The Effect of WTI Prices and the Fed's Rates on the JCI During the Covid-19 Pandemic

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A B S T R A C T

As a source of funding in the industrial world and also as a forum for people who want to carry out investment activities, the capital market has a vital function in national development. This research is a quantitative research using logistic regression analysis model (Logit). This study uses two independent variables and one dependent variable in the form of a dummy variable on a nominal scale, which will be estimated using the T statistical test method. The results of SPSS output calculations using the T statistical test conclude that World Oil Prices and The Fed Interest Rate partially have no effect on the volatility of the Jakarta Composite Index (JCI) during the Covid-19 Pandemic. Each of these independent variables is not a good indicator for estimating the movement of the JCI during the Covid-19 pandemic and investors should not use it as the basis for making investment decisions in the stock market.

Keywords: World Oil Prices, Fed Interest Rates, Composite Stock Price Index, Logistics Regression

INTRODUCTION

The capital market is one of the many sources of funding in the industrial world which has an imperative function in supporting national development. Law Number 8 of 1995 concerning Capital Markets explains that "Capital Markets are activities related to the Public Offering and trading of Securities, Public Companies relating to the securities they issue, as well as institutions and professions related to Securities" (Undang-Undang Republik Indonesia, 1995).

According to Li and Liu (2005), since the mid-1980s, Foreign Direct Investment (FDI) and economic growth have begun to significantly complement each other and form an increasingly endogenous relationship. Another study by Almfraji and Almsafir (2014) concluded that Foreign Direct Investment (FDI) and economic growth have a positive relationship. However, this relationship can still be influenced by the amount of investment capital owned, financial market conditions, and the relationship between domestic and foreign investment and policies regarding free trade in a country.

Through data published by the Central Statistics Agency (BPS), in February 2021 Indonesia's economic growth throughout 2020 experienced a contraction of 2.07% (c-to-c) when compared to the same period in the previous year, with a GDP per capita of IDR 56.9 million. The economic growth in 2020 was the worst since 1998, which at that time coincided with the end of the New Order.

The Composite Stock Price Index (JCI) on March 24, 2020, which closed at 3,937 was the lowest level since June 28, 2012, which at that time closed at 3,887. The index on March 24, 2020 itself fell by 37.49% from the end of 2019. Various online media reports in Indonesia (including: kompas.com, beritasatu.com, investment.kontan.co.id, finance.detik.com, cnbcindonesia.com, cnnindonesia.com, and others) stated that the Fed Rate and world oil prices contributed to the decline in the Composite Stock Price Index (JCI) during the Covid-19 pandemic since early 2020. The graph below shows how the JCI is moving. Throughout 2020, at which time the Covid-19 pandemic began to spread.

Table 1, shows the decline in the JCI by more than 28% in January, amounting to 6,283,581, to 4,466.037 in April. After that, the JCI continued to increase until in early June 2021 it touched 6,031.58.

Table 1. Composite Stock Price Index (JCI)

Number	Date	Composite Stock Price
1.	2-Jan-2020	6283,581
2.	3-Feb-2020	5884,17
3.	2-Mar-2020	5361,246
4.	1-Apr-2020	4466,037
5.	4-Mei-2020	4605,487
6.	2-Jun-2020	4848,507
7.	1-Jul-2020	4914,388
8.	3-Agt-2020	5006,223
9	1-Sept-2020	5310,679
10.	1-Okt-2020	4970,09
11.	2-Nov-2020	5115,13
12.	1-Des-2020	5724,74
13.	4-Jan-2021	6104,9
14.	1-Feb-2021	6067,55
15.	1-Mar-2021	6338,51
16.	1-Apr-2021	6011,46
17.	3-Mei-2021	5952,6
18.	2-Jun-2021	6031,58

Source: idx.co.id

The Fed's own interest rate since January 2020 has continued to move down as shown in table 2. Based on table 2, it is noted that in the first quarter of 2020 the Fed's interest rate was still above 1.5%. However, after entering the second quarter, on April 1, 2020, the Fed lowered its interest rate drastically to 0.06%. This continued until early June. Furthermore, in early July, the Fed's interest rate only increased by 0.02% to 0.08%. Even at the beginning of June 2021, the Fed's interest rate was still below 0.1%.

Table 2. The Fed's Interest Rates

Number	Date	%
1.	2-Jan-2020	1,55
2.	3-Feb-2020	1,59
3.	2-Mar-2020	1,59
4.	1-Apr-2020	0,06
5.	4-Mei-2020	0,05
6.	2-Jun-2020	0,05
7.	1-Jul-2020	0,08
8.	3-Agt-2020	0,1
9	1-Sept-2020	0,09
10.	1-Okt-2020	0,09
11.	2-Nov-2020	0,09
12.	1-Des-2020	0,09
13.	4-Jan-2021	0,09
14.	1-Feb-2021	0,08
15.	1-Mar-2021	0,07
16.	1-Apr-2021	0,07
17.	3-Mei-2021	0,06
18.	2-Jun-2021	0,06

Source: macrotrends.net

Since many countries have locked down as a result of the Covid-19 pandemic, which has slowed the movement of people in many countries around the world, global demand for oil has fallen drastically. As reported by bbc.com, it was recorded that until March 2020 world oil consumption fell by 1/3% of the average daily consumption before the pandemic, this was due to the lack of economic activity and transportation carried out by the community (Tambunan, 2020). When oil demand falls (up to 30%), it is not followed by a decrease in oil production. Oil storage capacity itself is almost full, which will eventually increase storage costs. That is why many companies holding crude oil futures are scrambling to offer money to other companies who want to buy the contract, causing world crude oil prices to continue to decline. It was noted that world oil prices fell by more than 60% from January to April 2020, during which period the Covid-19 pandemic peaked in Indonesia and almost all countries around the world. The graph below shows how the decline in world oil prices that occurred throughout 2020 until June 2021.

Table 3. WTI Oil Prices

Number	Date	USD/barel
1.	2-Jan-2020	61,18
2.	3-Feb-2020	50,11
3.	2-Mar-2020	46,75
4.	1-Apr-2020	20,31
5.	4-Mei-2020	22,78
6.	2-Jun-2020	36,81
7.	1-Jul-2020	39,82
8.	3-Agt-2020	41,01
9	1-Sept-2020	42,76
10.	1-Okt-2020	38,72
11.	2-Nov-2020	36,81
12.	1-Des-2020	44,55
13.	4-Jan-2021	47,62
14.	1-Feb-2021	53,55
15.	1-Mar-2021	60,64
16.	2-Apr-2021	61,45
17.	3-Mei-2021	64,49
18.	2-Jun-2021	68,83

Source: oilprice.com

Based on the table above, data is obtained that the price of oil has decreased in price since 2020 until its peak in April and May 2020. Then it rose again until December, based on the fact that it fell again in September and October. After that, until the beginning of June 2021 the price of WTI oil continued to increase until it touched the figure of 68.83 USD/barrel.

The effect of Federal Reserve interest rates and world oil price fluctuations on the JCI movement has been studied extensively by previous researchers. A study conducted by Adam et al. (2015), which used daily data and then analyzed using the LVAR causal model, showed that it was found that in both the long and short term there is a significant dynamic relationship between world crude oil prices and the composite index. Indonesia. A more comprehensive study conducted by Darmawan et al. (2020) shows that crude oil prices are cointegrated into seven stock market indices, including the JCI. Silvapulle et al. (2017) present research on the oil price index and stock market price index using a nonparametric panel data approach. The research shows that stock market fundamentals play an important role in determining the relationship between oil prices and stock prices. Then Ranto (2019) also added that in the short term, the price of WTI oil will have a positive and significant impact on the JCI.

These conclusions contradict the findings of Dewi (2020), who concluded that the JCI movement was not affected by world oil prices. Another study by Sutanto, Murhadi, and Ernawati (2013) concluded that the value of world crude oil products had a positive but not significant effect on the JCI. Sartika (2017) also supports this finding, which concludes that international oil prices do not have a partial impact on the JCI and the Jakarta sharia index. In addition, Kowanda et al. (2014) concluded that crude oil had a negative effect on the JCI.

Another study that discussed the relationship between the Fed's interest rates and WTI's world oil concluded that the Fed Rate and WTI's world oil prices together had a significant impact on the JCI (Akua Miyanti and Wiagustini 2018; Kamaruddin and Saskara (2019). However, Wicaksono and Yasa (2017), Syarif and Asandimitra (2015) and Prahesti and Paramita (2020) state the opposite, namely that the Fed Rate does not have any effect on the volatility of the Composite Stock Price Index.

The Covid-19 pandemic that has taken place in many countries, including Indonesia, has affected the buying and selling of financial instruments in the capital market. This caused stock value fluctuations, including common stock and preferred stock, which decreased due to the large number of investors doing panic selling due to the emergence of the Covid-19 virus in Indonesia.

With the above background, it is necessary to investigate in more detail the relationship between the WTI global oil price variable and the Fed's interest rate for fluctuations in the composite stock index (JCI) during the Covid-19 pandemic. It formulates the research problem:
1. Does the Fed Interest Rate affect the JCI fluctuations during the Covid-19 pandemic?
2. Does the WTI world oil price affect the JCI fluctuations during the Covid-19 pandemic?

The purposes of this study include the following:
1. To assess and examine how the impact of the Fed Rate on JCI fluctuations during the Covid-19 pandemic.
2. To assess and examine the impact of WTI world oil prices on JCI fluctuations during the Covid-19 pandemic.

METHOD

This study is a quantitative study using a logistic regression analysis model (Logit) using the SPSS program. Logistic regression analysis is one of several regression models used to test how one or more independent variables relate to the dependent variable which has categories 0 and 1 (Santoso,

2018). To achieve the research objectives, the T statistical test using the SPSS application was used to show whether the independent variables contained in the model had individual effects on the dependent variable (Widiasworo, 2019).

Decision making regarding this hypothesis is based on the probability of significance, where:
1. If the value of Sig. (2-tailed) > 5% then H0 is accepted and H1 is rejected.
   That is, there is no effect of the independent variable on the dependent variable.
2. If the value of Sig. (2-tailed) < 5% then H0 is rejected and H1 is accepted.
   That is, there is an effect of the independent variable on the dependent variable.

This study uses two independent variables and one dependent variable in the form of a nominal scale dummy variable which is estimated using the T statistical test method. The T statistical test itself is used to prove the effect of world crude oil prices and Federal Reserve interest rates on the combined stock of individual index variables (JCI) in the Covid-19 pandemic.

The sampling method used in this study is saturated sampling. The World Crude Oil Price Index (X1) serves as a sample recorded in Oil Price Charts, the Fed's interest rate (X2) from the Central Bank of America, and the Composite Stock Price Index (Y), all of which use the closing price value on the first trading day of each month . The samples for these variables were taken as many as 18. The observation period was from January 2020 to June 2021.

The measurement of the Composite Stock Price Index (JCI) variable uses a dummy variable with 0 = when the JCI goes down, and 1 = when the JCI goes up. The data that has been collected is then analyzed, so that later a picture is obtained and then conclusions are drawn.

RESULTS AND DISCUSSION

The results of the analysis using a logistic regression model consisting of the minimum value, maximum value, mean (average value), and the standard deviation of each independent variable can be seen in the Table 4.

Table 4. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Y	18	0	1	,61	,502
The Fed Rate	18	,05	1,59	,3256	,57598
WTI Price	18	20,31	68,83	46,5661	13,53560
Valid N (listwise)	18				

Source: processed data

The results of the descriptive analysis show that the Fed Rate, which is the benchmark interest rate for the American central bank, has a minimum value of 0.05% on May 4 and June 2, 2020. This value is the lowest value for the Fed's interest rate since January 2016 which the magnitude is always above 0.36%. The highest value of The Fed Rate in the sample was 1.59% which occurred on February 3 and March 2, 2020. Based on the results of the descriptive analysis, the average value of the Fed's interest rate for all samples was 0.3256%.

In order to find out whether the logistic regression model has met the requirements to interpret the Y value or not, a Goodness Of Fit (model feasibility test) must be carried out. In this study, the Model Feasibility Test (Test F) will be used to determine whether there is an influence between the related variables, or in other words the model used is Fit or not.

Based on the output of Table 5, it is known that the significance value for the effect of X1 and X2 simultaneously on Y is 0.650 > 0.05 and the calculated F value is 0.443 < F table 3.63, thus it can

be concluded that H0 is accepted and stated that there is no effect of the variable X simultaneously to the Y variable.

Table 5. Test F

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	,238	2	,119	,443	,650[b]
Residual	4,039	15	,269		
Total	4,278	17			

Source: processed data

Hypothesis testing in this study uses the T statistical test to prove whether the independent variables included in the model have an individual influence on the dependent variable.

Table 6. T Test

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,320	1,572		,204	,841
The Fed Rate	-,101	,109	-,239	-,922	,371
WTI Price	,021	,394	,014	,054	,958

Source: processed data

The results of the output calculation using the T statistical test in table 6 show that for the Fed Interest Rate (X1), the Sig value is obtained. of $0.371 > 0.05$ and the value of t count $-0.922 <$ t table 2.13145. For the effect of the variable World Oil Price (WTI), the results of hypothesis testing obtained the value of Sig. of $0.958 > 0.05$ and the value of t count $0.054 <$ t table 2.13145.

The Fed's Interest Rate (X1) against the Composite Stock Price Index (JCI) (Y)
The results of the output calculation using the T statistical test conclude that H0 is accepted and it is stated that the Fed Interest Rate individually has no effect on the increase and decrease in the Composite Stock Price Index (JCI). The results of this study support the results of research conducted by Wicaksono and Yasa (2017), Syarif and Asandimitra (2015), and Prahesti and Paramita (2020) which state that the Fed's interest rate has no effect on the volatility of the Jakarta Composite Index (JCI). However, these results contradict the results of research conducted by Akua Miyanti and Wiagustini (2018), Kamaruddin and Saskara (2019), and Ranto (2019), namely the Fed Rate has a significant influence on the increase and decrease in the Composite Stock Price Index (JCI).

World Oil Price (X2) against the Composite Stock Price Index (JCI) (Y)
For the effect of the variable World Oil Price (WTI), on the results of hypothesis testing it is concluded that H0 is accepted and it is stated that the World Oil Price (WTI) individually has no effect on the increase and decrease in the Composite Stock Price Index (JCI). The results of this study support the results of research conducted by Sari (2019), Sutanto, Murhadi, and Ernawati (2013), and Dewi (2020) said that world oil prices did not have a significant effect on the volatility of the Composite Stock Price Index (JCI). At the same time, the test results contradict the conclusions of research conducted by Adam et al. (2015), Akua Miyanti and Wiagustini (2018), Darmawan et al. (2020), and Ranto (2019) who said that world oil prices had a significant effect on the Composite Stock Price Index (JCI).

The results of the study imply that the World Oil Price (WTI) and the Fed's Interest Rate partially have no effect on the JCI. Each of these independent variables is also not a good indicator for estimating the movement of the JCI during the Covid-19 pandemic, and it is better for investors not to use it as the basis for making investment decisions in the stock market.

CONCLUSION

Based on the results of the previous analysis and discussion using the Fed Interest Rate and World Oil Prices (WTI), several conclusions were obtained which are described as follows:

1. The first hypothesis which states that the Fed Rate has a significant effect on fluctuations in the Composite Stock Price Index (JCI) during the Covid-19 Pandemic is not accepted.

2. The second hypothesis which states that crude oil prices have a significant effect on fluctuations in the Composite Stock Price Index (JCI) during the Covid-19 Pandemic is not accepted.

Based on the results of the analysis, discussion, and conclusions above, there are several suggestions that need to be considered. First, in future research, it is necessary to add independent variables from various variables in macroeconomics, such as national income, inflation, unemployment, and economic growth. . Then the second, for the sake of future research, the use of a larger number of samples is felt to be better in order to produce more detailed research conclusions.

In the current study, it is also felt that it has many shortcomings and limitations, one of which is the number of samples used in this study, which only amounted to 18 samples.

REFERENCE

Almfraji, M. A., & Almsafir, M. K. (2014). Foreign Direct Investment and Economic Growth Literature Review from 1994 to 2012. *Procedia - Social and Behavioral Sciences*, *129*, 206-13. http://dx.doi.org/10.1016/j.sbspro.2014.03.668

Budi, S., Murhadi, W. R., & Ernawati, E. (2013). Analisis Pengaruh Ekonomi Makro, Indeks Dow Jones, Dan Indeks Nikkei 225 Terhadap Indeks Harga Saham Gabungan (IHSG) Di BEI Periode 2007-2011. *Jurnal Ilmiah Mahasiswa Universitas Surabaya*, *2*(1), 1-9.

Darmawan, I., Siregar, H., Hakim, D. B., & Manurung, A. H. (2020). The Effect of Crude Oil Price Shocks on Indonesia Stock Market Performance. *Jurnal Organisasi Dan Manajemen*, *16*(1), 11-23. https://doi.org/10.33830/jom.v16i1.785.2020

Dewi, I. P. (2020). Pengaruh Inflasi, Kurs, Dan Harga Minyak Dunia Terhadap Indeks Harga Saham Gabungan Di Bursa Efek Indonesia. *Jurnal Ilmu Manajemen*, *17*(1), 10-19.

Kamaruddin, R. I., & Saskara, I. A. N. (2019). The Influence of World Stock Index, Bi Rate and Fed Rate Through Ihsg on Exchange Rates in Indonesia for the Period of 2006-2015. *Russian Journal of Agricultural and Socio-Economic Sciences*, *93*(9), 216-26. https://doi.org/10.18551/rjoas.2019-09.23

Kowanda, D., Binastuti. S., Pasaribu. R. B. F., & Ellim. M. (2014). Pengaruh Bursa Saham Global, Asean Dan Harga Komoditas Terhadap Ihsg, Dan Nilai Tukar EUR/USD. *Jurnal Akuntansi & Manajemen (JAM)*, *25*(2), 79-88.

Li, X., & Liu. X. (2005). Foreign Direct Investment and Economic Growth: An Increasingly Endogenous Relationship. *World Development*, *33*(3), 393-407.

Miyanti, G. A. D. A., & Wiagustini, L. P. (2018). Pengaruh Suku Bunga the Fed, Harga Minyak Dan Inflasi Terhadap Indeks Harga Saham Gabungan (IHSG) Di Bursa Efek Indonesia. *E-Jurnal Ekonomi dan Bisnis Universitas Udayana*, *I7*(5), 1261-1288.

Pasrun, A., Rianse, U., Cahyono, E. & Rahim, M. (2015). International Journal of Energy Economics and Policy Modeling of the Dynamics Relationship between World Crude Oil Prices and the Stock Market in Indonesia. *International Journal of Energy Economics and Policy*, *5*(2), 550-57.

Prahesti, S. D., & Paramita, R. S. (2020). Pengaruh Indeks SSEC, N225, STI, dan Faktor Makroekonomi terhadap IHSG. *Jurnal Ilmu Manajemen*, *8*(3), 878-893. https://doi.org/10.26740/jim.v8n3.p878-893.

Ranto, S. R. (2019). Pengaruh Jangka Pendek Dan Jangka Panjang Variabel Makro Ekonomi Terhadap IHSG Di Bursa Efek Indonesia Dengan Pendekatan Error Correction Model (ECM), *Jurnal Derivat: Jurnal Matematika dan Pendidikan Matematika*, *6*(1), 12-24. https://doi.org/10.31316/j.derivat.v6i1.332

Santoso, A. B. (2018). *Tutorial Dan Solusi Pengolahan Data Regresi*. Surabaya: CV Garuda Mas Sejahtera.

Sari, K. (2019). *Ruang Lingkup Ekonomi Makro*. ed. Agung Feryanto. Klaten: Cempaka Putih.

Sartika, U (2017). Pengaruh Inflasi, Tingkat Suku Bunga, Kurs, Harga Minyak Dunia Dan Harga Emas Dunia Terhadap Ihsg Dan Jii Di Bursa Efek Indonesia. *Balance : Jurnal Akuntansi Dan Bisnis*, *2*(2): 285-94.

Silvapulle, P., Smyth, R., Zhang, X., & Fenech, J. P. (2017). Nonparametric Panel Data Model For Crude Oil And Stock Market Prices In Net Oil Importing Countries. *Energy Economics*, *67*, 255-267.

Syarif, M. M., & Asandimitra, N. (2015). "Pengaruh Indikator Makro Ekonomi Dan Faktor Global Terhadap Indeks Harga Saham Gabungan (IHSG). *Kompetensi (Competence: Journal of Management Studies)*, *9*(2), 142-156.

Tambunan, L. (2020). Ekonomi Pandemi: Harga Minyak Dunia Anjlok, Harga BBM Dalam Negeri Belum Tentu Bisa Turun. *BBC News Indonesia*. https://www.bbc.com/indonesia/indonesia-52379031 (July 23, 2021).

Undang-Undang Republik Indonesia. (1995). Covering Globalization *Undang-Undang Republik Indonesia Nomor 8 Tahun 1995 Tentang Pasar Modal*.

Wicaksono, I. S., & Yasa, G. W. (2017). Pengaruh Fed Rate, Indeks Dow Jones, Nikkei 225, Hang Seng Terhadap Indeks Harga Saham Gabungan. *E-Jurnal Akuntansi*, *18*(1), 358-385.

Widiasworo, E. 2019. *Menyusun Penelitian Kuantitatif Untuk Skripsi Dan Tesis*. ed. Ilalang. Bantul: Araska.