

MACROECONOMICS EFFECT ON CONVENTIONAL AND SHARIA STOCKS DURING THE COVID-19 PANDEMIC

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Abstract: This study aims to analyze the effect of macroeconomics on conventional and sharia stocks during the COVID-19 pandemic. The data collected for this study was obtained from monthly stock index data on the Indonesia Stock Exchange (IDX) as well as macroeconomic development reports from the Ministry of National Development Planning/Bappenas. The population in this study are all conventional and sharia stocks listed on the IDX. The sampling technique was carried out using a purposive sampling method with the criteria of conventional and sharia stocks listed on the IDX for the period March 2020 to June 2021. The macro variables used in researching the Jakarta Composite Index (JCI) and the Jakarta Islamic Index (JII) consisted of four variables, which are exports, imports, inflation rate, and foreign exchange reserves. The data analysis technique used in this research is multivariate multiple linear regression analysis and analytical tool using R version 4.1.2. MVN package accompanied by simultaneous and partial testing to determine the predictor variables that affect JCI and JII. The results shows that exports and foreign exchange reserves had a significant positive effect on JCI and JII, while imports and the inflation rate did not have a significant effect. The goodness of the model is 93%.

Keywords: Macro economy; stocks; COVID-19

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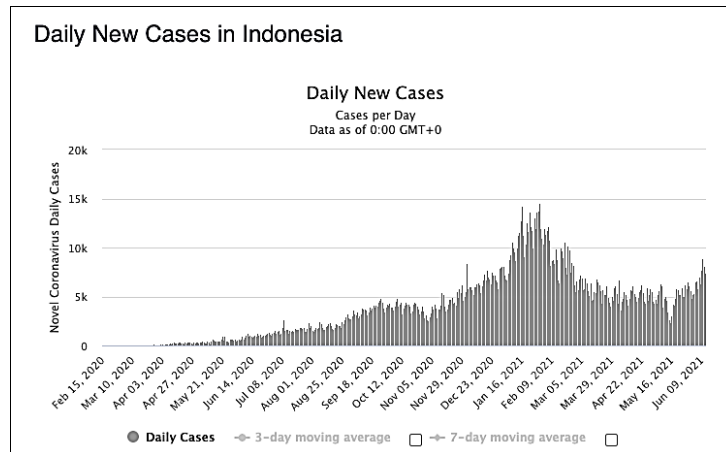
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INTRODUCTION

The COVID-19 case initially spread in the city of Wuhan, China at the end of 2019. The spread of this virus was so fast from human to human, as well as from one country to another, that it spread throughout the world, including Indonesia. The first case of COVID-19 in Indonesia, reported in early March 2020. The rapid spread of COVID-19 outbreak in Indonesia was able to have a great influence on the community, government, and the business world. The response of the public and the government in carrying out prevention efforts, including social distancing, work from home especially for formal sector workers, as well as the delay and cancellation of various government and private activities have raised global financial market concerns. (Nour Halisa & Annisa, 2020).

The corona virus (COVID-19) has a major impact on various sectors in Indonesia, one of which is the economic sector. The most consequence of the COVID-19 pandemic is the unstable economy in Indonesia which will certainly have an impact on the condition of

the capital market in Indonesia.

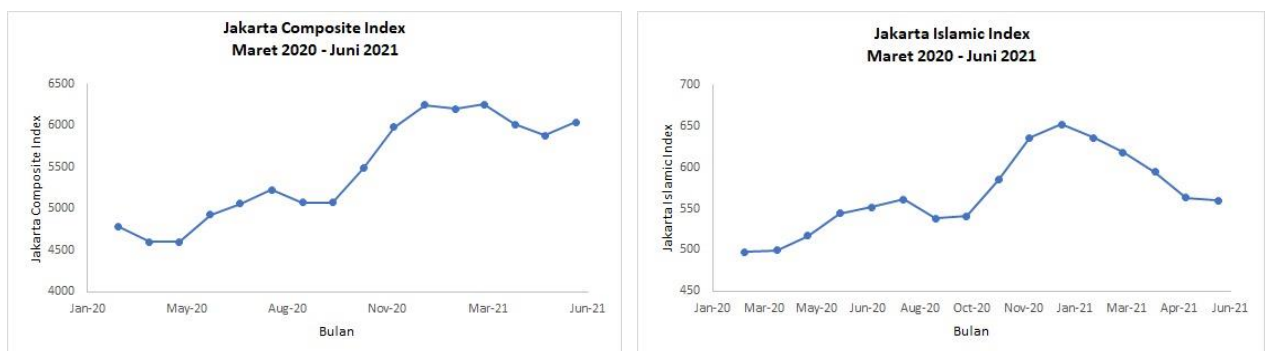


Source: Worldometer, 2021

Figure 1. COVID-19 cases in Indonesia March 2020 - June 2021

Figure 1 shows that COVID-19 cases in Indonesia since March 2020 have fluctuated and continue to increase. Until June 2021, there are additional 10,000 new cases per day. The peak of the highest addition of cases occurred in January 2021.

According to Nour Halisa & Annisa (2020) the condition of the COVID-19 pandemic indicates risk and uncertainty. In 2020, there have been capital outflows of 159.3 trillion rupiah. These capital outflows cause high volatility in stock price movements. The existence of high global market uncertainty has an impact on the capital market and financial markets in Indonesia. The capital market is one of the important elements in the financial cycle which supports banks and other financial institutions. The development of the capital market can be seen from the development of products such as stocks. According to Yofa et al., (2020) in times of crisis, global investors are more interested in storing their wealth in safe assets and avoiding risky assets such as stocks. This condition affects the financial market cycle and has an impact on global stock prices and causes the Stock Price Index to fluctuate.



Source: IDX Monthly Statistics March 2020 – June 2021

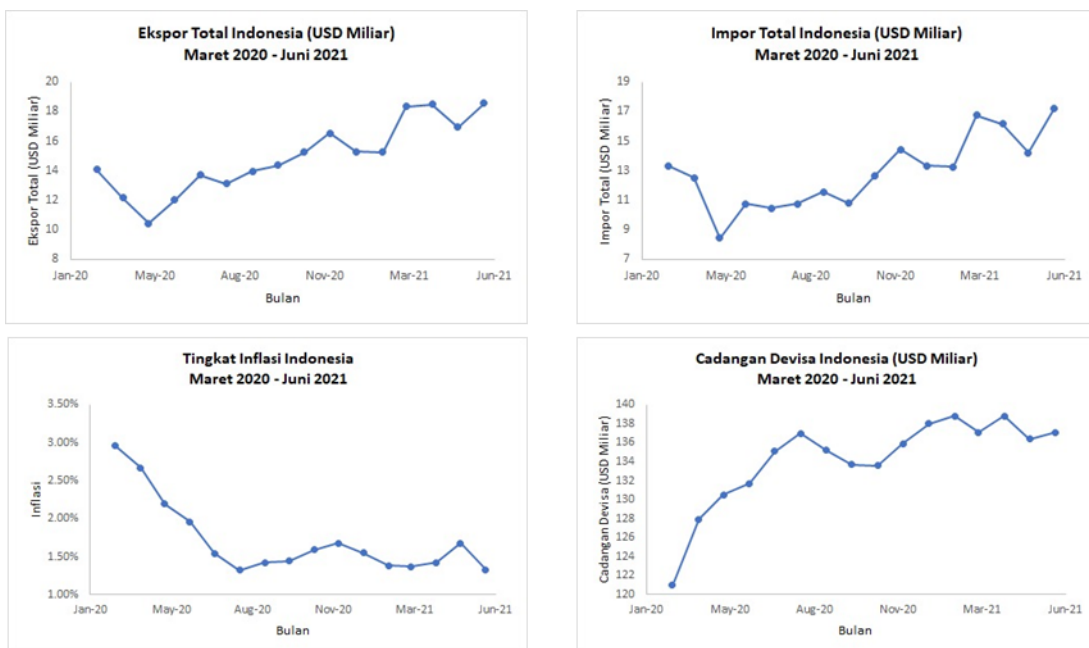
Figure 2. JII and JCI index March 2020-June 2021

Based on Figure 2, the Jakarta Islamic Index (JII) sharia stock index fluctuated sharply compared to the conventional Jakarta Composite Index (JCI) stock index. The JCI

index experienced a downward trend in January 2021 to June 2021. Meanwhile, Budi Setiawan (2017) compared the performance of the Islamic and conventional capital markets using the JII index and the JCI index and showed the results that the performance of conventional stocks showed better performance compared to sharia stocks.

The index in the capital market serves as an indicator of market trends, meaning that the stock index has a function to determine the current state of the market whether it is active or sluggish. The movement of the stock index that tends to fall indicates that most stock prices are experiencing a decline, and vice versa, the movement of the stock index increases indicates that most stock prices tend to increase. According to Nurdany et al (2021) investors do not need to worry about the impact of the bad news of the COVID-19 pandemic while the government carries out mitigation and economic policies.

According to Alwi (2008) there are two factors that cause stock index fluctuations. The two factors are macro factors and micro factors. Meanwhile, according to Samsul (2006) the macroeconomic environment adapts more quickly to stock prices. In addition, macroeconomic impacts cannot be avoided because macroeconomic variables do not only affect one or two companies but all companies on the IDX can be affected by macroeconomics. The macroeconomic environment studies the national economy such as consumers, the banking world, the government, and the business world. Several aggregative economic variables discussed in macroeconomic theory include exports, imports, inflation rate, and foreign exchange reserves.



Source: Bappenas, Macroeconomic Development Reports March 2020 – June 2021

Figure 3. Exports, Imports, Inflation rates, and foreign exchange reserves March 2020-June 2021

Figure 3 shows that Indonesia's total exports and imports fluctuated with an upward trend in the period March 2020 to June 2021. Furthermore, foreign exchange reserves experienced an upward and fluctuating trend. Meanwhile, the inflation rate experiencing a downward trend. Investors who are able to predict macroeconomic conditions in Indonesia will be able to make the right decisions whether to buy, sell, or hold shares. So that this

condition will have an impact on the stock index, both sharia and conventional stocks. Based on the description above, this study aims to analyze the effect of macroeconomics consisting of exports, imports, foreign exchange reserves, and inflation on sharia stocks (JII) and conventional stocks (JCI) during the COVID-19 pandemic in March 2020 to June 2021. This paper was compiled with the steps of (1) analyzing phenomena and empirical evidence related to economic conditions in Indonesia during the COVID-19 pandemic, (2) summarizing literature from relevant sources, (2) explaining data and research methodologies, (3) discussing models and test results, and (4) conclusions and provide recommendations.

LITERATURE REVIEW

COVID-19 in Indonesia

According to WHO (2020), coronavirus disease 2019 (COVID-19) is an infectious disease caused by the newly discovered coronavirus. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Corona Virus Disease 2019 initially spread in the city of Wuhan, China at the end of 2019 (Okada et al., 2020). This virus spreading so massively that almost all countries reported finding cases of COVID-19, including in Indonesia, where the first case was occurred in early March 2020.

The rapid spread of the COVID-19 outbreak in Indonesia was able to have a major impact on the Indonesian economy. The COVID-19 outbreak has caused concern and caused panic among the public, government, and the business world. The response of the public and the government in carrying out prevention efforts, including social distancing, work from home especially for formal sector workers, as well as delays and cancellations of various government and private activities that cause the wheels of the economy to slow down and global financial market concerns (Nour Halisa & Annisa, 2020)

Capital Market

The capital market is a place where various parties, especially companies, sell stocks and bonds with the aim that the proceeds from these sales will be used as additional funds or to strengthen the company's capital. Husnan (2015) defines the capital market as a market for various long-term financial instruments (or securities) that can be traded, either in the form of debt or equity, whether issued by the government, public authorities, or private companies. According to Tandelilin et al (2013), the capital market is a meeting between parties who have excess funds and those who need funds by trading securities. Meanwhile, according to the Capital Market Law no. 8 of 1995, the definition of the capital market is explained more specifically regarding activities related to the securities issued, as well as related institutions and professions.

Stocks

Shares are proof of ownership of the company. Shareholders are also called stockholders. Evidence that a person or a party can be considered a shareholder is if a person or a party has been registered as a shareholder in a book called the shareholder

register. The list of shareholders is usually presented a few days before the general meeting of shareholders is held and each party can view the list of shareholders (Samsul, 2006).

Shares are defined as evidence or certificates of ownership of a person or an entity against the company that issues the securities, which can also be interpreted as the participation of investors in a company, so that they have a claim on the income and the assets of the company.

Shares are categorized into two, namely sharia shares and non-sharia shares (conventional). The factors driving stock prices are the issuer's fundamental condition, SBI, foreign funds and foreign exchange, the Composite Stock Price Index (JCI), as well as all news circulating in the community concerning various matters, including economic, social, political, and security issues (Tambunan, 2020). In general, there are two factors that cause fluctuations in the stock price index. The two factors are macro factors and micro factors (Asmara & Suarjaya, 2016).

Conventional Stocks and the Jakarta Composite Index (JCI)

Conventional shares are securities which are a sign of ownership of a person or entity in a company and are issued by a company in the form of a Limited Liability Company (LLC). The shares state that the person who owns the shares is also a partial owner of the company (Kasmir, 2014). Conventional shares include all shares listed on the stock exchange; it is important that the listed issuer's shares (listing) comply with applicable regulations (legal). Conventional shares can include companies in any field, conventional transaction mechanisms where interest rate and profit orientation tools apply in general. The IDX Composite or Jakarta Composite Index (JCI) is an index of all stocks that are traded on the Indonesia Stock Exchange (IDX). In Indonesian the index is called the Indeks Harga Saham Gabungan (IHSG).

Sharia Stocks and Jakarta Islamic Index (JII)

According to (Silim, 2013) the Islamic capital market can be said to be a capital market that applies sharia principles. Therefore, the instruments traded must not conflict with Islamic law. Meanwhile in sharia principles, sharia shares mean that the form of capital participation is carried out in companies that do not violate sharia principles, such as gambling, usury, producing prohibited goods such as beer and others. Sharia securities issued must comply with the provisions stipulated in regulations that specifically regulate sharia securities, namely Bapepam and LK regulations Number IX.A.13, IX.A.14, II.K.1 and as long as they are not regulated in these regulations, they must follow the existing Bapepam and LK regulations governing the issuance of conventional shares.

Jakarta Islamic Index (JII) is one of the indexes on the Indonesia Stock Exchange (IDX). The index, which was launched on July 3, 2000, is intended to accommodate investors who wish to invest in the capital market in sharia-compliant stocks. The issuance of sharia securities has been regulated based on the direction of the National Sharia Board and Bapepam - LK Regulation Number IX.A.13. To determine which shares are included in the JII calculation, a selection process is carried out based on the Sharia Securities List (DES) issued by Bapepam – LK. JII consists of 30 (thirty) company shares which are

deemed to have met the requirements and passed the selection process. It can be said that JII is a derivative index of the JCI (Hidayah & Noordin, 2018).

With the presence of the index, investors have been provided with shares that can be used as a means of investing in accordance with sharia principles (Bapepam). The stocks in the Jakarta Islamic Index (JII) consist of 30 types of stocks selected from stocks that are in accordance with Islamic sharia, which are evaluated every 6 months. Determination of index components is carried out every January and July. Meanwhile, changes in the type of issuer's business will be monitored continuously based on available public data. The calculation of the Jakarta Islamic Index (JII) is carried out by the Indonesia Stock Exchange (IDX) using the index calculation method determined by the Indonesia Stock Exchange (IDX), namely market capitalization weighted. This index calculation also includes adjustments due to changes in issuer data caused by corporate actions (El Hasanah & Panjawa, 2016).

JII is also expected to support the process of transparency and accountability of sharia-based shares in Indonesia. JII is the answer to the wishes of investors who want to invest according to sharia. In other words, JII is a guide for investors who want to invest their funds according to sharia without fear of being mixed with usury funds. In addition, JII is a performance benchmark (benchmark) in choosing a halal stock portfolio (Parno, 2013).

Macroeconomic Analysis

Macroeconomic theory is a theory that studies and discusses all events, phenomena or problems related to the economy as a whole or in a large scope. Macroeconomics is also a part of economics that focuses on the study of the working mechanism of a nation's economy. Macroeconomics discusses the national economy. Macroeconomic analysis is to determine the overall economic condition of the country, which needs to be seen whether the economy is still growing. Several aggregative economic variables discussed in macroeconomic theory include import exports, inflation, and foreign exchange reserves.

Export dan Import

Export activity is a trading system by releasing goods from within the country to abroad by fulfilling the applicable provisions. Exports are the total goods and services sold by one country to another, including goods, insurance, and services in a given year. Export is one sector of the economy that plays an important role through market expansion between several countries, which can expand in one industry, thereby encouraging other industries, further encouraging other sectors of the economy (Benny, 2013).

Import is the activity of entering goods into the customs area. Import transactions are trades by entering goods from abroad into the Indonesian customs area by complying with the provisions of the applicable laws and regulations. This understanding means that import activities involve two countries. In this case, it can be represented by the interests of the two companies between the two countries, which are different and of course also the regulations and act as suppliers and the other acts as the receiving country (Rahardja & Manurung, 2008). Import is buying goods from abroad in accordance with government regulations which are paid in foreign currency.

Inflation

Inflation is an increase in the price of the product. Inflation is a negative signal for investors. Inflation will cause an increase in company costs and revenues. If the price increase enjoyed by the company is lower than the increase in production costs, the company's profit will decrease. The decrease in company profits will make the company's share price decrease (Asmara & Suarjaya, 2016). When many stock prices decline, the stock price index will weaken. The inflation rate is a number that measures the price level of goods and services purchased by consumers. The high inflation rate, which is indicated by rising prices of goods, will usually encourage Bank Indonesia (BI) to increase interest rates, which is then followed by banks by increasing loan interest rates (Rahmani, 2018).

If the increase in the money supply is too high, it will cause the economy to be too expansive and cause high inflation. Conversely, in conditions of inflation, Bank Indonesia will implement a tight money policy and increase interest rates, this will cause an increase in the company's cost of capital which will affect the company's profitability (Rahmani, 2018). In the long term, this situation will make the economy stagnate. Therefore, the role of Bank Indonesia is indispensable in controlling the money supply and inflation through the determination of the interest rate or BI Rate. To maintain economic stability, in general, Bank Indonesia's policy related to setting interest rates is to increase the BI Rate if inflation in the next few months is expected to exceed the set target. And vice versa, Bank Indonesia will lower the BI Rate if inflation in the next few months will be below the set target (Rahmani, 2018).

Foreign Exchange Reserves

Foreign exchange reserves are defined as all foreign assets controlled by the monetary authority which can be used at any time to finance balance of payments imbalances or in monetary stability by intervening in the foreign exchange market and for other purposes. Based on this definition, the benefits of foreign exchange reserves owned by a country can be used to maintain exchange rate stability and to finance a deficit in the balance of payments (Safitriani, 2014). International reserves are liquid and high-value assets owned by a country whose value has been recognized by the international community and can be used as legal tender in international transactions or payments. As a tool for international transactions, the size of a country's foreign exchange reserves is an important point for that country in conducting international trade transactions with other countries. Natural resources are a source of abundant foreign exchange reserves and can be traded abroad. These natural resources include gold, gas, oil, rubber, coffee, wood, and others (Ardiansyah & Andriani, 2018). The size of the accumulation of foreign exchange reserves of a country is usually determined by trading activities (exports and imports) with the country's capital flows. And the adequacy of foreign exchange reserves is determined by the amount of import needs and the exchange rate system used (Pridayanti, 2013).

Previous Studies

Asmara and Suarjaya's research (2016) examined the effect of macroeconomic variables on the composite stock price index, the results show that the macroeconomic

variable, inflation, has a significant effect on the composite stock price index. Meanwhile, Silim (2013) in his research explains that the macroeconomic variable Inflation does not affect stock prices of the big, medium and small capital types in the financial sector. The absence of such influence may indicate that stock prices do not have a reaction to changes in inflation in Indonesia. The research explained that the results of the impulse response function analysis showed that the JCI responded positively to the shock of the foreign exchange reserve variable, while the exchange rate and imports responded negatively by the JCI.

Furthermore, Safitriani (2014) proves that in the long term exports and FDI have a positive relationship to the Jakarta Composite Index (JCI) while imports have a negative relationship to the Composite Stock Price Index (JCI). In the short term, exports have a positive relationship to the Jakarta Composite Index (JCI), while imports have a negative relationship to the Jakarta Composite Index (JCI). Engle et al., (2013) in their research on the stock market and macroeconomic fundamentals stated that imputing economic fundamentals into volatility models pays off in term of long-horizon forecasting, and find that macroeconomic fundamentals play a significant role even at short horizons.

Conceptual Framework

Empirically there is a relationship between macroeconomics and stock indexes. Asmara & Suarjaya (2016) explain that macroeconomic variables have a significant effect on the Composite Stock Price Index (JCI). The macroeconomic environment adapts more quickly to stock prices. The size of the accumulation of foreign exchange reserves of a country is usually determined by trading activities (exports and imports) with the country's capital flows. Exchange market participants responded to the rising foreign exchange reserves as reflected in the movement of stocks that tended to be varied.

Meanwhile, inflation is a negative signal for investors. Inflation will cause an increase in costs so that company profits will decrease. Lower corporate profits will make the company's stock price fall. When many stock prices decline, the stock price index will weaken. The conceptual framework of this research can be seen in Figure 4. Macroeconomic variables consist of exports, imports, inflation, and foreign exchange reserves. Furthermore, the stock index consists of JCI and JII.

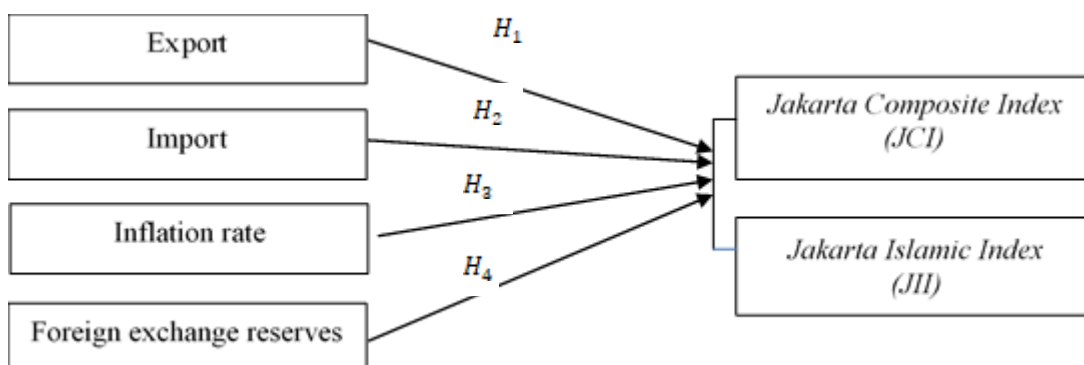


Figure 4. Conceptual Framework

Hyphotesis Formulation

Based on the conceptual framework, the hypothesis of this research are as follows:

H_1 : Exports affect JCI and JII

H_2 : Imports affect JCI and JII

H_3 : Foreign exchange reserves affect JCI and JII

H_4 : Inflation rate affect JCI and JII

METHOD

Research Data

This research approach uses a quantitative approach based on the philosophy of positivism, to describe and test the established hypotheses (Sugiyono, 2017). This study uses secondary data, which are monthly data on exports, imports, inflation and foreign exchange reserves obtained from the Macroeconomic Development Report of the Ministry of National Development Planning/Bappenas, as well as conventional and sharia stock price indices obtained from IDX Monthly Statistics. The population in this study were all conventional and sharia stocks listed on the Indonesia Stock Exchange (IDX). The sampling technique is purposive sampling, which is a sampling method that is carried out by selecting subjects based on specific criteria set by the researcher, which are JCI conventional shares and JII sharia shares listed on the IDX for the period March 2020 to June 2021.

Multivariate Multiple Linear Regression Analysis

The analytical method used is Multivariate Multiple Linear Regression Analysis. Multivariate Multiple Regression Analysis is a statistical analysis used to measure the effect of several independent variables and several dependent variables (Johnson & Wichern, 2007). This study has 2 response variables and 4 predictor variables. The model that will be formed are as follows:

$$Y_1 = \beta_{01} + \beta_{11}X_1 + \beta_{21}X_2 + \beta_{31}X_3 + \beta_{41}X_4 + \varepsilon_1$$

$$Y_2 = \beta_{02} + \beta_{12}X_1 + \beta_{22}X_2 + \beta_{32}X_3 + \beta_{42}X_4 + \varepsilon_2$$

Information :

Y_1 = Conventional stock (Jakarta Composite Index)

Y_2 = Sharia stock (Jakarta Islamic Index)

X_1 = Exports in billion USD

X_2 = Imports in billion USD

X_3 = Foreign exchange reserves in billion USD

X_4 = Inflation rate

Data Analytics Tool

The analytical tool used in this research is R version 4.1.2. MVN package for checking multivariate, normality, vegan package for checking homogenous residual and base package for building the model.

RESULT AND DISCUSSION

Data Overview

The characteristics or description of the data on each of the variables used in this study are presented in the Table 1 below.

Table 1. Descriptive Statistics of Research Variables

Variable	Mean	Minimum	Maximum	Standard Deviation
JCI	5465	4599	6253	611.83
JII	568.3	497.3	652.2	48.06
Export	14.91	10.45	18.55	2.42
Import	12.92	8.44	17.23	2.46
Foreign exchange reserves	134.2	121	138.8	4.66
Inflation rate	1.72	1.32	2.96	0.49

During the COVID-19 pandemic from March 2020 to June 2021, the average conventional share (JCI) was 5,465 rupiah, while the sharia share (JII) was 568.3 rupiah. At the same time, the average exports and imports were 14.91 billion USD and 12.92 billion USD, respectively. Foreign Exchange Reserves have an average of 134.2 billion USD and Inflation has an average of 1.72%. At the beginning of the COVID-19 pandemic in March 2020, JII and Foreign Exchange Reserves had the lowest values of 497.3 rupiah and 121 billion USD. On the other hand, inflation has the highest value of 2.96%. In May 2020 coinciding with the month of Ramadan, JCI, Exports and Imports had the lowest values during the COVID-19 pandemic, which were 5.465 rupiah, 14.91 billion USD and 12.92 billion USD, respectively. Entering the beginning of 2021, in January, JII had the highest value of 652.2 rupiah. The following month, February 2021, Foreign Exchange Reserves had the highest value of 138.8 billion USD. In March 2021, JCI had the highest value of 6,253 rupiah. Then in June 2021, Exports and Imports had the highest values of 18.55 billion USD and 17.23 billion USD. On the other hand, in the same month, inflation had the lowest value of 1.32%. Of the six variables used in this study, JCI has the largest standard deviation. This means that during the COVID-19 pandemic from March 2020 to June 2021, the JCI has more varied values than other variables.

Assumption of Multivariate Multiple Linear Regression for Response Variable

Before the multivariate multiple linear regression model is formed, it is first tested whether the response variables in this case are conventional stocks (JCI) and sharia stocks (JII) have a linear relationship or not (independent) through the Bartlett Sphericity test. The hypothesis used is as follows:

H_0 : Between response variables are independent

H_1 : Between response variables are dependent

Test statistics :

$$\begin{aligned} \chi^2 &= - \left(n - 1 - \frac{2q + 5}{6} \right) \ln |R| \\ &= - \left(16 - 1 - \frac{2(2)+5}{6} \right) \ln \begin{vmatrix} 1 & 0.8906 \\ 0.8906 & 1 \end{vmatrix} \\ &= 21.27 \end{aligned}$$

The value χ^2 table at the significance level of 5% and $df = 1$ is 3.841. Based on previous calculations, the value $\chi^2 = 21.27$ is greater than value of χ^2 table = 3.841. It means reject H_0 . In other words, the JCI and JII variables are dependent of each other. Because the response variables are correlated, multivariate multiple linear regression analysis can be performed. The next step is to check whether the JCI and JII variables have a multivariate normal distribution using the Henze-Zikler test. The hypothesis used is as follows:

H_0 : Response variables are multivariate normally distributed

H_1 : Response variables are not multivariate normally distributed

This test uses R software. The output obtained is $p\text{-value} = 0.0600252$. This value is greater than the 5% significance level. This means that it failed to reject H_0 . In other words, the JCI and JII variables have a multivariate normal distribution.

Residual Assumptions of Multivariate Multiple Linear Regression Model

Furthermore, the assumption that must be met in multivariate multiple linear regression modeling is the assumption of residuals, which are the residuals are homogeneous, independent of each other and have a multivariate normal distribution.

1. Residuals are homogeneous

Checking this assumption is through Levene's test with the following hypothesis:

H_0 : Residuals are homogeneous

H_1 : Residuals are heterogeneous

Output R gives the result $p\text{-value} = 0.1882$. This value is greater than the 5% significance level. This means that it failed to reject H_0 . In other words, the residual is homogeneous.

2. Residuals are independent

Checking this assumption through the Bartlett Sphericity test with the following hypothesis:

H_0 : Residuals are independent

H_1 : Residuals are dependent

Test statistics :

$$\begin{aligned}\chi^2 &= -\left(n - 1 - \frac{2q + 5}{6}\right) \ln |\mathbf{R}| \\ &= -\left(16 - 1 - \frac{2(2)+5}{6}\right) \ln \begin{vmatrix} 1 & 0.869 \\ 0.869 & 1 \end{vmatrix} \\ &= 19\end{aligned}$$

The value χ^2 table at the significance level of 5% and $df = 1$ is 3.841. Based on previous calculations, the value $\chi^2 = 19$ is greater than value of χ^2 table = 3.841. It means reject H_0 . In other words, the residuals are dependent of each other.

3. Residuals are multivariate normally distributed

Checking this assumption through the Henze-Zikler test with the following hypothesis:

H_0 : Residuals are multivariate normally distributed

H_1 : Residuals are not multivariate normally distributed

This test uses R software. The output obtained is $p\text{-value} = 0.733$. This value is greater than the 5% significance level. This means that it failed to reject H_0 . In other words, Residuals have a multivariate normal distribution.

Multivariate Multiple Linear Regression Model Model Parameter Estimation

The estimation of the parameters of the multivariate multiple linear regression model was carried out using R software. The resulting output can be seen in Table 2 below.

Table 2. Model Parameter Estimation

Variable	Parameter	$\hat{\beta}_i$
JCI	Intercept	-12559.13
	Export	123.96
	Import	32.59
	Foreign exchange reserves	110.56
	Inflation rate	531.85
JII	Intercept	-1189.344
	Export	7.456
	Import	-2.312
	Foreign exchange reserves	11.748
	Inflation rate	57.819

Based on Table 2 above, the estimated parameters used can be formed into a multivariate multiple linear regression model as follows:

$$JCI = -12559.13 + 123.96Export + 32.59Import + 110.56FER + 531.85Inflation$$

Based on the JCI model, it can be explained that:

- If Exports, Imports, Foreign exchange reserves and Inflation rate are zero, then JCI will decrease by 12,559.13 rupiah.
- If Exports increase by 1 billion USD and the other predictor variables remain constant, then JCI will increase by 123.96 rupiah.
- If Imports increase by 1 billion USD and the other predictor variables remain constant, then JCI will increase by 32.59 rupiah.
- If Foreign exchange reserves increase by 1 billion USD and the other predictor variables remain constant, then JCI will increase by 110.56 rupiah.
- If inflation rate increases by 1% and the other predictor variables remain constant, then the JCI will increase by 531.85 rupiah.

$$JII = -1189.344 + 7.456Export - 2.312Import + 11.748FER + 57.819Inflation$$

Based on the JII model, it can be explained that:

- If Exports, Imports, Foreign exchange reserves and Inflation are zero, then JII will decrease by 1,189.344 rupiah.
- If Exports increase by 1 billion USD and the other predictor variables remain constant, then JII will increase by 7.456 rupiah.
- If Imports increase by 1 billion USD and the other predictor variables remain constant, then JII will decrease by 2.312 rupiah.
- If Foreign exchange reserves increase by 1 billion USD and the other predictor variables remain constant, then JII will increase by 11.748 rupiah.
- If inflation rate increases by 1% and the other predictor variables remain constant,

then JII will increase by 57.819 rupiah.

Simultaneous and Partial Model Testing

After the model is formed, then the model is tested simultaneously using the Wilk's Lambda test. The hypothesis used are as follows:

$$H_0 : \beta_{11} = \beta_{12} = \dots = \beta_{23} = \beta_{24} = 0$$

$$H_1 : \text{There is at least one } \beta_{pq} \neq 0$$

Test statistics:

$$\Lambda = \frac{|E|}{|E + H|} = \frac{|Y^T Y - \hat{\beta}^T X^T Y|}{|Y^T Y - n\bar{y}\bar{y}^T|} = 0.07032806$$

The value of Λ 's table at the significance level of 5% with $df_1 = 4$ and $df_2 = 11$ is 0.45. Based on the previous calculation, the value of $\Lambda = 0.07032806$ is smaller than the value of Λ 's table = 0.45. It means reject H_0 . In other words, there is at least one predictor variable that has a significant effect on JCI and JII.

Subsequently, a partial model test was conducted using the Wilk's Lambda test to find out which predictor variables affected JCI and JII. The hypothesis used are as follows:

1. Exports variable

$$H_0 : \text{Exports have no effect on JCI and JII}$$

$$H_1 : \text{Exports affect JCI and JII}$$

Output R gives the result p-value = 0.00. This value is smaller than the significance level of 5%. It means reject H_0 . In other words, Exports affect JCI and JII.

2. Imports variable

$$H_0 : \text{Imports have no effect on JCI and JII}$$

$$H_2 : \text{Imports affect JCI and JII}$$

Output R gives the result p-value = 0.505. This value is bigger than the significance level of 5%. It means failed reject H_0 . In other words, Imports have no effect on JCI and JII.

3. Foreign exchange reserves variable

$$H_0 : \text{Foreign exchange reserves have no effect on JCI and JII}$$

$$H_3 : \text{Foreign exchange reserves affect JCI and JII}$$

Output R gives the result p-value = 0.022. This value is smaller than the significance level of 5%. It means reject H_0 . In other words, Foreign exchange reserves affect JCI and JII.

4. Inflation rate variable

$$H_0 : \text{Inflation rate have no effect on JCI and JII}$$

$$H_4 : \text{Inflation rate affect JCI and JII}$$

Output R gives the result p-value = 0.56. This value is bigger than the significance level of 5%. It means failed reject H_0 . In other words, Inflation rate have no effect on JCI and JII.

Goodness of Fit Model

The measure of the goodness of the multivariate model can be measured by calculating the value of Eta Square Lambda with the following formula:

$$\begin{aligned} \eta^2_{\Lambda} &= 1 - \Lambda \\ &= 1 - 0.07032806 \\ &\approx 0.93 \end{aligned}$$

The value $\eta^2_{\Delta} \approx 0.93$ means that the variables of Exports, Imports, Foreign exchange reserves and Inflation rate are able to explain JCI and JII by 93%. While the remaining 7% is explained by other variables that are not included in the model.

CONCLUSION

Based on the results of the analysis and discussion above, it can be concluded that the factors or variables that have a significant effect on the conventional stock index (JCI) and the sharia stock index (JII) are exports and foreign exchange reserves. Both exports and foreign exchange reserves have a positive effect on conventional and sharia stock indices. The multivariate multiple linear regression model formed are

$$JCI = -12559.13 + 123.96Ekspor + 32.59Impor + 110.56Devisa + 531.85Inflasi$$

$$JII = -1189.344 + 7.456Ekspor - 2.312Impor + 11.748Devisa + 57.819Inflasi$$

with the goodness of the model obtained is 93%.

Further research can add other macroeconomic variables so that a stronger and clearer analysis will be produced. Furthermore, there is a need for a comprehensive classification of stock indexes. Efforts to mitigate the spread of COVID-19 cases are very important so that the stock market in Indonesia remains stable. This stock market condition will of course have an impact on the real sector. Furthermore, the role of the stock market is important as an instrument of economic growth and accelerated development through transmission in the real sector. The existence of the capital market is very important to meet the investment needs of sustainable economic development.

Limitation

The limitations in this study are the limitations of macroeconomic factors that are used as the basis for predicted the JII and JCI stock index which are only limited to exports, imports, inflation rate, and foreign exchange reserves. It is hoped that further research will pay attention to other factors that can also affect the movement of the JII and JCI stock index.

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