

## **ROGALSKY EFFECT IN THE INDONESIAN STOCK EXCHANGE (AN EVENT STUDY ON THE MANUFACTURING SECTOR IN 2024)**

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### **Abstract:**

This study is classified as an event study. The researcher observed whether the Rogalsky Effect phenomenon occurred on the Indonesian Stock Exchange, particularly in the manufacturing sector. This study examined whether there were abnormal returns before and after the event and whether there were abnormal returns in each event period. The researcher used 200 periods for the estimation period and 27 periods before and 27 periods after the event. The research sample used 57 companies from 228 companies listed in the manufacturing sector on the Indonesia Stock Exchange in 2024. Paired Sample T-test and One Sample T-test were used to test the hypothesis. The results showed that there was no difference in stock returns on Mondays in January compared to returns on Mondays in non-January months for manufacturing sector companies, and there were abnormal returns in 19 event periods. This indicates that an abnormal return occurred during this period due to market reaction to the information that emerged at that time. The occurrence of abnormal returns in this period reflects changes in investor expectations regarding stock prices in response to new information perceived as valuable. The tests conducted, it can be concluded that a seasonal anomaly in the form of the Rogalsky Effect occurs in the Indonesian Stock Exchange, particularly in the manufacturing sector.

**Keywords:** Rogalsky Effect, Abnormal Return, Manufacturing Sector

## **INTRODUCTION**

The manufacturing sector contributed 18.98% to Indonesia's total economy throughout 2024. Domestic and global demand supported growth, especially in the sub-sectors of the basic metal industry, electronics, and food and beverage (CNBC Indonesia, 2025). In 1970, Fama proposed the efficient market hypothesis, which explains a condition in which the prices of all traded securities already reflect all available information. In this context, available information may include past information, current information, as well as opinions circulating in the market that can influence price changes (Istiqoma et al., 2023).

Abnormal return refers to the excess of actual returns over expected returns. Investors who actively observe stock price movements may identify certain phenomena that can be utilized as opportunities to obtain abnormal returns. In an efficient capital market, where security prices already incorporate all available information, it becomes difficult for investors to earn abnormal returns by exploiting information they possess, as the market reacts rapidly to newly released information. However, several studies have identified deviations from market efficiency, indicating the existence of patterns in returns where higher or lower returns occur at specific times. These deviations contradict the efficient market concept and are referred to as market anomalies (Sulviani et al., 2022).

Market anomalies represent techniques or strategies that contradict the efficient market hypothesis, in which stock prices consistently increase or decrease during certain events, thereby forming specific patterns (Agustin & Faisal, 2023). One type of market anomaly is the Rogalsky



Effect, which is a combination of the day-of-the-week effect and the January effect. This anomaly was first identified by Rogalsky in 1984, who found that the average return on Mondays in January is positive, while Monday returns in other months tend to be negative. This phenomenon indicates that the Monday effect disappears in January because returns in January are generally higher than returns in other months (Saraswati et al., 2015).

**Signalling Theory.** Signalling theory was first introduced by Spence (1973), which explains that the sender of information (the informed party) provides signals in the form of information that reflect a firm's condition and are useful for the receiver of information, particularly investors. This theory was further developed by Ross (1977), who emphasized the existence of information asymmetry between information held by management as the well-informed party and information available to shareholders as the less-informed party. Corporate executives, who possess superior information regarding the firm's actual performance and prospects, are motivated to disclose such information to potential investors as a signal of firm quality, with the expectation that it will lead to an increase in the company's stock price.

**The Efficient Market Hypothesis.** Fama (1970) proposed the Efficient Market Hypothesis, which describes a condition in which the prices of all traded securities fully reflect all available information. In this context, available information includes not only historical and current information but also publicly disseminated opinions and market sentiments that may influence price movements.

**Stock Return.** According to Hartono (2017), return is the outcome obtained from investment activities, which can take the form of realized returns that have already occurred or expected returns anticipated to occur in the future. Stock return consists of two main components, namely yield and capital gain. Yield represents the return component derived from cash flows, such as dividends received by investors, while capital gain refers to the profit obtained from the difference between the selling price and the purchase price of a stock.

**Market anomalies.** Market anomalies refer to conditions that deviate from normal patterns or irregularities occurring in capital markets or securities markets, as well as within firms themselves (Oktyani et al., 2024). Market anomalies contradict the Efficient Market Hypothesis, as they suggest that investors may have opportunities to obtain abnormal returns by exploiting certain events or patterns in the capital market. The existence of such anomalies implies that security prices do not always fully reflect all available information.

**January Effect.** The January Effect is a seasonal anomaly in the capital market in which stock returns in January tend to be higher than returns in other months. This phenomenon indicates the presence of predictable price movement patterns that investors may exploit to generate profits or avoid losses. Factors influencing the January Effect are often associated with financial reporting behavior and investor actions at the end of the year, such as tax-loss selling and window dressing. As a result, stock returns in December tend to be lower compared to January. Subsequently, companies or investors repurchase stocks at the beginning of January, leading to higher stock returns during that month (Rumawas et al., 2024).

**Rogalsky Effect.** Rogalsky Effect merupakan anomali pasar yang ditemukan oleh seorang peneliti bernama Rogalsky pada tahun 1984 yang mengemukakan adanya hubungan antara day of the week effect dengan January Effect yaitu ditemukan bahwa rata-rata return negatif pada hari Senin menghilang pada bulan Januari. Hal ini disebut dengan Rogalsky Effect yaitu adanya kecenderungan return yang lebih tinggi pada bulan Januari dibandingkan dengan bulan-bulan yang lainnya (Widayanti, 2018). Rogalsky Effect muncul akibat tindakan kurang rasional investor sehingga memengaruhi pembentukan harga saham tersebut. Investor banyak melakukan aksi beli

setelah menjual saham mereka pada bulan Desember dengan asumsi untuk mengurangi pajak (tax-loss selling), mengambil keuntungan capital gain, dan pengaruh portofolio window dressing (Amrullah & Khairunnisa, 2019). The Rogalsky Effect is a market anomaly identified by Rogalsky in 1984, which highlights the relationship between the day-of-the-week effect and the January Effect. Rogalsky found that the negative average returns typically observed on Mondays disappear in January. This phenomenon, known as the Rogalsky Effect, indicates a tendency for higher stock returns in January compared to other months (Widayanti, 2018). The emergence of the Rogalsky Effect is often attributed to irrational investor behavior that influences stock price formation. Many investors engage in buying activities after selling their stocks in December, motivated by tax-loss selling strategies, the realization of capital gains, and portfolio window dressing effects. These behaviors increase buying pressure at the beginning of January, thereby contributing to higher returns during that period (Amrullah & Khairunnisa, 2019).

**Research Hypotheses.** Research conducted by Rogalsky (1984) identified a phenomenon known as the Rogalsky Effect. The study demonstrated a relationship between the day-of-the-week effect and the January Effect, where the negative average returns typically observed on Mondays disappear during January. This finding indicates the presence of the Rogalsky Effect, in which stock returns tend to be higher in January compared to other months.

H0: There is no significant difference in abnormal stock returns on Mondays in January compared to Mondays in non-January months for manufacturing sector companies.

H1: There is a significant difference in abnormal stock returns on Mondays in January compared to Mondays in non-January months for manufacturing sector companies.

## METHODS

This study employs a quantitative research approach. Quantitative research is a method that utilizes numerical data or data expressed in numbers for analysis (Suryani & Hendryadi, 2018). This approach commonly applies mathematical models, theories, and hypotheses as the foundation for research development and hypothesis testing (Purnamasari et al., 2023). Population refers to a collection of elements that possess certain characteristics that can be used to conclude (Chandrarin, 2017). The population in this study consists of manufacturing sector companies listed on the Indonesia Stock Exchange (IDX) during the year 2024. Meanwhile, a sample is a subset of the population that represents its characteristics (Harsojuwono & Arnata, 2020). This study employs a purposive sampling method, which is a sampling technique based on specific criteria determined by the researcher. The criteria used in selecting the research sample are as follows:

1. Manufacturing sector companies listed on the Indonesia Stock Exchange (IDX).
2. Manufacturing sector companies that publish complete financial statements.
3. Manufacturing sector companies that have complete stock price data.

Based on the source of data, this study employs secondary data, which are obtained from third parties or intermediary sources. In this research, the secondary data are collected from the official website of Yahoo Finance ([www.yahoofinance.co.id](http://www.yahoofinance.co.id))

The operational variable used in this study is the stock return of manufacturing sector companies listed on the Indonesia Stock Exchange (IDX). Stock return represents the rate of return earned from invested capital. It is measured as the percentage change in stock prices over time, reflecting the investment performance of manufacturing companies. The stock return is calculated using the following formula (Hartono, 2017):



$$Rit = \frac{Pit - Pit_{-1}}{Pit_{-1}}$$

Where:

Rit = stock return in period t

Pit = stock price in period t

Pit-1 = stock price in period t-1

**Data Analysis Method.** This study employs an event study approach to calculate stock returns. The stages conducted in this analysis are as follows:

1. Determining normal return using an estimation model for each firm. The model applied is the mean-adjusted model, which is calculated by summing the actual returns of each stock during the estimation period and dividing the total by the number of estimation periods. Stock return is calculated using the following formula:

$$Rit = \frac{Pit - Pit_{-1}}{Pit_{-1}}$$

Where:

Rit = stock return in period t

Pit = stock price in period t

Pit-1 = stock price in period t-1

The normal return for each stock is calculated using the following formula:

$$NRt = \frac{\sum Ri}{T}$$

Information:

NRt = normal stock return

$\sum Ri$  = total stock returns during the estimation period

T = number of estimation periods

2. Calculating abnormal return during the event period for each stock. The abnormal return is calculated as follows:

$$ARi.t = Ri.t - NRi$$

Information:

ARi.t = abnormal return in period t

Ri.t = actual return in period t

NRi = normal stock return

**ANOVA Test.** The ANOVA (Analysis of Variance) test is applied in comparative research to examine whether there are differences among variables. In this study, the ANOVA test is conducted by comparing stock returns between Group 1 and Group 2. There are several steps involved in conducting the ANOVA test, which are as follows (Nursanti, 2015):

1. Homogeneity Test. The homogeneity test in ANOVA is conducted to ensure that each group used in the study has equal variances. In other words, this test is applied to confirm that any observed differences are truly differences between groups, rather than differences within groups. The homogeneity test is conducted based on the following criteria:



- a. If the p-value > 0.05, the variances among the groups are considered equal, indicating that the data can be used for further analysis.
  - b. If the p-value < 0.05, the variances among the groups are not equal, suggesting that the data may not meet the assumptions of ANOVA and therefore cannot be used for further analysis.
2. ANOVA Test. After conducting the homogeneity test, the ANOVA test is performed. The ANOVA test is conducted based on the following criteria:
- a. If the p-value > 0.05, the data are considered to have no significant differences, indicating that the components are statistically the same.
  - b. If the p-value < 0.05, the data are considered to have significant differences, indicating that the components differ statistically.

## RESULT AND DISCUSSION

**Overview of the Company.** The manufacturing sector consists of companies that process raw materials into finished goods using machinery or equipment. This sector is closely associated with the application of technology that enables the large-scale transformation of raw materials into finished products. Manufacturing companies typically produce goods in large quantities, which are subsequently sold to consumers to generate profits. The profits earned by manufacturing companies contribute to national income; therefore, this sector plays a significant role in supporting national economic growth and development.

**Table 1.** Results of Descriptive Statistical Analysis

	Descriptive Statistics				
	N	Minimum	Maximum	Mean	Std. Deviation
AAR_After	27	-0.037996	0.025173	-0.00296586	0.014577360
AAR_Before	27	-0.028435	0.032673	0.00050757	0.012423450
Valid N (listwise)	27				

Based on Table 4.2, the mean average abnormal return (AAR) before the event is 0.00050757, with a minimum value of -0.028435 and a maximum value of 0.032673. Meanwhile, the mean average abnormal return after the event is -0.00296586, with a minimum value of -0.037996 and a maximum value of 0.025173. The standard deviation of the average abnormal return before and after the event is 0.012423450 and 0.014577360, respectively. These standard deviation values indicate the extent to which the observed values deviate from their expected values.

**Data Analysis.** The data analysis in this study employs the paired sample t-test and the one-sample t-test. The calculation of actual returns is conducted during the estimation period of 200 trading days. The results of these calculations are used to obtain the normal return during the estimation period. Subsequently, the actual return is calculated for the event period, which consists of 54 observation periods, including 27 periods before the event and 27 periods after the event. The difference between the normal return estimated during the estimation period and the actual return observed during the event period yields the abnormal return.

**Table 2.** Results of the Paired Sample T-test

	Paired Samples Statistics			
	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 AAR_After	-.00296586	27	.014577360	.002805414
AAR_Before	.00050757	27	.012423450	.002390894



**Table 3. Paired Samples Test**

		Paired Differences					t	df	SSig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	AAR_Aftes - AAR_Before	-.003473425	.019801230	.003810748	-.011306530	.004359681	.911	6	370

Based on the test results above, the mean average abnormal return after the event is lower than the mean average abnormal return before the event. The magnitude of the mean average abnormal return is -0.003473425. The test results also indicate that the significance value of abnormal returns before and after the event is 0.370. If the significance value is less than 0.05, the hypothesis is accepted.

Since the significance value is greater than 0.05 ( $0.370 > 0.05$ ), it can be concluded that the hypothesis is rejected, indicating that there is no significant difference in stock returns on Mondays in January compared to Mondays in non-January periods for manufacturing sector companies.

**One-Sample t-test.** The subsequent analysis employs a one-sample t-test to examine whether abnormal returns occur in each event period. The results of this test are presented in the following table:

**Table 4. Result Of One Sample t-test**

Period	t-value	Df	Sig. (2-tailed)	Description
t27	2.724	56	0.009	Significant
t26	-4.793	56	0.000	Significant
t25	-0.752	56	0.455	Not Significant
t24	-0.409	56	0.684	Not Significant
t23	-0.043	56	0.966	Not Significant
t22	2.011	56	0.049	Significant
t21	4.112	56	0.000	Significant
t20	-2.038	56	0.046	Significant
t19	-2.094	56	0.041	Significant
t18	-1.741	56	0.087	Not Significant
t17	-0.615	56	0.541	Not Significant
t16	2.058	56	0.044	Significant
t15	-2.936	56	0.005	Significant
t14	1.166	56	0.248	Not Significant
t13	-0.762	56	0.449	Not Significant
t12	-1.937	56	0.058	Significant
t11	-2.755	56	0.008	Significant
t10	2.283	56	0.026	Significant
t9	1.450	56	0.153	Not Significant
t8	0.561	56	0.577	Not Significant



t7	0.217	56	0.829	Not Significant
t6	0.682	56	0.498	Not Significant
t5	-0.334	56	0.740	Not Significant
t4	-1.071	56	0.289	Not Significant
t3	-1.613	56	0.112	Not Significant
t2	-0.488	56	0.627	Not Significant
t1	-1.197	56	0.236	Not Significant
t0	2.916	56	0.005	Significant
t_1	-0.140	56	0.890	Not Significant
t_2	-0.356	56	0.723	Not Significant
t_3	1.851	56	0.069	Not Significant
t_4	0.609	56	0.545	Not Significant
t_5	1.003	56	0.320	Not Significant
t_6	-3.757	56	0.000	Significant
t_7	0.130	56	0.897	Not Significant
t_8	0.874	56	0.386	Not Significant
t_9	-4.749	56	0.000	Significant
t_10	-2.625	56	0.011	Not Significant
t_11	-2.858	56	0.006	Significant
t_12	-3.280	56	0.002	Significant
t_13	2.439	56	0.018	Significant
t_14	0.301	56	0.764	Not Significant
t_15	0.775	56	0.442	Not Significant
t_16	0.595	56	0.554	Not Significant
t_17	-0.036	56	0.972	Not Significant
t_18	-3.088	56	0.003	Significant
t_19	1.772	56	0.082	Not Significant
t_20	-1.164	56	0.249	Not Significant
t_21	0.202	56	0.841	Not Significant
t_22	1.662	56	0.102	Not Significant
t_23	1.553	56	0.126	Not Significant
t_24	3.463	56	0.001	Significant
t_25	0.256	56	0.799	Not Significant
t_26	-0.202	56	0.841	Not Significant
t_27	1.753	56	0.085	Not Significant

Based on the test results, significant abnormal returns were observed in only 19 event periods. In period t0, the significance value is 0.005, which is below the 0.05 threshold. Therefore, it can be concluded that an abnormal return occurred during this period, indicating that the market reacted to the information released on that day. The market responded quickly to the event, and the information was immediately reflected in stock prices during the first event period. In the subsequent periods from t1 to t9, no abnormal returns were detected. However, abnormal returns became significant again in periods t10 to t22. This pattern suggests that after the initial market



reaction in the first period, the market did not respond immediately thereafter. This implies that investors in Indonesia are already aware of the phenomenon that stock prices in the manufacturing sector tend to increase on the first Monday of the year. In other words, the Indonesian Stock Exchange also experiences the Rogalsky Effect, similar to other stock markets.

The results of this study indicate that there is no significant difference in stock returns on Mondays in January compared to Mondays in non-January periods for manufacturing sector companies. This finding is supported by the paired sample t-test results, which show a significance value of 0.370, exceeding the 0.05 threshold. These results suggest that stock price movements during the observation period were relatively stable and did not experience significant changes due to seasonal factors at the beginning of the year. This implies that investors in the Indonesian Stock Exchange are able to respond collectively to the available information. The absence of differences in abnormal returns between Mondays in January and Mondays in non-January indicates that investors have already reacted to the event (fully reflected), as all market participants respond simultaneously, thereby eliminating the emergence of abnormal returns.

The results of the one-sample t-test indicate that out of a total of 54 observation periods, consisting of 27 days before and 27 days after the event, there are 19 periods with significance values below 0.05, suggesting that abnormal returns occurred in several periods. This finding implies that the market reacted to information released during those specific periods. The one-sample t-test results also show that the first event period ( $t_0$ ) has a significance value below 0.05. This indicates that an abnormal return occurred during this period due to market reaction to the information that emerged at that time. The occurrence of abnormal returns in this period reflects changes in investor expectations regarding stock prices in response to new information perceived as valuable. However, after period  $t_0$ , no abnormal returns are observed until they reappear in the range of  $t_{10}$  to  $t_{22}$ , indicating a subsequent market reaction to changing conditions or the circulation of additional information following the initial event.

Based on the results of the tests conducted, it can be concluded that a seasonal anomaly in the form of the Rogalsky Effect occurs in the Indonesian Stock Exchange, particularly in the manufacturing sector. Although no significant difference is found overall between stock returns before and after the event, the period-by-period analysis reveals market reactions that are not entirely rational. This condition is attributed to the fact that investors in Indonesia are already aware of the phenomenon that stock prices in the manufacturing sector tend to rise on the first Monday of the year.

## CONCLUSION

This study aims to examine whether the Rogalsky Effect exists in the Indonesian Stock Exchange. The study employs an event study method with an observation window of 54 periods, consisting of 27 periods before and 27 periods after the event. The sample was selected using purposive sampling, focusing on manufacturing sector companies listed on the Indonesia Stock Exchange.

This study employs the paired sample t-test to demonstrate that there is no significant difference in average abnormal returns before and after the event. This is evidenced by a significance value of 0.370, which is greater than 0.05, leading to the rejection of the hypothesis. The results indicate that investors in the Indonesian Stock Exchange are already aware of the Rogalsky Effect and therefore react collectively to the occurrence of the event. In accordance with Fama's theory, the Indonesian capital market has already fully reflected the event, which explains the absence of abnormal returns.



The subsequent test uses the one-sample t-test, which shows that abnormal returns occur in 19 event periods, including  $t_0$ , which is statistically significant. This indicates that the Indonesian Stock Exchange experiences the Rogalsky Effect. Investors are aware that stock prices tend to increase during the first period, resulting in higher stock returns.

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