Analysis of efficient market anomaly on stock returns on Indonesia's composite stock price index and global stock price index

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ARTICLE INFO

Article history:

Received 03 January 2022

Received in rev. form 10 Feb. 2022

Accepted 23 February 2022

Keywords:

GARCH, Market Anomaly, Market Hypothesis, The Day Of The Week Effect, The Month Of The Year Effect

JEL Classification:

G1, G3

ABSTRACT

Market anomaly is an occurring phenomenon in the market. Supposedly, an anomaly does not exist in markets that are considered efficient. An anomaly is an aberration in the efficient market theory where existing information does not reflect stock prices; therefore, investors can earn abnormal returns. This study examines how The Day Of The Week Effect and The Month Of The Year Effect affect stock returns on the Indonesian Stock Price Index and the Global Stock Price Index. Samples in this study are daily stock return data and return data on stocks of IHSG, DJIA, SSEC, and N225. The Generalized Autoregressive Conditional Heteroscedasticity (GARCH) model is used to analyze data. The results show that in IHSG and SSEC, there was no The Day Of The Week Effect. The DJIA and N225 were found in The Day of the Week Effect. The Month of the Year Effect was found in IHSG, DJIA, SSEC, and N225.

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Introduction

The capital market is a business that is very dependent on information. An investor needs information as a means to help and project potential in the future. This is due to the characteristics of the capital market business that rely on an expectation (expectations) from current decisions, therefore, information in the capital market becomes the beginning of the process of determining the decision to buy and sell shares. All available information that is easily and cheaply captured by the market is the basic concept of the proposition of efficient market theory, where information can be obtained without any obstacles, therefore asset or security prices quickly and completely reflect available information about assets or securities. Thus, the market is efficient if neither individual nor institutional investors can obtain abnormal returns after adjusting for risk and trading strategy (Hadi, 2015).

In the concept of an efficient market, the concern is how the information available in the securities can affect prices or returns on the market. According to Haugen (2011), information can be grouped into three, namely (1) stock price information in the past, (2) all public information, (3) all available information, including private information. This information can reflect the extent to which the market can be efficient.

Tandelilin (2010) in Indah Khoidah and Andi Wijayanto (2017) explains that there is no more information in the efficient markets because the prices formed are reflected in all available information. However, Hartono (2009) says that there are many current debates regarding efficient markets, giving rise to many studies that ultimately reveal deviations in the efficient markets. Such deviations are called market anomalies. This market anomaly is the factor that turns out to be the opposite of the capital market hypothesis and does not support the concept of an efficient market which is persistent and has a significant impact and can be used to obtain unreasonable returns by investors.

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<http://dx.doi.org/10.36096/ijbes.v4i1.309>

One form of anomaly is a seasonal anomaly, often referred to as a calendar anomaly. This anomaly occurs because certain times systematically and consistently produce higher returns than other times. Anomalies in this seasonal analysis are the time of the day effect, the day of the week effect, and the month of the year effect (Jogiyanto, 2005).

The Day Of The Week Effect is a phenomenon in five trading days in the capital market, and some days have abnormal returns. Investors usually perceive that Monday is a bad day which is the first working day where investors who have not had time to sell shares on Friday will make sales on the first day of work, namely Monday. This phenomenon usually happens because many companies announce bad news to investors on the last day of work, which is Friday. Meanwhile, Friday is considered a good day because it is the last day of work and is headed for the weekend; therefore, many investors are optimistic. (Khoidah & Wijayanto, 2017a). The following is a data graph that presents daily stock prices on the Composite Stock Price Index (CSPI) and the Global Stock Price Index for January 2020 to December 2020. The graph below shows price differences on each day for one week and in each stock trading month.

Figure 1: JCI Daily Price Chart and Global Stock Price Index January 2020-December 2020 Period; *Source:* financenyahoo.com

The graph in Figure 1 above interprets a pattern indicating price differences on each trading day on the Indonesia Stock Exchange. The price difference is seen from the JCI, marked in dark blue, the American Stock Exchange, marked in dark blue, the Japan Stock Exchange, is marked in light blue, and the China Stock Exchange, is marked in pink. There were days with the highest prices within 243-253 trading days on the Indonesia Stock Exchange and Global Stock Exchange from January 2020 to December 2020, namely on certain days compared to other days. This shows a daily security price pattern that indicates that investors can gain abnormal returns compared to other days; this shows a deviation in the efficient market, which means that investors have no chance of getting abnormal returns. The Month Of The Year Effect is a phenomenon where stock returns in several months differ much or even higher than the previous months. The "January Effect" and the "April Effect" often happen, which is a month with a higher rate of return than the previous month. Sharpe (1999) says that the cause of a high return in January was tax-loss selling and window dressing, namely selling stocks with low prices to reduce taxes and improve portfolios. Patent and Sawel (2015) state that the January Effect is one of the dominant calendar anomalies that often occurs in developed countries, though the perceived effect has no significant effect on developing and underdeveloped markets. January Effect is a seasonal anomaly where the stock price usually tends to rise in January on the first days of the month. In addition to the January Effect, several seasonal anomalies usually affect stock returns studied by researchers first, where the results vary. The January Effect has the same indications as The Day of the week Effect and the Month Effect.

Figure 2: Monthly Price Chart of JCI and Global Stock Price Index for January 2020-December 2020 Period; *Source:* financenyahoo.com

In Figure 2, the graph shows different monthly price patterns on the Indonesia Stock Exchange and the Global Stock Exchange in 2020. This graph shows high prices in certain months and low prices in other months during one year, which is not in accordance with the concept of an efficient market theory which says that investors do not have the opportunity to gain abnormal returns in the market.

To determine the effect of The Day of The Week and The Month of The Year on stock returns on the Composite Stock Price Index, Dow Jones Industrial Average, Shanghai Stock Exchange Composite, and Nikkei 225, research was conducted using a descriptive quantitative approach. Secondary data in the form of daily stock prices and monthly stock prices from the Composite Stock Price Index, Dow Jones Industrial Average, Shanghai Stock Exchange Composite, and Nikkei 225 during the 2016-2020 period were processed using the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) method with the tool used was Eviews. Version 12 as well as Microsoft Excel 2010.

The next section discusses the literature review, followed by an introduction to the methodology and data, and closes with conclusions and implications.

Literature Review

Theoretical and Conceptual Background

Efficient Market

The concept of market efficiency was originally related to the practice of securities analysts trying to discover which securities were mispriced in the market through an analysis of the company's financial statements. Mispriced securities are securities whose prices deviate from their intrinsic or fundamental values. Thus, an efficient market is initially defined as a market in which the value of the securities does not deviate from their intrinsic value (Jems Arison Zacharias, 2020). According to Fama (1970), an efficient market has a stock price reflecting all available information. The market is efficient if the capital market participant, either an individual or an institutional investor, can receive an abnormal return, indicating that the established price is based on the available information. Tandelilin (2017) reveals that the market can be said to be efficient if the prices of all traded securities are prices that reflect all available information. The information available is relevant information that contains information in the past and present. It can also be in the form of opinionated or rational information, where this can affect the price of securities in the market. For example, in opinion information, investors say that the price of a stock will rise; thus, the news can later reflect a price formation in the market.

Market Anomaly

Anomalies are a form of a phenomenon that exists in the market. The phenomenon in the market anomaly is found in things where it should not exist if the existence of an efficient market is right. The existing anomaly exists not only in one type of efficient market but also in other forms of an efficient market (Gumanti & Utami, 2002; p. 68). Jones (1996) reveals that market anomalies are techniques or strategies contrary to efficient markets. In examining an efficient market, it is necessary to discuss the existence of irregularities (anomalies) associated with the efficient market hypothesis. Anomalies are a form of a phenomenon that occurs in the market. This anomaly contains something that should not exist in the market that is considered efficient. Anomalies that exist are not only found in one type of efficient market but also exist in other efficient markets, which means that empirical evidence that shows an anomaly in the capital market occurs in all forms of efficient markets. However, most are found in semi-strong forms of efficiency (Gumanti & Utami, 2002: 65). Gumanti & Utami (2002) also explain that there are at least four market anomalies in financial theory. These anomalies are firm, seasonal, event, and accounting anomalies.

The Day of The Week Effect

According to Trisnadi and Sedana (2016, 3797) in Yolanda, F (2020), The Day Of The Week Effect is an anomaly that indicates the trading day affects the stock returns in one week. This anomaly causes investors to guess because a stock price movement forms a pattern at a certain time. Therefore, it no longer moves randomly. Gibbon and Hess (1981) in Tandelilin (2017) say that the stock market return will be lower on Monday than other days of the week on the New York Stock Exchange. Meanwhile, positive returns occur on Wednesdays and Fridays. This pattern can happen because of differences in the information that comes to the public every day, the desires and strategies of investors to buy or sell shares on certain days, and the emotional behavior of investors on certain days. Alteza (2007) in Trisnadi and Sedana (2016:3797) explains that the Day Of The Week Effect includes a market anomaly, a form of deviation that occurs in an efficient market. The anomaly of the Day Of The Week Effect causes a difference in the average return in one week of stock trading days caused by investors. The Behavioral Finance Theory explains that investors cannot always behave rationally. The negative returns that often occur on Mondays can be triggered by many investors who study various kinds of relevant information to develop a strategy to buy or sell shares. Investors tend to dislike trading day on Monday because it is the first day of work; thus, it affects the mood in conducting stock trading transactions. Then in the days after Monday and at the end of the week, investors will carry out a stock trading strategy in order to get a profit so that it can lead to an increase in the average return on shares on days other than Monday, namely Tuesday, Wednesday, Thursday and Friday (Sedana, 2016:3798).

The Month of The Year Effect

The Month Of The Year Effect is part of the seasonal anomaly in the capital market. Fama (1991) in Tandelilin (2017:230) found that in the period 1941 to 1981, there was a higher return in January compared to other months. Tandililin (2017: 235) explains in the January Effect that the cause of high returns in January (especially the day at the beginning of the month) is the tax selling hypothesis, where many investment advisors advise investors to sell their losing securities before the end of the year and at the beginning of the year. In an efficient market, sessional patterns should not occur. If investors see a high return in January, they will start making purchases at the end of December to obtain an abnormal return. This buying behavior of investors will cause the existing seasonal pattern to disappear. However, the high return in December cannot be fully explained properly; thus, the January Effect is a deviation that occurs in an efficient market. (Yolanda, 2020)

Return

Jogiyanto (2000) states that return is obtained from an investment. Returns can be in the form of realized returns and expected returns that have not yet occurred. The realized return is the return that has already occurred. Meanwhile, the expected return is the return that is expected to be obtained by investors in the future.

Realized return is calculated using historical data. Realized return is important because it is widely used for investment analysis, including portfolio analysis data.

The realized return consists of capital gains (losses) and yields, which are stated as follows:

Realized return = Capital gain (loss) + Yield

A capital gain or capital loss is the difference between the current investment price relative to the previous period's price

$$\text{Capital gain or Capital loss} = \frac{P_t - P_{t-1}}{P_{t-1}}$$

If the current investment price (P_t) is higher than the previous period's investment price (P_{t-1}), there is a capital gain; on the other hand, there is a capital loss.

Securities Return Pattern

Laksmiana & Dewi (2018) explain that many studies show patterns in security returns. These patterns indicate that there is a higher or lower rate of return within a certain time, be it daily or monthly,

Daily Securities Return Pattern

There are differences in returns in the intensive pattern of daily security returns on certain days within one week. Gibbons and Hess (1981) in Tandelilin (2001:116) found a negative return on Monday trading day with a presentation of 35.5%. Meanwhile, on Wednesday and Friday trading days, it was found that the return was positive. Harris (1968) in Tandelilin (2001: 117) also conducted a study with the pattern of return in one day (intraday pattern) and stock day in one week (day of the week pattern) with data for 14 months from December 1981 to January 1983. The results show a negative return on Monday, but there was a positive return for the other four days. This negative return on Monday did not occur during one trading day of the stock exchange, half of which occurred at the close of the market on Friday and the opening of the market on Monday.

Monthly Securities Return Pattern

Many studies have found results those high returns occur in January compared to other months of the year and usually occur in stocks with small values (Laksmiana & Dewi, 2018:129). In this case, Fama (1991) in Tandelilin (2001:117) reveals a higher return in January than in other months from 1941 to 1981. Furthermore, the difference occurs in stocks with a small market capitalization value. Fama also found the same thing, though the difference in returns in January for small and larger stocks was not that big. The presence of abnormal returns in January for small stocks was relatively high in the early days of the month in general.

Research and Methodology

This research is quantitative research with descriptive analysis technique. This study aims to determine the effect of The Day of The Week and The Month of The Year and to find the relationship between the variables The Day of The Week and The Month of The Week between the Composite Stock Price Index, the Dow Jones Industrial Average, the Shanghai Stock Exchange Composite and Nikkei 225, from January 2016-December 2020.

This study uses secondary data in the form of quantitative data processed using the Generalized Autoregressive Conditional Heteroscedasticity (GARCH) method with descriptive statistical tests, dummy variable tests, stationarity tests. This study also uses heteroscedasticity tests with tools that use computer software Eviews Version 12, a computer program for managing data in time series, cross-section, panel data, and Microsoft Excel 2010.

The type of data used in this study is secondary data. The secondary data are daily share prices and monthly share prices from the Composite Stock Price Index, Dow Jones Industrial Average, Shanghai Stock Exchange Composite, and Nikkei 225 from 2016-2020

2020. The data sources used in this study were extracted from daily and monthly stock price reports. This data can be accessed through the official website of Yahoo Finance and Investing for stock price data on the Dow Jones Industrial Average, the Shanghai Stock Exchange Composite, and the Nikkei 225, as well as through the official website of the Indonesia Stock Exchange for prices. Shares Composite Stock Price Index.

This study uses the stock return variable as the dependent variable. Stock return is the return from stock investment which can be profit (capital gain) or loss (loss), where the return is obtained from today's price minus yesterday's price.

Where the return formula used is as follows:

$$\text{Stock Return} = \frac{P_t - P_{t-1}}{P_{t-1}}$$

Notes:

Pt = Current closing share price

Pt-1 = Past closing share price

The independent variable or independent variable is a variable that affects the dependent variable or dependent variable. In this study, two independent variables were used, namely:

The Day of The Week Effect

The Day of The Week Effect is an anomaly on certain days of the week that systematically gives a higher return than the return given by other days.

The measurement formula for The Day Of The Week Effect used is as follows:

$$\text{Stock Return Monday} = \frac{(P_{it} - P_{it-1})}{P_{it-1}}$$

The Month of The Year Effect

The Month of The Year Effect is an anomaly in a certain month, especially in January, in one year systematically and gives a higher return compared to the return given by other months.

The measurement formula for The Month Of The Year Effect used is as follows:

$$\text{Stock Return of the Month} = \frac{(P_{it} - P_{it-1})}{P_{it-1}}$$

Analysis and Findings

Stationarity Test

In using time series data in research, the stationarity test is required first on the data. Time series data is a collection of values of a variable taken at different times and collected periodically at certain time intervals. Therefore, time series data tends to have problems such as autocorrelation. Autocorrelation causes the data to be non-stationary.

Widarjono (2013) in Widowati (2018) says that the method that econometricians often use in testing stationary data problems is to use the unit root test. The unit root tests include the Augmented Fuller test (ADF) or the Philip Platform test (PP). This study uses the Augmented Dickey-Fuller (ADF) test. The formulation of the hypothesis in the ADF test is:

H_0 = non-stationary, indicated by the results of the critical value of the ADF test > 5%

H_1 = Stationary, indicated by the results of the critical value of the ADF test < 5%

The value in the ADF t-statistical test with a number lower than the critical value of 5% means that the data does not have a unit root problem. In other words, the data is stationary; thus, the conclusion is that H_0 is rejected.

Heteroscedasticity Test

Ghozali (2018:137) reveals that the heteroscedasticity test aims to test the regression model, whether there is an inequality of variance. A good regression model does not have heteroscedasticity. Kurniawan (2016:145) explains that heteroscedasticity is not expected in the model, making it difficult to estimate the right model due to inconsistent variance data. In the Generalized Autoregressive Conditional Heteroscedasticity (GARCH) method, a heteroscedasticity test is required using the ARCH-LM test. The ARCH-LM test (Lagrange Multiplier) is used to test whether the residuals are in a state of heteroscedasticity or not. With a significant level of = 5%, if the result of the probability of Chi-Square (1) is less than 0.05, the residual is in a state of heteroscedasticity.

H_0 = homoscedasticity residue. If the probability of Chi-Square (1) > 5%, then the null hypothesis fails to be rejected, which means the residue is in a state of homoscedasticity.

H1 = heteroscedasticity residue. if the probability of Chi-Square (1) < 5%, then the null hypothesis is rejected, which means the residue is in a state of heteroscedasticity.

GARCH Test

GARCH (Generalized Autoregressive Conditional Heteroscedasticity) is a suitable model for analyzing time-series data. This model is especially suitable in financial data such as stock price indexes, which are heteroscedastic. GARCH is considered to be able to provide simpler results because this model uses few parameters; thus, it can reduce the error rate in calculations. (Anggraeny, 2019). The GARCH model was developed by Bollerslev (1986). Bollerslev (1986) explains that the variance of the disturbance variable depends on the residuals of the past period and the variance of the disturbance variable in the past period. Bollerslev and Taylor (1986) describe the GARCH model used in the simple regression model as follows:

$$Y = \beta_0 + \beta_1 X_t + e_t$$

Where :

Y = Dependent Variable

X = Independent Variable

e = Residual

The formulation of the hypothesis is explained as follows:

H0 = There is no efficient market anomaly, if the probability value $\geq 5\%$

H1 = There is an efficient market anomaly, if the probability value $< 5\%$

If the test's probability value is $< \alpha = 5\%$, then there is an efficient market anomaly in stock returns; thus, H0 is rejected. However, if the probability test results show a value $\geq 5\%$, it can be said that there is no efficient market anomaly in stock returns; thus, it can be concluded that H0 is accepted.

Findings

The Day of The Week Effect

Based on the analysis results using the GARCH model with daily stock return data for the 2016-2020 Composite Stock Price Index, which has been stationary and no heteroscedasticity problem, the coefficient values for each day are Monday, Tuesday, Wednesday, Thursday, and Friday $\geq 5\%$ (0.05). Therefore, it can be concluded that The Day Of Week Effect does not affect stock returns of the Composite Stock Price Index (IHSG).

Table 1: GARCH Test Results of Daily Stock Return of Composite Stock Price Index (IHSG)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
Monday	0.000312	0.048637	0.006411	0.9949
Tuesday	-0.004690	0.081946	-0.057234	0.9544
Wednesday	0.079442	0.057284	1.386814	0.1655
Thursday	0.002886	0.032823	0.087934	0.9299
Friday	-0.043859	0.061039	-0.718542	0.4724
C	0.000320	0.000560	0.571267	0.5678

Source: Eviews version 12 output results

The Indonesia Stock Exchange has the initiative to maintain an orderly, fair and efficient market continuity with established regulations. One of the things done is removing broker codes, adding Indicative Equilibrium Price (IEP) features, Indicative Equilibrium Volume (IEV), and random closing. This was done so that the formation of the closing price of shares is more reasonable and increases transparency in the formation of the closing price (cnbcindonesia.com).

With this, a seasonal anomaly cannot be proven, namely The Day Effect on the Composite Stock Price Index. This is in accordance with the theory of the efficient market concept that no phenomenon contradicts the efficient market, namely market anomaly. (Dharmawan, A. et al., 2020). Therefore, the Indonesia Stock Exchange, represented on the Composite Stock Price Index, can be said to be free from daily securities seasonal anomalies and in the form of an efficient market.

Table 2: GARCH Test Results of Daily Stock Return of Dow Jones Industrial Average

Variable	Coefficient	Std. Error	z-Statistic	Prob.
MONDAY	0.038583	0.026552	1.453147	0.1462
TUESDAY	0.044574	0.039079	1.140599	0.2540
WEDNESDAY	-0.023311	0.047096	-0.494973	0.6206
THURSDAY	0.008321	0.058230	0.142893	0.8864
FRIDAY	0.078773	0.033312	2.364682	0.0180
C	0.000573	0.000457	1.253286	0.2101

Source: Eviews version 12 output results

Based on the analysis results using the GARCH model with the daily stock return data of the Dow Jones Industrial Average for the 2016-2020 period, which has been stationary and no heteroscedasticity problem, the Friday coefficient value was significant at $\alpha=5\%$ (<0.05) and had a positive value. Therefore it can be concluded that The Day Of Week Effect affects stock returns of the Dow Jones Industrial Average (DJIA). With that, it can be proven that there is a seasonal anomaly, namely The Day Effect on the Dow Jones Industrial Average. This is not in accordance with the theory of the efficient market concept that there is a phenomenon contrary to the efficient market, namely the market anomaly (Dharmawan, A. et al., 2020). Therefore, the New York Stock Exchange represented on the Dow Jones Industrial Average can have daily effects on seasonal anomalies and in the form of an inefficient market. The occurrence of daily effects can be seen in terms of investor psychology, where investors make investment decisions with several considerations such as rational, economic, objective data and are also influenced by the mood and emotions of investors. Monday is considered a bad day because Monday is the first day of work, while Friday is the best day because it is the last day before the weekend. This causes optimism for Friday and pessimism for Monday (Suryandari, N. N. A., & Wirawan, I. M. C, 2018).

Table 3: GARCH Test Results of Daily Stock Return of Shanghai Stock Exchange Composite

Variable	Coefficient	Std. Error	z-Statistic	Prob.
MONDAY	0.027190	0.042557	0.638917	0.5229
TUESDAY	0.042857	0.074636	0.574216	0.5658
WEDNESDAY	-0.096826	0.095076	-1.018408	0.3085
THURSDAY	0.103978	0.068023	1.528559	0.1264
FRIDAY	-0.031684	0.056022	-0.565563	0.5717
C	0.000259	0.000768	0.337065	0.7361

Source: Eviews version 12 output results

Based on the analysis results using the GARCH model with data on the daily stock return of the Shanghai Stock Exchange Composite 2016-2020 which has been stationary and no heteroscedasticity problem, the result of the coefficient values for each day are Monday, Tuesday, Wednesday, Thursday, and Friday $> \alpha=5\%$ (0.05). Therefore it can be concluded that The Day Of Week Effect does not affect the stock returns of the Shanghai Stock Exchange Composite (SSEC). It cannot be proven that there is a seasonal anomaly, namely The Day Effect on the Shanghai Stock Exchange Composite. This is in accordance with the theory of the efficient market concept that no phenomenon contradicts the efficient market, namely market anomalies (Dharmawan, A. et al., 2020). Therefore, the Shanghai Stock Exchange, represented on the Shanghai Stock Exchange Composite, can be said to be free from seasonal anomalies in daily securities and in an efficient market form. Investors believe in an efficient market, where no one investor can gain above the market return. Investors believe that the price that occurs is a price that reflects the truth. Thus investors will not actively seek to obtain abnormal returns. (Suryandari, N. N. A., & Wirawan, I. M. C, 2018)

Table 4: GARCH Test Results of Daily Stock Returns of Nikkei 225

Variable	Coefficient	Std. Error	z-Statistic	Prob.
MONDAY	-0.023437	0.063080	-0.371545	0.7102
TUESDAY	0.175205	0.088254	1.985246	0.0471
WEDNESDAY	0.202042	0.108686	1.858956	0.0630
THURSDAY	0.245831	0.072572	3.387412	0.0007
FRIDAY	-0.030741	0.059496	-0.516688	0.6054
C	-0.000394	0.000819	-0.480729	0.6307

Source: Eviews version 12 output results

Based on the analysis results using the GARCH model with Nikkei 225 daily stock return data for the 2016-2020 period, which has been stationary and no heteroscedasticity problem, the results of the Tuesday and Thursday coefficient values were significant at $\alpha=5\%$ (<0.05) and a positive value. Therefore, it can be concluded that The Day Of Week Effect affects Nikkei 225 (N225) stock returns. With that, it can be proven that there is a seasonal anomaly, namely The Day Effect on the Nikkei 225. This is not in accordance with the theory of the efficient market concept that there is a phenomenon contrary to the efficient market, namely the

market anomaly (Dharmawan, A. et al., 2020). Therefore, the Tokyo Stock Exchange, represented on the Nikkei 225, can be said to have seasonal anomalies in daily securities and in the form of an inefficient market.

The Month of The Year Effect

Based on the analysis results using the GARCH model with monthly stock return data of the 2016-2020 Composite Stock Price Index, which has been stationary and no heteroscedasticity problem, the results of the April coefficient value were significant at $\alpha=5\%$ (<0.05) and a positive value. Thus, it can be concluded that The Month of The Year affects stock returns of the Composite Stock Price Index (IHSG).

Table 5: GARCH Test Results of Monthly Stock Return of Composite Stock Price Index (IHSG)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
JANUARY	0.168651	0.333345	0.505935	0.6129
FEBRUARY	0.175092	0.253385	0.691010	0.4896
MARCH	-0.373514	0.195220	-1.913298	0.0557
APRIL	0.688788	0.247247	2.785831	0.0053
MAY	0.576653	0.322413	1.788556	0.0737
JUNE	-0.412938	0.265930	-1.552806	0.1205
JULY	-0.523366	0.453418	-1.154269	0.2484
AUGUST	-0.548693	0.400432	-1.370251	0.1706
SEPTEMBER	-0.079344	0.188199	-0.421596	0.6733
OCTOBER	0.344182	0.457625	0.752107	0.4520
NOVEMBER	-0.066892	0.112573	-0.594211	0.5524
DECEMBER	0.166914	0.177853	0.938497	0.3480

Source: Eviews version 12 output results

It can be proven that there is a seasonal anomaly, namely The Month Effect on the Composite Stock Price Index. This is not in accordance with the theory of the efficient market concept that there is a phenomenon contrary to the efficient market, namely the market anomaly (Dharmawan, A. et al., 2020). Therefore, the Indonesia Stock Exchange, represented on the Composite Stock Price Index (CSPI), can be said to have monthly securities seasonal anomalies and in the form of an inefficient market. Iramani dah Mahdi (2006) in Suryandari, N. N. A., & Wirawan, I. M. C. (2018) explain that several studies conducted in the Indonesia Stock Exchange revealed higher returns in April. This high return can happen because of the regulations and provisions of the Capital Market Supervisory Agency No. 80/PM/1996, where companies must submit an annual financial report accompanied by an accountant's report with an opinion that is usually submitted to Bapepam 120 days after the end of the year. Thus, the latest submission of reports is in early April. Good financial reports due to the company's earnings management practices create positive sentiment for the market because they are considered to have good prospects in the future.

Table 6: GARCH Test Results of Monthly Stock Return of the Dow Jones Industrial Average

Variable	Coefficient	Std. Error	z-Statistic	Prob.
JANUARY	-0.692313	0.187608	-3.690200	0.0002
FEBRUARY	-0.752585	0.210671	-3.572323	0.0004
MARCH	-0.428202	0.059480	-7.199079	0.0000
APRIL	-0.083613	0.142966	-0.584841	0.5587
MAY	-0.497519	0.103819	-4.792164	0.0000
JUNE	-0.510834	0.209793	-2.434943	0.0149
JULY	1.520426	0.206814	7.351672	0.0000
AUGUST	-0.727445	0.469503	-1.549393	0.1213
SEPTEMBER	1.498713	0.338110	4.432623	0.0000
OCTOBER	0.848497	0.233498	3.633855	0.0003
NOVEMBER	-0.626274	0.191453	-3.271160	0.0011
DECEMBER	0.685403	0.485501	1.411744	0.1580
C	0.016411	0.001561	10.51031	0.0000

Source: Eviews version 12 output results

Based on the analysis results using the GARCH model with the Dow Jones Industrial Average 2016-2020 monthly stock return data, which has been stationary and no heteroscedasticity problem, the results of the coefficient values for July, September, and October were significant at $\alpha=5\%$ (<0.05) and a positive value. Meanwhile, January, February, March, May, June, November were significant at $\alpha=5\%$ (<0.05) and negative values. Thus it can be concluded that The Month Of The Year affects the stock returns of the Dow Jones Industrial Average (DJI). With that, it can be proven that there is a seasonal anomaly, namely The Month Effect on the Dow Jones Industrial Average. This is not in accordance with the theory of the efficient market concept that there is a phenomenon contrary to

the efficient market, namely the market anomaly (Dharmawan, A. et al., 2020). Therefore, the New York Stock Exchange, represented on the Dow Jones Industrial Average (DJIA), can be said to have seasonal anomalies in monthly securities and in the form of an inefficient market. There are differences in the average monthly return for several reasons, such as differences in culture, politics, economy, and holidays that occur on monthly trading days. Investors' optimistic and pessimistic nature in this different situation causes investors to make investment decisions, causing the Month Effect of The Year (Yolanda, 2020).

Table 7: GARCH Test Results of Monthly Stock Return of the Shanghai Stock Exchange Composite

Variable	Coefficient	Std. Error	z-Statistic	Prob.
JANUARY	0.319981	0.129577	2.469429	0.0135
FEBRUARY	-0.293723	0.117878	-2.491762	0.0127
MARCH	-0.483521	0.116522	-4.149611	0.0000
APRIL	0.472580	0.192198	2.458823	0.0139
MAY	0.380895	0.136762	2.785099	0.0054
JUNE	0.898296	0.115528	7.775583	0.0000
JULY	0.025174	0.116762	0.215604	0.8293
AUGUST	0.556432	0.194134	2.866227	0.0042
SEPTEMBER	-1.140633	0.131261	-8.689810	0.0000
OCTOBER	1.740993	0.015849	109.8462	0.0000
NOVEMBER	1.794855	0.182114	9.855651	0.0000
DECEMBER	1.058111	0.205685	5.144325	0.0000
C	0.005938	0.001510	3.933526	0.0001

Source: Eviews version 12 output results

Based on the analysis results using the GARCH model with monthly stock return data for the 2016-2020 Shanghai Stock Exchange Composite, which has been stationary and no heteroscedasticity problem, the coefficient values for January, April, May, June, August, October, November, and December were significant at =5% (<0.05) and had a positive value. Meanwhile, February, March, and September were significant at =5% (<0.05) and had a negative value. Thus, it can be concluded that The Month Of The Year affects stock returns of the Shanghai Stock Exchange (SSEC).

It can be proven that there is a seasonal anomaly, namely The Month Effect on the Shanghai Stock Exchange Composite. This is not in accordance with the theory of the efficient market concept that there is a phenomenon contrary to the efficient market, namely the market anomaly (Dharmawan, A. et al., 2020). Therefore, the Shanghai Stock Exchange, represented on the Shanghai Stock Exchange Composite (SSEC), can be said to have seasonal anomalies in monthly securities and in the form of an inefficient market.

Table 8: GARCH Test Results of Monthly Stock Return of Nikkei 225

Variable	Coefficient	Std. Error	z-Statistic	Prob.
JANUARY	0.350365	0.302084	1.159828	0.2461
FEBRUARY	0.278897	0.307485	0.907026	0.3644
MARCH	-0.095633	0.179938	-0.531476	0.5951
APRIL	0.259940	0.215186	1.207978	0.2271
MAY	0.967881	0.383789	2.521910	0.0117
JUNE	0.647010	0.407033	1.589577	0.1119
JULY	2.430779	0.429295	5.662259	0.0000
AUGUST	0.413092	0.405506	1.018709	0.3083
SEPTEMBER	1.112418	0.488368	2.277829	0.0227
OCTOBER	0.085630	0.204179	0.419387	0.6749
NOVEMBER	-0.662845	0.456750	-1.451222	0.1467
DECEMBER	0.550789	0.314574	1.750906	0.0800
C	0.008187	0.002298	3.561967	0.0004

Source: Eviews version 12 output results

Based on the analysis results using the GARCH model with monthly stock return data of Nikkei 225 2016-2020, which has been stationary and no heteroscedasticity problem, the coefficient values for May, July, September were significant at =5% (<0.05) and a positive value.

Therefore, it can be concluded that The Month Of The Year affects the Nikkei 225 (N225) stock return. In this way, it can be proven that there is a seasonal anomaly, namely The Month Effect on the Nikkei 225. This is not in accordance with the theory of the efficient market concept that there is a phenomenon contrary to the efficient market, namely the market anomaly (Dharmawan, A. et al., 2020).

Therefore, the Tokyo Stock Exchange is represented on the Nikkei 225 (N225). It can be said that there is a seasonal anomaly in monthly securities and in the form of an inefficient market.

Conclusions

Based on the results of data processing and hypothesis testing, it can be concluded that there is no The Day Of The Week Effect anomaly on the IHSG and SSEC, but there is an anomaly of The Day Of The Week Effect on the DJIA on Friday and N225 on Tuesday and Thursday. On these days the return is higher than other days. Meanwhile, The Month Of The Year Effect anomaly affects stock returns in the four stock indices, namely; April on the IHSG. July, September, and October on the DJIA index. January, April, May, June, August, October, November, and December on the SSEC index. May, July, and September on the N225 index. This shows that there are still phenomena that affect stock returns, especially the anomaly of The Month of The Year Effect. Market inefficiencies may still occur due to other anomalies.

Therefore, it is necessary to further develop the possibility of anomalies that may result in capital market inefficiency. In addition, investors need to pay attention to deviations that occur in the market where investors must be wise in responding to every price that occurs in the market in determining whether to be active when the market is inefficient or vice versa. This is certainly an important concern for the government to continue to supervise the Stock Exchange to maintain an orderly, fair, and efficient market continuity with established regulations. Then pay attention to global influences to maintain the stability of the capital market, economy, and investment climate.

Author Contributions: Conceptualization, F.J., and K.U.; methodology, F.J., and K.U.; validation, F.J., and K.U.; formal analysis, F.J., and K.U.; investigation, F.J., and K.U.; resources, F.J., and K.U.; writing—original draft preparation, F.J., and K.U.; writing—review and editing, F.J., and K.U. All authors have read and agreed to the published version of the manuscript.

Institutional Review Board Statement: Ethical review and approval were waived for this study, due to that the research does not deal with vulnerable groups or sensitive issues.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy.

Conflicts of Interest: The authors declare no conflict of interest.

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