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## THE DETERMINANTS ANALYSIS OF EXCHANGE RATE VOLATILITY OF RUPIAH TOWARDS INDONESIAN OIL AND GAS IMPORT

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### Abstract

*This study aims to analyze the determinants of rupiah exchange rate volatility and its impact on Indonesia's oil and gas imports. The variables observed in this study are economic growth, interest rates, inflation, rupiah exchange rate volatility and Indonesia's oil and gas imports. All data used in this study are secondary data obtained from 2005 to 2019 time series recordings obtained from the Central Bureau of Statistics, Investing.com and Bank Indonesia. Data were analyzed using the two-stage least squares (2SLS) method in the IBM SPSS Statistics application 23. Based on the analysis results, economic growth was found to have a positive effect and interest rates had a positive effect. negative and significant impact on oil and gas imports due to fluctuations in the rupee exchange rate. Although inflation is negatively correlated, there is no significant impact on oil and gas imports through fluctuations in the rupee exchange rate.*

**Keywords:** *Economic Growth, Interest Rates, Inflation, Rupiah Exchange Rate Volatility*

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## 1. INTRODUCTION

The magnitude of the figures on a country's Gross Domestic Product (GDP) report is a reflection of the economic conditions in that country. As one of the most important concepts in macroeconomic studies, GDP measures the total value of goods and services produced by a certain region in one period (annual). The method used is usually a flow of product approach by adding up household consumption of various goods and services such as apples, computer software, clothing, health services and haircuts (Paul A. Samuelson & William D Nordhaus, 2019). Indonesia is one of the member countries of the G20 which is an association of world economic powers. Based on the World Bank report as of July 1 2020, Indonesia is one of the countries with a fairly high GDP level of \$ 1,119,191 (16th in the world). This is in line with the fact that in the last few years Indonesia's GDP achievement has shown progressive changes. This information contains the scale and composition of a country's production, the income it generates, the size and composition of expenditure of its population, and how these variables change over time (Antonio Argandoña, 2016).

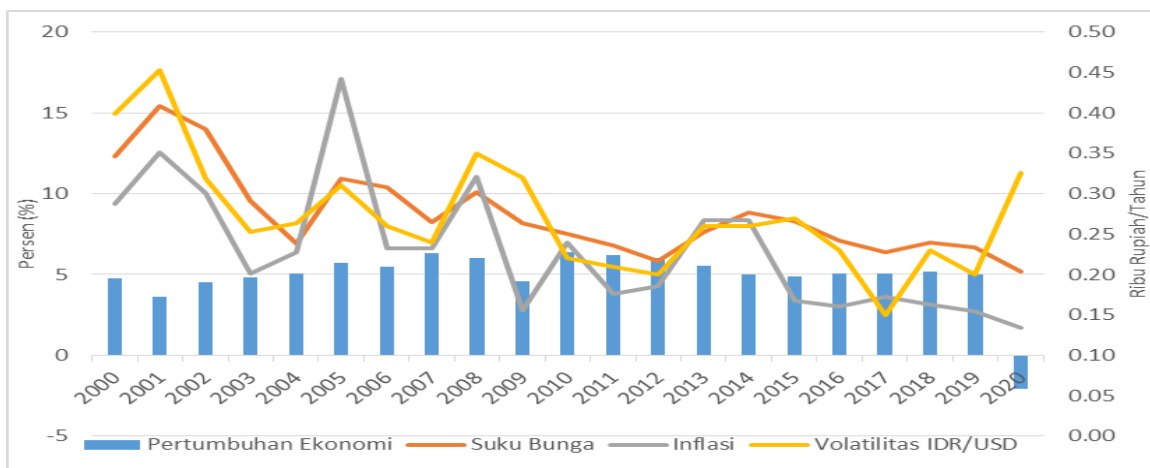
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As a percentage change in output, gradual economic growth indicates an improved standard of living. The increased public consumption of imported goods leads to an increase in the demand for foreign currency and a weakening of the exchange rate. On the other hand, improving the quality and quantity of production leads to an increase in the demand for national goods in the international market, because of this, the demand for the national currency also increases and the exchange rate appreciates. The results of the calculation of national income show the value of aggregate demand. One of the demand posts is known as investment. The amount of spending on this post will be directly proportional to the accumulated results of the GDP itself. But it's not enough to stop there, in fact it is necessary to pay attention to the instruments that influence the investment itself, namely knowing the amount of the interest rate (i). The higher the interest rate, the lower the level of investment, and therefore the lower the demand for goods and services (N. Gregory Mankiw, 2007).

Interest rates have a close relationship with the exchange rate. From chart 1.1 the movement of exchange rate volatility follows changes in interest rates. This implies that if the interest rate of return in a country is greater than in other countries, there will be an inflow of funds so that the demand for that country's money increases and its value strengthens.

**Graph 1.1 Economic growth in interest rates, inflation, and rupiah exchange rate volatility in 2000-2020.**



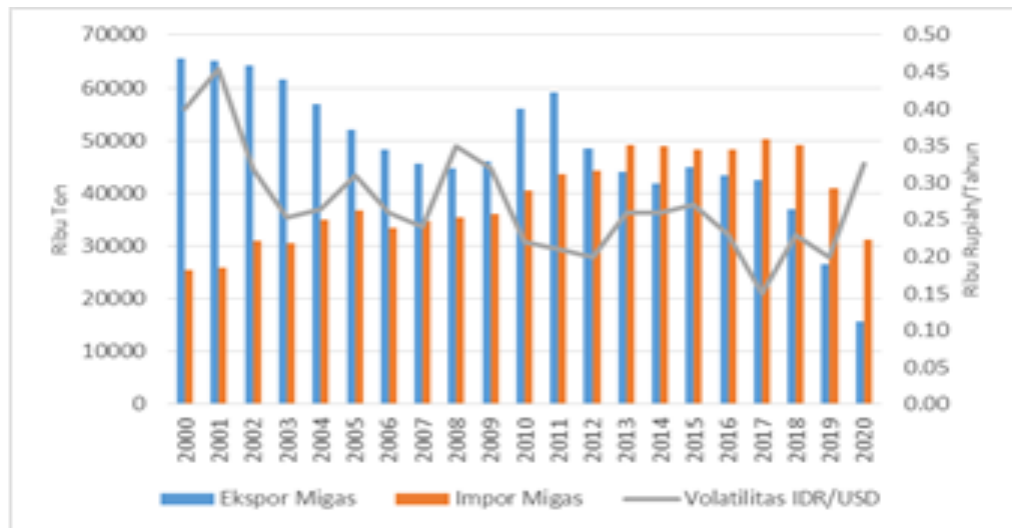
Source: Central Bureau of Statistics, Bank Indonesia

In Graph 1.1 above economic growth and interest rates in Indonesia during 2000-2020 shows that there is a relationship between these two variables. In line with the empirical study by Khan (2010) which found that there is a positive relationship between interest rates and exchange rates. Therefore, implicitly it can be said that the exchange rate volatility that occurs is a result of the interest rate adjustment activity itself. International trading activities

require an acceptable medium of exchange for processing transactions between countries. Paul Krugman in Exchange Rate Theory and Practice (1984) argued that before the First World War, pound sterling was an international currency. Furthermore, in the interwar period in 1919-1938 the dollar and pound shared a role. Until the end of the second World War in the Bretton Woods era and since the launch of the Marshall Plan by the United States, the dollar has been dominant until now.

In the Economic and Banking Bulletin released by Bank Indonesia in 2008, it was stated that Indonesia's economic growth when the managed floating regime was in effect was relatively higher than when the New Order government ended and the floating regime was put into effect. Indonesia's economic growth during the managed floating period was around 6.5% per year, even Indonesia had experienced economic growth above 7% for several periods. The exchange rate was relatively stable before the regime change compared to the fluctuating exchange rate during the floating regime.

**Graph 1.2 Volatility of the Rupiah Exchange Rate against the United States Dollar (IDR/USD) and Indonesia's Oil and Gas Exports and Imports during 2000-2020.**



Source: Central Bureau of Statistics, [www.investing.com/currencies/usd-idr-historical-data](http://www.investing.com/currencies/usd-idr-historical-data) (data processed)

Figure 1.2 shows that from 2013-2020 the value of Indonesia's oil and gas imports has always been greater than exports, in contrast to several periods last year, which means that oil and gas shortages can occur in Indonesia. However, the increase in oil and gas consumption did not necessarily result in an increase in oil and gas imports. The value of imports tends to decrease but inversely proportional to consumption which continues to

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increase. Oil and gas commodities have their own uniqueness regarding the market and transaction methods. Benny Lubiantara (2014) in his book explains that the agreed oil and gas price for transactions is not the price in effect at the time the contract was pressed (spot price), but the average price 5-10 days before and after the goods arrive. Rationally, in trading losses are things whose presence is absolutely undesirable. Referring to the previous method of oil and gas commodity transactions, the existing timeframe increases the risk of loss due to the uncertainty of the price that will be charged later. Bearing in mind that exchange rates are always changing all the time and changes in oil and gas prices are also relative to changes in exchange rates, knowledge of exchange rates alone is not enough. Therefore, the concept of the trend of changes in the exchange rate, in this case the volatility of the exchange rate, is important to know because it serves as a reference for importers to estimate the right time to make a transaction, bearing in mind that the cost for oil and gas commodities is quite high and the price itself fluctuates. Therefore, knowing the volatility of the exchange rate can minimize the risk in oil and gas transactions.

Indonesia is very dependent on oil and gas imports for the continuity of national economic and industrial growth (Eifert, 2003; Ardiansyah et al., 2012). British Proteleum (BP) released the Statistical Review of World Energy June 2020, recording National Oil Consumption of 1.69 million barrels per day (bpd) in 2017, while national production was 837.97 thousand bpd. So that in 2017 there was a deficit of around 858.31 thousand bpd or around 102%. The gap between demand and oil production capacity is expected to widen in line with increasing demand and national development. This condition is exacerbated by the fact that oil reserves and production have continued to decline since the peak of oil production in 1995 which reached 1.6 million bpd. Assuming no new oil reserves are found, then the age of Indonesian oil is only around 12 years based on proven reserves. Moreover, the current condition of Indonesia's oil reserves is not like the oil reserves in the 1970s which made Indonesia experience a boom in 1977-2000 with a production capacity of 1.6 million bpd. However, after that Indonesia's production level tended to decline until Indonesia left the Organization of Petroleum Exporting Countries with a suspended status since January 2009 (Korte, 2011 in Chandranegara and Hoesein, 2019).

### **3. RESEARCH METHODS**

Based on the author's initial intention, this study aims to determine whether macroeconomic conditions have implications for oil and gas imports according to the previous literature review. Therefore, this research is a descriptive research when viewed from the method of approach. Descriptive analysis is used to describe phenomena related to the problems studied, where this study analyzes the determination of economic growth, interest rates, and inflation on the volatility of the rupiah exchange rate in influencing oil and gas imports. Meanwhile, when referring to the type of data used, in this study the conditions or phenomena of the parameters can be calculated numerically, meaning that this

research is a quantitative study, namely processing and analyzing quantitative data information in the form of economic growth, interest rates, inflation, exchange rate volatility, and oil imports.

The data used in this study were not obtained directly from the research object, but were collected through secondary sources that had previously been processed and collected. The data collected by the author is in the form of time series data in the form of numbers (numeric). The institutions, authorities or institutions that are the source of data are Bank Indonesia, the Central Bureau of Statistics, the World Bank, Investing.com, British Protelem and BPH Migas. The preparation of this thesis is carried out by applying the library method, namely research conducted with materials in the form of scientific writings and scientific research reports that have a relationship with the topic that is the object of study. The data collection technique used is direct recording in the form of time series data for a period of 15 years (2005 - 2019). The criteria for testing the equation model is by using statistical tests, including testing the partial regression coefficient (t test), testing the coefficient of determination (R<sup>2</sup>) and testing the regression coefficient together (F test). Processing techniques in this study, namely:

### **1. Model Determination/Simultaneous Test with F test (R<sup>2</sup>)**

The coefficient of determination (R<sup>2</sup>) is a parameter that shows the magnitude of the contribution of the variable X which has a linear effect on the variation/variance (up and down) of Y. The properties of R<sup>2</sup> are that the value of R<sup>2</sup> is always non-negative, because it is the ratio of two squared sums. The coefficient of determination is between zero and one or  $0 \leq R^2 \leq 1$ . The greater the value of R<sup>2</sup>, the more appropriate/fit a regression line is, conversely the smaller the R<sup>2</sup>, the more imprecise the regression line is to represent the observed data (Damodar Gujarati, 2008). In this study, the authors used R<sup>2</sup> to measure the magnitude of the contribution of variable X to the variation of variable Y.

### **2. Statistical t-test**

The t statistical test (testing the significance of the model partially) basically shows how far the influence of one independent variable individually explains the variation of the dependent variable. The null hypothesis (H<sub>0</sub>) to be tested is whether a parameter ( $\beta_i$ ) is equal to zero, or H<sub>0</sub>:  $\beta_i \leq 0$ . This means that an independent variable is not a significant explanatory factor for the dependent variable or X does not affect Y. The alternative hypothesis (H<sub>a</sub>) is a parameter the variable is not equal to zero, or H<sub>a</sub>:  $\beta_i > 0$ . This means that the variable is a significant explanatory factor for the dependent variable (Gujarati, 2008). The significance level ( $\alpha$ ) used is  $\alpha = 5\%$ . If t count > t table, then H<sub>0</sub> is rejected and H<sub>a</sub> is accepted, or if the probability value t <  $\alpha = 0.05$  then H<sub>0</sub> is rejected and H<sub>a</sub> is accepted. Conversely, if t count < t table, then H<sub>0</sub> is accepted and H<sub>a</sub> is rejected.

### **3. F statistical test**

According to Gujarati (2008), the F statistical test basically shows whether all the independent variables referred to in the model have a joint effect on the dependent variable.

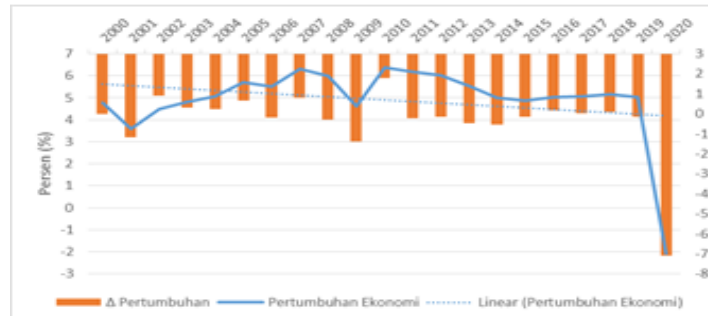
### **4. Sobel Test**

Intervening variables or mediators are types of variables that influence the relationship between the independent variables and the dependent variable to become an indirect relationship. The detection test for intervening variables in this study used the Sobel test. The Sobel test is a test to find out whether the relationship through a mediating variable is significantly capable of being a mediator in the relationship. For example, the influence of A on B through C. In this case C is the mediator of the relationship from A to B. To test how big the role of C is in mediating the influence of A to B, the sobel test is used.

## **4. RESULTS AND DISCUSSION**

Economic growth indicates a situation in which income increases due to an increase in the production of goods and services. The increase in income is not arbitrary due to population growth (because labor is a function of production), but is assessed from the increase in production, technological development and innovation in the social sphere. Conceptually, economic growth is the process of economic transformation of the country's economy in a certain period in the direction of betterment. In general, economic growth means an increase in productive capacity in the form of achieving the goal of increasing national income. Over the past decade, Indonesia's economic condition has grown with a trend of around 6-5%. This generally occurs in developing countries with a fairly high economic growth rate, in contrast to developed countries where growth stagnates and can even experience negative growth. This phenomenon is in accordance with the Solow Growth Model, that economic growth occurs when the investment made is still able to produce output that is greater than the cost to overcome the depreciation of capital goods that have been previously invested. Developed countries have experienced a steady state phase where additional investment no longer increases the consumption of capital goods so that it grows output. Historically, after the end of the second world war, Japan and Germany, which received investment assistance to improve the post-war economy (marshall plan), succeeded in growing the economies of the two countries significantly and making them world economic powers. However, now that it has reached a steady state, its growth is around 2% and often experiences a minus value.

**Graph 1.3 Development of Indonesia's Economic Growth**



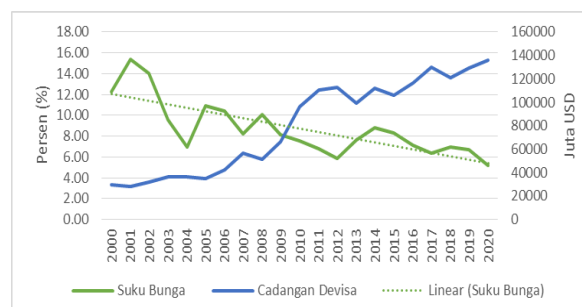
Source: Central Bureau of Statistics

Throughout the research study period, through graph 4.1 it is known that Indonesia's economic growth fluctuates quite a bit every year with a negative trend. The highest economic growth occurred in 2010 which reached 6.38%. The lowest growth of 4.6% occurred in 2009, estimated due to the international economic crisis that occurred in the previous period. Looking at changes in growth ( $\Delta$ Growth), conditions from 2008 to 2009 continued to show the worst conditions with a decrease of -1.4 points. While the recent extreme conditions due to Covid 19 have caused economic growth to drop -2.07% in 2020.

Adam Smith, one of the classical economists known for his free market campaign (reducing as much government interference in the economy as possible) stated that through investment/capital accumulation, the economy can grow. So that the problems that hinder growth itself can be resolved if people save more. The size of the savings rate is of course highly dependent on the interest rate that motivates a person to be willing to save their money with the hope of a certain return in the future. Based on this premise, it can be concluded that the interest rate will affect the amount of capital available for investment.

For the monetary authority, in this case the central bank, interest rates are one of the instruments used to control the flow of money. The government is expected to be able to respond to changes in economic conditions which are very sensitive to changes in market demand and supply by setting the right interest rate, so that the country's economy remains stable.

**Graph 1.4 Indonesian Interest Rate**



Source: World Bank, Central Bureau of Statistics.

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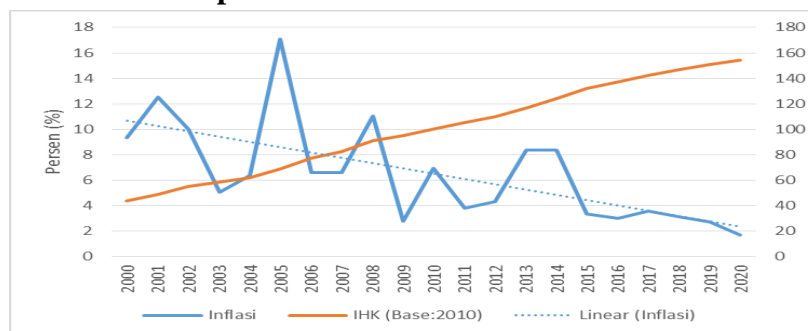
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During 2000-2020, taking into account chart 4.2, it is known that the interest rates set in Indonesia fluctuate a lot with a downward trend. The highest interest rate during this research period occurred in 2001 at around 15.42 percent and the lowest in 2020 at 5.21%.

For the last ten years (2010-2020), interest rates have been lower than the previous one to two decades. Even though its role is very vital because it greatly influences capital inflow which will later have implications for exchange rates, it does not necessarily make it a single instrument which can cause its value to tend to be high and quite volatile so that its value can still be suppressed so that the economy can continue to grow. This is expected because Indonesia's relatively high foreign exchange reserves (the third largest in Asean) indicate the government's ability to intervene in the rupiah through foreign exchange reserves far above its ability in 1996 before facing the crisis. Inflation is a condition where there is a general and continuous increase in prices. John Maynard Keynes, an economist from England who is famous for his analysis of the Great Depression in the 1930s, stated that inflation occurs because people want a life that exceeds their economic capacity. Increasing people's income can cause aggregate demand to be greater than the number of goods available, causing price increases.

Inflation is one of the scourges of concern to a country's economy due to its broad impact on the macro economy. Therefore changes in the inflation rate can at least reflect the economic turmoil that occurs in a country. One of the macroeconomic indicators used to determine the rate of inflation over a certain period is the consumer price index. The CPI figure is used to calculate the average price change of a group of goods and services consumed by households in a certain period of time. Changes in the CPI from time to time reflect the rate of price increase (inflation) or the rate of decline in prices (deflation) of goods and services.

**Graph 1.5. Indonesia's Inflation Rate**



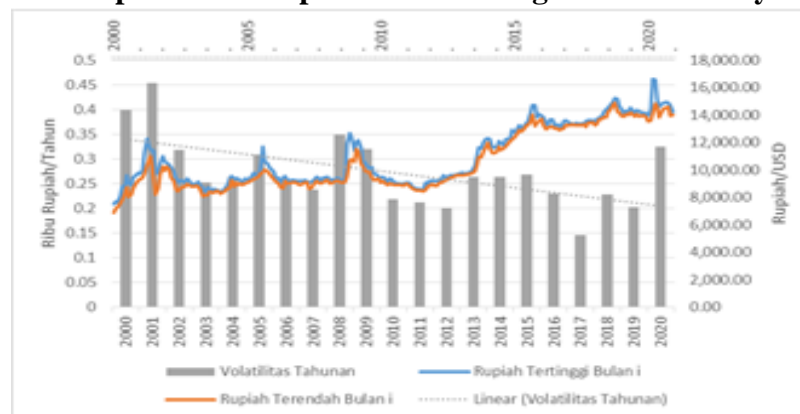
Source: Central Bureau of Statistics

Throughout the study period, it was recorded that the highest inflation rate had ever been achieved in 2005, at which time there was an increase in the price of basic commodities due to increased transportation costs in response to rising fuel costs. Throughout 2005-2014,

the inflation rate fluctuated in the range of 17.11% -2.78%. Inflation rates began to tend to be low and stable throughout 2015-2020 in the range of  $\pm 2.9\%$  when Bank Indonesia began to become more mature in implementing the Inflation Targeting Framework (2005), having previously used a monetary policy framework with base money as the target of monetary policy.

The open economy is a forum for participation of various economic actors from various parts of the world, of course, with diverse backgrounds, conditions and orientations. As with any transaction process in general, an agreed medium of exchange is required between the parties involved. On the seller's side, the transaction will be accepted if the buyer is willing to exchange the goods requested in accordance with the currency in effect in the seller's country or with foreign currency/assets whose value is considered a safe heaven (low risk level, stable, and trusted by many countries). Changes in the rupiah exchange rate that strengthens or weakens against foreign currencies (appreciation/depreciation) indicate the amount of volatility that occurs in that currency.

**Graph 1.6 Development of Exchange Rate Volatility**



Source: Central Bureau of Statistics

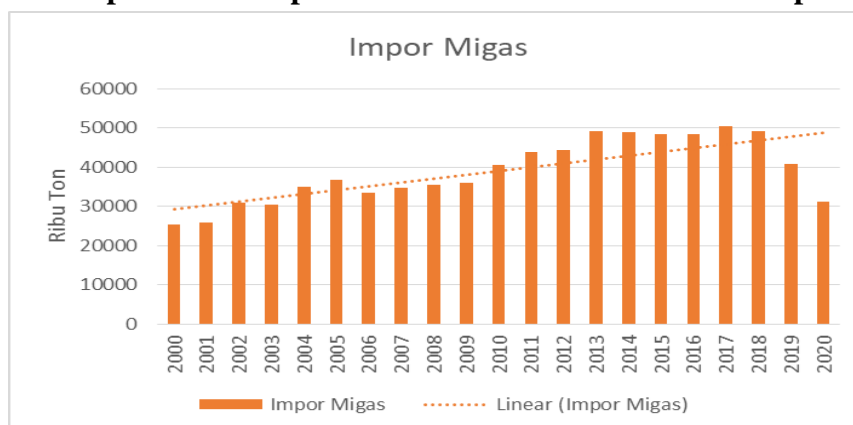
Throughout the study period, the volatility figure in 2008 showed a value of 0.35. This shows deviations from changes in exchange rates (highest-lowest prices) which are quite far from the average exchange rate prevailing at that time. The global financial crisis that occurred in 2008 had an impact on the rupiah exchange rate which tended to weaken. Starting from the Composite Stock Price Index (IHSG), which fell by up to 60.73%, which is estimated to be due to the Quantitative Easing policy carried out by the United States to stimulate its economy which was experiencing a recession. This policy ultimately causes foreign funds in Indonesia to return to their countries of origin or at least switch to other investment sources that are able to offer higher yields. It doesn't stop there, in 2008 Indonesia's import growth reached 73% while exports only grew by 20%, based on this ratio



There were 140 BUs registered with the Ministry of Energy and Mineral Resources/ESDM (2020 report) and based on the 2019 National Energy Council (DEN) report, imports of petroleum in 2013-2017 tended to increase but decreased to 113 million barrels in 2018. Imports Crude oil itself is influenced by the needs of domestic refineries which are supplied from petroleum produced both domestically and imported. Indonesia imports crude oil mainly from Saudi Arabia (28%) and Nigeria (26%) and the rest comes from Malaysia, Australia and Azerbaijan. The government, through Pertamina Persero, to meet domestic fuel needs, imports certain types of fuel with the highest volumes of gasoline/gasoline and diesel. Both types of fuel are consumed the most, especially in the transportation sector. Gasoline and diesel imports respectively reached 59% and 28% of total fuel imports. Meanwhile, imports of other fuels include avtur, avgas and fuel oil. As for gas imports, since 2007. The government has started to implement a kerosene to LPG conversion program, therefore LPG consumption continues to show an increase. To meet this need, since 2008 LPG imports have grown significantly due to insufficient domestic production.

Benny Lubiantara in his book entitled Dynamics of the Oil and Gas Industry (2014) explained that the oil and gas trading mechanism consists of barter agreements, cargo transactions (spot or forward delivery), and term contracts. Saudi Arabia, for example, has conducted barter transactions to buy military equipment from the United States with payments in the form of crude oil or refined oil. Spot transactions themselves rarely occur because the risk is greater than forward, the goods may not arrive while the price has changed drastically. Meanwhile, 90% -95% of global oil and gas trade uses a futures contract mechanism which is preferred by exporters because it guarantees demand and also importers because of guaranteed supply. It's just that there are still effects of exchange rate and price volatility, so a floating price agreement is then applied (using an average price of 5-10 days before and after the goods arrive) to minimize this impact.

**Graph 1.8 Development of Indonesia's Oil and Gas Imports**



Source: Central Bureau of Statistics

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Throughout the research period, the development of Indonesia's oil and gas imports tended to increase. The largest recorded oil and gas imports occurred in 2017 where the rupiah exchange rate against the dollar was stable and when the global economy was in a period of stretching, including in Indonesia. This growth was supported by the continued improvement in the world's economies and global commodity prices. From the domestic side, this performance was supported by increased investment and improved exports, as well as stable public consumption (Bappenas report on developments in the Indonesian and world economies in the fourth quarter of 2017). The lowest oil and gas imports occurred in 2020, in contrast to conditions in 2017, at that time Indonesia's economic conditions experienced a significant decline due to the Covid-19 pandemic. Meanwhile, the average volume of oil and gas imported during 2000-2020 is around 38,994.5 tons.

Based on the results of the estimation and analysis of the data above, the implication of the factors affecting oil and gas imports in Indonesia is then carried out. The results of the analysis in question are as follows

1. Determination of Economic Growth on the Volatility of the Rupiah Exchange Rate in Influencing Indonesia's Oil and Gas Imports

Based on the results of the research estimation, the variable economic growth has a negative and significant effect on exchange rate volatility in Indonesia because the probability value is below 5%, namely 0.001 with a coefficient value of -0.019 which means that every one percent increase in economic growth is followed by a decrease in exchange rate volatility of -0.019 thousand rupiahs/year.

Economic growth is indeed an indication of increased production scale, growing exports, and growing investment in the country. However, it should be noted that the current account deficit that has been occurring so far has also greatly affected the exchange rate and the fact that around 70%-75% of imports are raw/auxiliary material goods, meaning that Indonesia's industrial capacity is still very dependent on external supplies. Therefore, it can be said that the growth due to the increase in production that has occurred is highly dependent on the import itself. This is consistent with the results of research by Yayang Oktafiani et al (2015) concerning the Causal Relationship of Exchange Rates and the Current Account.

The exchange rate volatility variable has a significant effect with a probability value below 5%, namely 0.000, and has a negative effect on oil and gas imports with a coefficient value of -2.622, which means that for every thousand rupiah/year increase in exchange rate volatility, oil and gas imports will decrease by -2.622 thousand tons. There is a negative and significant relationship between exchange rate volatility and oil and gas imports. Since the economic crisis hit most of Southeast Asia in 1997/1998, the Indonesian government has changed its exchange rate system from a controlled floating system to a free float exchange rate regime. This causes the rupiah exchange rate to fluctuate more and more against other currencies. The degree of change in these fluctuations is known as volatility, which reflects

the risk of transactions in trading activities. For Indonesia's oil and gas imports, exchange rate volatility is a factor that will be highly considered by importers. This is because for oil and gas commodities it takes an average of 40 to 50 days to arrive in the destination country, of course with the risk of changes in oil and gas prices and exchange rates. Therefore, it can be concluded that oil and gas importers are risk averters, the implication is that when exchange rate volatility increases, the quantity of oil and gas imports tends to be less.

The effect of exchange rate volatility on imports is also in line with previous research conducted by Septika (2015) that exchange rate volatility has a negative effect on Indonesian imports from the United States and Arize's research (1998) related to the effect of exchange rate volatility on US imports which has a negative effect in the long term. long or short. Meanwhile, the results of the estimation of the indirect effect show that the economic growth variable has a positive correlation with oil and gas imports through exchange rate volatility in Indonesia with a coefficient value of 0.043586 and a significant effect with a probability value below 5%, namely 0.00002333. This means that economic growth determines exchange rate volatility in influencing oil and gas imports where an increase in economic growth will reduce exchange rate volatility, and then will have an impact on increasing oil and gas imports.

## 2. Determination of Interest Rates on the Volatility of the Rupiah Exchange Rate in Affecting Indonesia's Oil and Gas Imports

Based on the estimation results of the study, the interest rate variable has a significant effect with a probability value below 5%, namely 0.002, and has a positive effect on rupiah exchange rate volatility with a coefficient value of 0.017, which means that every one percent increase in interest rates is followed by an increase in exchange rate volatility of 0.017 thousand rupiah. /year. These results are consistent with The Effect of Changing Interest Rates on the Current Exchange Rate in an international economic literature by Krugman, Obstfeld, and Melitz (2012) that an increase in interest rates in a country will increase expected returns (return) so that the demand for currency it also increased. Therefore the exchange rate will appreciate, in the end the volatility of the exchange rate also changes.

The effect of interest rate variables on exchange rate volatility in this study is in line with research conducted by Jonada Tafa (2015) who found that an increase in interest rates on foreign currency deposits (in this case the USD) will cause an appreciation of the foreign exchange rate against other currencies. Albania, so it becomes more expensive to buy USD with the depreciating local currency. Likewise with the results of Muis Murtadho's research (2016) which examined interest rates in three countries, namely Indonesia, China and Australia, which have a significant effect on the stock price index and exchange rates. However, this is not in line with the research conducted by Pamela and Melti (2019) which

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concluded that Indonesian interest rates do not have a significant effect on the rupiah exchange rate per US dollar.

Based on estimation results. The exchange rate volatility variable has a significant impact with a probability value of less than 5%, or 0.000, and a negative impact on oil and gas imports with a coefficient value of -2.622. Price volatility of oil and gas imports decreased by -2,622 thousand tons. The results of the indirect effect estimation show that the interest rate variable has a significant impact at a probability value of less than 5%, i.e. 0.031, and a negative impact on oil and gas imports due to changes in Indonesia's exchange rate at a coefficient value of -0.038998. is shown. means that for every 1% increase in interest rates, -0.038998 kt of oil and gas imports decrease due to exchange rate changes. This is consistent with previous hypotheses that interest rates have a significant negative impact on oil and gas imports through exchange rate fluctuations. This means that oil and gas imports will also decline as interest rates increase exchange rate volatility. This effect occurs indirectly when rising interest rates increase exchange rate volatility and affect a decline in oil and gas imports.

3. Determination of Inflation on the Volatility of the Rupiah Exchange Rate in Affecting Indonesia's Oil and Gas Imports

Based on the research estimation results, the inflation variable has no significant effect with a probability value above 5%, namely 0.263 and has a positive effect on rupiah exchange rate volatility with a coefficient value of 0.004, which means that every one percent increase in inflation is followed by an increase in exchange rate volatility of 0.004 thousand rupiahs/year. This finding is in line with Dwi and Patricia's research (2019) which also found that inflation was not significant in influencing changes in the rupiah exchange rate against the dollar. It's just contrary to research previously conducted by Elysa (2015) that in the long term and short term, the theory of purchasing power parity applies to the Rupiah exchange rate against the United States Dollar. Meanwhile, the results of the estimation of the indirect effect show that the inflation variable has a negative correlation with oil and gas imports through exchange rate volatility in Indonesia with a coefficient value of -0.009176 but has no significant effect (0.093). This means that inflation does not determine oil and gas imports through exchange rate volatility where an increase in inflation will not increase exchange rate volatility, and then will not have an impact on decreasing oil and gas imports.

#### 4. CONCLUSION

Based on the results of the research that has been done, the following conclusions can be drawn:

1. Taken together, economic growth, interest rates and inflation have a significant effect on the volatility of the rupiah exchange rate.

2. The significant economic growth variable determines the volatility of the rupiah exchange rate, so that its effect on Indonesia's oil and gas imports is also significant.
3. The interest rate variable significantly determines the volatility of the rupiah exchange rate, so that its effect on Indonesia's oil and gas imports is also significant.
4. The inflation variable is not significant in determining the volatility of the rupiah exchange rate, so that its effect on Indonesia's oil and gas imports is also insignificant.

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***THE DETERMINANTS ANALYSIS OF EXCHANGE RATE VOLATILITY OF RUPIAH TOWARDS  
INDONESIAN OIL AND GAS IMPORT***

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