Determinants of GDP Growth in Asean-5 Using Panel Method

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Abstrak – Penyebaran COVID-19 ke seluruh dunia menyebabkan kekhawatiran di seluruh dunia. Tujuan penelitian ini adalah pada penilaian dampak COVID-19 terutama pada sektor ekonomi. Kami mengkaji dampak ekonomi dari virus corona di berbagai negara ASEAN-5 dengan menganalisis ekonomi masing-masing dari 2018 hingga 2020. Dengan menggunakan variabel cadangan devisa, nilai tukar, indeks harga saham, dan PMA data diolah menggunakan Metode Panel. Hasil penelitian ini menunjukkan bahwa cadangan devisa dan neto ekspor berpengaruh negatif dan signifikan terhadap pertumbuhan ekonomi ASEAN-5. Sedangkan nilai tukar dan indeks harga saham berpengaruh positif dan signifikan terhadap pertumbuhan ekonomi ASEAN-5. FDI tidak berpengaruh signifikan terhadap pertumbuhan ekonomi ASEAN-5.

Abstract - The spread of COVID-19 throughout the world is causing concern around the world. This study aims to assess the impact of COVID-19, especially on the economic sector. We examine the economic impact of the coronavirus in various ASEAN-5 countries by analyzing their respective economies from 2018 to 2020. The data is processed using the Panel Method. The results of this study indicate that foreign exchange reserves and net exports have a negative and significant effect on the economic growth of ASEAN-5. At the same time, the exchange rate and stock price index have a positive and significant impact on the economic growth of ASEAN-5. Then FDI has no significant effect on the economic growth of ASEAN-5.

Keywords: ASEAN-5, GDP, FDI, Stock Price, Exchange Rate

INTRODUCTION

In early 2020, the world was shocked by a virus that originated in China. The coronavirus, or COVID-19 (Coronavirus Disease 2019), was first reported in Wuhan, China, on December 31, 2019; this virus spread very quickly to 178 countries, or 99.5% of the world GDP. The panic caused by this virus has killed thousands of people in China. With a speedy spread scale, COVID-19 was declared a global pandemic by WHO (World Health Organization) in March 2020.

It is not only terms of health affected by this Covid-19 pandemic. This epidemic has also eroded the global economy and has spread to the ASEAN region. It can be seen in Figure 1.1 that the accumulation of active COVID-19 cases continues to increase in ASEAN-5 countries (Indonesia, Malaysia, Singapore, Thailand, and the Philippines). The economic sector is mos t affected by the COVID-19 pandemic (Barzani, 2020). Restrictions in various activities experienced by the community caused a decrease in purchasing power and led to layoffs. Due to this pandemic, many business actors and companies have closed their businesses (Fernando, 2020). In addition, several developing countries experienced a devaluation due to this pandemic (Slobodianyk, 2019).
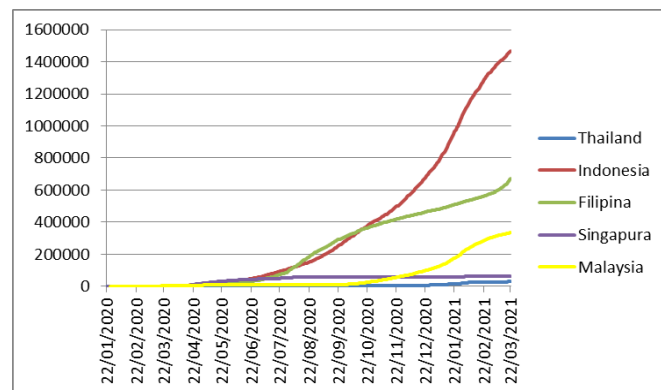
Figure 1. Accumulation of Active Cases of COVID-19 in ASEAN-5

To reduce the impact of the rapid and even spread of COVID-19, health policies and protocols are strictly enforced to limit mobility between regions and between countries. These policies impact people's mobility barriers that drastically reduce consumption, production, and investment due to disruptions in global production chains. COVID-19 also has depressed tourism performance due to restrictions on traffic access abroad. Uncertainty in global financial markets has also increased dramatically as consumer and business confidence in the economic outlook declines. Intense pressures on financial markets and the global economy were particularly pronounced in the first half of 2020, particularly in the second quarter of 2020. The economic crisis also raised concerns about the impact of the new contagion on financial system stability and deteriorating business and household performance.

The COVID-19 pandemic has significantly impacted almost all countries in the world. Several ASEAN countries are officially reported to be entering a recession (Putra, 2020). It can be seen in Figure 2 that until the end of 2020 alone, Indonesia, Malaysia, the Philippines, and Singapore are still in recession. However, an increase occurred from April 2020 to December 2020, even though the growth rate still showed a negative sign. In the World Economic Outlook (WEO) April 2020, the IMF shows that global growth in 2020 will decline to -3%. Even the IMF believes that the world economy in 2020 will be worse than the Great Depression of 1929 and the Global Financial Crisis of 2008 (IMF, 2020). Nevertheless, independent economic growth is essential in increasing the community's prosperity and welfare at the per capita income level (Hodijah, 2021). Economic growth can describe economic development success in a country; then, economic growth can explain other macro indicators such as stock price index, exchange rate, foreign exchange reserves, net exports, and foreign direct investment.

COVID-19 also impacts investment because people will be more careful when buying goods or investing, affecting market projections. Investors delay investment due to changing market assumptions. It can be seen from the Stock Price Index in ASEAN-5 countries, which decreased yearly. The first decline occurred in early January 2020; then, the average ASEAN country experienced a sharp decline in March 2020. The decline occurred due to regional restrictions imposed by several countries. In addition, many investors prefer to take their cold money in the stock market into cash on hand because people will prioritize their money for spending on basic needs during this pandemic.

The domestic currency exchange rate against the dollar in ASEAN-5 countries was also volatile during the COVID-19 pandemic. The currency's value will continue to be vulnerable during the spread of the COVID-19 outbreak, causing panic in global markets that has sent foreign funds fleeing as well as liquidity pressures, and the rush to acquire dollars has put the dollar ahead of all other currencies. In addition, the indicator of foreign exchange reserves is also very influential on a country's economy. The number of foreign exchange reserves can be used as a monetary indicator that looks at the strength and weakness of a country's economic fundamentals in assessing the level of resilience in facing economic crises such as during this pandemic (Sayoga, 2017). The higher the foreign exchange reserves owned by a country, the more resistant it will face the economic crisis (Dianita, 2018)
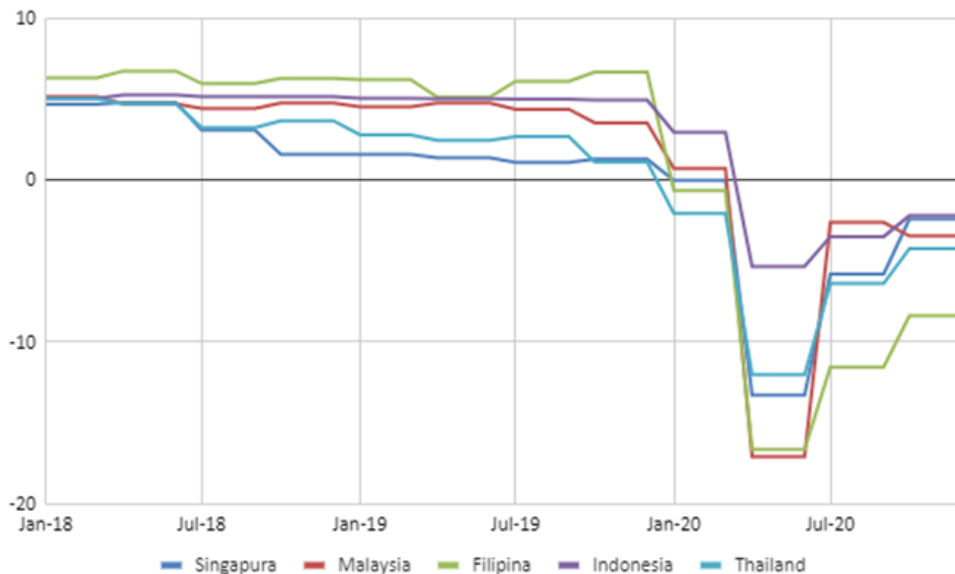
Figure 2. Real GDP Growth in ASEAN-5 Countries

Restrictions on community activities caused by the COVID-19 pandemic affect business activities that will continue to impact the economy in Indonesia. Economic growth will decline to cause an increase in the number of unemployed and a decrease in foreign investment. Foreign direct investment can become development capital to achieve the target country's economic growth through the contribution of FDI in filling the gap between capital requirements and actual existing capital to achieve economic growth targets, foreign exchange gaps, and national income gaps (Widianatasari, 2021). Based on the origin of investment, investment and investment are divided into domestic and foreign. Due to the tight economy and slowed economic growth, FDI in ASEAN-5 is developing at a slower rate. In addition, investment risk during this pandemic also creates uncertainty in investment returns due to high exchange rate fluctuations and a decline in real GDP growth caused by increasing COVID-19 cases.

With the COVID-19 pandemic, the global economy has been torn apart, and Southeast Asia's economy is no exception. During the pandemic, ASEAN countries tend to take a protectionist stance. Nearly 60% of trade is in Southeast Asia. They consider that the ASEAN region's exports and imports account for more than a quarter of economic spending (Citradi, 2020). In addition, with the implementation of lockdown or regional restrictions, the business climate becomes increasingly unfavorable for exports and imports. Several ASEAN countries, such as Indonesia, Malaysia, Singapore, and the Philippines, adhere to an open economic system to be active in international trade, such as exports and imports. The excellent export performance will undoubtedly increase productivity. Exports have a function in advancing economic growth, and if exports soar compared to imports, it will increase national income growth and foster economic growth (Karlita, 2013). This study aims to analyze the effect of the stock price index, foreign investment, foreign exchange reserves, net exports, and exchange rates on economic growth in ASEAN-5.

LITERATURE REVIEW
Economic Growth Theory

Adam Smith's classical theory. In his book entitled "An Inquiry into the Nature and Causes of the Wealth of Nations," Adam Smith's classical economic growth theory put forward several views on several factors that have an essential role in economic growth. According to Adam Smith, these critical factors are natural resources, human resources (number and population quality), and capital stock. According to this theory, if the elements of natural resources have not been utilized optimally, the increase in production will be determined by human resources and capital stock. Human resources in this theory are the number of people. According to this theory, an economy will grow if the population increases, expanding markets and encouraging specialization.

Further specialization and expansion of economic activity will promote technological development and increase productivity. An increase in productivity will increase workers' income, and this

increase will expand the market. This situation will develop a specialization. This cycle will cause the economy to continue to grow.

In Keynes' economic growth, the money flow cycle refers to the idea that an increase in spending (consumption) in an economy will increase income, encouraging more spending and income. According to (Mankiw, 2014) Keynes' Theory, consumption made by one person will become income for others in the same economy. So, when a person spends his money, he helps increase the income of others.

The growth theory put forward by Harrod-Domar states that investment plays an essential role in economic growth; because investment has two properties, namely, creating income and increasing production capacity by increasing the capital stock. An investment must be continuously increased; this requires continuous real income growth at a good enough level to ensure full capacity utilization of the growing capital stock (Jhingan, 2000). This model also assumes that the economy can achieve substantial growth (steady growth) in the long term. Therefore, production (Capital Output Ratio/COR) is fixed, and the economy consists of two sectors (Y = C + I).

The theory of economic growth, according to Ricardo, is that the role of capital accumulation and technological progress tends to increase labor productivity, meaning that it can slow down the work of "The Law of Diminishing Return," so that it will slow down the decline in the standard of living (Arsyad, 1999). Ricardo stated that economic growth is influenced by several factors, namely natural resources, population, technological progress, and agriculture. In addition, Ricardo also considers that the number of factors of land production (natural resources) cannot be increased so that it eventually becomes a limiting factor in the growth process of a society. Ricardo's theory was first expressed in his book The Principles of Political Economy and Taxation. One of Ricardo's economic characteristics is that capital accumulation occurs when the level of profit earned by the owners of capital is above the minimum level of profit required for them to invest.

Mundel- Flemming's Theory

This model can explain that economic performance depends on the exchange rate system adopted by floating or fixed. With a floating exchange rate system, Indonesia's movement of the rupiah value is determined by market forces and fluctuates according to the economic conditions that affect it. Mundell-Fleming's theory is similar to the IS-LM model. The difference is an essential assumption in this theory: the economy studied is a small open economy, and there is perfect capital mobility (unrestricted access to borrow from world finance). So, the interest rate is controlled according to the world interest rate with the notation r = r *.

In this study, the Mundell-Fleming theory only explains the relationship between exchange rates and national income. The IS* curve, in theory, is downward sloping because a lower exchange rate causes the value of net exports to increase (the price of domestic goods becomes cheaper for the international community), which in turn can increase aggregate income. There is a negative relationship between the exchange rate and economic growth (GDP); the appreciation of the exchange rate will make net exports fall, then the total output will fall and cause economic growth to decline (Mankiw, 2014).

RESEARCH METHODS

This type of research is quantitative research. Quantitative research reveals the influence of variables in the form of numbers. This study uses secondary data obtained from various sources. The type of data used in this study is panel data, a combination of time-series or cross-section data. The data used in this study is secondary data, in the form of panel data with time series data for the period 2018-2020 and cross-section data totaling five countries, namely Malaysia, Indonesia, Thailand, the Philippines, and Singapore observations is 180.

The dependent variable in this study is the economic growth of ASEAN-5 countries (percentage of real GDP growth). At the same time, the independent variables of this study are the stock price index, foreign direct investment (net balance of payments in billion US dollars), net exports (the difference between a country's total exports and total imports written in billion US dollars), the domestic exchange rate against dollars, foreign exchange reserves (written in billions of US dollars). The data in this study were sourced from Investing.com, CEIC Data, and Yahoo Finance.

In analyzing the data, this study uses the panel data method with a fixed-effect model specification processed with E-Views 9. The equation model that will be estimated in this research is as follows:

$$GDP_{it} = \alpha + \beta 1\ SHM_{it} + \beta 2\ Devisa_{it} + \beta 3\ PMA_{it} + \beta 4\ Kurs_{it} + \beta 5\ Neto_{it} + \varepsilon_{it}$$

Which:
α = intercept
β = regression coefficient
GDP = real GDP growth (%)
SHM = stock price index (thousand)
Devisa = foreign exchange reserves (USD)
PMA = foreign direct investment (USD)
Kurs = exchange rate (USD)
Neto = Net Export (USD)
ε = Error

RESULTS AND DISCUSSION

Chow test is carried out to determine whether the model used is a Common Effect or Fixed Effect for panel data. Table 1 shows the Chi-Square probability value of 0.0000, which is smaller than the 0.05 significance level, so the fixed effect model is better than the common effect model.

Table 1. Results of Chow Test

Effect *Test*	Statistics	*d.f*	Probability
Cross-section F	51,951034	(4,170)	0,0000
Cross-section Chi-square	143,743945	4	0,0000

Source: Output of E-Views 9, 2021

The Hausman test aims to determine the most appropriate Fixed Effect or Random Effect model used in panel data estimation. However, the random effect model test cannot be used in this estimation because the number of countries (n) is less than the time series, covering five countries, including Indonesia, Malaysia, the Philippines, Thailand, and Singapore. Thus, the regression model of the random effect model cannot be carried out.

Based on the Chow and Hausman tests, the best approach model is the fixed effect. The next step is to test the classical assumptions to ensure that the research results are valid, the data used in theory is unbiased and consistent, and the regression coefficient estimation is efficient (Gujarati, 2012). Based on the Glejser test, the innovation variable has a probability value below 0.05, so the model in this study has a heteroscedasticity problem. Based on the Durbin Watson test, the DW value was 0.846352, so the model in this study has an autocorrelation problem.

Because the model in the study is still subject to heteroscedasticity problems, this problem can be handled by weighting a relevant factor and then using the OLS method on the weighted data (Maziyya et al., 2015). So, in this study, the fixed effect model was weighted with cross-section weights and used the white cross-section covariance method.

The values in Table 2 show the F-statistic probability is 0.0000, where the value is less than 0.05. It means that the independent variables in the model can influence the dependent variable. While the Adjusted R-square value in table 2 is 0.65434, which means that the independent variable in the model can explain the dependent variable by 65%. In comparison, other variables outside the model explain the remaining 35%.

Table 2. FEM with GLS (Dependent variable: PDB)

Variable	Coefficient	Std. Error	t-statistic	Prob
DVS	-0,00013	0,0000273	-4,8807	0,0000*
KURS	165,348	47,55793	3,47677	0,0006*
NETO	-9,9E-06	0,00000426	-2,0884	0,0382*
PMA	2,8E-06	0,000201	0,02741	0,9782*
SHM	0,00574	0,001033	5,55649	0,0000*
R-squared	0,67172	Mean dependent var	1,27427	
Adjusted R-squared	0,65434	S.D. dependent var	6,38587	
S.E. of regression	3,71569	Sum squared resid	2347,08	
F-Statistic	38,6492	Durbin-Watson stat	0,84097	
Prob (F-Statistic)	0,000000			

Source: Output of E-Views 9, 2021

Probability less than the significance level means that the foreign exchange reserve variable significantly negatively affects the real GDP growth of ASEAN-5. The results of this study support research conducted by Shu Du (2018), which states that foreign exchange reserves harmed economic growth in China in 2014-2018, which was caused by two factors, namely the government's policy factor with the weakening of its currency to encourage export companies in China to carry out, As a result, China's foreign exchange reserves have increased significantly, but the real GDP has decreased.

This probability is less than the significance level, which shows that the domestic exchange rate variable against the USD has a significant positive effect on the real GDP growth of ASEAN-5. The results of this study follow previous research conducted by Hermansyah, and Febri Ahmad (2016), namely, the exchange rate significantly influences economic growth with a coefficient of 0.4666420. Thus, the world's entire population uses the exchange rate as a means of payment in international trade transactions. With economic growth, the exchange rate affects the open economy.

Probability less than the significance level means that the domestic exchange rate has a significant adverse effect on the real GDP growth of ASEAN-5. This study supports the previous research submitted by Bobby (2018), where the results also show a negative and significant relationship caused by the fluctuating value of net exports and had experienced a deficit. The role of exports and imports in ASEAN-5 in economic growth in several ASEAN-5 countries increased before and even during the COVID-19 pandemic, but with very volatile export and import movements. Even before the COVID-19 pandemic began, several countries such as the Philippines, Indonesia, and Thailand had negative net exports. It is because the number of imports is greater than the total exports in the country.

Probability more than significance level means that the foreign investment variable has no significant effect on the real GDP growth of ASEAN-5. This study is also in line with Bobby's (2018) research which states that FDI does not affect GDP because the realization of FDI itself is still very volatile. The COVID-19 situation can still not provide some investors with a conducive and attractive investment climate. In addition, the COVID-19 pandemic has also caused several foreign investors to postpone investment in several sectors in ASEAN-5 due to the uncertainty of the world economic situation, thus causing inconsistent FDI realization.

Probability less than the significance level indicates that the stock price index has a significant positive effect on real GDP growth. This study is in line with previous research conducted by La Saidi (2017), which found that the effect of stock prices on economic growth was positive. In addition, research conducted by Ohiomu and Godfrey (2011), Petros (2012), and Koirala (2011) confirms that their research results have a positive relationship between the stock market and economic growth. The stock market is one of the long-term funding facilities that issuers can use optimally to invest for investors and assist the government in actual sector development. The Covid-19 pandemic has affected the ASEAN-5 economy and stock market. At the beginning of the announcement of the COVID-19 pandemic, the stock market immediately reacted with a decline that made the stock market unstable. A good synergy between the government, issuers, and investors is needed to deal with and break the Covid-19 chain so that the Indonesian economy and stock market return to normal. Along with the economic recovery in various ASEAN-5 countries, real GDP growth was also followed by an increase in the ASEAN-5 stock price index.

CONCLUSION

Based on the data processing results and discussion above, it can be concluded that Foreign exchange reserves significantly negatively affect real GDP growth in ASEAN-5. An increase in foreign exchange reserves will cause a decline in real GDP growth. Second, the exchange rate significantly positively affects real GDP growth in ASEAN-5. An increase in the exchange rate will cause an increase in real GDP growth. Third, Net exports significantly negatively affect real GDP growth in ASEAN-5. This means that any increase in net exports will cause a decrease in real GDP growth. Fourth, foreign investment has no significant effect on real GDP growth in ASEAN-5. The increase or decrease in foreign investment does not change the real GDP growth in ASEAN-5. Fifth, the stock price index significantly positively affects real GDP growth in ASEAN-5. This means that every increase in the stock price index causes an increase in real GDP growth in ASEAN-5.

Suggestions that can be given are the government must maintain the stability of the trade balance performance by implementing import quota policies and export subsidies so that the increase in imports is accompanied by an increase in exports so that the trade balance remains stable and can maintain or increase foreign exchange reserves. The easing of regional restrictions will make it easier for ASEAN countries to export to various countries so that the industries of each of the 5 ASEAN countries will revive. Second, the government is expected to carry out an exchange rate policy to reduce the turmoil that arises from the imbalance of supply and demand in the foreign exchange market through a triple intervention strategy. The triple intervention strategy is carried out by selling interventions in the spot market, Domestic Non-Deliverable Forward (DNDF) or foreign exchange futures market, and purchasing Government Securities in the secondary market. The triple intervention strategy is carried out to maintain exchange rate stability and, at the same time, maintain adequate domestic exchange rate liquidity. This strategy is carried out to maintain exchange rate stability and, at the same time, maintain adequate domestic exchange rate liquidity. (3) The government is expected to maintain the availability of raw materials and capital goods as well as price stability of capital goods at competitive international prices which can be done by reducing tariffs, providing convenience in the process of obtaining export and import licenses, and permits, as well as increasing transparency of export and import regulations. ; expansion of export markets which can be done by maintaining the number of bilateral, regional, and multilateral trade agreements and exploring non-traditional export markets; increasing exports of services, which can also be done using, among others, the development of electronic commerce, technology, and internet-based business. By doing these several ways, the government believes that assisting can increase exports. (4) The government is expected to be more transparent in managing foreign capital invested by foreign investors so that deviations that may occur can be overcome. The government is also expected to provide facilities and convenience in licensing for foreign investors who want to invest in ASEAN-5 countries. So that the presence of foreign investors will impact economic growth, such as the entry of experts and the procurement of new technology; the ongoing project will also absorb many workers to reduce unemployment. (5) The government needs to make policies that encourage positive sentiment for the Stock Price Index in each ASEAN-5. Some of them are policies to intensify vaccinations and normalize the business climate by loosening people's efforts. In addition, the governments of each ASEAN-5 country provide economic stimulus to increase people's purchasing power, increasing economic growth. In addition, there needs to be an increase in media facilities and infrastructure to make it easier for people to invest in shares.

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