude the symptoms that occur at each lag.

Table 7. VR test

	MR-RF (5.75%)		MR-RF (6%)	
Joint tests	**Value**	**Sig.**	**Value**	**Sig.**
	2.225461	0.1465	2.481339	0.0760
Individual tests				
	VR	**Sig.**	**VR**	**Sig.**
Lag 3	0.675642	0.0261	0.579184	0.0131
Lag 6	0.663602	0.1701	0.460162	0.0535
Lag 12	0.688114	0.4109	0.413581	0.1568
Lag 24	0.585196	0.4552	0.515026	0.3963
Lag 36	0.403406	0.3773	0.613108	0.5674
Lag 48	0.666962	0.6645	0.487789	0.5012

Source: Processed data (2024)

During the effective interest rate period of 5.75%, the MR-RF pattern only at lag 3 is significant at the 5% and 10% levels. The significance level of the pattern began to change from lag 6 to insignificant at the 1%, 5%, and 10% levels. Consistent with the ARIMA (2,0,0), the pattern remains insignificant at the 1%, 5%, and 10% levels at lag 12 to lag 48. The joint test shows that the statistical value of 2.225461 has a significance of 0.1465 or is above 1%, 5%, and 10%. It indicates that investors quickly respond to information about changes in effective interest rates so that it is reflected promptly in the market index. This condition also implies that monetary policy in implementing an interest rate of 5.75% is effectively able to cause markets in Indonesia to be more efficient or random walk in the context efficient market hypothesis especially the weak form. On results, H1 is accepted for this period which is consistent with Legowo & Machfoedz (1998), Utami (2018), Hadianto et al. (2021), Mukharomah et al. (2022), Rodoni et al. (2022), Budiarso & Pontoh (2023), Pontoh & Budiarso (2023), Juliana et al. (2023), and Sari et al. (2024).

During the effective interest rate period of 6%, the significance of the MR-RF pattern consistently follows the ARIMA (0,0,1), or since lag 12. The joint test shows that the statistical value of 2.481339 has significance level of 0.0760 or below 10%. On those results, H0 is accepted for this period. On findings, this study is consistent with Khoirunnisa' & Alteza (2012), Dewi & Artini (2014), Kiky (2018), Agustin (2019), Mubarok & Fadhli (2020), Yulianti & Komara (2020), and Pasaribu (2022).

The change in setting the effective interest rate to 6% tends to make the market condition less efficient in a weak form. Consistent with the efficient market hypothesis, the market condition tends to provide opportunities to generate more returns for investors as presented in descriptive statistics. In this case, the noise seems to have succeeded in creating a market gap for investors.

Figure 4 describes more clearly the MR-RF pattern at an interest rate of 5.75%. The VR value for all lags shows a value of less than 1. This result indicates the occurrence of negative autocorrelation. Monetary policy in implementing an interest rate of 5.75% tends to generate market optimism effect on the long-term historical mean.

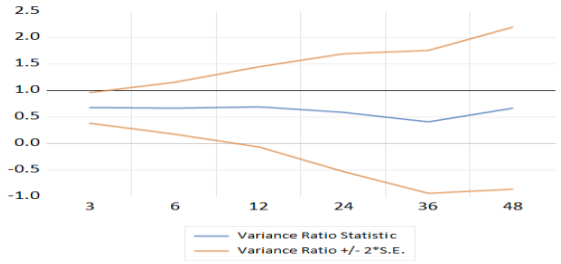

Figure 4. VR pattern of MR-RF (5.75%)

Figure 5 describes the MR-RF pattern at an interest rate of 6%. Similar to previous period, the VR value for all lags also shows a value of less than 1 which means negative autocorrelation also occurs in this period. But, as the joint test shows in-significant results and the significance of the lags is similar to the ARIMA model, the implementation of an effective interest rate of 6% tends to have a pessimistic effect on the long-term historical mean.

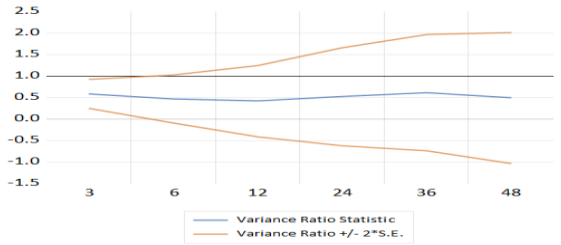

Figure 5. VR pattern of MR-RF (6%)

Discussions

During the Hawkish stance, market returns in the period when the effective interest rate reached 6% did not provide significant results compared to the previous interest rate period. This indicates that

an increase in the effective interest rate to a higher level will only have a small impact on the movement pattern of market returns. However, other the fact in periods of higher interest rates shows that the better trade-off between risk and return so high risk means high return. Moreover, the market returns in both interest rate periods (5.75% and 6%) tend to be normally distributed. This condition indicates that the market tends not to provide extraordinary returns.

Furthermore, market efficiency during the Hawkish stance tends to change when the effective interest rate increases to 6%. In short-term conditions, an increase in interest rates tends to cause the market to become less efficient in context of EMH-weak form. This condition also tends to cause higher returns (although not extraordinary). Of particular note, the implementation of higher interest rates (or 6%) tends to result in negative autocorrelation in the sense that there is a mean reverting or pessimistic effect on the long-term historical mean.

CONCLUSION

During 2023 and the early 2024, the effective interest rate continued to change until it reached at 6.00%. This study examines market efficiency under the urgency of determining effective interest rates which refers to a Hawkish stance. As a contribution, the findings of this study show that the effective interest rate period of 6% tends to have better market returns performance than the effective interest rate period of 5.75%. This condition is reflected through higher risk or volatility when the effective interest rate is at 6%. Apart from that, monetary policy in a hawkish stance tends to cause the market to provide a better risk-return trade-off for investors. The findings of this study also contribute to the development of finance and accounting science, especially in the fair presentation of financial information in the equity section and as the basis of investment decisions at least in the short-term. As implication, the implementation of effective interest rate of 6% apparently only has a small impact on changes in market returns. This is reflected in the market returns from the two periods which have insignificant differences. The application of higher interest rates (or 6%) tends not to result in a shift in investor behavior to allocate stock investments to risk-free assets. This condition tends to be reflected in market returns that are higher than the previous effective interest rate period. Consistent with the efficient market hypothesis, the increase in returns occurs because the market in Indonesia tends to be less efficient. This study underlines that "keeping the Hawk does not necessarily make the market move randomly". The implementation of an interest rate of 5.75% apparently tends to result in a more efficient or random market walk compared to period when the effective interest rate changed to 6%.

This study is limited to the implementation of effective interest rates which refer to the Hawkish stance in terms of controlling the rate of inflation in Indonesia. This study is also limited to market behavior patterns that refer to composite indexes and not on an investment portfolio basis, especially individual stock investments. In addition, this study emphasizes an examination of the impact of effective interest rates on the capital market in the short term due to limitations on uncertain events. For further studies, it is highly recommended to carry-out observations with a wider scope of observations on other market indices in Indonesia.

REFERENCES

Agustin, I. N. (2019). Testing Weak Form of Stock Market Efficiency at the Indonesia Sharia Stock Index. *Muqtasid: Jurnal Ekonomi dan Perbankan Syariah, 10*(1), 17-29. https://doi.org/10.18326/muqtasid.v10i1.17-29.

Akerina, R. B., & Putri, S. N. E. (2023). Interelasi Indeks Pasar Sektoral dalam Kondisi Tingkat Bunga Tertinggi. *Manajemen Bisnis dan Keuangan Korporat, 1*(2), 54-62. https://doi.org/10.58784/mbkk.50.

Asyari, S., & Arieftiara, D. (2022). Investors React to Disclosure of Carbon Emissions and Environmental Performance. *International Journal of Contemporary Accounting, 4*(1), 59-76. https://doi.org/10.25105/ijca.v4i1.13911.

Audy, N. A., Harunnurrasyid, & Andaiyani, S. (2022). The COVID-19 Pandemic: What Factors Can Affect BUMN-20 Stock Return in Indonesia? *Jurnal Ekonomi Pembangunan, 20*(1), 67-76. https://doi.org/10.29259/jep.v20i1.17926.

Budiarso, N. S., & Pontoh, W. (2023). Testing the Market Efficiency When Interest Rates Change: Case in Indonesia. *Research in Management and Accounting, 6*(2), 119-128. https://doi.org/10.33508/rima.v6i2.5130.

Cohen, J. (1992). A Power Primer. *Psychological Bulletin, 112*(1), 155–159. https://doi.org/10.1037/0033-2909.112.1.155.

Dewi, L. P. K., & Artini, L. G. S. (2014). Pengujian Efisiensi Pasar Bentuk Setengah Kuat di Bursa Efek Indonesia. *E-Jurnal Manajemen, 3*(12), 3540-3557.

Diana, P. (2022). Analisis Fenomena Underpricing Sebagai Strategi Pada Perusahaan Go Public di Indonesia. *Jurnal Akuntansi Kontemporer, 14*(2),

82-93. https://doi.org/10.33508/jako.v14i2.3326.

Fama, E. F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *The Journal of Finance, 25*(2), 383-417. https://doi.org/10.2307/2325486.

Gayatri, P. A. M., Suarjaya, A. A. G., & Dana, I. M. (2024). Reaksi Pasar Modal Akibat Pengumuman Kenaikan Bank Indonesia 7-Day Reverse Repo Rate Tanggal 17 November 2022. *E-Jurnal Manajemen, 13*(2), 298-316. https://doi.org/10.24843/EJMUNUD.2024.v13.i02.p07.

Gu, G., Zhu, W., & Wang, C. (2022). Time-varying Influence oOf Interest Rates on Stock Returns: Evidence from China. *Economic Research-Ekonomska Istraživanja, 35*(1), 2510-2529. https://doi.org/10.1080/1331677X.2021.1966639.

Hadianto, B., Hendrik, & Yuwana, T. (2021). Does The Efficient Market Theory in the Weak Form Exist? Evidence From Indonesia. *Jurnal Manajemen Indonesia, 21*(2), 183-190. https://doi.org/10.25124/jmi.v21i2.2703.

Haryono, E., Nugroho, W. A., & Pratomo, W. (2000). Mekanisme Pengendalian Moneter dengan Inflasi Sebagai Sasaran Tunggal. *Buletin Ekonomi Moneter dan Perbankan, 2*(4), 68-122. https://doi.org/10.21098/bemp.v2i4.282.

Indrawan, G. A., & Dewi, L. G. K. (2023). Analisis Kondisi Pasar Modal Pra Pasca Kenaikan BI 7-Day Repo Rate (Event Study Pada Perusahaan Sektor Properti dan Real Estate yang Terdaftar Di BEI). *Vokasi: Jurnal Riset Akuntansi, 12*(2), 1-10. https://doi.org/10.23887/vjra.v12i2.60052.

Javangwe, K. Z., & Takawira, O. (2022). Exchange Rate Movement and Stock Market Performance: An Application of the ARDL Model. *Cogent Economics & Finance, 10*(1), 1-20. https://doi.org/10.1080/23322039.2022.2075520.

Jihadi, M., Safitri, I. H., & Brahmawati, D. (2021). The Effect of Exchange Rates Towards Stock Return Mediated With Inflation Rates and Interest Rates. *Jurnal Reviu Akuntansi dan Keuangan, 11*(2), 383-392. https://doi.org/10.22219/jrak.v11i2.16320.

Juliana, A., Junaid, M. T., Yuniati, N., & Malik, A. D. (2023). Studi Efisiensi Pasar Bentuk Lemah Pada Pasar Modal Indonesia: Sebelum dan Sesudah COVID 19. *Akuntabel: Jurnal Ekonomi dan Keuangan, 20*(1), 18-30. https://doi.org/10.30872/jakt.v20i1.12894.

Khoirunnisa', R. M., & Alteza, M. (2012). Pengujian Efisiensi Pasar Bentuk Setengah Kuat Secara Informasi Atas Pengumuman Dividen (Studi Pada Emiten yang Memenuhi Syarat Keanggotaan Jakarta Islamic Index (JII) Periode Tahun 2003-2007). *Jurnal Ekonomi dan Bisnis Islam, 6*(2), 167-184.

Kiky, A. (2018). Kajian Empiris Teori Pasar Efisien (Efficient Market Hypothesis) pada Bursa Efek Indonesia. *Jurnal Bina Manajemen, 6*(2), 139-156.

Legowo, H., & Machfoedz, M. (1998). Efisiensi Pasar Modal: Perbandingan Pada Dua Periode yang Berbeda dalam Pasar Modal Indonesia. *Journal of Indonesian Economy and Business, 13*(2), 78-90.

Lo, A. W., & MacKinlay, A. C. (1988). Stock Market Prices Do Not Follow Random Walks: Evidence From A Simple Specification Test. *The Review of Financial Studies, 1*(1), 41-66. https://doi.org/10.1093/rfs/1.1.41.

Mahendra, I. K. R., & Rasmini, N. K. (2019). Reaksi Pasar terhadap Kenaikan Bank Indonesia 7-Day Reverse Repo Rate Tanggal 15 Agustus 2018. *E-Jurnal Akuntansi, 27*(3), 2066-2099. https://doi.org/10.24843/EJA.2019.v27.i03.p16

Malkiel, B. G. (1989). Is The Stock Market Efficient? *Science, New Series, 243*(4896), 1313-1318. https://doi.org/10.1126/science.243.4896.1313.

Malkiel, B. G. (2003). The Efficient Market Hypothesis and Its Critics. *Journal of Economic Perspectives, 17*(1), 59-82. https://doi.org/10.1257/089533003321164958.

Mourine, A., & Septina, F. (2023). Pengaruh Inflasi, Tingkat Suku Bunga, Nilai Tukar, dan Struktur Modal Terhadap Return Saham Perusahaan Sektor Farmasi. *Jurnal Perspektif, 21*(1), 10-20. https://doi.org/10.31294/jp.v21i1.12943.

Mubarok, F., & Fadhli, M. M. (2020). Efficient Market Hypothesis and Forecasting of the Industrial Sector on the Indonesia Stock Exchange. *Journal of Economics, Business, & Accountancy Ventura, 23*(2), 160-168. https://doi.org/10.14414/jebav.v23i2.2240.

Mukharomah, F., Nilmawati, & Kristanto, H. (2022). Testing of Weak Form Market Efficiency on Indonesian Capital Market: Study on LQ45 Companies on the Indonesia Stock Exchange. *Journal of International Conference Proceedings, 5*(5), 163-171. https://doi.org/10.32535/jicp.v5i5.2036.

Mutmainnah, M., & Mahfiyah, M. (2023). Consumer Price Index and inflation on BI-7 Day Reverse Repo Rate. *Iqtishaduna: Jurnal Ilmiah Ekonomi Kita, 12*(2), 197-208. https://doi.org/10.46367/iqtishaduna.v12i2.1409.

Novitasari, P., & Handayani, R. S. (2020). Do The Investors React to Risk Management Disclosure? (An Empirical Study on Companies in Property, Real Estate, and Building Construction Industry Listed on The Indonesia Stock Exchange Period 2016-2018). *Riset Akuntansi dan Keuangan Indonesia, 5*(2), 193-201. https://doi.org/10.23917/reaksi.v5i2.10406.

Nugroho, G. A., & Hermuningsih, S. (2020). Pengaruh Kurs Rupiah, Inflasi dan Suku Bunga Terhadap Return Saham Perusahaan Sektor Jasa Sub Konstruksi dan Bangunan Pada Bursa Efek Indonesia. *Derivatif: Jurnal Manajemen, 14*(1), 38-43. https://doi.org/10.24127/jm.v14i1.438.

Pasaribu, R. H. (2022). Kajian Tingkat Efisiensi Pasar Modal Bentuk Lemah di Bursa Efek Indonesia pada Periode Sebelum dan Selama Pandemic COVID-19. *Jurnal Ekonomi dan Manajemen, 1*(2), 90-101. https://doi.org/10.56127/jekma.v1i2.210.

Pontoh, W., & Budiarso, N. S. (2023). Efficient Market and the COVID-19 Pandemic: Case of ASEAN-5. *The Contrarian: Finance, Accounting, and Business Research, 1*(1), 23–29. https://doi.org/10.58784/cfabr.7.

Putikadea, I., & Siregar, C. S. (2023). Does Disclosure of Carbon Emission Able to Attract Investors? *AKRUAL: Jurnal Akuntansi, 15*(1), 39–52. https://doi.org/10.26740/jaj.v15n1.p39-52.

Rachmawati, A. (2019). Abnormal Return di Sekitar Tanggal Peristiwa Ekonomi Makro 2018 di Indonesia. *Efektif: Jurnal Ekonomi dan Bisnis, 10*(2), 59-68.

Rahayu, C. W. E. (2017). The Influence of Information Framing Towards Investors Reaction in Bullish and Bearish Market Condition: An Experiment. *Jurnal Dinamika Manajemen, 8*(2), 199-207. https://doi.org/10.15294/jdm.v8i2.12760.

Ramadhanti, A., & Pramesti, M. (2023). Analisis Pengaruh Kebijakan Fiskal dan Moneter Terhadap Tingkat Pengembalian Saham Indonesia Tahun 2015-2019. *Jurnal Administrasi Bisnis Terapan, 6*(1), 1-11. https://doi.org/10.7454/jabt.v6i1.1090.

Rodoni, A., Djauhari, H., Rahma, Y., & Alhassan, A. A. (2022). Comparative Analysis of Efficient Market for Sharia and Conventional Stocks in ASEAN Countries. *Al-Iqtishad: Jurnal Ilmu Ekonomi Syariah (Journal of Islamic Economics), 14*(1), 1-22. https://doi.org/10.15408/aiq.v14i1.25025.

Sari, D. P., Maradesa, D., & Budiarso, N. S. (2024). Efisiensi Pasar dan Mean-Reversion di Indonesia. *Manajemen Bisnis dan Keuangan Korporat, 2*(2), 103–108. https://doi.org/10.58784/mbkk.114.

Sayudha, A. A. G. R., & Rasmini, N. K. (2021). Reaksi Pasar Atas Pengumuman Penurunan Bank Indonesia 7-Day Reverse Repo Rate. *E-Jurnal Akuntansi, 31*(8), 1907-1917. https://doi.org/10.24843/EJA.2021.v31.i08.p03

Sumanti, E., & Pangemanan, A. (2012). Investor's Reaction Toward Exchange Rate Impact on Indonesian Manufactuing Company. *Journal of Business and Economics, 11*(2), 154-160.

Tursoy, T. (2019). The Interaction Between Stock Prices and Interest Rates in Turkey: Empirical Evidence from ARDL Bounds Test Cointegration. *Financial Innovation, 5*(7), 1-12. https://doi.org/10.1186/s40854-019-0124-6.

Utami, A. T. (2018). Efisiensi Pasar Bentuk Lemah Pada Pasar Modal Indonesia, Malaysia dan Korea Selatan periode Krisis Ekonomi Global 2008. *Jurnal Inspirasi Bisnis dan Manajemen, 2*(2), 101-116. https://doi.org/10.33603/jibm.v2i2.1476.

Warjiyo, P., & Zulverdi, D. (1998). Penggunaan Suku Bunga Sebagai Sasaran Operasional Kebijakan Moneter di Indonesia. *Buletin Ekonomi Moneter dan Perbankan, 1*(1), 25-53. https://doi.org/10.21098/bemp.v1i1.159.

Yulianti, E., & Komara, E. F. (2020). Pengujian Efisiensi Pasar Bentuk Lemah pada Periode Bullish dan Bearish di Bursa Efek Indonesia. *Jurnal Administrasi Bisnis, 16*(2), 163-173. https://doi.org/10.26593/jab.v16i2.4318.163-173.

Zidniilman, M. W., & Devia, V. (2023). Stock Market Reaction to the Announcement of 2022 Fuel Price Increase on JII-30. *Jurnal Ekonomi Syariah Teori dan Terapan, 10*(6), 592–604. https://doi.org/10.20473/vol10iss20236pp592-604.

Zuhroh, I., & Putri, D. A. (2021). Investors Reaction To Bad News of COVID 19 (Evidence for Food and Beverage Stocks: Comparison Between IDX and BIST). *Jurnal Ekonomi Pembangunan, 19*(01), 44-56. https://doi.org/10.22219/jep.v19i01.16434.