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Impact of Imports and Interest Rates on Inflation: A Case Study in ASEAN Countries 2006-2019

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Abstract

Abstract: This research is a descriptive and explanative research on the effect of imports and interest rates on inflation. This study tries to understand the factors that influence inflation in ASEAN countries for the 2006-2019 period. The results show that: 1) Imports have a significant effect on inflation, this is evidenced by sig 0.0001 < 0.05. 2) Interest rates have a significant effect on inflation, this is evidenced by sig 0.0001 < 0.05 and Fcount of 15.43226 with a determinant coefficient (R²) of 0.573003. This means that 57.3% of the impact is determined as the contribution of the independent variables (imports and interest rates) jointly to the dependent variable (inflation). While the rest (42.7%) is the influence of external variables not examined in this study.

Keywords: Imports, Interest Rates, Inflation

1. Preliminary

In macro theory, macroeconomic problems that are always faced by a country are the problem of economic growth, the problem of instability in economic activity, the problem of unemployment, the problem of rising prices (inflation), and the problem of the trade balance. The economic issue that has always been an important concern of the governments of countries in the world, especially ASEAN countries, is inflation.

Research conducted by Rabiul Islam, Ahmad Bashawir Abdul Ghani, Emil Mahyudin, Narmatha Manickam in the International Journal of Economics and Financial in 2017 stated that in general, inflation caused by a decrease in aggregate supply is the same as an increase in aggregate demand. Price controls and allotments are other measures of direct control for checking inflation. The government tries to control prices by setting a ceiling on the prices of important consumer goods and services in the market. They have to apply this strategy to certain goods such as sugar, oil, rice, etc. so that the market price will be fixed at a certain rate and no one has the right to change the price level in the market.

The factor that influences inflation is imports. 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.

Globalization has opened doors for the world economy and international business trade. International business has an important role in the production process and consumption decisions. In a closed economy, apart from a number of causal factors, inflation is associated with the excess demand created in the economy. However, in the case of an open economy, the global trade situation, for example, imports, also affects inflation. According to Dexter et al. (2005), imports can directly affect domestic inflation through the price of imported goods included in the price index, but imports can also indirectly affect through competition for services and domestic goods compared to imported goods abroad. Thus, the country can adopt an import policy to respond to this excess demand. In general, an increase in imports can lead to a depreciation of the exchange rate, so this inflationary pressure can be managed by increasing the cost of imports. Likewise, if the country imports raw materials, furthermore, the local currency depreciates, and that makes imports expensive. As a result, the cost of producing finished goods increases due to the increase in the cost of raw materials; thus, higher imports tend to increase inflation. On the other hand, an increase in exports encourages the appreciation of the local currency so that it tends to reduce inflation. According to Lipsey et al. (1982), an increase in inflation makes every individual moresad because of a decrease in the purchasing power of wages, undermines living standards, and exacerbates the uncertainty of life in many ways.

Another factor that affects inflation is the interest rate. Inflation and interest rates are interrelated, this is often expressed in macroeconomic theory. Inflation refers to the rate of increase in the price of goods and services. When interest rates are low, the effect is that more people borrow money. As a result, consumption increases because there is more money in circulation, the economy begins to grow, and the after-effect is rising inflation. The opposite effect also applies, if interest rates are high, there will be less money borrowers. The result is that more people withhold spending, they choose to save. What happened was the level of consumption fell. Inflation fell.

Several studies report positive or direct effects such as Adu and Marbuah (2011), and Mbutor (2014). Bayo (2011) investigates the determinants of inflation in Nigeria between 1981 and 2003. Using OLS to analyze secondary data regarding the fiscal deficit, money supply, interest rates and exchange rates, the results show that all variables have a significant and positive effect on the inflation rate in Nigeria. While the explanatory variables accounted for 72% of the variation in inflation in Nigeria during the study period with the error term capturing 28% of the variation. He concludes that the causes of inflation in Nigeria are multi-dimensional and dynamic, requiring full knowledge at any time to be able to choose solutions to inflationary trends in the country to lead to high productivity and an increase in the standard of living of citizens.

2. Literature Review

2.1. Inflation

Inflation is an unavoidable economic problem in almost all world economies. According to Greenidge & Dacosta, (2009) inflation has been a topical issue since the early 1970s when oil prices recorded high numbers. Since then, controlling inflation has become a top priority for many countries, especially those with small open economies (Greenidge & Dacosta, 2009). Inflation means a continuous increase in general prices in the economy and poses a serious threat to macroeconomic stability worldwide (Bashir et al., 2011). Friedman and Schwartz (1970) in (Tafti, 2012), wrote an influential book on the monetary history of the United States saying that inflation has always existed and is everywhere a monetary phenomenon. Economists from various schools of thought have presented their theories on the causes of inflation. In the Keynesian era inflation is believed to be caused by an increase in aggregate demand, namely demand-pull inflation or a decrease in aggregate supply, namely cost-push inflation. Economists in this era considered fiscal policy as an important mechanism to control inflation. The Phillips Curve model developed by Phillips presents the idea of a trade-off between inflation and unemployment. This model shows a negative relationship between inflation and unemployment. The quantity theory of money model says that the money supply has a direct and proportional relationship with the price level. It emphasizes the role of monetary policy over fiscal policy in controlling inflation. According to Friedman in (Tafti, 2012) as a monetarist, he argues that domestic inflation is caused by an excess of the money supply in the economy. Monetaris

highlighted the government's budget deficit as an important factor contributing to inflation. This happens because with a budget deficit, the government feels the need to borrow or print more money for its spending. This then causes more money to circulate in the economy, resulting in inflation (Ogbokor, 2004). Structuralists argue that inflation is caused by demand pressures on structural factors and cost pressures. This can lead to changes in the real-world price of money, such as wages. Wages tend to be inflexible downwards; this can lead to inflation (Ogbokor, 2004). Structuralists further state that changes in the Influence of the Money Supply, Exports and Imports in the economic structure cause relative prices to rise. This leads to the effect of the price of money, in other words it leads to a growth in the money supply. In an open economy, inflation is also influenced by the international trade situation, namely imports.

2.2. Imports

Globalization has opened doors for the world economy and international business trade. International business has an important role in the production process and consumption decisions. In a closed economy, apart from a number of causal factors, inflation is associated with the excess demand created in the economy. However, in the case of an open economy, the global trade situation, for example imports, also affects inflation. According to Dexter et al. (2005), imports can directly affect domestic inflation through the price of imported goods included in the price index, but imports can also affect indirectly through competition for services and domestic goods compared to imported goods abroad. Thus, the country can adopt an import policy to respond to this excess demand. In general, an increase in imports can lead to a depreciation of the exchange rate, so this inflationary pressure can be managed by increasing the cost of imports. Likewise, if the country imports raw materials, furthermore, the local currency depreciates, and that makes imports expensive. As a result, the cost of producing finished goods increases due to the increase in the cost of raw materials; thus, higher imports tend to increase inflation. According to Lipsey et al. (1982), an increase in inflation makes every individual more sad because of a decrease in the purchasing power of wages, undermines living standards, and exacerbates the uncertainty of life in many ways.

There are several different reasons that can explain the inflation of goods and services. The three main types of inflation, as part of what Robert J. Gordon (1988) calls the "triangle model"; demand-pull inflation, cost-push inflation, and inherent inflation. Demand-pull inflation refers to the idea that the economy actually demands more goods and services than is available. This shortage of supply allows sellers to increase prices until there is a balance between supply and demand. The cost-push theory, also known as "supply shock inflation," suggests that a shortage or shock in the supply of a certain available good or product will cause a ripple effect through the economy by driving up prices through the supply chain from producer to producer. consumer. According to the theory of demand-pull and cost-push we accept the relationship between import volume and inflation.

Research conducted by Volkan Ulke and Uğur ERGÜN entitled *Econometric Analysis of Import and Inflation Relationship in Turkey between 1995 and 2010* concludes that there is a long-term and short-term cointegration relationship between inflation and import volume. Indeed, there is a one-way Granger causality from imports to inflation.

2.3. Interest Rates

A permanent decline in the inflation rate lowers the inflation risk premium and consequently the interest rate. Low interest rates will have a positive impact on investment decisions and economic growth.

The interest rate is the real interest rate earned and may also be referred to as the market interest rate, or discount rate. From an economic perspective, interest is the equilibrium price of money, which is determined by the cross curve of the supply and demand for money. Moreover, this equilibrium price is not fixed. When there is a shift in the supply or demand curve for money, the interest balance and loan amount will also change. Thus, one of the important determinants of interest rates is the supply and demand for money (Assabeel, 2019).

Interest rates according to the World Bank are Interest payments including interest payments on government debt including long-term bonds, long-term loans, and other debt instruments to domestic and foreign countries. From

the above understanding it can be concluded that the interest rate is the level of remuneration obtained by the community for a number of funds or loans that have been received during a certain period of time expressed in percentage (%).

From the customer's point of view, the most attractive aspect of deposits is the interest rate. Because time deposits are deposits that provide the highest interest compared to other types of deposits, such as savings and checking accounts. Meanwhile, banks view that deposit products are products that can provide flexibility for banks to optimize their investment in various activities. Such as credit and securities.

The central bank can use a control called the discount rate for loans granted by the central bank. If the discount rate is increased by the central bank, the desire for commercial banks to guarantee will be smaller, so that the reserves in the central bank are also getting smaller. As a result, the ability of commercial banks to provide loans to the public is getting smaller so that the money supply decreases and inflation can be prevented.

There are also additional determinants of interest rates, including the length of time the funds are borrowed, the degree of risk of not repaying the full amount of money lent, and the extent to which money loses its purchasing power over time. In general, the determinants of interest rates are the cost of funds, operating costs, emergency reserves, tax costs, interest rate increases, credit ratings, customers, inflation, and finally high competition (Bean, 2017). It is said in economic theory that the conditions of demand and supply of credit available at banks and financial institutions determine interest rates.

Lawrence, William and Gregory (2000) define interest rates as the most pervasive element in the financial world; they influence everything that financial institutions do. Interest rates are a factor of demand and supply of loanable funds by lenders and demand by borrowers. This factor is determined by the government and the central bank. The equilibrium interest rate can be defined as the point of intersection between supply and demand where the number of lenders equals the number of borrowers. It hardly stays at equilibrium, fluctuates like any other competitive price because the shift in the demand and supply curves can increase or decrease at any rate of interest, this is referred to as a change in the quantity demanded or a change in the quantity supplied. When interest rates fall borrowers (households) ask for more money (inflation period) because they can afford the new interest rates, while rising interest rates will discourage households from borrowing but want to keep what is available to them, even though it increases the profits they make. made by the company and the expectation of higher income by consumers.

Interest is the price paid for using capital. Therefore, interest is one of the production costs. In this case, an increase in interest rates will have an impact on increasing production costs and consequently inflation. On the other hand, if there is demand pressure in the economy, an increase in interest rates is carried out to reduce consumption and control inflation.

According to the macroeconomic literature, when the price level increases, first the real balance will be affected. In other words, the higher price level causes the real money supply to fall.

Fiscal policy-Fiscal experts argue that the effect of interest rates on inflation is direct and positive. Reports of empirical findings by researchers are more contradictory, because in addition to the positive and negative effects of reported interest rates on inflation, some researchers also report that the effect of interest rates on inflation is not significant (Danladi et al., 2015).

Several studies report positive or direct effects such as Adu and Marbuah (2011), and Mbutor (2014). Whereas some studies report negative or inverse effects and such studies including Babalola et al. (2015). Many studies have reported that interest rate mismatches affect the dynamics of the inflation rate, such as Amaefula (2016), Ifionu and Ibei (2015), Udo dan Isaiah (2018), Ndidi (2013), Alexander et al. (2015) and Odusanya and Atander (2015).

Bayo (2011) investigates the determinants of inflation in Nigeria between 1981 and 2003. Using OLS to analyze secondary data regarding the fiscal deficit, money supply, interest rates and exchange rates, the results show that all variables have a significant and positive effect on the inflation rate in Nigeria. While the explanatory variables accounted for 72% of the variation in inflation in Nigeria during the study period with the error term capturing 28% of the variation. He concludes that the causes of inflation in Nigeria are multi-dimensional and dynamic, requiring full knowledge at any time to be able to choose solutions to inflationary trends in the country to lead to high productivity and an increase in the standard of living of citizens.

Raymond (2014) examined the effect of changes in interest rates on inflation as measured by the CPI in Nigeria using descriptive and econometric methods. A collection of data on the money supply, interest rate, CPI, minimum rediscount rate, principal loan interest rate and interest rate on treasury bills for the period 1980 to 2010 is considered. Empirical results show that changes in interest rates and an increase in the money supply are associated with increased inflationary pressures. The study concluded that the relevant authorities to correct inflation rate abnormalities through the application of appropriate interest rates from time to time.

Umouru and Oseme (2013) estimated the relationship between inflation expectations and interest rate variations in Nigeria using the Generalized Method of Moment (GMM) estimator. Using the ADF and PP tests all variables are stationary at the first difference. Johansen's cointegration test results reveal that all variables move together in the long run. The results of the GMM show that interest rates have a negative and significant effect on inflation. They conclude that variations in prime lending are the determinants of inflation expectations in Nigeria. Therefore, CBN must continue to vary the prime lending rate to control domestic inflation expectations.

3. Hypothesis

The hypothesis is a temporary answer to the research formulation, therefore the research problem formulation is usually arranged in the form of a question sentence. The hypothesis is a proportion that will be tested for validity or is a temporary answer to the researcher's statement. It is said to be temporary, because the answers given are only based on relevant theories, not based on empirical facts obtained through data collection. So, the hypothesis can also be stated as a theoretical answer to the research problem formulation, not an empirical answer. The hypothesis of this research can be formulated as follows:

H₁: Imports and interest rates together have a significant effect on inflation

H₂: Imports have a significant and negative effect on inflation.

H₃: Interest rates have a significant and positive effect on inflation.

3.1. Research Objectives

A In accordance with the formulation of the problem, this research aims to find out:

1. The effect of imports and interest rates and gold prices together on inflation.
2. The effect of imports on inflation.
3. The effect of interest rates on inflation.

3.2. Research Methods

The research used descriptive and verification research methods. The opinion of Sugiyono (2017) states that descriptive research is research carried out to examine the value of independent variables, either one or more variables without comparing or correlating with other variables and analyzing will get a conclusion. Furthermore, what is meant by the verification method is research carried out on a particular population or sample with the aim of testing the hypothesis.

The data used in this research is quantitative data by its nature, because it is data in the form of numbers and can be measured. The data used in this study is secondary data, namely data in the form of annual reports that have been prepared or published by related parties. The data used in this study is secondary data where the collection uses time series data for 14 years, namely from 2006-2019. The data collected by the researchers came from various sources related to the research theme, namely the World Bank.

3.3. Research Model

The structure of the model in this study is presented as follows:

$$\hat{Y} = \beta_0 + \beta_1 \ln X_1 + \beta_2 X_2 + e_{it}$$

Keterangan:

\hat{Y} = Inflation

X_1 = Import

X_2 = Interest Rate

β_{1-5} = regression coefficient/parameter/slope

e_{it} = error

i = individual (country); $i = 1, 2, 3, \dots, N$

t = time period: $t = 1, 2, \dots, T_i$

Total number of observations: $\sum_{i=1}^N T_i$

Asumsi: $e_{it} = nol$

3.4. Population and Sample

Population is the entire data that is the target of research. From the whole study a very large population was taken part called the target population. The population in this study are ASEAN countries. The sample is a small part of the population that is considered to be able to represent the population as a whole (Mukhtar, 2013). The samples in this study were nine (9) ASEAN countries namely Indonesia, Malaysia, Singapore, Brunei Darussalam, Thailand, Philippines, Vietnam, Myanmar, and Laos. The non-probability sampling method is a process where probabilities cannot be assigned to units objectively, and therefore it becomes difficult to determine the reliability of the sample results in relation to probabilities (Yamane, 1967).

3.5. Hypothesis test

1. Simultaneous Parameter Significance Test (Test F)

Simultaneous significance test (F statistic) to determine whether the independent or independent variables simultaneously or simultaneously affect the dependent variable (Ghozali, 2016). The F test is carried out by comparing F_{count} with F_{table} and if the significance value is.

2. Individual Parameter Significance Test (t Test)

The t-test was used to determine the effect of each independent variable on the dependent. The test is carried out by comparing t_{count} with t_{table} and if the significance value is < 0.05 or $= 5\%$, the hypothesis is accepted.

3. The Determinant Coefficient

The coefficient of determination as an instrument to measure the extent to which the power of a model in explaining the variance of the dependent variable. The value of the coefficient of determination is between 0 or 1. A low value of R^2 indicates the ability of the independent variable to explain the variant of the dependent variable is very limited. Meanwhile, if the value is close to 1, it means that the independent variable provides almost all the information needed to estimate the dependent variable.

4. Result and Discussions

The calculation of this research uses the help of the EViews version 10 program. The results of this study can be seen as follows:

Table 1: Panel Data Regression Results

Dependent Variable: INFLASI
 Method: Panel Least Squares
 Date: 05/11/22 Time: 23:02
 Sample: 2006 2019
 Periods included: 14
 Cross-sections included: 9
 Total panel (balanced) observations: 126

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	36.15683	10.18010	3.551717	0.0006
IMPOR	-1.298549	0.315553	-4.115153	0.0001
SUKU_BUNGA	0.638879	0.162170	3.939569	0.0001

Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.573003	Mean dependent var	4.214623	
Adjusted R-squared	0.535873	S.D. dependent var	5.144969	
S.E. of regression	3.505108	Akaike info criterion	5.429573	
Sum squared resid	1412.865	Schwarz criterion	5.677185	
Log likelihood	-331.0631	Hannan-Quinn criter.	5.530170	
F-statistic	15.43226	Durbin-Watson stat	1.758903	
Prob(F-statistic)	0.000000			

The results of the calculations in Table 1 above can be presented with the results of multiple linear regression as follows:

$$\hat{Y} = 36.15683 - 1.298549 \ln X_1 + 0.638879 X_2$$

4.1. Simultaneous F Test

F-statistical test is used to determine the relationship between the independent variables jointly affect the dependent variable. The calculation results obtained in table 1 is a significance value of 0.0006 < 0.05 which means a significant effect, indicating that the import variable and interest rates simultaneously have a significant effect on inflation. Interpretation in the language of economics means significant meaning that the hypothesis of imports and interest rates convincingly and can be proven to influence inflation.

4.2. Partial Test of imports against inflation

The t-test was carried out by looking at the level of significance or α , where in this study the level of used was 5% or 0.05. Thus, based on table 1 above, it can be concluded that the effect of imports on inflation based on the calculation results obtained in the multiple linear regression table, statistically shows the significance of the import value to inflation is smaller than (0.0001 < 0.05), it can be concluded that the import variable has a significant and negative effect on inflation. Interpretation in the language of economics means significant meaning that the import value hypothesis can be convincingly and meaningfully proven to influence inflation. Where a negative meaning implies that an increase in imports is followed by a decrease in inflation.

4.3. Partial Test of Interest Rates Against Inflation

The t-test was carried out by looking at the level of significance or α , where in this study the level of used was 5%

or 0.05. Thus, based on table 1 above, it can be concluded that the effect of interest rates on inflation based on the results of calculations obtained in the multiple linear regression table, statistically shows the results of the significance of interest rates on inflation is smaller than ($0.0001 < 0.05$), it can be concluded that the interest rate variable on inflation has a significant and positive effect. Interpretation in the language of economics means significant meaning that the hypothesis of interest rate values can be convincingly and meaningfully proven to affect inflation. Where a positive understanding means that an increase in interest rates is also followed by an increase in inflation.

4.4. The Determinant Coefficient

The determinant coefficient is the square of the correlation coefficient value. This means that the change in the dependent variable caused by the independent variable is equal to the square of the correlation coefficient (r^2). The formula for the determinant coefficient is as follows:

$$KD = r^2 \times 100\%$$

Description:

KD = The determinant coefficient

r^2 = correlation coefficient squared

The calculation of the coefficient of this determinant is done using EViews Version 10.

The magnitude of the effect of the value of the imports and interest rates simultaneously has a significant effect on inflation and is shown by the regression results of the two independent variables on inflation, namely Adjusted R Squared = 0.573003, meaning the imports and interest rates simultaneously have a significant effect on inflation by 57.3 percent, the remaining 42.7 percent is influenced by other factors outside the model studied.

5. Conclusion

1. The hypothesis on the model proposed by the researcher before the research was carried out was in accordance with what was expected and the theory and published international journals became the rationale, where the independent variable (imports) had a negative effect on inflation. Interest rates also have a significant and positive effect on inflation.
2. The magnitude of the effect of imports and interest rates on inflation is shown by the regression results of the independent variable on inflation, namely Adjusted R Squared = 0.573003, meaning that the magnitude of the influence of imports and interest rates on inflation is 57.3%, the remaining 42.7% is influenced by other factors. other factors outside the model under study.

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