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Abnormal Return of The Agriculture Sector Test on The President Election Process in 2019

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Abstract

Presidential election is one of the political events that can be tested whether it contains information that can affect the performance of issuers in the capital market. This study aims to examine the reaction of agricultural stocks whether they contain information related to the political events of the 2019 presidential and vice-presidential elections. Information content is measured by the significance of the Cumulative Average Abnormal Return (CAAR) t-test. The results showed that there was significance before and after the presidential and vice-presidential election events in 2019. Before the election the significance of CAAR had a negative dominant value and after the significance event at H + 1 was positive with a negative Average Abnormal Return. This shows that there is good and bad information circulating in the capital market, especially in the agricultural sector. The CAAR and AAR pair test shows that the political events of the 2019 presidential election before and after the events were not significantly different.

1. Introduction

Information is the primary need of investors in the capital market. Relevant information helps investors to be able to assess the prospects for the performance of the item so that investors have an overview of the risks and expected returns on funds that have been invested and will be invested. According to the market (efficiency efficient market hypothesis) theory, the price of securities in the capital market fully reflects the available information. The information required here can come from the internal and external conditions of the issuer. In an efficient capital market, the market will react quickly to all relevant information. This movement is generally indicated by changes in stock prices that experience abnormal returns, namely changes in stock prices that exceed normal conditions.

The capital market is an economic instrument that cannot be separated from environmental influences, both financial and non-economic. The impact of the non-economic environment, although not directly related, cannot be separated from stock exchange activity. One of the economic environments that cannot be separated

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from the capital market is political events (Fama, 1998). As indicated by market players' response, political events affecting the capital market include general elections, change of heads of state, or various political unrest. This political event has had both positive and negative impacts on Jones and investors' conducive climate stability (Jensen, 2016). The 2019 presidential election is an interesting political event to research. The 2019 political election was attended by the candidate pair Ir. H. Joko Widodo and KH Maruf Amin against Prabowo Subianto and Sandiaga Uno. The 2019 presidential election is a rematch of the previous election. The capital market showed positive sentiment regarding the announcement of the Quick Count results; this was demonstrated by the JCI, which strengthened by 1.58%, while the LQ-45 index rose 2.15%; this strengthening indicates that the political events of the presidential election contain information that investors can use to obtain a return. Figure 1. Shows stock trading pattern in the agricultural sector, which tends to be the same as LQ-45.

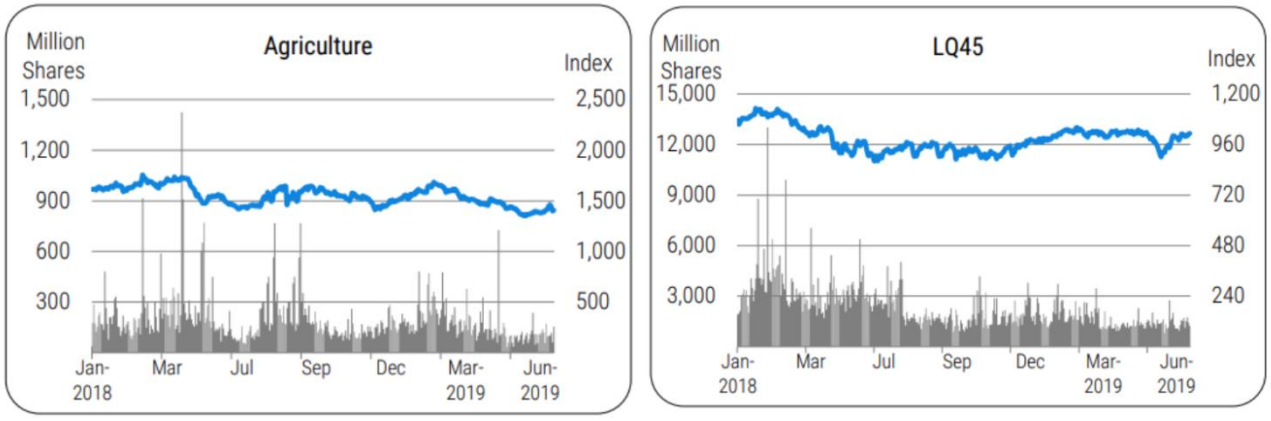

Figure 1. Agricultural sector stock sales volume and LQ-45 Index

This research is informed of an event study that aims to examine the information content around the 2019 presidential election stages on agricultural sector stocks. The information content is tested using the cumulative average abnormal return.

2 Research Method

This research was conducted using a descriptive and quantitative econometric research method using secondary data. This research is a case study of agricultural sector stocks in the 2019 presidential and vice-presidential election period. The research design uses an event study to determine presidential and vice-presidential elections on abnormal stock returns. The data used in this study are secondary data obtained from various relevant sources. The data used in this study are as follows: 1). Daily share price data for the agricultural sector listed on the Indonesia Stock Exchange for January 2019-December 2019 and 2). Daily JCI data were starting from January 2019-December 2019. Data obtained from https://finance.yahoo.com. Performed data analysis by calculating the abnormal return around the event period. The stages of data analysis are as follows:

1. Determining The research. This study's period is 20 days before and after the 2019 presidential and vice-presidential election events. The election event date is April 17, 2019. The research period is taken 20 days before the event and 20 days after the event. The estimation period used is 200 days following the research of Yu and Leitikow (2011).
2. Forming the Expected Return model. Forming the model expected return is done in several stages, namely
    - Calculating the actual returns individual stock. Actual return is the real rate of return received by shareholders. Calculation Actual return as follows

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$$R_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}}$$

Info:
$R_{i,t}$ = The actual return of individual shares, I on day t.
$P_{i,t}$ = Stock price at *i* until day *t*
$P_{i,t-1}$ = stock price at *i* until day *t-1*

- Calculating index returns stock market—return Marketisrate of return the actual overall. Returns Stock is calculated during the estimation period and events. To figure the index return market used the following equation.

$$R_{m,t} = \frac{IHSG_t - IHSG_{t-1}}{IHSG_{t-1}}$$

Info:
$R_{m,t}$ = stockmarket *actual return* at day- *t.*
$IHSG_t$ = IHSG price at day-*t.*
$IHSG_{t-1}$ = IHSG price at day-*t-1.*

3. Calculating the expected return of each stock. In this study, the expected return is calculated using the market model (market model). The steps are taken in calculating the following two stages:
   - Established the model expectations with return actual and the stock return market index during the estimation period. The estimation period used in this study is 200 days. The expectation model is formed using the OLS (Ordinary Least Square) regression technique from the equation model built as follows.
   $$E(R_{i,t}) = a + b_i R_{m,t}$$
   - Using the expectation model above, the calculated expected return of each stock during the event period, by substituting the value return index on the daily market $R_{m,t}$ into the equation.
4. Calculating the Abnormal Return (AR) of each stock sample during the estimation period. Abnormal return is the difference between return realized and expected return. Abnormal returns can be calculated using the following formula.
   $$AR_{i,t} = R_{i,t} - E(R_t)$$
5. Calculating Average Abnormal Return (AAR). Average abnormal return is calculated during the event period with the following equation. Where; K is the expected stock return i day t
   $$AAR_{i,t} = \sum \frac{AR_{i,t}}{K}$$
6. Calculate the Cumulative Average Abnormal Return (CAAR). CAAR is the cumulative value of the AAR during the event period. CAAR is calculated during the event period with the following formula.
   $$CAAR_{i,t} = \sum AAR_{i,t}$$
7. Calculate the t-CAAR value. Statistical testing of abnormal returns aims to see the significance of abnormal returns in the event period. The importance is that the abnormal return is statistically significant, not equal to zero (positive for good news and negative for bad news). In general, the t-test that tests the null hypothesis that the value of a parameter is equal to zero is as follows (Jogiyanto, 1998).

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$$Nilai - t = \frac{\beta}{KSE}$$

β = Parameter and *KSE*= Standard Error Estimation

Thus, the t-test is carried out by standardizing the abnormal return value. Standardization is done by dividing the odd return value by the value of the estimated standard error. Estimation standard error is the standard error when calculating the abnormal return value. Standardization is carried out for abnormal returns of each security. The standardized abnormal return for the it security is as follows.

$$ARS_{i,t} = \frac{AR_{i,t}}{KSE_i}$$

Info:
$ARS_{i,t}$ = *Abnormal Return of at i standardized security on the t-day of the event period*
$AR_{i,t}$ = Securities *Abnormal Return* at-i until day-t event period
KSE = Estimated standard error for the day-i

The calculation of Estimated Standard Error (KSE) in this study is based on the deviation of the values. The return from the average return value during the estimation period and is formulated as follows.

$$KSE = \sqrt{\frac{\sum_{j=t1}^{t2} (R_{i,j} - \bar{R}_i)^2}{T_1 - 2}}$$

Info:
KSE = Error Standard Estimation of a securities at-i
$R_{i,j}$ = Securities *Return* at-i until day-j event period estimation
R_i = Securities mean at-i event period estimation
T_1 = Total event period estimation

The t-test is generally conducted for returns portfolio on day t of the event period. This security portfolio consists of k-pieces of securities that are affected by the announcement of the relevant event. The amount return of standardized abnormal for a portfolio of k-securities is:

$$t - hitung_t = \frac{\sum_{i=1}^{k} ARS_{i,t}}{\sqrt{k}}$$

Info:
t-value = t value of the portfolio in the event period
$RTNS_{i,t}$ = Abnormal *Return standardized at-I securitiesy for day t in the event period*
K = Total securities

3 Result and Discussion

3.1. Samples

Data on agricultural sector stocks that passed the selection to calculate abnormal returns were 16 issuers. Shares that give the following calculation:

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Table 1. Samples

No	Firms Code	Firms Sample
1	AALI	PT. Astra Agro Lestari
2	ANJT	PT. Austindo Nusantara Jaya
3	BISI	PT. BISI International
4	BWPT	PT. Eagle High Plantations
5	DSFI	PT. Dharma Samudera Fishing Industri
6	DSNG	PT. Dharma Satya Nusantara
7	GOLL	PT. Golden Plantation
8	GZCO	PT. Gozco Plantations
9	JAWA	PT. Jaya Agra Wattie
10	LSIP	PT. Perusahaan Perkebunan London Sumatra Indonesia
11	PALM	PT. Provident Agro
12	SGRO	PT. Sampoerna Agro
13	SMAR	PT. Sinar Mas Agro Resources and Tech
14	SSMS	PT. Sawit Sumbermas Sarana
15	TBLA	PT. Tunas Baru Lampung
16	UNSP	PT. Bakrie Sumatera Plantations

Source: IDX Fact Book 2019

3.2. Expected Return Model Formation

The expected return model is obtained by regressing stock returns with market returns. The results of the desired return model using tools are Microsoft Excel as follows:

Tabel 2. Model Expected Return setiap Emiten

No	Firms Code	Model Expected Return $E(R_{i,t}) = a + b_i R_{m,t}$	
		a	b_i
1	AALI	0.00022824	0.53380468
2	ANJT	-0.00048791	0.14001081
3	BISI	-0.00115832	0.28131175
4	BWPT	-0.00077171	0.65312474
5	DSFI	0.00082019	0.43387992
6	DSNG	0.00004735	0.19568761
7	GOLL	-0.00072251	0.06644474
8	GZCO	-0.00098461	0.62228857
9	JAWA	-0.00121775	0.00852494
10	LSIP	0.00045223	0.76512544
11	PALM	-0.00014486	0.43811853
12	SGRO	0.00047444	-0.06626107
13	SMAR	0.00017948	0.13416818
14	SSMS	-0.00104742	0.43669957
15	TBLA	-0.00082674	1.01370138
16	UNSP	-0.00329884	0.71557053

3.3. Abnormal Return

The number of issuers that passed the testing was 16 issuers during the estimation. The statistical test is used to see the significance of the abnormal return. The test used is the-test two-tails with a tiered α, consisting of 1 percent, 5 percent, and 10 percent. The degree of freedom used is 14. Descriptive statistics of AR before and after the incident are shown in table 3 below.

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Table 3. Descriptive Statistics AR Before the Event and After the Event

	Before Event	*After Event*
Mean	-0,0000674	-0,0066455
Standard Deviation	0,1111528	0,0874407
Minimum	-0,1678957	-0,1457059
Maximum	0,2365872	0,1468051
Total	20	20

Based on Table 3, the descriptive AR before the minimum occurrence is -0.1678957. The maximum is 0.2365872 with an average of -0.0000674 and a standard deviation of 0.111528, while after the incident, the minimum is -0.1457059 and the maximum is 0.1468051. the standard deviation has decreased to 0.0874407. This shows a change in risk after the event, as indicated by a change in standard deviation. A smaller standard deviation value also indicates stability after the political events of the presidential election.

3.4. Hypothesis Testing and Statistical Analysis: Analysis of Information Content and Abnormal Return of the 2019 Presidential Election Events.

The first research objective is to analyze the information content of 2019 Presidential and Vice-Presidential Election during the observation period, testing the Average Abnormal Return (AAR) to see the significance of the Abnormal Return during the observation period. After that, know the importance of the Cumulative Average Abnormal Return (CAAR) during the observation period. The Efficient Market Hypothesis basis is that the market will respond to information announced openly to the public and fundamentally has the potential to cause changes in returns. The first hypothesis testing tests, whether there is an abnormal return after the event. This test will test whether the Average Abnormal Return (AAR) is different from 0 or whether the return after the event is different from the return before the event. Testing is done by using a t-test. The results of the t-test calculations and their significance are presented in Table 4:

Table 4. AAR and CAAR

Days	AAR	CAAR	*t-calculated*	
-20	-0.00268	0.00058	0.32202	
-19	-0.00358	-0.00210	-1.54703	
-18	-0.00187	-0.00568	-2.13300	
-17	-0.01049	-0.00754	-0.73982	
-16	0.00803	-0.01804	-5.46330	
-15	-0.00589	-0.01001	4.22995	***
-14	0.00725	-0.01589	-3.90726	
-13	-0.00049	-0.00864	4.94804	***
-12	-0.00496	-0.00913	-0.73935	
-11	0.01384	-0.01410	-2.75038	
-10	0.01479	-0.00026	7.35803	***
-9	-0.00047	0.01453	8.18638	***
-8	-0.00849	0.01406	-0.13779	
-7	0.00688	0.00557	-4.45918	
-6	-0.00717	0.01245	3.56834	***
-5	0.00040	0.00528	-4.02386	
-4	-0.00277	0.00568	0.36741	
-3	0.00105	0.00291	-1.47293	
-2	-0.00404	0.00396	0.49665	
-1	0.00000	-0.00008	-2.55714	
0	0.00436	-0.00008	0.00000	
1	-0.00426	0.00428	2.34206	**
2	-0.00515	0.00002	-1.86374	
3	-0.00159	-0.00513	-3.28443	
4	-0.00601	-0.00672	-0.12990	
5	0.00918	-0.01274	-3.06129	
6	-0.00121	-0.00356	4.46901	***

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Days	AAR	CAAR	*t-calculated*
7	0.00399	-0.00477	-0.47319
8	0.00164	-0.00078	2.21251 **
9	0.00152	0.00086	1.12356
10	-0.00648	0.00238	1.12346
11	-0.00911	-0.00410	-3.54400
12	0.00900	-0.01320	-5.96875
13	-0.00670	-0.00420	5.52222 ***
14	-0.00364	-0.01090	-3.74951
15	-0.00471	-0.01454	-1.79567
16	0.00175	-0.01924	-2.04897
17	0.00788	-0.01749	1.15907
18	-0.00161	-0.00962	4.15768 ***
19	0.00284	-0.01123	-0.82936
20	0.00284	-0.00839	1.83076 *

Info:

* : Significant at α =10 %

** : Significant at α =5 %

*** : Significant at α =1 %

The two-sided test in stages carried out using 14 degrees of freedom obtained the t table value for α = 1% was 2.976843, α = 5% was 2.144787, and α = 10% was 1.761310. Based on the t-value distribution, it is known that on the day D-15, H-13, D-10, before the event, the significance of CAAR occurred, which was negative and positive on D-9 and H-6. This shows that before the incident, investors had received good and bad information regarding abnormal returns. Negative AAR values on H + 1, H + 6, H + 13, H + 18 indicate a negative reaction by the market to information. This shows that investors are worried about political stability after the election to wait until the politics stabilize. Its significance indicates this on D + 20, where information on election winners can be known from the relevant institutions. At the time of the incident, there was no significance because the stock market was closed. But on H + 6, H + 8, H + 13, H + 18, H + 20, there was a negative significance CAAR. This shows that the events of the 2019 presidential and vice-presidential elections contain information that the market responds to. A negative CAAR value indicates negative sentiment and expectations of agricultural sector investors on the presidential election results. The significance value of H + 20 (H-3 before the KPU announcement) at α = 1% indicates that agricultural sector investors are very confident about the elected government.

$$\boldsymbol{AAR}[[\boldsymbol{t_{-20}}, \boldsymbol{t_0}], [\boldsymbol{t_0}, \boldsymbol{t_{20}}]] \neq \boldsymbol{0}$$

To see the difference in the mean AAR before the incident and after the incident, the paired sample t-test was used. This test looks at whether there is a difference in the average abnormal return received by investors before the event and after the incident. The hypothesis used is as follows.

H0 = There is no difference in the mean AAR before the incident and after the incident

H1 = There is a difference in the mean AAR before the incident and after the incident.

Before testing, it is necessary to know whether the data has a normal distribution or not. This is done to find out the test statistics performed. The data normality test was performed using the Kolmogorov Smirnov test. The criteria used if the significance of the Kolmogorov Smirnov test is greater than 5 percent, then the data is normally distributed. If it is less than 5 percent, the information is not normally distributed. The results of the normality test are shown in Table 5.

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Table 5. AAR Normality Test Before and After the Event

	Kolmogorov-Smirnov			*Shapiro-Wilk*		
	Statistic	*df*	*Sig.*	*Statistic*	*df*	*Sig.*
AAR Before	0,188	20	0,062	0,928	20	0,141
AAR After	0,120	20	0,200*	0,948	20	0,337

* This is a lower bound of the true significance.
a Lilliefors Significance Correction

The Kolmogorov-Smirnov Shapiro-Wilk test results showed a significance value of Shapiro Wilk of more than α = 5%, so it was concluded that the data were normally distributed. AAR paired test before and after the incident was carried out using paired t-test. The results of the paired t-test are shown in Table 6.

Table 6 Paired t-test results for AAR

Pair	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
AAR Before AAR After	0,0004585	0,0088041	0,0019687	-0,0036620	0,0045790	0,233	19	0,818

The paired t-test results show a significance value of 0.818> 5%, so it can be concluded that there is no difference between the average AAR before the incident and after the incident. This indicates that the agricultural sector is a sector that is not affected by the events of the 2019 presidential and vice-presidential elections.

$$\boldsymbol{CAAR[[t_{-20}, t_0], [t_0, t_{20}]] \neq 0}$$

CAAR describes the level of welfare that investors receive when investing. The test is done by using paired sample test. This test looks at whether there is a difference in the average CAAR received by investors before the event and after the incident. The hypothesis used is as follows.

H0: There is no difference between the mean CAAR before the incident and after the event
H1: There is a difference in the mean CAAR before the event and after the event

As in testing hypothesis I, before testing it is necessary to know whether the data is normally distributed or not. The data normality test was performed using the Kolmogorov Smirnov test. The criteria used are if the significance of the Kolmogorov Smirnov test is greater than 5 percent, then the data is normally distributed and if it is less than 5 percent, the data is not normally distributed. The test results are shown in Table 7.

Table 3. Normality Test of CAAR Before and After Period

	Kolmogorov-Smirnov			*Shapiro-Wilk*		
	Statistic	*df*	*Sig.*	*Statistic*	*df*	*Sig.*
CAAR Before	0,094	20	0,200*	0,964	20	0,628
CAAR After	0,109	20	0,200*	0,978	20	0,899

* This is a lower bound of the true significance.
a Lilliefors Significance Correction

The Kolmogorov-Smirnov Shapiro-Wilk test results showed a significance value of Shapiro Wilk of more than α = 5%, so it was concluded that the data were normally distributed. A paired CAAR test before and after the event was carried out using a paired t-test. The results of the paired t-test are shown in Table 8

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Table 8 Results of the CAAR paired t-test

Pair	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
CAAR Before CAAR after	0,00563	0,01400	0,00313	-0,00092	0,01218	1,799	19	0,88

The paired t-test results show a significance value of 0.88 > 5%, so it can be concluded that there is no difference between the mean CAAR before the event and after the event. This indicates that the abnormal returns before and after the agricultural sector events are not affected by the presidential and vice-presidential election events.

4 Conclusion

The presidential and vice-presidential elections' events provide a change in abnormal returns and are significant at H + 20, the 1% confidence level. AAR and CAAR, which were negative after the incident, showed investor caution in responding to the 2019 presidential and vice-presidential elections. Agricultural sector investors tend to wait until the political situation stabilizes and is shown to be significant at α = 10 percent. Statistically, AAR and CAAR before and after the event we're not significantly different. This shows the reaction of investors before the event and after the event is the same. The presidential and vice-presidential election events do not contain information, so investors cannot use it to obtain a significant abnormal return until the political situation stabilizes.

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