

# Analysis Factors that Influence the Money Demand in Indonesia

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**Abstract**—This study aims to determine the effect of inflation, interest rates, and economic growth variable on money demand in Indonesia from in years 2005-2018. The data used in this study are secondary data obtained from the Indonesian statistical reports. This study uses multiple linear regression with the Ordinary Least Squares method. The results of this study indicate that the inflation variable has a positive and not significant effect on money demand. The interest rate variable has a negative and significant effect on money demand and the variable of economic growth has a negative and significant influence on the money demand in Indonesia.

**Keywords:** money demand, inflation, economic growth

## I. INTRODUCTION

Money is an commodity that has a function as a means of exchange, store of value, unit of account, and standard for deferred payment. Indonesia as one of the countries that adheres to a free foreign exchange system is only known to have two definitions of money based on its liquidity level, that M1 and M2. while M2 consists of M1 plus quasi-money including term deposits, savings deposits, and accounts (savings) of foreign exchange in the country private property [1].

Basic factors in the development of macro economy is also determined by the behavior of money such as foreign reserves, current account, economic growth, and inflation of a country. So the role of demand for money can be used as an analytical tool in considering the monetary policy decision.

The role of money in a country's economy can not be a doubt as to facilitate economic activities such as to obtain the necessary basic materials and other activities. Demand for money in Indonesia is progressing in accordance with the needs of society in transaction activity and the development of government policies that allow the development of savings and time deposits. People's desire to save money by depositing the money was strongly influenced by the ease in acquiring and various amenities

offered among banks. this is possible if the government also intervened in various deregulation and regulation of development policy, especially monetary and economic areas of the country in general [2].

Deregulation or regulatory development policy in the monetary field that can either create a stable economy. A stable economy can be achieved if the balance between the amount of money required to do aktivitiy economic communities (Md) with the amount of money circulating in the economy which is supplied by the central bank and commercial banks (Ms), so that the monetary aspect is expressed by the equation  $Md = Ms$ .

Economic growth requires growth of money or sufficient liquidity. But the rate of money growth must also be balanced with an increase in the amount of production so that it does not have an adverse effect on the country's economy, because changes in the money supply can affect price stability. Growth in the money supply that is too fast without being balanced by the amount of production can cause inflation. The money supply that exceeds the needs of the transaction will also encourage people to speculate against the foreign exchange impact on the weakening of the rupiah. But otherwise, if the increase in the number of production greater than the growth in the money supply will lead to deflation, so the revenue decline and the business world have an impact on economic growth.

TABLE I. COMPARISON of M1, INFLATION, and INDONESIA ECONOMIC GROWTH in YEAR 2014-2018

Year	M1	Growth of M1 (%)	Economic Growth (%)	Interest Rate
2018	1.457.150	4,77	5,17	3,13
2017	1.390.807	12,37	5,07	3,61
2016	1.237.643	17,26	5,03	3,02
2015	1.055.440	12,01	4,88	3,35
2014	942.221	6,21	5,01	8,36

<sup>a</sup> Resources: Badan Pusat Statistik, 2019

Based in table 1. The development of money supply of spent continues to increase every year, however the percentage of expenditure has decreased since 2017 to 2018. Since years 2014 until 2016 the money supply increased from 942.221 became 1.237.643 its growth rate as a percentage also increased from 6.2 percent to 17.26 percent. Whereas in 2016 to 2018 the money supply increased from 1,237,643 to 1,457,150 with the percentage growth rate decreased from 17.26 percent to 4.77 percent. In the economic growth side of Indonesia has increased from 2015 to 2018, but in 2015 Indonesia's economic growth declined, one of which was caused by slowing household spending. Growth in the money supply in 2017 was 12.37 percent greater than economic growth in the same year of 5.07 percent, causing inflation to increase by 3.61 percent. But in 2018 the growth in the money supply is 4.77 percent smaller than the economic growth of 5.17 percent causing inflation to decrease of 3.13 percent.

Based on research [7] states that in the short run the Gross Domestic Product has a positive and insignificant effect, inflation has a positive and insignificant effect, and the interest rate has a positive and significant effect. Whereas in the long run Gross Domestic Product has a positive and significant effect, inflation has a positive and insignificant effect, and interest rates have a positive and insignificant effect on money demand in Indonesia.

Monetary phenomena related to money demand is very interesting to study. Identification of the economic factors affecting money demand through empirical studies, theoretical studies, and the phenomenon of data as well as global economic conditions in Indonesia. So the goal of this research to determine the effect of inflation, interest rates, and economic growth to the demand for money in Indonesia.

## II. LITERATURE REVIEW

### A. Money Supply

Money supply is based on the liquidity level consists of M1 and M2. M1 includes real money have people, while M2 includes M1 (currency and demand deposits) and quasi money. Real money are paper money and coins issued by the authority of the legitimate monetary. Demand deposits is saving owned domestic private sector with Indonesia bank and Central Bank, that can currently raise funds in current accounts can be withdrawn at any time in exchange for real money worth the amount. Demand deposits consist of rupiah giro account of population, savings and time deposits that have matured [7].

#### *Theory of money demand*

Theory of money demand Keynes

Theory of money demand Keynes be known liquidity preference. Keynes divide the money demand into 3 categories:

1. Demand for money for transactions
2. Demand for money for precaution
3. Demand for money for speculative

Money demand for the transaction will increase along with payment needs payments, the demand for

precaution, and increased speculation for unexpected needs.

### B. Demand money for transactions and demand money for precaution

The Government and people always want to hold cash for the purposes transactions and precaution because the reception is not always aligned with expenditure, this is due to their leisure time (time lag) between revenue and expenditure.

$$M_t = f(Y) \tag{1}$$

Information :

$M_t$  = Money demand for transactions

$Y$  = Revenue

$$\frac{dM_t}{dY} > 0$$

The higher income more money is needed for transaction purposes. Demand for money in case a reflection of the uncertainty regarding income and expenditure. Based on the opinions Keynes, request money just in case is a function of the level of income.

$$M_p = f(Y) \tag{2}$$

Information

$m_p$  = Money demand in precaution

$Y$  = Revenue

Merger of the demand for money for transaction purposes and precaution is

$$M_t + M_p = f(Y)$$

$$M_t + M_p$$

### C. Money Demand For Speculative

Keynes say money demand for speculative purposes is determined by interest rates. The higher the interest rate, the higher the desire to demand money with the purpose of speculation. This is because if the interest rate increase means the cost to save money the larger / higher, so the desire to save money is getting smaller. Otherwise, if the interest rate the lower the desire to save money higher [8].

The Money demand function for speculative purposes as follows:

$$M_2 = f(i) \tag{3}$$

Information,

$M_2$  = Money Demand for speculative

$i$  = interest rate

### D. Economic Growth

One important indicator to determine the condition of the economy or the economic growth of a country in a given period is by Gross Domestic Product (GDP),

well above current prices or basic price. GDP is basically the amount of value added generated by business units in a particular country or is the value of final goods and services produced by all economic units. GDP at current prices can illustrate the added value of goods and services based on a count of current prices in every year, while the GDP at constant prices can demonstrate the added value of goods and services calculated using prices prevailing in a base year. GDP at current prices can be used as a tool to see shifts and economic structure, while constant prices are used to find out economic growth from year to year (BPS, 2019). According to [10] Economic growth is a process of increase in output per capita in the long term.

#### E. Inflation

Inflation is an increase in prices in general and continuously within a certain period. The price increase of one or two items alone can not be called inflation except when the increase is widespread in other goods. The opposite of inflation is called deflation. Indicators used to measure the rate of inflation is the Consumer Price Index (CPI). CPI changes over time shows the price movement of goods and services consumed by society (BI, 2019).

Inflation is a process of price increases in an economy that is constantly, while the inflation rate is a presentation increases prices of goods within a certain time period [12]. Inflation rates in the economy are often around 2 to 4 percent per year, this inflation classified creeping inflation, while inflation exceeded 30 percent including severe inflation. The condition is usually caused by the country's economy is very bad.

According [12] based on the factors that cause inflation as follows.

- a. Pull Inflation Demand (Demand full inflation)
- b. Inflation Pressure Cost (cost push inflation)
- F. Interest Rate

The interest rate plays an important role in every economy that uses money as a store of value. In addition, as a variable link between the money market and goods market. The interest rate is the price of the use of money for a certain period [1].

### III. RESEARCH METHODS

#### A. Types and Sources of Data

The data used in this research is secondary data obtained from the Central Statistics agency reports and Indonesia Bank reports be related economic growth of inflation and interest rates.

#### B. Analysis method

The analytical method used in this research is multiple linear regression method OLS (Ordinary Least Squares), OLS is an analytical technique to determine the effect of independent variables on the dependent variable. Variables used are inflation, interest rates, and economic growth to be known the money demand in Indonesia.

#### C. Classic assumption test

- Multicollinearity Test

Multicollinearity test is a test to see whether or not a high correlation between smoking variabel. The method used in multicollinearity test in this study using the scale of value. *variance inflation factor* (VIF) or value *tolerance* [13]. Decision making multikolinieritas test as follows:

1. when the value *tolerance*  $< 0.1$  or *variance inflation factor* (VIF)  $> 10$  then it can be said that there is a problem multicollinearity between independent variables.
2. when the value *tolerance*  $> 0.1$  or *variance inflation factor* (VIF)  $< 10$  then it can be said that there is no problem of multicollinearity between independent variables.

#### D. Heterokedastisitas test

Heterokedastisitas test is used to see if there are problems heterokedastisitas. This problem is usually caused by residuals of the regression model variant which is not constant from one observation by other observations. Criteria heterokedastisitas problems using methods *white* as follows :

1. If Obs \* R-squared (X2 count) greater than X2 table then there are symptoms heterokedastisitas
2. If Obs \* R-squared (X2 count) is smaller than X2 table then there are no symptoms heterokedastisitas

#### E. Autocorrelation test

Autocorrelation test used to see whether or not there is problem autocorrelation in the study. Autocorrelation is the correlation between a series of observations are sorted by time or space. This study uses a testing *Larange Multiplier* (LM). Criteria for autocorrelation using the LM (*Bruesch Godfrey*) as follows :

1. If *probability value* Obs \* *R-square* greater than 10 percent confidence level then there is no problem of autocorrelation
  2. If *probability value* Obs \* *R-square* less than the 10 percent confidence level then there is a problem autocorrelation.
- F. Normality test

Normality Test is a test to see the normality of the data distribution. Testing the significance of the influence of independent variables on the dependent variable will only be valid if the residual

Value obtained have a normal distribution. The method used to test for normality in this study is a test *Jarque-Bera*. Normality test criteria as follows:

1. If *Jarque-Bera probability value*  $> \alpha = 10$  percent, normally distributed data
2. If *Jarque-Bera probability value*  $< \alpha = 10$  percent, the data were not normally distributed

### IV. RESULTS ANALYSIS CLASSIC ASSUMPTION TEST

#### A. Multicollinearity Test

The data in this study were tested using multikolinieritas to see whether or not there is a high

correlation between independent variables, the results of the test multicollinearity such as :

**TABLE II. MULTICOLLINEARITY TEST**

Variabel	Coefficient Variance	Uncentered VIF	Centered VIF
C	1,073301	139,3334	NA
INFLATION	0,002283	16,39176	4,404576
INTEREST RATE	0,006979	52,41762	4,086775
ECONOMICS GROWTH	0,030130	120,3786	1,164353

<sup>a</sup> Source : Author's Processed Data

Based on the data processing , multikolinieritas test calculation results show that Vif each independent variable inflation, interest rates and GDP to money demand has a value of less than 10. The tolerance value of each independent variable has a value above 0.1, so it can be said that there is no problem multicollinearity between the independent variables

**B. Heterokedastisitas test**

**TABLE III. HETEROKEDASTICITY TEST (WHITE)**

F-statistic	1,609516	Prob. F(9,4)	0,3412
Obs*R-squared	10,97062	Prob. Chi-Square(9)	0,2777
Scaled explained SS	6, 468995	Prob. Chi-Square(9)	0,6922

<sup>c</sup> Source : Author's Processed Data

Based on test results obtained heterokedastisitas p-value indicated by the value of the probability of Chi-Square at Obs \* R-Squared is equal 0.2777. Therefore, p-value 0.2777 is greater than  $\alpha = 0.10$  (10 percent) then the regression model in this study is homoskedastisitas or do not have a problem heterokedastisitas.

**C. Autocorrelation test**

**TABLE IV. AUTOCORRELATION TEST(Breusch-Godfrey SerialCorrelation LM Test)**

F-statistic	0,071670	Prob. F(2,8)	0,9314
Obs*R-squared	0,246429	Prob. Chi-Square(2)	0,8841

<sup>d</sup> Source : Author's Processed Data

Based on the results obtained autocorrelation test p-value indicated by the value of the probability of Chis-Square at Obs \* R-Squared is equal 0.8841. Therefore, p-value 0.8841 is greater than  $\alpha = 0.10$  (10 percent) then the regression model in this study did not have a problem of autocorrelation.

**D. Normality Test**

Normality test used to see whether the study is normally distributed or not. Normality test can use a variety of methods including Liliefors, Kolmogorov-Smirnov, Shapiro Wilk and Shapiro Francia, Skewness Kurtosis, Jaque Bera, and others. However, in this study the method used is the method Jaque Bera. Based normality test results showed that the value of Jaque-Bera

statistical probability of 0.702042 is greater than  $\alpha = 0,05$ , It can be concluded that the data used in this study are normally distributed.

**E. Multiple Linear Regression Test Results**

After all variables have passed the test classic assumptions, then do multiple linear regression to see the effect of independent variables on the dependent variable by using multiple linear regression method OLS (Ordinary Least Squares) the results are as follows:

**TABLE V. ESTIMATION of MONEY DEMAND with ORDINARY LEAST SQUARES METHOD**

Variabel	Coefficient	Std. Error	t-Statistic	Prob.
C	16,93804	1,036002	16,34942	0,0000
INFLATION	0,046964	0,047779	0,982949	0,3488
INTEREST RATE	-0,231453	0,083543	2,770471	0,0198
ECONOMIC SGROWTH	-0,382986	0,173581	2,206382	0,0519

<sup>e</sup> Source : Author's Processed Data

The estimation results of the effect of inflation, interest rates, and economic growth with OLS (Ordinary Least Squares) method, model is obtained as follows

$$Y = 16,93804 + 0,046964 \text{INFLATION} - 0,231453 \text{INTEREST RATE} - 0,382986 \text{ECONOMICS GROWTH}$$

Based on the results of multiple linear regression showed that inflation is not significant variables with a probability of 0.3488 is greater than and has a coefficient of .046964 which is positive. This shows that every 1 percent increase in inflation will increase the demand for money by 4.69 percent. Variable interest rates have a significant effect on the level of 5 per cent with a probability of 0.0198 is smaller than  $\alpha = 0,05$ , and has a coefficient of -0.231453 that is negative so that when the 1 percent increase in the interest rate will be a change of 23.14 percent. Economic growth variables have a significant effect on the level of 10 percent with a probability of 0.0519 is smaller than and has a coefficient of -0.382986 that is negative.

**V. DISCUSSION**

**A. Interpretation of the Influence of Inflation on Money Demand**

Variable inflation in this study had a positive influence and have no significant effect. Inflation has a positive coefficient of 046964 which shows that any change in the condition or the increasing inflation of 1 percent would affect the change to demand for money at 4.69 percent. Inflation is a variable that are in direct contact or can be felt directly by the people, so it affects the community in determining its objectives in using the money. In addition, inflation in theory have an impact on the demand for money in accordance with the transaction motive keynes theory, the higher the inflation, the need for money is increasing.

Based on research [7] research results showed that inflation in the short and long term has a positive and not

significant effect on the demand for money in Indonesia. This research is in line with this research because in this study the inflation variable also has a positive and not significant effect.

#### *B. Interpretation of the Effect of Interest Rates on Money Demand*

The variable rate of interest on having a significant negative impact. The variable interest rate has a coefficient of -0.231453 which indicates that if there is a change in the interest rate or the increase in interest rates by 1 per cent it will have an impact or changes in the demand for money at 23.14 per cent. This is consistent with the theory of money demand with speculation motive Keynes because interest rates have an impact on the public interest and desire to add or increase the value of the money they have a way to save money in the bank and earn profits. Besides the money owned by the community can also be used by changing the money in stocks, bonds and so forth due to the influence of changes in interest rates in Indonesia.

The results of this study indicate that interest rates have a negative and significant effect on money demand, in line with research conducted by [14] in his research on the analysis of factors that influence money demand with the results of the study show that interest rates, in the long run have a negative and significant effect on money demand in Indonesia

#### *C. Interpretation of the Effect of Economic Growth on Money Demand*

Economic growth variables in this study had a significant negative impact. variable coefficient of economic growth based on the results of regression that is equal to -0.382986, meaning that when a change in the economic growth of 1 percent meals will cause a change of 38.29 per cent of the demand for money. Variable economic growth and a significant negative effect in this study is different from the research [15] research results showed that the gross domestic product has positive and significant impact.

The different which occur in this study due to the presence of the different uses of the data. In this study, the data used is economic growth that is growing up and down. It is different from the situation in money demand continues to increase from year to year. This phenomenon is most noticeable when the 2008 American crises which have an impact on the Indonesian economy. In 2007, Indonesia's economic growth by 6.34 percent down to 6.01 percent, while in the same year the money supply increased from 450 055 billion to 456 787 billion in 2008, while also in 2015 economic growth in Indonesia decreased while the demand for money increases so that the presence of a negative relationship between economic growth and demand for money.

## VI. CONCLUSION

The data in this study have passed the classic assumption test which shows that the data in this study is feasible to be processed. Based on the results of data processing and analysis of research on the factors that affect money demand in Indonesia with the Ordinary Least Squares method shows that the inflation variable has a positive and not significant effect on money demand

in Indonesia. Interest variable has a negative and significant effect on money demand in Indonesia. Economic growth variable has a negative and significant effect on money demand in Indonesia. Recommendations for subsequent research in analyzing the money demand entering a new variable that monetary uncertainty that research on the money demand can be wider so as to assist stakeholders in taking monetary policy in Indonesia.

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