The effect of COVID-19 in European union on the performance of Indonesian publicly listed palm oil companies

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C H R O N I C L E	A B S T R A C T
	One of the leading industries that affect economic growth in Indonesia is the palm oil industry. The role of this industry depends on the level of exports from European Union countries. Based on the COVID-19 pandemic situation, international trade activities are hampered and could affect industry performance from a stock perspective. Therefore, this study aims to explore the impact of the COVID-19 cases that occurred in the European Union and related macroeconomic variables on the stock performance of the oil palm industry in Indonesia. This research also examines the impact of COVID-19 on certified sustainable companies and companies that are not certified. Panel regression was applied in this study with Eviews 11 Software.This research's observations are 13 palm oil companies in Indonesia which are listed on the Indonesia Stock Exchange (IDX) from March 2, 2020, to August 31, 2020. This study's results reveal that the world CPO prices and market capitalization affect the activities shares of palm oil companies in Indonesia.Meanwhile, from the grouping of certifications within companies, the impact of COVID-19 in the European Union was more substantial on companies that were certified as sustainable. Based on these results, The COVID-19 case in the European Union must be a concern for palm oil companies in Indonesia.

1. Introduction

The world is currently struck by the COVID-19 pandemic originally discovered in Wuhan, China in December 2019. This pandemic has produced various social and economic disruptions around the world. The World Health Organization (WHO) declared the outbreak of COVID-19 is a global pandemic on March 11, 2020. The outbreak has spread worldwide, with the number of cases reaching 72 million people infected with a death rate of about 1.6 million people in 218 countries (Worldometer, 2020). Furthermore, the COVID-19 case basically could also affect the global economy and society. One of the pandemic's significant impacts was the changing of business behavior, thus resulting in several business closures from various industrial sectors (Panyagometh, 2020).

Indonesia's main agricultural industries are the palm oil industries, which is experiencing rapid development in the global market (Pahan et al., 2011; Suroso & Ramadhan, 2014). Oil palm plays an essential role in the Indonesian economy. The vital role generated is the contribution of exports which has reached 30.3 million tons (Bureau of Central Statistics, 2020). Oil palm sector contributes 17% of the total income from the agricultural sector, making this commodity a leading agricultural product in Indonesia (Acosta & Curt 2019). Apart from the economy, the oil palm industry has another role, such as improving smallholder

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household economies resulting in the welfare of small farmers can increase (Susila, 2004; Maesaroh et al*.*, 2018; Suroso et al*.*, 2020). In the world market, Indonesia is the country with the largest palm oil exports in the world (USDA 2020). The European Union countries have been one of the leading importers of palm oil in the last ten years, which has shown an increase in exports in almost every period. Although the European Union applies sustainable certification for imported CPO to protect domestic oil, statistically, the European Union still depends on CPO and becomes the world's third-largest importer country (Indexmundi, 2020).

COVID-19 cases that occur in the world are found in several importing countries of Indonesian palm oil. Statistics show that the European Union is a country that has high cases of infection and mortality when compared to several countries in the world (Papanikos 2020). The result in several European Union countries was to carry out lockdown efforts on their territories to prevent the spread of COVID-19 (Ruktamonchai et al., 2020). As a result, this could impact the closure of international trade and have implications for the stock performance of the palm oil company. It is known that a pandemic event that occurs could significantly affect the return of the stock market (Chun et al*.*, 2009; Ichev & Marinic 2018), resulting in that a problem arises regarding how the effect of the number of cases from importing countries on the performance of oil palm companies in export countries, one of them is Indonesia. Therefore, this article investigates how the impact of cases in importing countries could affect the performance of oil palm companies in Indonesia through a stock perspective: 1) rate of return, 2) trading activity of company shares and 3) bid-ask spread.

This study contributes to the development of a broader literature by analyzing the magnitude of the impact of COVID-19 from major importing countries such as the European Union on the performance of the company's shares in producing countries. Moreover, additional testing was carried out by comparing the effect of COVID-19 case both on palm oil companies that joined sustainable certification or not joining it. It is done because certification has a crucial role in improving company performance in operational profitability and financial performance (Shahida et al., 2018; Hafizuddin-Syah et al., 2018), but further investigation is needed if the application of certification is carried out during the COVID-19 pandemic. Specifically, this study uses references from oil palm companies' price returns and stock trading activities in Indonesia.

2. Literature Review

There are some literatures related to the COVID 19 pandemic and its impact on stock performance. The results of the study, according to Khan et al., (2020), revealed that investors in 16 countries responded negatively to the news of COVID-19 in the short and long term. Moreover, other results by Liu et al., (2020) found that stocks in countries affected by the impact of COVID-19 experienced a drastic decline, especially in the Asian region with negative abnormal returns. Al-Awadhi's findings (2020) showed that daily growth in total confirmed COVID-19 cases and deaths has a negative and significant impact on stock returns across companies. Another finding by Xu (2020) is the negative impact of the increase in COVID-19 cases on the stock market from Canada and the US.

Furthermore, there are findings that there is a negative impact of COVID-19 on stock returns in the US (Alfaro et al., 2020). The stock market has reacted more proactively to the number of confirmed cases than the growth in the number of deaths from COVID-19. Other results by Ashraf (2020) also showed that the stock market responds rapidly to the COVID-19 pandemic, and this response varies over time, depending on the pandemic stage. Empirical results by Panyagometh (2020) showed that most securities on the Thai stock market had been affected by the pandemic, which is reflected in abnormal returns compared to the period before the COVID-19 pandemic.

The impact of the COVID-19 pandemic on stocks varies across sectors and conditions of a company. Mazur (2020) found that stocks from the natural gas, food, healthcare, and software industries received high positive returns, whereas the petroleum, real estate, entertainment and hotel industries experienced a dramatic decline. Other findings showed that the companies with more extensive scale, better profitability and growth opportunities, higher combined leverage, and fewer fixed assets experienced less adverse impacts from the COVID-19 outbreak (Xiong et al., 2020). According to He et al. (2020), studies found that the pandemic impacted transportation, mining, electricity & heating, and environmental industries. However, the manufacturing, information technology, education and health care industries are quick to recover and adapte during a pandemic.

There is an impact from other studies that also confirmed the impact of an increasing number of COVID-19 cases every day on stock returns in Vietnam and a positive impact of lockdowns on stock performance across different markets and business sectors in Vietnam (Anh dan Gan 2020). There is a direct negative impact of social distancing policies on stock returns due to changes in economic activity (Ashraf 2020). Alam et al. (2020) found that the lockdown policy positively impacted stock market performance until the situation improved in the Indian context. However, Eleftheriou and Patsoulis (2020) did not explain the effect of the lockdown policy on each particular country. Other findings by Huo and Qiu (2020) revealed that for industry-level stocks and companies with positive cumulative abnormal returns (CAR) in the event window when Wuhan was locked down drastically decreased.

Some related literature analyzed the impact of the COVID-19 pandemic and the EU lockdown on stock markets' performance in the world. However, no research specifically examined the impact of COVID-19 in importing countries and policies carried out by other countries on a company's stock market conditions in an exporting country. Palm oil in Indonesia is a high export commodity, so it is highly dependent on the conditions of the economies of other countries. Besides, oil palm is also known to provide a high economic contribution to Indonesia's economy, so the movement of shares from palm oil companies is essential to trace. This study also examines whether there is a different impact of COVID-19 on stock performance in sustainable certified companies or vice versa. Sustainable certification gives oil palm companies the ability to enter global markets, especially in the European Union (Poletti & Sicurelli, 2016). Global developments, international trade relations and the resilience of certification are motivations for conducting this research.

3. Data and Research Methods

3.1 Data

The data source in this research is based on a secondary data approach. This study focuses on oil palm companies listed on the Indonesia Stock Exchange (IDX) based on the research objectives. A total of 13 oil palm plantation companies were selected as samples in this study. This sample's requirement based on the company has gone public since 2017 and has active stock trading between 2019 and 2020. This study's data starts from 2 March 2020 because that date is the first COVID-19 case to enter Indonesia. The last period of research data observation was 30 August 2020. This study's dependent variables were stock returns, total trading activity, and the bid-ask spread, all of which were sourced from the Yahoo Finance website. Meanwhile, the independent variables used are the cases of COVID-19 in the European Union from the European Center for Disease Prevention and Control website (ecdc.europe.eu), world palm oil prices (CIF-Rotterdam), market capitalization and sustainable certification respectively of the company's financial statements. Table 1 presents the definitions and measurements of the research variables.

3.2 Research Methods

This study applies business analytic panel data regression to identify the impact of the independent variable on the dependent variable (Hsiao, 2014). This method is more appropriate because it is more suitable than the classical event study method in empirical analysis because it can identify the time-variant relationship between the dependent and explanatory variables and minimize the problem of estimation bias, multicollinearity and individual heterogeneity (Hsiao, 2014). The panel data regression model proposed is as follows:

$$RE_{i,t} = a_{i,t} + C19_{i,t} + CPOP_{i,t} + MKT_{i,t} + LEU_{i,t} + EXR_{i,t} + e_{i,t} \tag{1}$$
$$TVA_{i,t} = a_{i,t} + C19_{i,t} + CPOP_{i,t} + MKT_{i,t} + LEU_{i,t} + EXR_{i,t} + e_{i,t} \tag{2}$$
$$BAS_{i,t} = a_{i,t} + C19_{i,t} + CPOP_{i,t} + MKT_{i,t} + LEU_{i,t} + EXR_{i,t} + e_{i,t} \tag{3}$$

where :
$RE_{i,t}$: Stock return using the formula: $(P_t/P_{t-1})-1$ where P_t is the share price on that day and P_{t-1} is the share price at *t-1*
$C19_{i,t}$: Number of COVID-19 cases that have occurred in the European Union (Calculations of 27 Countries)
$CPOP_{i,t}$: World CPO price on day *t*
$MKT_{i,t}$: Market capitalization at company *i* and day *t*
$LEU_{i,t}$: 1 is the same as the lockdown policy on day *t*, 0 otherwise
$EXR_{i,t}$: The exchange rate of Euro to Rp on day *t*
$e_{i,t}$: Residuals from the regression model

The model examines the impact of COVID-19, World Palm Oil Prices, Market Capitalization, EU Lockdowns and US $ Exchange Rates on stock returns, total trading activity and bid-ask spread of all palm oil companies. Then a panel regression model is then carried out by dividing the oil palm companies into companies that have been certified as RSPO and Non-RSPO companies. In total, there are 3 panel regression models carried out in this study.

Table 1
Research Variable

Variables	Measurement
Stock Return	The return of stock in firm *i* on day *t,* calculated by the difference between the return on day *t* with the return on day t-1 then be diminished by 1.
Trading Volume Activity	The trading volume activity in firm *i* on day *t*
Bid-Ask Spread	The bid-ask spread in firm *i* on day *t*, calculated through the difference between the highest and lowest prices which is then divided by the close price.
COVID-19 Case	The number of COVID-19 confirmed cases in European Union on day *t*
CPO World Price	The natural logarithm of daily CPO price on day *t* refers to CIF-Rotterdam
Market Capitalization	The natural logarithm of daily market capitalization of firm *i* on day *t*
Lockdown in European Union	A dummy variable which takes the value of "1" if the countries take a lockdown policy in the observation period, "0" otherwise
Exchange Rate	EURO to Indonesia Rupiah (Rp) in the observation period

4. Result and Discussion

Table 2 presents descriptive statistics of palm oil companies listed on the stock market on IDX from March 2, 2020 to August 30, 2020. The average stock return, total trading activity and the bid-ask spread at IDX reached positive values during the observation period. The average number of confirmed cases of COVID-19 in the European Union reached up to 1 million per day during the study observation period. The average world price of CPO in the form of natural logarithms reaches 6.42. Meanwhile, the market capitalization in the form of natural logarithms of Indonesian palm oil companies has an average value of 33.59. Meanwhile, the lockdown policy in the European Union reaches an average of 3.48 days. It was found that the average EURO to Rupiah exchange rate reached 16,560.

Table 2

Descriptive Statistics

Variables	Obs	Mean	Median	Maximum	Minimum	Std. Dev.
Return	1547	0.001	0	0.276	-0.167	0.039
TVA	1547	12.345	14.014	20.684	0.000	4.576
Bid_Ask	1547	0.042	0.034	0.339	0.000	0.040
EU_C19	1547	1014267	1166839	1924458	2606	509015
CPOP	1547	6.420	6.414	6.607	6.234	0.098
MKT	1547	33.590	33.542	36.070	30.587	1.166
LOCK_EU	1547	3.48	0	14	0	5.347
EXR	1547	16560	16425	18029	15408	646

Table 3 displays the results of the correlation between the independent variables. Correlation is done to explain the strength and direction of the linear relationship between the independent variables. Based on Table 3, the correlation coefficient for each variable is below 0.8. Correlation can detect multicollinearity problems with the assumption that the correlation value is at 0.8 or lower (Tay et al., 2017). This indicates that there is no multicollinearity problem so that each tested variable can be analyzed further.

Table 3

Correlation Matrix

	C19	CPO	MKT	LEU	EXR
EU_C19	1				
CPO	0.298	1			
MKT	0.028	0.056	1		
LEU	-0.491	-0.383	-0.034	1	
EXR	-0.004	0.379	0.010	0.570	1

The results of the first panel data regression through the fixed effect model are shown in Table 4 as follows. Based on these results it was found that the COVID-19 confirmation case had a significant positive effect on stock returns and total trading activity. On the other hand, the COVID-19 confirmation case has a negative and significant effect on the bid-ask spread. On world CPO prices, this variable has a significant positive effect on total trading activity and the bid-ask spread. But the world price of CPO has no effect on stock returns.

Table. 4

Panel Regression Estimation

Variables	Return	Total Volume Activity	Bid-Ask Spread
Constanta	-1.29	38.98	0.86
EU_Covid-19	5.96**	1.22***	-9.83***
CPO Price	-0.01	5.27***	0.04**
Capitalization	0.04***	-1.76***	-0.03***
Lockdown_EU	0.00	0.01	-6.24
Exchange Rate	2.28	-0.00	3.16
N	1547	1547	1547
R-Squared	0.03	0.76	0.16
Prob(F-statistic)	0.00	0.00	0.00

Notes (s) : *, **, *** signify 10%, 5% and 1% level of significance, respectively.

The results also show that market capitalization has a positive effect on stock returns. However, a negative and significant impact was found from this variable to total trading activity and the bid-ask spread. In the first panel regression model, there is no effect of lockdown in the European Union and exchange rates on stock returns, total trading activity and the bid-ask spread. The R-Square value of the panel regression model shows that the estimation results through stock returns and the bid-ask spread

are low with 3% and 16%, respectively. Meanwhile, the estimation result through total trading activity is classified as high with a value reaching 76%.

Table 5
Panel Regression Estimation (RSPO and Non-RSPO Companies)

Variables	Non-RSPO			RSPO		
	Return	Total Volume Activity	Bid-Ask Spread	Return	Total Volume Activity	Bid-Ask Spread
Constanta	-1.21	102.19	1.36	-1.47	-4.15	0.36
EU_Covid-19	4.88	1.61***	-7.46*	6.77**	9.98***	-1.09***
CPO Price	-0.06*	5.81***	0.06*	0.02	6.10***	0.034
Capitalization	0.04***	-3.96***	-0.05***	0.04***	-0.45	-0.02*
Lockdown_EU	-0.00	-0.06	1.57	0.00	0.08**	-8.70
Exchange Rate	9.25*	0.00	3.77	-3.59	-0.00**	2.04
N	714	714	714	833	833	833
R-Square	0.04	0.76	0.09	0.03	0.77	0.24
Prob(F-statistic)	0.00	0.00	0.00	0.00	0.00	0.00

   Notes (s) : *, **, *** signify 10%, 5% and 1% level of significance, respectively.

In the second panel regression model (Table 5), the sample of oil palm companies is divided into two groups, namely non-RSPO companies and RSPO companies. Based on the results of the analysis on Non-RSPO companies, it was found that the confirmed cases of COVID-19 had a positive and significant impact on total trading activity. However, the COVID-19 confirmation case had a negative and significant effect on the bid-ask spread. There was no effect from the COVID-19 confirmation case on stock returns. Meanwhile, world CPO prices found a positive and significant impact on total trading activity and the bid-ask spread. There is a negative and significant impact of world CPO prices on the stock returns of palm oil companies in Indonesia.

In addition, market capitalization has a positive and significant effect on stock returns of oil palm companies and conversely, market capitalization has a negative and significant impact on total trading activity and the bid-ask spread. The Lockdown variable in the European Union does not have a significant effect on stock returns, total trading activity and the bid-ask spread of non-RSPO palm oil company stocks in Indonesia. The exchange rate was found to have a positive and significant effect on stock returns, but the exchange rate had no effect on total trading activity and the bid-ask spread. The R-Square value of the panel regression model for non-RSPO oil palm companies in Indonesia shows that the estimation results through stock returns and bid-ask spreads are low with 4% and 9%, respectively. Meanwhile, the estimation result through total trading activity is classified as high with a value reaching 76%.

For companies that follow RSPO certification, there is a difference in the effect of the independent variable on the estimated dependent variable. The COVID-19 confirmation case was found to have a positive and significant effect on stock returns and total trading activity of shares of the RSPO palm oil company in Indonesia. The COVID-19 confirmation case also has a negative and significant effect on the bid-ask spread. The world price of CPO has a positive and significant impact on the total trading activity of the shares of the RSPO palm oil company in Indonesia. On the other hand, world CPO prices do not have a significant impact on stock returns and the bid-ask spread. Market capitalization has a positive and significant effect on stock returns. Market capitalization was found to have a negative and significant effect on the bid-ask spread. However, there is no impact of market capitalization on total trading activity. Lockdown in the European Union was found to have only a positive and significant effect on total trading activity. This is also found in the exchange rate variable which has a negative and significant effect on total trading activity alone. The R-Square value of the panel regression model at the RSPO palm oil company in Indonesia shows that the estimation results through stock returns and bid-ask spreads are low with values of 3% and 24%, respectively. Meanwhile, the estimation result through total trading activity is classified as high with a value reaching 77%.

This research revealed that the confirmed cases of COVID-19 in the European Union also impact the market performance of Indonesian palm oil company shares. The European Union is one of the leading market segments that have long been the destination of CPO exports in Indonesia, especially the Netherlands, which connects Indonesia and other European countries (Rifin, 2020). Therefore, COVID-19 in the European Union could impact the stock market for oil palm plantation companies in palm producing countries such as Indonesia. The world price of CPO during the COVID-19 observation was not found to affect stock returns. On average, Indonesian palm oil companies have a reasonably low return in the research observation period (0.001), resulting in the increase in world CPO prices could not increase the return on shares of oil palm companies in Indonesia.

Meanwhile, in stock trading activities, the research found that every time the world CPO price increases, this could be a signal for investors to invest in palm oil company stocks. World CPO prices could affect the total trading volume of shares, and this could also have a direct impact on the bid-ask spread conditions. Market capitalization is one of the research variables that affect the stock market performance of oil palm companies. The study results are following the findings of previous research by Al-Awadhi (2020). The lockdown policy could not affect the performance of the stock market for palm oil companies in Indonesia.

This result contradicts previous studies' findings, which revealed the impact of lockdowns on stock market performance (Anh & Gan, 2020; Alam et al., 2020)

On the contrary, these results are under previous findings by Eleftheriou and Patsoulis (2020). The lockdown policy in the European Union is implemented on average by only 14 countries (Table 4), resulting in that the market share of Indonesian palm oil commodities in the European Union could still be reached. Likewise, the Euro exchange rate was also not found to affect palm oil companies' stock market performance in Indonesia. The palm oil is one of the essential oils, resulting in changes in the euro exchange rate does not impact the level of CPO oil sales and have no implications for the return of shares in palm oil companies.

The research also explored the EU COVID-19 on stock market performance between Non-RSPO and RSPO companies. The results revealed that COVID-19 confirmation cases affect stock returns in companies that follow RSPO certification. On the other hand, there is no effect on stock returns of Non-RSPO palm oil companies. The world price of CPO was found to affect stock returns of Non-RSPO companies, but not on RSPO companies. Non-RSPO palm oil companies are less likely to rely on the European Union because of sustainable certification obligations. Between Non-RSPO companies and RSPO companies, both found the impact of the EU COVID-19 confirmation case on the volume of trading activity and the bid-ask spread. The confirmed case of COVID-19 could affect the country's economic activities, especially from its trading activities (Panyagometh 2020). Market capitalization was found to affect Non-RSPO palm oil companies' stock market performance, but there was no effect of market capitalization on the trading activity volume of shares of RSPO palm oil companies. Market capitalization is an indicator that measures the market's ability to provide capital for companies (Elhassan dan Braima 2020), resulting in an impact on the company's stock market performance.

The lockdown policy in the European Union did not affect the shared activity of Non-RSPO companies. However, the trading activity of Non-RSPO companies was limited in the European Union, but the EU lockdown was found not to affect the return and bid-ask spread of RSPO companies, but only affect their share volume trading activity. These results proved that palm oil products in the form of CPO remain a necessity for European Union countries, even though they face the COVID-19 pandemic. The EURO exchange rate was also found not to affect the stock market performance of Non-RSPO companies and was only found to affect the volume of stock trading activity of RSPO companies. The European Union's impact has not yet affected palm oil companies' activities because the country has not yet dominated world CPO consumption. China and India, the two main markets for Indonesian CPO, have slowly implemented sustainable production from exporting countries (Kadarusman & Pramudya, 2019). Resulting from that sustainable certification is thought not to be an aspect that determines oil palm companies' performance in Indonesia, especially its impact on stock activities.

5. Conclusion

This study has examined the impact of COVID-19 in the European Union on palm oil companies' stock market performance in Indonesia, which is one of the leading exporters of palm oil in the European Union. There are 13 palm oil companies in Indonesia listed on IDX from March 2, 2020, to August 31, 2020. Through a panel regression test, this study revealed that the confirmed cases of COVID-19 and market capitalization in the European Union affect the overall activity of the company's stock market (positive influence) on stock returns and the volume of trading activity, a negative effect on the bid-ask spread). World CPO prices were found to have a positive and significant effect on the volume of trading activity and the bid-ask spread, on the other hand, there is no significant effect on stock returns. The lockdown policy in the European Union and the Euro Exchange Rate was found not to affect Indonesian palm oil companies' stock market performance.

Non-RSPO and RSPO companies did not find any significant differences in their impact on stock market performance. The COVID-19 confirmation case was found to affect the volume of trading activity and the bid-ask spread of Non-RSPO companies and RSPO companies. However, there was no effect of COVID-19 confirmation cases on stock returns of Non-RSPO companies. World CPO prices and market capitalists were also found to affect overall market activity in Non-RSPO companies' shares. The lockdown policy in the European Union only affected the volume of the RSPO palm oil company's stock trading activities. Besides, the Euro exchange rate was found to have only a positive and significant effect on stock returns of Non-RSPO companies.

This research implies that the confirmed cases of COVID-19 in the European Union need to be a concern for palm oil companies in Indonesia because the European Union is one of the leading markets for Indonesian CPO. Also, sustainable certification did not make a difference to the impact of the COVID-19 case in the European Union on the performance of the company's stock market, along with the increase in the sustainable implementation of the operations of oil palm companies, resulting this needs to be a concern for leaders of palm oil companies in Indonesia in formulating strategies to adapt to the COVID-19 pandemic.

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