

Analysis Of Factors Affecting Inflation In Indonesia Period 2008-2016

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Abstract : *This study aims to determine the effect of macro variables which in this case is the money supply, the interest rate of Bank Indonesia (BI), the exchange rate (exchange rate), Money Supply and the rising prices of fuel oil to inflation in Indonesia either partially or simultaneously.*

Dnature of this research using quantitative research with descriptive approach. The test is performed using multiple linear regression by considering four classical assumption of normality, autocorrelation, multicollinearity, and heteroscedasticity. From the analysis Ftest value amounted to 55 634 > Ftable 1,960 with level of significant 5% and proved that simultaneously macroeconomic variables significantly affect Inflasin. Macro variables in this study could explain the change in inflation of 69% and the balance of 31% influenced by other variables outside the model. Partially with the level of significant 5% only of the money supply (M2) that no significant effect on inflation while the variable interest rate of Bank Indonesia (BI), the exchange rate (exchange rate), the rise in prices of fuel oil (BBM) have influence significantly to inflation in Indonesia.

INTRODUCTION

Prowth a country's economy can be seen from the condition of macroeconomic variables, including the amount of money supply, the interest rate of Bank Indonesia (BI), the exchange rate (exchange rate), and the rising prices of fuel oil (BBM) and inflation. The SBI is one of the mechanisms used by Bank Indonesia to control the stability of the rupiah. By selling the SBI, Bank Indonesia can absorb primary money in circulation. Experience crisis after crisis that hit the world economy in the last century should have been aware to us that the inflation problem has evolved into an increasingly complex issue. Beginning with the great calamity (the great depressions) in the 1930s, followed by the onset of the crisis Latin America in the 1980s, finally reappeared in the Asian financial crisis in mid-1997's, is the experience of the world economy with high inflation (hyperinflation) is very damaging economic joints (Triono, 2008).

Inflation is sala an important indicator for the economy in analyzing the economy of a country. Inflation provide considerable influence on the achievement of macro policy goals, such as economic growth, employment, income distribution, and the balance of payments (order not to trigger inflationary pressures through various instrumrn and policy strategy (Pratiwi, 2013). Basically, the phenomenon of inflation in Indonesia is caused by various external and internal factors, both of which affect directly or indirectly. Government efforts to control inflation set forth in Law No. 23 of 1999 concerning Bank Indonesia as amended into Law No. 3 of 2004, Article 7, which states that Indonesia has adopted a monetary policy with a single goal of achieving and maintaining stability of the rupiah. Withwords another, more focused monetary policy to control fluctuations in the price level in order not to trigger inflationary pressures through various instrumrn and policy strategy (Pratiwi, 2013).

As a control inflation policy implemented by Bank Indonesia by providing inflation at a certain rate with range deviation of $\pm 1\%$ is known as the ITF (inflasion targeting framework), penargeten inflation expectations conducted with the aim of directing and being a reference for economic actors in conducting economic activity in the future, so that the movement of inflation can be directed towards a target that has been set. From the research Zainul (2015) found that jointly inflation, interest rates, JUB, BOP together Affects movement of the rupiah against the US dollar it was confirmed that together components of the macro-economy which includes inflation, interest rates, JUB, BOP, need to be considered in policy making with regard to the exchange rate. Based on the above, this research took the title in the money supply, the interest rate of Bank Indonesia, the exchange rate and the rise in fuel prices applicable to partial and simultaneous inflation.

THEORETICAL FRAMEWORK AND REVIEW OF LITERATURE

Inflation is the increase in general prices of goods continuously during the period tertentu. Increase

these prices are measured using price. Some price index is often used to measure inflation include cost of living index (consumer price index), wholesale price index large (wholesale price index) and GNP deflator. (Nopirin, 2000)

Inflation is regarded as a monetary phenomenon impairment monetary unit of account of the commodity. In line with the opinion of Al-Maqrizi, the definition of inflation by modern economists is comprehensive increase of the amount of money to be paid (monetary value calculation unit) for goods / commodities and services. Conversely, if that happens is the decline in value of the monetary unit calculation for goods / commodities and services is defined as deflation. (Karim, 2008).

In this study the micro-economic indicators used to measure the rate of inflation over a certain period of the year the consumer price index (CPI) which is a number that indicates the level of the price index of goods and services to be bought by consumers within a specific period. Indonesia's CPI calculation made by considering about bebrapa hundred staple commodities. To better reflect the actual situation, the CPI calculation is done by looking at regional developments, namely taking into account the inflation rate of the big cities, especially the capital of the provinces in Indonesia (Manurung, 2001).

Money supply is all kinds of money in the economy is the sum of currency in circulation plus demand deposits in commercial banks. Money supply or money supply divided into two terms, namely in the narrow sense and broad sense (Sukirno, 1998).

In Meaning Narrow money supply (M1) amount of money in the narrow sense (M1) that the money supply is the purchasing power that can be directly used for payments, could be expanded and include payment tools are "approaching" money, for example, deposits (time deposits) and savings deposits (savings deposits) on banks. The money saved in the form of time and savings deposits are actually also is a potential purchasing power for its owners, although it is not as easy as cash or checks to use (Boediono, 1994). And Money berdar In Meaning Area (M2) Indonesia based monetary system, money supply M2 is often referred to as the liquidity of the economy. M2 is defined as M1 plus time deposits and savings balances belonging to the community on the banks. Since the development of M2 could also affect price developments, production and economic conditions in general (Boediono, 1994).

According to Al-Maqrizi excessive printing of money will lead to increase in the price level (inflation) decline in currency values drastically, consequently no longer worth the money (Karim, 2008). In this study, researchers used data types of the money supply in a broad sense (M2).

Hypothesis 1 is H_{a1} : there is a positive and significant effect of the variable M2 against inflation in Indonesia in 2008 to 2016. H_{o1} = there are positive and significant effect of the variable M2 against inflation in Indonesia in the period from 2008 to 2016.

BI Rate is the interest rate that reflects the attitude of policy or monetary policy stance set by Bank Indonesia and announced to the public (Bank Indonesia, 2016).

BI Rate announced by the Board of Governors of Bank Indonesia each monthly Board of Governors and implemented on monetary operations conducted by Bank Indonesia liquidity through processing (Liquidity management) in currency markets to achieve the monetary policy operational Sasran. The operational objective of monetary policy is reflected in the development of market interest rates Overnight Interbank Money movements in interbank rates is expected to be followed by the development in interest rates on deposits, and ultimately bank lending rates (Bank Indonesia, 2016).

Hypothesis 2 is H_{a2} : there positif and significant influence of the variable BI rate to inflation in Indonesia in the period 2008-2016.

H_{o2} = no effect and significant positive of variable BI rate to inflation in Indonesia in the period 2008-2016.

The rupiah is the price terhadap rupiah currency of another country. Thus, the exchange rate is the value of the rupiah currency is translated into another country's currency. For example nilai rupiah against the US dollar, the rupiah against the Yen, and so forth. Exchange rate this as one indikator that affect the activity of the stock market and financial markets as investors tend be careful to melakukakn investment. The decline in the rupiah exchange rate against foreign currencies, especially the US dollar had a negative effect on the economy and capital markets (Sitinjak and Kurnia sari, 2003). Exchange rate regime used in Indonesia is a free-floating exchange rate regime (freely floating exchanges rates). Free-floating exchange rate regime is the exchange rate regime handed power of his country's currency exchange rate on free market mechanism. With the exchange rate regime in the rupiah currency can be traded freely perjual with foreign currency in the foreign exchange market (Triono, 2008). Hypothesis 3 is H_{a3} = there positif and significant influence of variable exchange rate on inflation in Indonesia in the period from 2008 to 2016 ..

H_{o3} : No effect and significant positive of a variable exchange rate on inflation in Indonesia in the period from 2008 to 2016 ..

Fuel is one of any material that can be converted into energy. The bias of fuel containing heat energy

that can be released and manipulated. Kebanyakan fuel used by humans through the burning process (redox) where the fuel releases heat after reacted with oxygen in the air. Another process to release energy from the fuel is a exothermic reactions and nuclear reactions (such as nuclear or nuclear fusion Fifi). Hydrocarbons (including gasoline and diesel) is by far the type of fuel that is most often used by

humans. In this study the fuel price used is the price of premium fuel.

Hypothesis 4 is H_{a4} = there positif and significant influence of variable fuel price hike on inflation in Indonesia in the period from 2008 to 2016 . H_{o4} : no effect and significant positif of variable fuel price hike on inflation in Indonesia in the period from 2008 to 2016 .

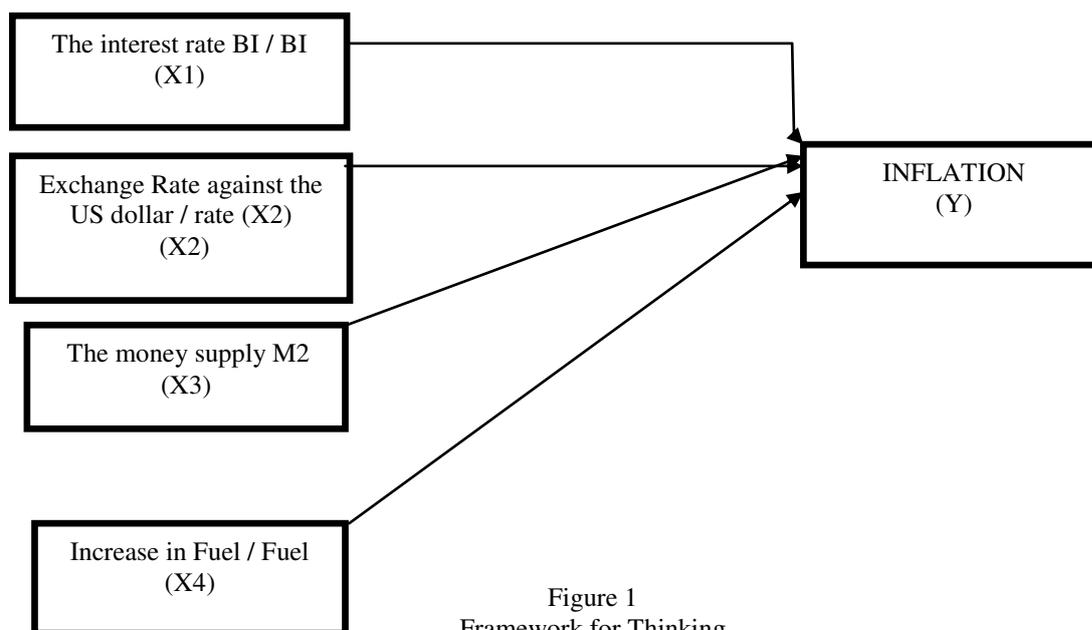


Figure 1
Framework for Thinking

The collection of data and information is done by taking from internet, article and journal, which support the research process. The sample collection criteria include price indexes at the closing time for 100 months which is expected to represent populasinya. Sampel BI rate based on the monthly interest rate is taken down load from wibesite BI, The inflation rate used is the monthly inflation taken down load of *Inflation wibesite*, exchange rate rupiah using the exchange rate in sales down load of wibesite BI and the amount of money circulating in down load of wibesite BPS from January 2008 to July 2016 for monthly data. Reasons for the selection period of the year is used to get more accurate results. Reasons for the selection of monthly data to avoid bias that occur in reacting to information so they can more accurately

Analysis model used in this study is the linear regression. Use to know influence BI rate, Exchange rate, M2, the increase in fuel for 100 months between January 2008 - July 2016 on Inflation simultaneously and partially and Classical Assumption Test.

RESULT

Descriptive statistics for each dependent and independent variables. The dependent variable is inflation. Independenya and variables used in this analysis as much as five variables with each of BI rate, Exchange rate, M2, the increase in fuel, Descriptive statistical results are as follows:

Table 4.1: Statistics Diskriptif

	N	Minimum	maximum	mean	Std. deviation
BI rate	100	5.75	9.50	6.9900	0.91558
Exchange rate	100	8,566.00	14,098.00	10,617.1500	1,685.48886
M2	100	1,586,795.00	4,745,017.00	3.0154E6	9.66497E5
Fuel	100	4,500.00	8,500.00	5,705.5000	1,069.17071
Inflation	100	2.41	12.14	6.0170	2.38251

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Valid.N (listwise)	100				

Source : Secondary data were processed

Based on the data that has been processed using SPSS 20 then unknown lowest and highest value of the variable inflation, central bank interest rate (BI rate), exchange rates, the money supply, and the fuel price hike. Inflation variable has a minimum value of 2.41 in November 2009 and a maximum value 12.14 in September 2008 with a standard deviation of 2.38 and the mean value of 6.02 has niali standard deviation lower than the mean grade, then there is a considerable gap of variable inflation the lowest and highest. Variable BI rate has a minimum value 5.75 in February 2012 to May 2013 and a maximum value 9.50 in January 2009 and has a standard deviation lower than the mean value of it, then there is a considerable gap of variable interest rates the lowest and highest BI. Variable rate has a minimum value 8.566 in June 2011 and the maximum value 14.098 in December 2015 and has value standard deviation lower than the mean value, then there is a considerable gap of the highest and lowest exchange rate variables. Variables in the money supply (M2) has a minimum value 1,586,795 in March 2008 and a maximum value 4,745,017 in June 2016. The standard deviation value indicates a lower value than its mean value, this means that

cukuadakesenjangan not greater than the variable amount of money in circulation and tertinning during the years 2008-2016.

Variable Fuel has a minimum value 4500 in February 2009 and a maximum value of 8500 in the month of November 2014 as well as having the lowest standard deviation from the mean value, then there is a considerable gap of variable high and low fuel.

According Ghazali Gujarati (2006) to generate an accurate data analysis, a regression equation should be free from classical assumptions that must be met, including normality test, multicollinearity, autocorrelation and heteroskedasitas.

Normality test aims to test whether the regression model, the dependent variable and the independent variables both have distribution normal or not. A good regression model is to have a data distribution normal or nearly normal. Normality Test aims to see whether the regression model, or residual confounding variables normal distribution. For that test one sample Kolmogorov-Smirnov Test. The test results presented in Table 4.2 below:

Table 4.2
One-Sample Kolmogorov-Smirnov Test

	Deleted Residual Studentized
N	100
Normal mean	-0.0010152
Parameters a, b Std. deviation	1.01271565
Most Extreme Absolute Differences	0.080
positive	0.050
negative	-0.080
Kolmogorov-Smirnov Z	0.799
Asymp. Sig. (2-tailed)	0.545

Source : Secondary data were processed

From the results of testing one sample Kolmogorov-Smirnov Test the value of the obtained test *one sample Kolmogorov-Smirnov* is

significant at 0.799 and 0.545, which means the data residual normal distribution.

Multikolinearitas phenomenon perfect correlation between the independent variables with other independent variables. If there multikolinearitas, will result in the emergence of standard error estimator and probailitas to accept the hypothesis that the greater wrong. According Ghozali (2005: 95) one way to determine the presence of multicollinearity is

to look on; First, the value of tolerance and its opponent. Second, the variance inflation factor (VIF) ie if the tolerance value is not less than 0.1 and VIF no more than 10 then the model can be said to be free from multicollinearity. Based on the results SPSS processing on the data obtained, it can be seen in Table 4.3 below:

Tabel 4.3
Test Results Multicollinearity

Model	Collinearity Statistics	
	Tolerance	VIF
(constant)		
BI rate	0.349	2.867
Exchange rate	0.191	5.248
M2	0.149	6.724
Fuel	0.296	3.375

Source : Secondary data were processed

From Table 4.3 can be seen that the VIF value for each variable is less than 10 and not less than 0.1 Tolerance. This proves that the regression model used in this study there are no symptoms multikolinearitas (homoskedasitas).

Autocorrelation was detected using the test Test Run. According Ghozali (2005: 107) Run the test as part of a non-parametric statistics may be used to test whether there is a

correlation between high residual. If there is a correlation between residual it is said that the residuals are random or random. Run a test used to see whether the data residual occur randomly or not (systematically). H_0 ; residual (res_1) random (random), and H_a ; residual (res_1) are not random. SPSS processing results on the data obtained, it can be seen in Table 4.4 below:

Tabel 4.4
Test Results Test Run

	Deleted Residual Studentized
Test Valuea	0.02762
Cases <Test Value	50
Cases > = Test Value	50
total Cases	100
Number of Runs	15
Z	-7237
Asymp. Sig. (2-tailed)	0.000

Source : Secondary data were processed

From autocorrelation in Table 4.4 test scores is 0.02762 with probability 0.000 not significant at 0.05 which means that the null hypothesis is accepted, so it can be concluded that the residual random or not autocorrelation between residual.value.

Heteroskidastity test aims to test whether the regression modelinequality occurs variant of residual one pangamatan to observationother.

A good regression model is that homoskedasitas or non-occurrenceheteroskedasitas. One way to detect the presence or absence heteroskedastisitasnamely by looking at the graph plots the predicted value ariable bound withresidual. If there is a specific pattern, such as the points spread above and belowthe number 0 on the Y axis, then there is no heteroscedasticity.

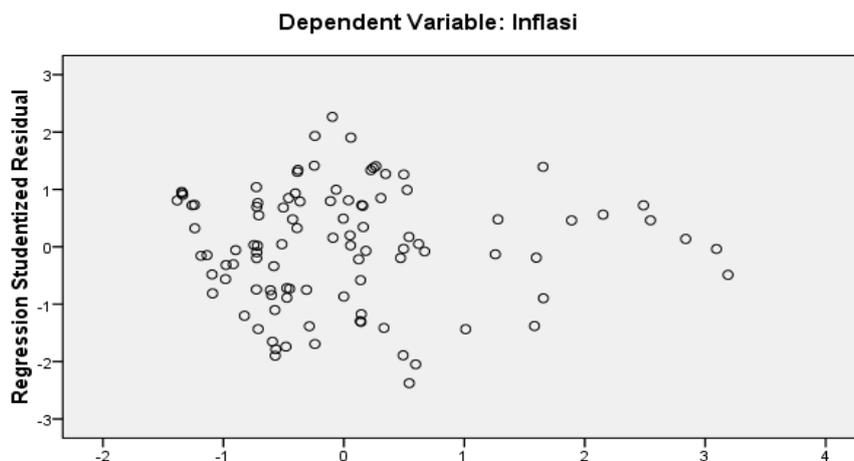


Figure 4.1 Scatterplot

Based on the figure 4.1 there were no specific pattern, and the dotsspread above and below the number 0 on the Y axis, it is said does not happen Heteroskidastity.

The statistical test F basically indicates whether all the independent variables included in the model have influence simultaneously to all dependent variable (Ghozali, 2006).

Table 4.5
TEST F

Model	Sum of Squares	df	mean Square	F	Sig.
1 Regression	393 835	4	98 459	55 634	.000a
residual	168 126	95	1770		
Total	561 961	99			

Source : Secondary data were processed

From the results of the calculation SPSS above can be seen that the value and significance of 0000 is calculated F value of 55.63 As a basis for a decision is the alpha level of significance of 5% ($\sigma = 0.05$). Because the significance value less than 0.05 then shows the influenceBI rate, Exchange

rate, M2, the increase in fuel simultaneously on Inflation. Individual Parameter Significance test or partial test basically shows how far the influence of the independent variables partially explain the variation in the dependent variable (Ghozali, 2006: 91). Following the results of the t test SPSS.

Table 4.6
Individual Test Parameters Significance

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	beta			tolerance	VIF
(Constant)	-5766	1,191		-4841	.000		
BIrate	2,328	0.247	0.895	9416	0.000	0.349	2867
Exchange rate	0.000	0.000	-0.635	-4939	0.000	0.191	5248
M2	4.099E-7	0.000	0.166	1,143	0.256	0.149	6724
Fuel	.001	0.000	0.299	2,900	0.005	0.296	3,375

Source : Secondary data were processed

Based on the statistical test, the first hypothesis shows that the first hypothesis test results showed

that the variable interest rate BI are statistically significant effect on infalasi in Indonesia during the

period January 2008 to July 2016, with the value of $t > t$ table is 9416 > 1.9833 significant value of 0.000 which means that H_0 refused and H_1 accepted, with regression 9416 positive direction. This means that any increase in the variable BI rate of one unit there is an increase inflation by 9416. it is explained that the BI Rate increase the demand for goods and services will rise to total supply of goods and services remains, resulting in price increases. Rising prices of goods and services will ultimately raise inflation. This explains why the BI Rate take effect significant variables with a positive direction.

The second hypothesis test results showed that the variable value of the rupiah against the US dollar (exchange rate) are statistically significant effect on inflation in Indonesia during the period January 2008 to July 2016, with the value of $t < t$ table is -4939 > -1.9833 Significant value which means the sum of 0,000 H_0 refused and H_1 accepted, with regression -4939 negative direction. This shows that any increase in the variable rate of one unit then decline in inflation 4939.

The third hypothesis test results showed that the variables of money supply (M2) were not statistically significant effect on nflasi in Indonesia

during the period January 2008 - July 2018 with a value of $t < t$ table is 1.143 < 1.9833 significant value of 0.025 which means insignificant, then H_0 is rejected and H_1 accepted, with regression 1,143 positive direction. This means that any increase in M2 one unit there is an increase inflation 1.143, It is clear that M2 is not excessive and offset by economic growing and productivity, then M2 no effect on inflation.

The fourth hypothesis test results show that the variable price of fuel oil. Statistically significant effect on inflation in Indonesia during the period January 2008 to July 2016, with the value of $t > t$ table is 2,900 > 1.9833 significant value of 0.005, which means the value of the sign. $0.005 < 0.05$ H_0 refused and H_1 accepted by regression 2,900 positive direction. This shows that sertiap an increase in fuel prices the unit there is an increase inflation 2,900. In the study Aisyah Abdul Rahman (2009) essence, the monetary policies variables (proxied by money supply, exchange rate, reserves and interest rate) and domestic supply factor (presented by industrial production) have significant long run effects on Malaysia. The result of the calculation of the coefficient of determination can be seen in table 4.7 as follows:

Table 4.7
The coefficient of determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.837a	0.701	0.688	1.33032

Source : Secondary data were processed

The coefficient of determination that has been adjusted (adjusted R^2) of 0.688 is 69% dependent variable inflation can be explained by the independent variables such as the SBI interest rate, exchange rate, M2, rising fuel prices and the remaining 31% explained by other variables outside variables used. Inflation adjusted R^2 value for that big would make more precise regression models to predict inflation in Indonesia.

CONCLUSIONS

Conclusions from the analysis of the data in this study is hypothesis first. Statistical test results showed that the first hypothesis BI variable interest rate (BI rate) is statistically significant with a negative direction on inflation in Indonesia during the period January 2008 until July 2016. Both showed that the statistical hypothesis test results showed that the variables of the IDR against Dollar US (exchange rate) is statistically significant with a positive direction on inflation in Indonesia during the period January 2008 to July 2016. the three variables are the amount of money in circulation (M2) tidak statistically significant effect on inflation

in Indonesia during the period January 2008 until July 2016. the fourth hypothesis statistical test result shows that the variable price of fuel oil is statistically significant with a positive direction on inflation in Indonesia during the period January 2008 until July 2016.

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