

Analysis of the Influence of Interest Rate, Rupiah Exchange Value, Household Consumption, and Import on Inflation in Indonesia Period 2010.Q1 - 2018.Q4

Jusmer Sihotang^{#1}, Nancy Nopeline^{#2}

Department of Development Economics, Universitas HKBP Nommensen, Medan, Indonesia^{#1, #2}

Abstract — This study aims to analyze the effect of the interest rate, the exchange rate of the rupiah, and imports on the inflation in Indonesia. The study used multiple regression equation by using secondary time series. Data from 2008.Q1-2018.Q4. The results showed that the interest rate of SBI, exchange rate of rupiah against US Dollar, private sector household consumption, and the total imports of Indonesia had a simultaneous impact on the inflation in Indonesia. However, partially only the interest rate of SBI and total imports of Indonesia had a significant impact on the inflation in Indonesia, respectively on the level of $\alpha = 1\%$ and $\alpha = 5\%$. These results mean that the increasing of interest rate of SBI and Indonesian import could impact the inflation rate in Indonesia. Based on the findings, the policy to control the inflation in Indonesia was Bank Indonesia as the holder of monetary policy needs to oversee the determination of business credit interest rate (micro, retail, and corporate), by commercial banks in order to maintain the rate on the stable and low levels. In addition, the government needs to compose the policy to reduce the dependence on imported goods by providing various facilities and incentives to increase the interest of entrepreneurs to invest in industries that produce imported substitute goods.

Keywords: inflation rate, interest rate, rupiah exchange rate, household consumption, imports.

I. INTRODUCTION

Inflation is a very important monetary phenomenon that occurs in almost all countries. In simple terms, inflation can be interpreted as a process of increasing the prices of goods and services that are generally accepted and occur continuously. With this understanding, price increases that occur for only one or two types of goods or services and are temporary, cannot be called inflation unless the increase in price becomes widespread and results in an increase in the price of most other goods or services.

Inflation is used as an indicator of a country's economic stability. The government together with the central bank as the holder of the monetary authority of a country always tries to control the inflation rate so that it remains low and stable. A low and stable inflation rate is one of the prerequisites for promoting economic growth and can also improve people's lives. However, a high and unstable rate of inflation can cause various social, economic and political problems and have a negative impact on the economic life of a country. Therefore, the problem of inflation is not merely an economic problem, but also a socio-economic-political problem.

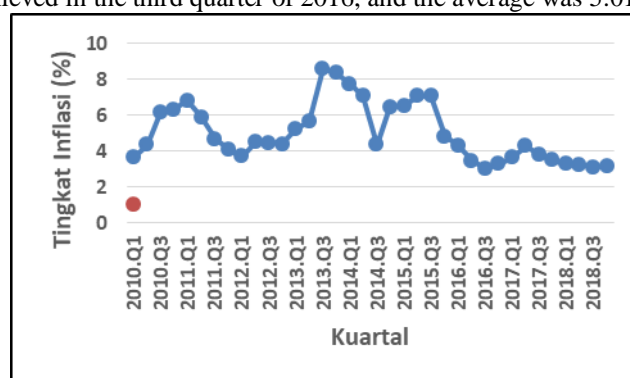
Rahardja (2008), explains three social problems (social costs) that can be caused by inflation, namely a decrease in the level of people's welfare, worsening income distribution, and disruption of economic stability. In times of inflation, the level of public welfare will decline due to a decrease in the real value of income or purchasing power for goods and services, especially for people with fixed income. Inflation can worsen the distribution of income, because the real value of income and wealth of the upper class people during the inflation period tends to increase, while the real value of the income of the lower class is getting lower. Then inflation can disrupt economic stability through disrupting future forecasts (expectations) of economic actors. For consumers, the estimate of inflation will encourage them to spend more than they should, so that demand increases and can accelerate the rate of inflation. For producers, estimates of inflation will make them delay sales, as a result, supply is reduced and will eventually accelerate the rate of inflation.

According to Sukirno (2013), high and continuous increases in prices can have an adverse effect on economic activity and on the welfare of individuals and society. The bad effects of inflation on economic activity are



because during times of inflation: (1) the cost of producing is high and unprofitable, so that capital owners prefer to use their money for speculative purposes rather than carrying out productive activities so that economic development slows down, and (2) exports decline and imports increased so that it could worsen the balance of payments. The bad effects of inflation on the welfare of individuals and society are: (1) inflation will reduce the real income of people with fixed income, (2) inflation will reduce the value of wealth in the form of money, and (3) worsen the distribution of income,

The phenomenon of inflation in Indonesia is still one of the macroeconomic diseases that occur from time to time so that it can cause various problems in economic life. The data shows that during the period 2010.Q1-2018.Q4, the inflation rate in Indonesia, although already below 10 percent (mild inflation or single-digit inflation), has fluctuated greatly from time to time with the highest figure at 8.6% in the third quarter of 2013, the lowest was 3.02% achieved in the third quarter of 2016, and the average was 5.01% per quarter (Figure 1).



Source: www.bi.go.id (processed data)

Figure A.1. Inflation Rate in Indonesia in 2010.Q1 - 2018.Q4

Although the inflation rate in Indonesia has been able to be suppressed below single digits, to encourage higher economic growth, the inflation rate still needs to be controlled at a lower and more stable level. The question is what factors need to be done to control the inflation? This question can certainly be answered by studying the various factors that can affect inflation in an economy.

In theoretically, inflation in Indonesia can occur due to high production costs, which is known as cost push inflation and or because of high aggregate demand called demand pull inflation. Cost-driven inflation occurs because production costs increase, thereby reducing aggregate supply. Some of the factors that can lead to cost-driven inflation are: rising interest rates, lowering the rupiah exchange rate against foreign currencies, increasing administered prices, demands for an increase in wages by labor unions or an increase in the provincial minimum wage (UMP), an increase in the price of fuel oil (BBM), an increase in the price of imported raw materials used by domestic industries, and a decrease in production due to natural disasters. Demand-pull inflation occurs due to the high aggregate demand on the one hand, while aggregate output on the other hand cannot be increased because it is already in a condition of full employment. In the macroeconomic context, this condition occurs when real output exceeds potential output or when aggregate demand is greater than the producing capacity of the economy. In macroeconomics, there are four components of aggregate demand, namely household consumption, private investment, government spending, and net exports.

In several previous studies found differences and inconsistencies regarding the influence of various variables on the inflation rate in Indonesia. For example, in Nainggolan's (2019) study, it was found that the money supply, interest rates and exchange rates partially have a positive effect, but only interest rates have a significant effect on inflation in Indonesia. Then Panjaitan's research (2016) shows that the money supply and the BI Rate have a positive and significant effect on inflation in Indonesia, while the exchange rate and net exports have a negative and insignificant effect on inflation in Indonesia. The positive effect of the money supply and the BI Rate in this study is in line with theoretical expectations, but the negative effects of exchange rates and net exports are not in line with theoretical expectations. Komariyah (2016), found that the money supply has no significant effect on the inflation rate in Indonesia, the exchange rate has a positive and significant effect on the inflation rate in Indonesia, and the interest rate has no significant effect on the inflation rate in Indonesia. Because of the differences in the results of these studies, it is deemed necessary to continue previous studies by respecifying the research model using the latest research data.

II. LITERATURE REVIEW

Inflation and Its Causes

Economists generally have the same view of the notion of inflation which states that inflation is a state or process in which the prices of goods generally increase and take place continuously. There are three components that must be fulfilled in order to say that inflation has occurred, namely an increase in prices, a general price increase, and a continuous price increase.

Based on the rate, inflation is divided into: (1) mild inflation or moderate inflation with an inflation rate below 10% per year, (2) moderate inflation with an inflation rate ranging from 10-30% per year, (3) heavy inflation with an inflation rate ranging 30-100% per year, and (4) very high inflation or hyperinflation with an inflation rate above 100% per year (Budiono, 1991). Based on its origin, inflation can be classified into two categories, namely domestic inflation and imported inflation. Domestic inflation is caused by domestic economic events, for example the continuous deficit in the state budget which is financed by printing new money and the failure of the market system which results in an increase in the price of foodstuffs. (Samuelson, 2004).

In Indonesia, imported inflation occurs due to the high degree of dependence of the real sector on imported goods, both capital goods, intermediated good, and row material. The transmission of imported inflation in Indonesia occurs in two ways, namely the depreciation of the rupiah against foreign currencies and changes in prices for imported goods in their home countries. If the rupiah depreciates sharply, the costs borne by producers will increase, both for payments for raw materials, intermediary goods and for foreign debt. Thus, the selling price of goods in the country, especially for import substitution industries, will increase and will lead to inflation in the country. Then if the import price rises,

Based on the contributing factors, inflation can be divided into two, namely: (1) demand pull inflation which occurs due to the dominance of an increase in aggregate demand compared to an increase in aggregate supply, and (2) cost push inflation which occurs due to an increase in aggregate demand. Production costs that cause a lack of aggregate supply (Sukirno, 2013; Yuliadi, 2008; Rahardja, 2008; Samuelson, 2004). These two types of inflation are explained using Figure 2.

Demand Pull Inflation

Figure 2.a shows demand pull inflation that occurs due to an increase in aggregate demand from AD₀ to AD₁. Assuming that aggregate supply is fixed, the increase in aggregate demand will shift the balance of the economy from point E₀ to E₁, the general price level (inflation) rises from P₀ to P₁ and real output (GDP) also increases from Y₀ to Y₁.

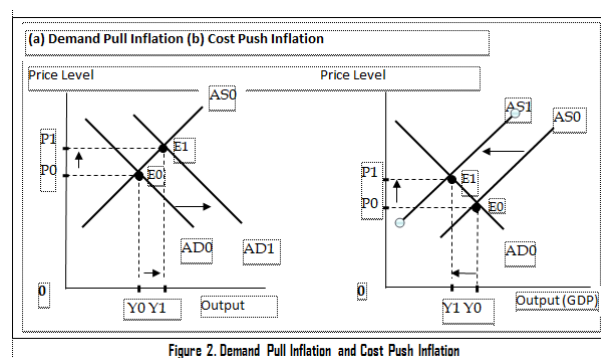


Figure 2. Demand Pull Inflation and Cost Push Inflation

The magnitude of the increase in inflation as a result of the increase in aggregate demand is of course very dependent on the conditions of aggregate supply. If the production factors used for the production process in the economy are fully utilized (full employment), then the increase in inflation will be high. However, if its use is still below full employment, meaning that there are still many production factors that have not been used (for example a large number of unemployed workers), then the increase in aggregate demand may not have a significant effect, because production factors have not yet been used. Used can increase the aggregate supply.

Aggregate demand consists of four components, namely household consumption, corporate investment, government spending and net exports. Therefore, the increase in each component of aggregate demand will shift

the aggregate supply curve to the right and consequently will have an impact on increasing inflation. From a monetary perspective, an increase in aggregate demand can occur if there is an expansion of consumption credit or a decrease in interest rates on savings or time deposits. From a fiscal perspective, an increase in aggregate demand can occur through a reduction in tax rates or an increase in subsidies.

Cost Push Inflation

Cost-push inflation is a factor causing supply-side inflation (Figure 2.b). If production costs continue to increase, the ability of producers to buy and use production factors will be increasingly limited so that producers will be forced to reduce production to a certain level, as a result, the aggregate supply will decrease from AS₀ to AS₁. Assuming that the condition of aggregate demand is constant, the decrease in aggregate supply will shift the economic balance from point E₀ to E₁, so that the general price level (inflation) rises from P₀ to P₁ and the increase in inflation is also followed by a decrease in real output (GDP) from Y₀ to Y₁. In this case, if the increase in production costs lasts long enough, it will lead to inflation accompanied by stagnation or recession (stagflation).

An increase in production costs that can cause cost push inflation can occur due to various factors, namely: (1) the demand for an increase in wages from lab or unions or an increase in the provincial minimum wage (UMP), (2) an increase in interest rates, (3) an increase in the price of industrial raw materials. (4) there is an increase in the prices of goods or services regulated by the government (administered prices), for example an increase in public transport rates, an increase in the basic electricity tariff, an increase in the price of fuel oil (BBM), an increase in civil servant salaries and an increase in the state budget financed by printing of new money (money creation), (5) natural effects that can reduce production or worsening supply shocks (negative supply shocks), (6) decrease in the rupiah exchange rate against foreign currencies, (7) imported inflation especially for countries that adhere to an open economic system or free market, and (8) there is a monopolistic industry that provides power to producers to control the market.

Interest Rate Relationship and Inflation

Interest is the fee for borrowing money, while the interest rate is the percentage of the principal paid as compensation for the principal of the debt in a certain period. According to Samuelson (2004), interest is a payment made for the use of money, while interest rate is the amount of interest paid per unit of time which is referred to as a percentage of the amount loaned. Interest is a measure of the price of resources used by debtors to be paid to creditors (Mishkin, 2008; Sunaryah, 2013).

The interest rate is closely related to the inflation rate. In fact, the differences in interest rates that occur between several countries occur because of differences in inflation rates. The government policy to raise the interest rate is not only aimed at reducing the rate of increase in the inflation rate, this policy can also be aimed at strengthening the domestic currency exchange rate. Yunus' research (2013) using data for the 1998-2012 period, found that the real interest rate variable has a positive and significant effect on inflation in Indonesia. The same research results found by Ilhaini (2016) also found that interest rates have a positive and significant effect on inflation. Likewise Arjunita (2017) by analyzing data in the period 1997.Q1-2015.Q4, also found that interest rates had a positive and significant effect on inflation. However, in terms of the sign of the regression coefficient, the results of Nur's (2012) study using data for the 2000.Q1-2010.Q4 period found that interest rates have a significant negative effect on inflation in Indonesia. In addition, Marliah's research (2018) by analyzing data for the 2005-2010 period found different results where the SBI variable did not have a significant effect on inflation.

Relationship between Rupiah Exchange Rate and Inflation

The exchange rate of a currency is basically the price of that currency, valued in other currencies. Salvatore (2014) defines the exchange rate as the price of the domestic currency of a unit of foreign currency. Sukirno (2012) defines foreign exchange rates as the value of a unit of foreign currency (currency) when exchanged for domestic currency. Thus, if the domestic currency is rupiah and the foreign currency is US dollars, the rupiah exchange rate can be defined as the amount of rupiah that must be exchanged to obtain one unit of US Dollar.

Saputra's (2013) research results show that the exchange rate has a positive and significant effect on inflation in Indonesia. When the rupiah exchange rate depreciates, the price of imported goods will increase so that the cost of imported raw materials will increase which in turn can cause a decrease in production. This will lead to scarcity of manufactured goods, which can lead to an increase in prices for domestic goods in general so that

inflation will rise. Meanwhile, from the supply side, the depreciation of the exchange rate will cause the price of foreign goods to be relatively higher than domestic goods. This will increase demand for domestic goods both from domestic demand and from foreign demand for exported goods. This situation then triggers an increase in prices so that inflation will rise.

Research conducted by Ilhaini (2016) found that the exchange rate has a positive but insignificant effect on inflation in Indonesia. Similarly, Marliah (2018) also found that the exchange rate did not have a significant effect on inflation in Indonesia. Even the results that are not in accordance with the economic relationship in Arjunita's research (2017), it is found that the exchange rate has a negative and insignificant relationship to inflation in Indonesia.

Relationship between Household Consumption and Inflation

Consumption is the expenditure made by households on final goods and services with the aim of meeting their needs. According to Samuelson (2004), consumption expenditure is divided into three categories, namely durable goods such as vehicles, non-perishable items such as food, and services such as medical care.

In the macroeconomic analysis, consumption is divided into household consumption and government consumption. In the national income calculation statistics, household consumption constitutes the largest share of GDP. Therefore, there are at least two reasons it is important to carry out a more in-depth analysis of household consumption. The first reason is that household consumption provides the largest contribution to national income. In many countries, consumption expenditure can account for 60-70 percent of national income, exceeding the total of the other three components of expenditure, namely corporate investment, government spending and net exports. The second reason is that household consumption has a very important influence in determining fluctuations in economic activity from time to time (Sukirno, 2012).

Research on the effect of spending on government consumption on inflation was conducted by Ilhaini (2016) who found that government spending had a positive and significant effect on inflation in the long term, but in the short term government spending had a positive and insignificant effect on inflation. Likewise, research conducted by Nur (2012) using data for the period 200.Q1-2010.Q4, found that household consumption expenditure had a significant negative effect on inflation in Indonesia.

Import Relations and Inflation

Goods produced domestically contain imported goods. Therefore, to find out how much aggregate expenditure on goods produced domestically, imports must be deducted from the total aggregate expenditure contained in a country. Physically, imports represent purchases and income goods from abroad into an economy (Sukirno, 2013).

Imports are carried out to meet the consumption of goods of better quality, meet consumption of goods whose production is limited and even do not exist in the country, obtain raw materials and capital goods in developing domestic industrial activities, as imports of modern technology from abroad, maintain price stability in the country, and increase cooperation with other countries. However, an increase in the price of imported goods, especially the price of imported raw materials for domestic industrial use, will cause inflation in Indonesia. Research conducted by Jumhur (2018) shows that imports have a positive but insignificant effect on inflation in Indonesia.

HYPOTHESIS

The hypothesis in this study is formulated as follows:

1. The SBI interest rate has a positive and significant effect on inflation in Indonesia in the 2010Q1-2018.Q4 period.
2. The Rupiah exchange rate against the US Dollar had a positive and significant effect on inflation in Indonesia in the 2010Q1- 2018.Q4 period.
3. Private household consumption has a positive and significant effect on inflation in Indonesia in the 2010.Q1- 2018.Q4 period.
4. Imports had a positive and significant effect on inflation in Indonesia in the 2010.Q1- 2018.Q4 period.

III. RESEARCH METHOD

Data and Data Sources

Data on inflation rate, SBI interest rate, Rupiah exchange rate against US Dollar, private household consumption, and imports analyzed in this study are secondary data types of time series (time series) with observations for 36 quarters or 2010.Q1-2018 period. Q4. The data is obtained through library study and documentary study. Secondary data sources are the website of the National Statistics Agency (BPS), the website of Bank Indonesia (Indonesian Economic and Financial Statistics (SEKI), Bank Indonesia, Indonesian Economic Reports), and various publications.

Model Specifications and Model Estimation Methods

The analytical tool used in this research is the double log regression equation by making a model in logarithms (natural logarithms) both dependent and independent variables. The model specifications are as follows:

$$\ln I_t = b_0 + b_1 \ln r_t + b_2 \ln ER_t + b_3 \ln C_t + b_4 \ln M_t + U \quad (t = 1, \dots, n)$$

Where:

- I_t = Inflation rate in Indonesia in Q-t (%)
- r_t = SBI interest rate or BI rate in the t-quarter (%)
- ER_t = Rupiah exchange rate against US Dollar in the t-quarter (Rupiah / USD)
- C_t = Private sector household consumption in Indonesia in Q-t (IDR billion)
- M_t = Total Indonesian imports in Q-t (USD million)
- U = confounding variables.

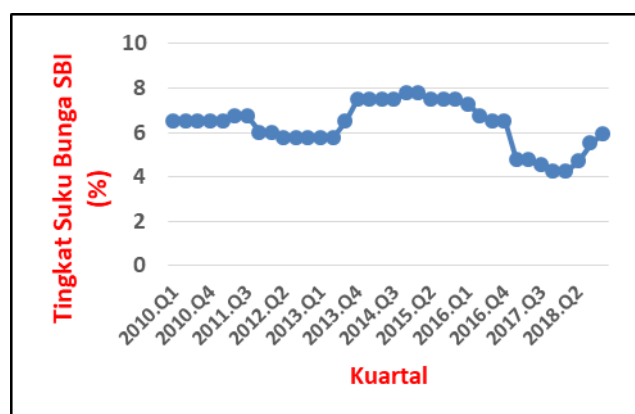
The theoretical expectation or hypothesis of each sign of the regression equation coefficient above is $b_1, b_2, b_3, b_4 > 0$ (positive). A positive regression coefficient sign means an increase in each of the independent variables will have a positive effect on increasing inflation in Indonesia. The method of estimating the regression equation model used is the OLS (Ordinary Least Square) method. The data is processed using the SPSS application software (*Statistics Package for Social Science for Windows 24.0*).

To test whether the regression equation model that has been formulated is good to use as a prediction tool, it is used three criteria, namely economic criteria, statistical criteria, and econometric criteria. The economic criterion is to find out whether the coefficient sign of the assumed regression equation model has been in accordance with theoretical expectations or not. The statistical criteria are to find out whether the assumed regression equation model has met goodness of fit to be tested from the coefficient of determination (R^2), individual effect test (t-test), and simultaneous effect test (F-test). Then, the econometric criterion is to find out whether the regression equation model is suspected to be free from the problem of violating the assumptions of the classical linear regression model which in this study was carried out through a multicollinearity problem test, and autocorrelation problems (autocorrelation).

IV. RESULTS AND DISCUSSION

Description of SBI Interest Rates

Bank Indonesia Certificates (SBI) are securities issued by Bank Indonesia (BI) in recognition of short-term debt (1-3 months) with a discount or interest system. The interest rate applicable to each sale of SBIs is determined by the market mechanism, namely based on the auction system. During the period 2010.Q1-2018.Q4, the SBI interest rate (BI Rate) continued to fluctuate at an average of about 6.3 percent per quarter, the highest was 7.75 percent that occurred in the fourth quarter of 2014 to the first quarter of 2015, and the lowest was 4.25 percent that occurred in the fourth quarter of 2017 to the first quarter of 2018 (Figure 3).



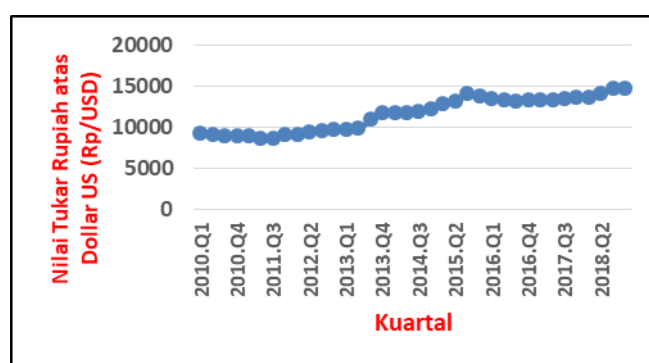
Source: www.bi.go.id (processed data)

Figure A.3. SBI Interest Rates for the 2010.Q1 - 2018.Q4 Period

Bank Indonesia policy to increase the BI Rate was mainly due to future inflation forecasts that exceeded the predetermined target. On the other hand, Bank Indonesia's policy of lowering the BI Rate was because future inflation forecasts were below the predetermined target. In addition to this, Bank Indonesia could also lower the BI Rate because the expected return on domestic financial assets remains attractive, and also to boost economic growth.

Description of the Rupiah Exchange Rate against US Dollar

The exchange rate or the rupiah exchange rate is the price of a unit of foreign currency expressed in rupiah currency. In this study, the rupiah exchange rate is measured using the US Dollar currency. During the period 2010.Q1-2018.Q4, The rupiah exchange rate against the US Dollar from time to time fluctuates and tends to depreciate by an average of IDR 11,574.5 per US Dollar (Figure 4). Except for the third quarter of 2015, during the period 2010.Q1-2018.Q4, the rupiah exchange rate was still below Rp. 14,000 per US Dollar, but since early 2018 the rupiah exchange rate has continued to weaken until it reached Rp. US Dollar in the third quarter, even in January 2018, it reached the position of IDR 14,915 per US Dollar. The very low exchange rate of the rupiah is related to the ongoing uncertainty in global financial markets, especially due to the unclear trade war agreement between the United States and China.



Source: www.bi.go.id (processed data)

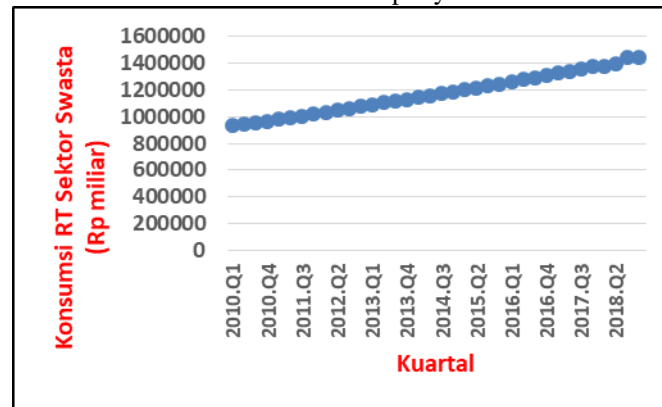
Figure A.4. The Exchange Rate of the Rupiah against US Dollars for the 2010.Q1 - 2018.Q4 Period

Description of Private Sector Household Consumption in Indonesia

Household consumption (RT) is the largest contributor to economic growth in Indonesia and is expected to have an impact on changes in domestic prices for goods and services (inflation). The Central Bureau of Statistics (BPS) noted that the contribution of household consumption to Gross Domestic Product (GDP) in the last five years reached an average of 56.2% of BPS data for 2019 in Buhaerah (2020).

Private sector household consumption in Indonesia during period 2010.Q1-2018.Q4, the average was IDR 1,168,689.391 billion per quarter. The household consumption increased moderately from quarter to quarter (Figure 5). This increase is closely related to Bank Indonesia's policy of maintaining low and stable

inflation so that it is still able to increase the purchasing power of households in Indonesia. Other factors that have caused consumption to increase moderately include periodic increases in regional minimum wages, government programs to increase the purchasing power of households in the lowest expenditure groups in the form of social assistance funds (bansos) and also government programs that provide financial assistance to poor families, starting from IDR 500 thousand to IDR 3.6 million per year.



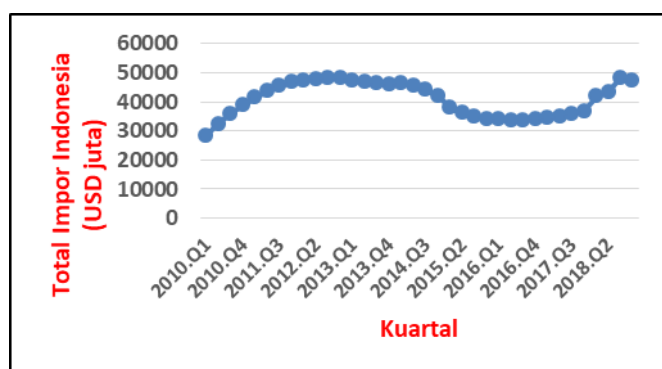
Source: BPS (Center for Data and Information Systems, Ministry of Trade)

Figure A.5. Private Sector Household Consumption in Indonesia in 2010.Q1 - 2018.Q4

Description of Indonesian Imports

Of the total Indonesian imports, more than 80% are imports of the non-oil and gas sector and the remaining less than 20% are imports of oil and gas. In terms of economic goods grouping, most of Indonesia's imports are imports of raw materials, followed by imports of capital goods and then consumer goods. As an illustration, BPS data in 2017 shows that of Indonesia's total imports, it turns out that the contribution of imported raw materials reached 75.07 percent, capital goods around 15.96 percent and the rest is consumer goods at 8.97 percent (BPS, 2018).

In Figure 6, a graph of Indonesia's total (oil and gas and non-oil and gas) for the period 2010.Q1-2018.Q4 is shown. Total Indonesia's imports continued to increase until 2012 and reached the highest value of USD 48,216.91 million in the third quarter of 2012, however after that it tended to decline and reached the lowest value of USD 33,796.82 million in the third quarter of 2016. However, since the third quarter of 2016 fourth in 2016 total Indonesia's imports are slowly increasing again and reaching a value of USD 48,161 million in the third quarter of 2018.



Source: Indonesian Economic Report (Bank Indonesia, processed data)

Figure A.6. Indonesia's Total Imports for the Period 2010.Q1 - 2018.Q4

Estimation Result of Regression Equation Model Inflation in Indonesia

The results of the estimation of the inflation equation model in Indonesia are as follows:

Table A.1 The Estimation Of The Result

Constants / Independent Variables	Regression Coefficient	t-statistics	Sig.
(constant)	-4,387	-0,600	0.553
lnr	0.863	3,431	0.002 *)
lnERt	-0,116	-1,617	0.116
lnCt	-0.047	-0.107	0.915
lnMt	0.579	2,053	0.049 **)
		F-statistic = 7,765	0,000 *)
$\ln It = - 4.387 + 0.863 \ln r - 0.116 \ln ERt - 0.047 \ln Ct + 0.579 \ln Mt$ (R ² = 0.500; DW = 0.753; N = 36)			
*) significant at the level $\alpha = 1\%$; **) significant at the level $\alpha = 5\%$			

Source: processed from research data, time series data 2010.Q1 - 2018.Q4

The positive sign of the regression coefficient of the SBI interest rate (rt) and the positive sign of the regression coefficient for Indonesia's total imports (Mt) are in accordance with theoretical expectations or not in accordance with economic criteria. However, the negative sign of the regression coefficient of the rupiah exchange rate against the US Dollar (ERt) and the negative sign of the regression coefficient for private sector household consumption (Ct), are not in accordance with theoretical expectations or are not in accordance with economic criteria.

Judging from the value of the F-statistic or the F-test it can be said that at the level α one percent, all the independent variables in the model simultaneously have a significant effect on inflation in Indonesia. However, based on the t-statistic or t-test value, it turns out that only the SBI interest rate and Indonesia's total imports have a significant effect, respectively at the level of α one percent and five percent, while the rupiah exchange rate against the US dollar and private sector household consumption do not have a significant effect on inflation in Indonesia. The coefficient of determination (R²) is 0.500, meaning that only 50 percent of the diversity of inflation in Indonesia can be explained by the independent variables of the SBI interest rate, the rupiah exchange rate against the US Dollar, private sector household consumption, and Indonesia's total imports.

Based on the print out of data processing in the collinearity statistics column, it can be seen that all independent variables, namely the SBI interest rate, the rupiah exchange rate against the US Dollar, private sector household consumption, and Indonesia's total imports, have a tolerance value <1 and a Variance Inflation Factor value (VIF) <10. Thus it can be concluded that the inflation equation model in Indonesia in this study does not have a multicollinearity problem so that based on econometric criteria this model can be used as a good empirical model and has satisfactory predictive power.

Then in this study the amount of observational data (N) = 36 and the number of independent variables (k) = 4, so that the Durbin-Watson (DW) table $\alpha = 5\%$, the value of dL = 1.2358 and dU = 1.7245 is obtained. Therefore, in data processing, the value of d-statistic (d) = 0.753, then $0 < d < dL$. Based on the DW test criteria, the inflation equation model in Indonesia in this study still contains a positive autocorrelation problem, so that the predictive power of the model is less satisfactory.

The SBI interest rate has a positive and significant effect on inflation in Indonesia with a regression coefficient of 0.863, meaning that if the SBI interest rate increases by one percent, ceteris paribus, inflation in Indonesia will increase by about 0.9 percent. The results of this study indicate that the increase in SBI interest rates is more dominant in influencing inflation in terms of cost push inflation compared to demand pull inflation. This means that for producers or entrepreneurs, an increase in SBI interest rates if followed by an increase in loan interest rates can mean an increase in the cost of producing goods and services. This will tend to reduce the production of goods and services which in turn will push up the prices of goods and services resulting in cost push inflation.

Indonesia's total imports also have a positive and significant effect on inflation in Indonesia with a regression coefficient of 0.579. This means that if Indonesia's total imports increase by one percent, ceteris paribus, then inflation in Indonesia will increase by about 0.6 percent. As it is known, of Indonesia's total imports, more than 90 percent of them are imports of raw materials and imports of capital goods. Thus, an increase in the price of imported raw materials and an increase in the price of imported capital goods will certainly increase the cost of producing goods and services in the country and this will have an impact on rising prices of goods (inflation) in the country. The positive regression coefficient sign in this study is the same as the results of Jumhur's (2018) study which also found that imports have a positive effect on inflation in Indonesia.

As previously hypothesized that private sector household consumption as well as the depreciation of the rupiah against the US Dollar will have a positive and significant effect on inflation in Indonesia, this study is not found. In this study, it was found that the sign of the regression coefficient of the two independent variables was negative, not in accordance with theoretical expectations and it was also not statistically significant.

The private sector household consumption which does not have a significant effect on inflation in Indonesia can at least be due to two things. First, during the research period private sector household consumption in Indonesia only increased moderately so that it was not automatically able to trigger an increase in the rate of inflation in Indonesia. Second, the inflation control policy implemented by the government through Bank Indonesia with the support of the synergy between the Central Inflation Control Team (TPIP) and the Regional Inflation Control Team (TPID) through the 4K program, namely price affordability, availability of supply, smooth distribution, and effective communication, seems quite successful in maintaining low inflation rate in Indonesia.

The rupiah exchange rate against the US Dollar does not have a significant effect on inflation in Indonesia, possibly because the rupiah exchange rate does not directly affect inflation, but through the transmission mechanism of other economic variables, for example through imports, so what happens is imported inflation.

V. CONCLUSIONS

Conclusion

1. Simultaneously, the SBI interest rate, the rupiah exchange rate against the US Dollar, private sector household consumption, and total Indonesian imports have a significant effect on inflation in Indonesia. However, partially, only SBI interest rates and total imports of Indonesia have a positive and significant effect on inflation in Indonesia.
2. Based on the coefficient of determination (R^2), only 50 percent of the diversity of inflation in Indonesia can be explained by the SBI interest rate, the rupiah exchange rate against the US Dollar, private sector household consumption, and Indonesia's total imports, the remaining 50 percent is explained by other variables. which is not included in the regression equation model. Other variables are thought to be those originating in cost push inflation, including increases in raw material prices, increases in minimum wages, increases in prices for imported goods, increases in VAT and excise, and increases in money supply.
3. In the inflation equation model in Indonesia, there is no multicollinearity problem, but it contains a positive autocorrelation problem.

Advice

1. Because the SBI interest rate has a significant positive effect on inflation in Indonesia, Bank Indonesia as the holder of the monetary policy authority needs to monitor the interest rate policy implemented by commercial banks in order to keep referring to the benchmark interest rate set by Bank Indonesia so that the interest rate in particular, interest rates for business credit (micro, retail and corporate) were maintained in a stable and low manner.
2. Given that imports have a positive and significant effect on inflation, trade and economic policies are needed to reduce dependence on imported goods, for example by promoting domestic import substitution industrialization. For this, the government needs to provide various facilities and incentives to increase the interest of entrepreneurs to invest in industries that produce imported substitution goods.
3. The inflation regression equation model formulated in this study still contains positive autocorrelation problems. The sign of the regression coefficient for private sector household consumption and the negative exchange rate of the rupiah against the US Dollar is not in line with theoretical expectations and is also not statistically significant. Thus, in future research on inflation in Indonesia, it is necessary to revise the model by including other independent variables, as well as to further examine how the actual effect of

private sector household consumption and the rupiah exchange rate against the US Dollar on inflation in Indonesia.

REFERENCES

- [1] Arjunita, Chairannisa, 2017, Factors Affecting Inflation in Indonesia. Thesis thesis, Padang State University.<http://repository.unp.ac.id/16653/> (accessed October 17, 2019).
- [2] BPS, 2018, 2018 Indonesian Economic Report, Editor / Editor: Subdirector of Statistical Indicators, Jakarta: BPS RI.
- [3] Budiono, 1991, Introduction to Economics Synopsis Series No.2 Macroeconomics, Tenth Printing, Yogyakarta: BPFE
- [4] Buhareah, Pihri, 2020, Restoring Household Consumption,<https://www.google.com/amp/s/m.bisnis.com/amp/read/20200112/9/1189244/merestorasi-kentuk-rumah-tangga> (accessed January 18, 2020).
- [5] Gujarati, Damodar, 2003, Basic Econometric, Fourth Edition, New York, USA: McGraw Hill Companies.
- [6] Ilhaini, Meidillah Pratiwi, 2016, Analysis of factors affecting inflation in Indonesia, Diploma thesis, Andalas University <http://scholar.unand.ac.id/7218/> (accessed October 17, 2019).
- [7] Indrawati, Sri Mulyani, 2018, *Minister of Finance is wary of "imported inflation" in Semester II-2018*, <https://www.antaraneews.com/berita/734071/menkeu-waspadai-imported-inflation-di-semester-ii-2018> (accessed October 18, 2019).
- [8] Jumhur, 2018, The Effect of Money Supply, Exports and Imports on Inflation in Indonesia (Empirical Studies on the Indonesian Economy), Journal of Business Economics and Entrepreneurship, Vol. 7, No. 3, Tanjungpura University, Pontianak, Indonesia, file:///C:/Users/Agus/Downloads/Documents/26991-75676594015-2-PB.pdf (accessed 19 October 2019).
- [9] Komariyah, Astutik, 2016, Analysis of the Effect of Money Supply (JUB), Exchange Rates, and Interest Rates on Inflation Rate in Indonesia 1994-2014, Undergraduate Thesis (Unpublished) Faculty of Economics and Business, Muhammadiyah University of Surakarta. Surakarta.
- [10] Marliah, S., 2018, Factors Affecting the Inflation Rate in Indonesia, JEBI | Journal of Indonesian Business Economics, 11 (02), 62-76. <https://doi.org/10.36310/jebi.v1i02.21> (accessed October 17, 2019).
- [11] Mishkin, Frederic S., 2008, Money Economics, Banking and Financial Markets, Salemba Empat: Jakarta.
- [12] Nainggolan, PA, 2019 Analysis of the Effect of Money Supply, Interest Rates and Exchange Rates on Inflation in Indonesia 2003-2017, Medan, Faculty of Economics, UHN (Unpublished thesis).
- [13] Nur, Emon Muh. (2012), Jakarta Journal of Economic Studies, Vol 1, Number 1, April 2012, Padang State University, ejournal.unp.ac.id/index.php/ekonomi/article/view/739/608 (accessed October 15, 2019).
- [14] Panjaitan, MNY and Wardoyo, 2016, Factors Affecting Inflation in Indonesia, Journal of Business Economics Volume 21, No.3, December 2016, Gunadarma University, <https://media.neliti.com/media/publications/97274-ID-none.pdf> (accessed October 15, 2019).
- [15] Rahardja, Prathama, and Mandala Manurung, 2008, Macroeconomic Theory: An Introduction, Fourth Edition, Jakarta: Publishing Institute, Faculty of Economics, University of Indonesia.
- [16] Salvatore, Dominick, 2014, *International Economics*, Edition 9, Book 2, Jakarta: Publisher Salemba Empat.
- [17] Samuelson, Paul.A. and William D. Nordhaus, 2004, Macroeconomics, Jakarta: PT. Global Media Education
- [18] Saputra, Kurniawan, 2013, Analysis of Factors Affecting Inflation in Indonesia 2007-2012, Undergraduate Thesis (Unpublished) Faculty of Economics and Business, Diponegoro University. Semarang.
- [19] Sukirno, Sadono, 2013, Introductory Macroeconomic Theory, Third Edition, 22nd Edition, Jakarta: PT RajaGrafindo Persada.
- [20] _____, 2012, Modern Macroeconomics, the Development of Thought from Classics to New Keynesian, 5th Printing, Jakarta: PT RajaGrafindo Persada.
- [21] Sunariyah, 2013, Introduction to Capital Market Knowledge, Yogyakarta: UPP-STIM YKPN.
- [22] Yuliadi, Imamudin, 2008, Monetary Economics, Jakarta: PT. Index
- [23] Yunus, Yuliarni, 2013, Analysis of Factors Affecting Inflation in Indonesia 1998-2012, Undergraduate Thesis, Faculty of Economics and Business, Hasanuddin University. Makassar. <http://repository.unhas.ac.id/handle/123456789/6628> (accessed 17 October 2019).