The Influence of Long-term and Short-term Variables on the Oil Prices, Money Supply, Policy Rates, Output Gaps, Rupiah Exchange Rate and Gross Fixed Capital Formation on Inflation in Indonesia

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Abstract:- This study examines the influence of long-term and short-term variables on oil prices, money supply, policy rates, gross fixed capital formation (PMTB), rupiah exchange rate against the dollar, and output gaps on inflation in Indonesia. Indonesia is one of the countries with the highest population in the world as well as one of the countries with the most significant oil wealth in the world. However, Indonesia is still classified as a developing country. One of the indicators in a country's economy is the inflation rate. This study used secondary data from 2006:Q1-2018:Q4 with the Error Correction Model (ECM) analysis method. The result of this study is that the variable oil prices and money supply in the short and long term have a positive and significant effect on Indonesia's inflation. In the short and long term, variable policy rates negatively and significantly impact Indonesia's inflation. Gross fixed capital formation and the output gap in the long and short term have an insignificant positive impact on Indonesia's inflation.

Key-Words: - Oil Price, Inflation, Money Supply, Investment, Exchange Rate, Output Gap.

1 Introduction

Based on Law No. 3 of 2004 concerning, [1], Bank Indonesia has the sole objective of achieving and maintaining rupiah stability. Where the strength of the rupiah contains one of the crucial aspects of the final target of monetary policy in Indonesia, namely price stability. Price stability is reflected in developing a low and stable inflation rate, [2]. Low and stable inflation is a prerequisite for sustainable economic growth to improve many people's welfare.

Inflation increases the price of goods and services in a manner that is familiar and happening. Keep going continuously, [3]. Inflation or stability price is a barometer of growth economy representative actual condition economy of a country. So low and stable inflation becomes a precondition essential in a growth economy Because it will have a continuous impact favorable to a government case, increases Power by the community, passion public For saving and investing, and national income, which in the end improves the well-being public a country.

Whereas high inflation or instability become significant problems in the economy, move st avoided. This is because mark something currency will experience a drop and power buy the currency become that weak direct impact on individuals, the business world budget income, and spending government. The inflation rate more domestically compared with the level of inflation in other countries will also make the level flower domestic real become No competitive, which can put pressure on the value of the rupiah so that the rupiah will depreciate to foreign currency, mainly the dollar, the as the main currency in trading international, [4].

Kindly general level of inflation in developed countries is more stable and controlled compared to relatively developing countries, which are more highly and fluctuate. One developing country with residents of Islam, Indonesia is the largest in the world. After implementing an inflation targeting framework in Indonesia, which is determined by Bank Indonesia as a policy stance monetary in guard movement inflation still on track

achievement target inflation that has set, Indoneia's inflation has become stable Following is the progress of Indonesian inflation.

Indonesian inflation, since In 2006-2018 Indonesia experienced inflation various fluctuations. Indonesia's inflation in 2008, ie reached 9.4 percent caused by the global crisis that hit the world so impact badly in Indonesian. Development inflation in Indonesia identified that there is various causative factor inflation in Indonesia. Islam No known for Inflation, because the currency used is dinars and dirhams that have stable value and justified by Islam as well as according to economists Islam Inflation causes the economy a country to be bad, [5].

Economists believe that stability price or inflation always and wherever it is a phenomenon monetary. he added that the amount of money in circulation is a phenomenon monetary found as reason for inflation. Economists consider that the source of all inflation episodes is high money supply growth. Monetaryists state that t a positive relationship between rate inflation and money supply growth, [6]. Whereas a study from, [7], find that the rate money supply growth negatively affects Indonesia as authority monetary authorized to determine policy Indonesian Monetary in an effort to keep and achieve stable prices. In case of this, since July 2005 Bank Indonesia has implemented inflation targeting framework policies with ethnic group flower policy as a target of its operational. If pressure inflation experience increases, Bank Indonesia responded with an increase level ethnic group flower policy For push inflation still low and stable. When the economy currently experiences sluggishness, Bank Indonesia will do policy expansionary with lower level ethnic group flower policy. Decline ethnic group flower reference lower savings community, improve investment and consumption.

Connection This shows that the level of ethnic group flower is one factor important in affecting rate inflation. The essence, level ethnic group flower is the price that connects the present and the future, [8]. Based on theory quantity and Fisher's equation shows that level inflation changed because the flower changed. Research, [7], states that ethnic groups flower own influence negative to inflation. Whereas a study from [9], found that ethnic group flower influential positive to inflation.

Instability inflation is influential big to the well-being society. High inflation can cause poverty Because opinion real public decreases. According to Nurske poverty in developing countries can cut through caused capital formation lack of capital goods and can be overcome through capital formation. Capital formation is issued capital formation For owned capital goods age usage of more from One year, that covers buildings, machines, facilities transport and factory, and equipment with all types forms of real capital that can be with fast increase benefit effort productive. Capital formation leads to the utilization full existing sources so that can increase national output, however addition Continued capital formation continuously influential to enhancement inflation. Based on [10], states in his research that capital formation positively influences inflation. this shows that movement influences capital formation level inflation in Indonesia.

Development rate neither does Indonesia's inflation regardless of fluctuation mark swaps specifically mark exchange rupiah against the USD dollar as the main currency in trading internationally. Based on [11], explained on the transmission direct mark experienced exchange depreciation will make goods import to be expensive and on its continuation will increase domestic inflation. In the theory of Purchasing Power Parity when happen enhancement inflation so For maintaining equilibrium law of one price exchange rate should go up (value swap depreciated). Fluctuation mark swaps or exchange rates have an influence positive to inflation. this is proven by research from [12], [13] find that the impact of exchange rate on inflation is positive. However, research conducted by [14], finds that the exchange rate negatively impacts inflation.

The movement price world oil also has the potential in affect inflation in Indonesia. Considering that Indonesia is exporting oil raw at a time of importing oil so. Since 2002 changes price oil raw the world becomes a system determination the price material burn For industry. The scarcity cooking oil caused spike price of cooking oil in Indonesia, p This happens policy government yet fully by values economy Islam, [15].

According to [16], the price of oil more will quickly followed by an increase price of products oil, like gasoline and materials fuel used by manufacturers. Ascension price oil responded by the producers with enhancement cost production in form price more consumers tall For goods and services, meanwhile worker will respond enhancement cost life with demand more wages tall, [17]. So if this happen fluctuating to price oil will affect level inflation.

Corner view knowledge economy classifies two causes happening inflation in a economy namely: inflation caused by changes in aggregate or called demand pull inflation and the resulting inflation change in offer aggregate cost push inflation. ,inflation is caused by the existence gap between excess request aggregate in an economy that doesn't capable matched by offers aggregates inside economy. Gaps This is called the output gap. The output gap is the difference between actual outputs and potential output.

Actual output is the actual output value of the economy. In contrast, the potential output is the optimum economic output value that can be considered permanent and sustainable in a period medium without existing shock and pressure inflation. Actual output is the request aggregate while the potential output is as offer aggregate. Positive output gaps are marked with excess demand so that level prices tend to experience significant increases or rate relative inflation tall [18]. In [19], states that positive output gap positively influences Indonesian inflation.

The application of ITF by Bank Indonesia was carried out To orientate target end policy monetary from target double become target single which is stability inflation. Stable inflation is depicted as moving inflation relatively stable Good increase or decrease, and when experiencing change so No too fluctuate so that No cause shock or big shock for the economy a country. All perpetrator economy including the public broad expects stability Inflation. According to [3], turmoil excessive inflation No in accordabyterest period long because instability inflation can distort the level Power competitive economy, reduce efficiency allocation source power, and boost uncertainty for the perpetrator economy.

The magnitude of inflation in the economy makes inflation need controlled to stay awake and stable. Analysis of variables reason inflation is very important For done Because various policy monetary taken based on mark inflation. In research, This variable is money supply, tribe flower policies, PMTB, values exchange rupiah against USD, price oil, and output gaps. It not only influences inflation from the side request aggregate but influences inflation from the side offer aggregate anyway. The variable that becomes a factor from side request aggregate repres is represented by the money supply, rate flower policies, and PMTB, factor from side offer aggregate is influenced by the value exchange rate and oil precedes that the output gap becomes a variable important in respond to inflation. because that, you formulate policy proper monetary For control inflation, important To know How suspected variables influence inflation in period short nor period length and how the stability inflation in Indonesia.

2 Literature Review

Stability price is the central bank goal in guard level price general still low and stable from time to time, that is guard level inflation. Inflation is a trend that increases the prices of goods and services in a manner that generally keeps going continuously in a certain period. Two elements are important in understanding inflation: the first is the goods and services area and the second is Keep going continuously. Only hike prices in a manner common and sustainable called inflation, [3].

Theory about inflation first developed from the known theory of quantity (about money). Quantity theory is something about a causative factor changing level price when an increase the amount of money in circulation is factor determinant or influencing factor increase level of price. based on theory quantity by Irving Fisher that is MV=PT, where the V and T factors were considered constant, change M will influence change P. When the amount of money in circulation is more big compared to the amount of money requested or needed by society, then the level price will escalate, and so will inflation. On the other hand, if the amount of money in circulation is smaller than the amount of money needed by society, then the level price will decrease, and what's called deflation, [20].

Keynesian economists say that theory quantity is invalid because theory assumes the economy in conditions of full employment (capacity economy full). In condition capacity, the economy is yet full, then expansion (increase) of the money supply precisely will increase output (increase growth

economy and opportunity work) and no will increase the price. More carry on said that money is fully neutral, increase in money supply can have influence permanent (permanent) against variables real such as output and rates flower.

There are two problems structural inside developing country economies that can result in inflation. First, acceptance of export inelastic, which is a growth mark more slow exports than other growth sectors. It is caused by deteriorating terms of trade and production goods fewer exports responsive to increase. Slowing down growth export will ensure the ability to import needed items. Often developing countries do policy substitution imports although with high costs and consequences which stuff so it raises inflation. Second, the problem structural developing country's economy is the production of material food in a country that isn't inelastic, that is growth production of food domestically does not as fast increase population and per capita income so the price of food domestically tends to to increase more-tall than increase price goods other. this push emergence demands increased wages from the worker sector next industry will increase cost production and in turn will raise inflation, [20].

3 Methodology

Research type This descriptive and quantitative study uses various theories and related data to study this. Data used is secondary data and the type of time series data (sequential time) starts from the period 2006:Q1-2018:Q4 with variables used in the study This is stability Indonesian prices/inflation as variable bound, money supply, interest rate flower policy (BI Rate and BI 7-days reserve repo rate), PMTB, value exchange (exchange rate) rupiah against dollar USD, price oil, and the output gap as variable free. Following is an explanation variable to be the center analysis to use give direction research (Table 1, Appendix).

The researcher's data analysis method is quantitative with the Error Correction Model (ECM). ECM is a plugging model adjustment for do correct for imbalance. The use of the ECM model occurs in time series data that is not stationary. No data stationary will cause results regression doubt or spurious regression, [21]. By research, this so obtained model equation is as follows:

$$D(INF_t) = \beta_0 + \beta_1 D(JUB_t) - \beta_2 D(SK_t) + \beta_3 D(PMTB_t) + \beta_4 D(KURS_t) + \beta_5 D(HM_t) + \beta_6 D(OG_t) + ECT$$

(1)

Description:

INF	= Inflation/ stability price
β_0	= Intercept
$\beta_{1,...,6}$	= Coefficient from variable independent
JUB	= Amount of money in circulation
SBK	= Interest rate policy
PMTB	= Gross Fixed Capital Formation
EXCHANGE	= Rupiah exchange rate against USD
HM	= Oil Price
OG	= Output gaps
ECT	= Error Correction Term

The first condition is data stationarity. One important draft for time series data is stationary data conditions or no stationary. Data said stationary when the data is close to the average and not affected by time. With stationary data, time series models can said more stable. If an estimate is done with using data that is not stationary then the data considered returns its validity and stability, because results originating regression from data that is not stationary will cause spurious regression. Spurious regression understands that results regression from One time series variable at one or several time series variables tend to produce conclusion results biased estimate. Procedure To determine is the data stationary or Not with method compare mark ADF test statistics with mark critical distribution MacKinnon statistics, where the statistical t value indicates ADF test statistics.

Hypothesis: $H_{0:}$ $\alpha_i = 0$ for all i (there is a unit root, no stationary)

H_a : $\alpha_i \neq 0$ (no there is a unit root, stationer)

If the value absolute more ADF test statistics big from mark critical distribution MacKinnon statistics then H_0 is rejected, in the sense that the observed time series data is stationary. And vice versa, if the mark absolute more ADF test statistics small from mark critical distribution MacKinnon statistic, then H_0 is accepted, which means the time series data is not stationary. Suppose ADF test results show that the observed time series data are not stationary in form levels. In that case, transformation is needed through the

differencing process so that the data becomes stationary. data in the difference form is data that has been lowered with the period before, where form degrees first (first difference) can notated with I(1) then the ADF test procedure is again done when the time series data is observed still not yet stationary in degrees first so return second difference for get stationary data.

Furthermore is the cointegration test. The cointegration test is no test no connection period long between variable free and variable bound. Main purpose of cointegration test is To know is the residual cointegrated stationary or not. If the variable is cointegrated so there is a stable relationship over a period long. On the contrary, If No there is cointegration between variables so implication is that no linkages connection in period long. In research, this is a cointegration test using the Engle-Granger cointegration test. To perform a cointegration test with EG, we must do a regression equation and then get the residual, then, we test this residual using DF and ADF. The results estimate mark statistics DF and ADF later compared to mark critical.

Hypothesis: H_0 = no there is cointegration and Ha = exists cointegration. If the value is absolute more ADF test statistics big from mark critical distribution MacKinnon statistics then H_0 rejected, in the sense of the variables observed each other cointegrated. And vice versa, if the mark absolute more ADF test statistics is small from mark required distribution MacKinnon statistic, then H_0 accepted, which means variables observed no cointegrated.

If the data is not stationary at the level level, but stationary on the level difference and the second variable cointegrated or has connection or balance period long. in term short Possible There is imbalance. That is, that what the offender wants economy is Not yet Of course The same with what happened actually. There is a difference between what is wanted perpetrator economics and what happened so needed exists adjustment. Insert models adjustment For do correct for imbalance called the Error Correction Model (ECM), [21].

4 Result and Discussion

4.1 Research Results

One assumption in the required time series data test fulfilled with the use of ECM model analysis is a test of data stationarity. Deep data stationarity test study Uses unit test root test with use Augmented Dickey-Fuller Test method (ADF test).

Table 2 (Appendix) shows the unit root test using the ADF at level level. By comparing the mark from t- t-count with critical value for each variable. Unit root test results with compare marks from t- count with critical value for each α namely 1 percent, 5 percent, and 10 percent can conclude that variable This ethnic group flower policy (SBK), value exchange (EXCHANGE) and prices oil (HM) is stationary at the level level while v. In contrast, e inflation (INF), the money supply (JUB), and PMTB are not stationary at this level. So th go back to the unit root test on the first difference in each variable and the results can be seen in Table 3 (Appendix).

Table 3 (Appendix) shows the results unit root estimate at the level of the first difference for all variables. Already stationary at order one or can abbreviated becomes I(1) so that the data is free from impudent problem regression (spurious regression). Because that condition is already fulfilled, the stage furthermore can do more data processing.

In research this is a cointegration test done with the cointegration test EngelGranger, that is see the residuals of the equation stationary or not. The results of the Engel-Granger cointegration test are shown in Table 4 (Appendix).

Table 4 (Appendix) shows that variable residual yield inflation, money supply, interest rates flower policies, PMTB, values exchange, price oil, and the output gap are stationary at the level level. this is proven with the- value ADF statistic is bigger from critical value. Thus there is cointegration between variable free and variable bound.

ECM testing is performed For now exists possibility imbalance in period short. ECM test insert adjustment (ECt) to correct imbalance. The estimation results period short shown in Table 5 (Appendix).

From estimation estimated ECM above got equality as follows:

$$D(INF_t) = -0.042334 + 0.047D(JUB_t) - 0.642D(SBK_t) + 0.005D(PMTB_t) + 0.033460D(EXCHANGE_t) + 0.00025D(HM_t) + 0.005D(OG_t) - 0.223EC_t$$

$$(2)$$

Coefficient ECt (-1) is the Error Correction Term (ECt) which indicates speed adjustment (speed of adjustment) ie residual/error speed on term short For corrected change variable Y headed balance on term long. A negative sign (-) on the coefficient ECt indicates valid or valid model specifications. The ECM estimation results show mark coefficient ECt worth negative and significant at 95% significance. That is, terms For ECM estimation are fulfilled and the ECM model is declared valid. Coefficient value ECt (-1) of 0.22 or 22 percent, p This shows speed residual/error adjustments on term short For corrected change variable inflation going to balance on term long by 22 percent.

Based on the results estimate got a mark coefficient R2 determination of 0.570367 which shows that the variables JUB, SBK, PMTB, KURS, HM, and OG explain and influence the INF variable is 57 percent and the remaining 43 percent influenced by other variables that are not entered in models.

The coefficient variable JUB value is positive of 0.047257 and has a probability of 0.0185 smaller than level significance by 0.05, that is the JUB variable has an effect positive and significant to Indonesian inflation and predictability of every increase in growth the amount of money in circulation by 1 percent so will increase inflation of 0.047257 percent.

The coefficient SBK variable has a value negative of 0.642743 and has a probability of 0.0001 smaller than level significance by 0.05, that is SBK variables have an effect negative and significant to Indonesian inflation and predictability of every increase in ethnic group flower policy by 1 percent so will lower inflation of 0.642743 percent.

The coefficient value PMTB variable is positive of 0.005669 and has a probability of 0.7919 bigger than level significance by 0.05, that is PMTB variables have a effect positive but No significrance to Indonesian inflation.

Coefficient EXCHANGE variable value is positive of 0.033460 and has a probability of 0.0283 smaller than the level significance by 0.05, that is EXCHANGE variables have an effect positive and significant to Indonesian inflation and predictability every increase growth mark swap by 1 percent so will increase inflation of 0.033460 percent.

The coefficient HM variable is worth a positive of 0.033460 and has a probability of 0.0473 smaller than level significance by 0.05, which is influential HM variable positive and significant to Indonesian inflation and predictability every increase in growth price oil by 1 percent so will increase inflation of 0.033460 percent. Coefficient the OG variable is worth a positive of 0.005116 and has a probability of 0.9014 bigger than level significance by 0.05, that is the OG variable has a effect positive but No significance to Indonesian inflation.

After knowing how the influence variable is free to variable bound in a period short, then see How the influence variable is free to variable bound in a period long. The estimation results period long shown in Table 6 (Appendix). From estimation estimated ECM above got equality as follows:

$$D(INF_t) = -0.047 + 0.051D(JUB_t) - 0.622D(SBK_t) + 0.007D(PMTB_t) + 0.031D(EXCHANGE_t) + 0.0002D(HM_t) + 0.0081D(OG_t)$$

$$(3)$$

Based on the results estimate period long got a mark coefficient R2 determination as big 0.405202 which show that the variables JUB, SBK, PMTB, KURS, HM, and OG explain and influence the INF variable is 40 percent and the remaining 60 percent influenced by other variables that are not entered in models.

The coefficient variable JUB value is positive of 0.051766 and has a probability of 0.0081 smaller than the level significance by 0.05, that is the JUB variable has an effect positive and significant to Indonesian inflation and predictability of every increase in growth the amount of money in circulation by 1 percent so will increase inflation of 0.051766 percent.

The coefficient SBK variable has a value negative of 0.622986 and has a probability of 0.0002 smaller than the level significance by 0.05, that is SBK variables have an effect negative and significant to Indonesian inflation and predictability of every increase in ethnic group flower policy circulating by 1 percent so will lower inflation of 0.6229863 percent.

The coefficient value PMTB variable is positive at 0.007141 and has a probability of

0.7510 bigger than the level significance by 0.05, that is PMTB variables have an effect positive but No significance to Indonesian inflation. The coefficient EXCHANGE variable value is positive of 0.031515 and has a probability of 0.0470 smaller than the level significance by 0.05, that is EXCHANGE variables have an effect positive and significant to Indonesian inflation and predictability every increase growth mark swap by 1 percent so will increase The inflation of 0.031515 percent.

The coefficient HM variable is worth a positive of 0.000225 and has a probability of 0.0349 smaller than the level significance by 0.05, which is an influential HM variable positive and significant to Indonesian inflation and predictability of every increase in growth price of oil by 1 percent so will increase inflation by 0.000225 percent. Coefficient the OG variable is worth a positive of 0.008171 and has a probability of 0.8502 bigger than the level significance by 0.05, that is the OG variable has a effect positive but No significance to Indonesian inflation.

4.2 Discussion
Influence Growth Amount of Money in Circulation against Indonesian Inflation
The ECM estimation results show that variable growth of the amount of money in circulation in plural short term are long influential positive and significant to inflation in Indonesia. Research results support the proposed hypothesis. This is supported by research conducted by [22], which states that the amount of money in circulation has a positive relationship with the level of inflation in Indonesia. Similar results were also shown in research by [23], that the money supply in Indonesia has a positive relationship to the level of inflation in Indonesia.

In theory quantity of money, a determinant important in level inflation is growth in the amount of money in circulation. When the money supply significantly increases, the amount of money held by the public increases causing behavior public to tend To buy more goods and services. Behavior This increase in requests will goods and services in a manner aggregate compared to with offer aggregate. goods become reduced because utilization resources have reached the maximum or Because production No can Again be improved as soon as possible. For offset increasing

demand increased later effect on level inclined prices increase. Because of inflation shown on change changes in prices and services are increasing, then can concluded that growth in the money supply increases will cause inflation.

Effect of Policy Interest Rates against Indonesian Inflation
In terms short nor period long, the tribe's flower policy has influence negative and significant. Research results supported by research from [19], stated that ethnic groups flower influential negatively and significant to Indonesian inflation. In theory keynes ethnic group flower is price from holding money. That means for the level ethnic group low interested public will more Like holding money, then the bigger the amount of money requested public, later consumption and investment will cause an increase in price.

Change ethnic group flower policy in affect inflation through track ethnic group flower affect ethnic group flower deposits and interest flower credit banking. If the economy currently experiences sluggishness, Bank Indonesia uses policy expansionary monetary through decline of ethnic groups flower For push activity economy. Decline ethnic group flower policy and lower ethnic group flower credit so that requests will be credited from the company and the home ladder will increase. Decline ethnic group flower credit will lower company capital cost for investment. This will increase activity encouraging consumption and investment enhancement prices and cause inflation.

Influence Gross Fixed Capital Investment Growth on Indonesian Inflation
Estimation results show that gross fixed capital investment growth during the period study was influential and positive but insignificant in a period short or long. This is by a study from [10], stated that investmenthas an effect positive but Insignificant. This is due to a period study slowdown in growth capital accumulation which cause slowdown investment, [24].

Influence Exchange Rate Growth against Indonesian Inflation
Research results show that in short and term growth mark swaps own positive and significant influence. This by the proposed

hypothesis. Research results supported by [23], stated that mark swap influences inflation positively. Research [12], also stated that the impact exchange rate against inflation is positive. Development rate Indonesian inflation is not regardless of growth mark swap specifically mark rupiah exchange against USD which is the main currency in trading international.

According to [11], on transmission direct mark experienced exchange depreciation will make goods import expensive. prices goods import from relative abroad become more expensive. If many Indonesian producers use goods imported as material default in production, then cost production will increase. this will responded by the manufacturer'sTo reduce bidding which causes increased prices consumption and cause inflation.

Influence Oil Price Growth against Indonesian Inflation
Estimation results showing in period short and term growth prices oil influential positively and significantly. This by the proposed hypothesis. Research results supported by research from [25], stated that the price of oil is influential positive, and significant. Since 2002 development price of oil raw become a system determination of price material burn For industry. Oil prices for more raw tall will quickly followed by an increase price of products oil, like gasoline and materials fuel used by the manufacturer. Ascension price of oil matters a lot to inflation in Indonesia Because an increased price of oil will cause cost production goes up, because in the production process in Indonesia, materials burn oil Still become the energy main in the production and driving process main transportation carrier in the distribution process, so If happen enhancement price producer oil will raise price For cover increase cost production, besides that the workers also demand more wages tall For increase cost live. this will response by the manufacturer For lower offer so that happen enhancement the next price is inflation. The government must control the market through the Hisbah Institution because the Hisbah Institution will detect early symptoms of market distortion through its supervision, [15].

Influence Output Gaps against Indonesian Inflation
In the short and long term, the output gap variable is influential and significant to inflation in Indonesia. this caused happened balance between side demand and supply. Ability side offer Still can offset increased side demand indicated by some big industries that can utilise source available power in a manner max, so when happen enhancement demand by consumers, producers can also increase the amount of their goods and services production For weigh request, so pressure flagged request with excess demand can be prevented. The ability offer aggregate in respond development requests aggregate resulted development output gap or output gap tends to be narrowed, [26].

Indonesian Inflation Stability Test Results
Stabilitas test results show that Indonesian inflation during period study generally shows that Indonesia's inflation is stable with rule ± 1 stdev (default deviation) determined by Bank Indonesia where is in the long term trend length or within stable limits. Only on some periods just Indonesia 's inflation is outside the limitation of 1 stdev (standard deviation). Summary results testing to Indonesia 's inflation can seen in Table 7 (Appendix).

Stable Interpretation: (1) Stable when inflation is within the limits of ±1.stdev and (2) Unstable if inflation passes the lower bound (< 1.stdev) or upper bound (>1.stdev). Table 7 (Appendix) shows the position of Indonesia's inflation based on limit ±1 stdev (default deviation) set by Bank Indonesia. Viewed from condition inflation that exceeds the target 's undervalued threshold inflation happened only in the 2010 quarter first, p This caused by strengthening rupiah value with enough volatility low and decline Power buy society.

Then if the condition stable occurred in 43 periods of research, starting from the quarter fourth 2006, throughout 2007, 2009 to 2018. Stability inflation can be directed according to the target determined in the period medium. Attempts to guard stability inflation done through the application policy prudent monetary as well as effort stabilization inflation taken in a manner consistent For prevent excessive volatility with an increase the BI Rate in anticipating continuing money supply increases, then still guard adequacy backup foreign exchange For fulfill

fundamental needs of the economy, as well guard fluctuation mark rupiah exchange.

They viewed from condition inflation that exceeds the target (overvalued). inflation occurred in 8 periods of research, namely in the 2006 quarter First until the quarter third, throughout in 2008 and 2009. Instability caused by an increase price of oil raw world during 2005 which had an impact on the increase Indonesian fuel prices up reach 100 percent. Then response to a decrease in the BI rate with a decline ethnic group PUAB interest rate flower savings and rates flower credit increase request particular money supply originate from increase working capital credit and consumption. Also, the influence crisis global finances triggered by the subsequent subprime mortgage case impacted on the decline mark Indonesia 's exports through significant and ongoing hurry up and up import consequence activity still economy tall cause mark the rupiah exchange rate against the USD depreciated.

5 Conclusion

The effect of positive and significant growth in the money supply on inflation in Indonesia, so the money supply needs to be controlled and controlled strongly through monetary policy. In addition, the change of the rupiah exchange rate against the USD and the development of oil prices also affect inflation in Indonesia positively and significantly, so an exchange rate policy is needed to maintain exchange rate volatility so that rupiah exchange rate depreciation does not occur. Then the government's role is required to carry out control functions in the event of changes in world crude oil prices. The causes of inflation, both in terms of demand-pull and cost-push inflation, affect inflation, so good cooperation and coordination between Bank Indonesia and the government are needed in making policies so that a low and stable inflation target can be achieved.

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APPENDIX

Table 1. Definitions operational Variable

Variable	Source	Measure Scale
Inflation	Bank Indonesia	Inflation is a tendency to increase prices of goods and services in general and continuously within a certain period.
Amount of Money in Circulation	Bank Indonesia	The money supply is the amount in circulation held by the public. The money supply used in this study is the money supply in the narrow sense, namely M1. M1 includes currency held by the public and demand deposits, namely demand deposits denominated in rupiah.
Policy Interest Rate	Bank Indonesia	The policy interest rate is the interest rate that reflects the monetary policy stance or stance stipulated by Bank Indonesia and announced to the public. The interest rates used are the BI Rate and the BI 7-day Reserve Repo Rate.
Gross Fixed Capital Formation	Bank Indonesia	PMTB is the formation of capital issued for capital goods with a useful life of more than one year, including buildings, machinery, transportation and factory facilities, and equipment with all kinds of real capital forms that can quickly increase productive benefits. PMTB data used in this study is gross fixed capital formation growth data with a base year of 2010.
Exchange rate	Bank Indonesia	The exchange rate (exchange rate) is the price level agreed by residents of the two countries to trade with each other, [8]. The exchange rate in this study is the rupiah exchange rate against the USD, because the dollar is the main currency in international trade, [4].
Oil Prices	Energy Information Administration	Oil price data in this study is crude oil price data. The price of oil in this study is the price of West Texas Intermediate (WTI) oil. WTI as a reference for global oil prices used by Indonesia.
Output Gaps	Bank Indonesia	Output gap is defined as the difference between actual output and potential output. Actual output is the real economic output value, while po. In contrast, output is the optimum economic output value that can be considered permanent and sustainable in the medium term without any shocks and inflationary pressures. The actual output data is real GDP with a base year of 2010. Then the potential output data is real GDP with a base year of 2010 whs then calculated using the Hodrick-Prescott Filter (HPF) method. Output gap data is obtained from reducing actual output with potential output divided by potential output multiplied by 100 percent to equate the units of all variables.

Table 2. Test Level Level Stationary

Variable	ADF t-statistics	Critical Values			Results	Conclusion
		1%	5%	10%		
INF	-2,584	-3,565	-2,919	-2,597	Accept H_0	Not Stationary
JUB	-1,802	-3,565	-2,919	-2,597	Accept H_0	Not Stationary
SBK	-3,733	-3,565	-2,919	-2,597	Reject H_0	stationary
PMTB	-2,648	-3,565	-2,919	-2,597	Accept H_0	Not Stationary
EXCHANGE RATE	-6,231	-3,565	-2,919	-2,597	Reject H_0	stationary
HM	-6,912	-3,565	-2,919	-2,597	Reject H_0	stationary
OG	-3,275	-3,565	-2,919	-2,597	Accept H_0	Not Stationary

Source: EViews 10

Table 3. Stationary First Difference Test

Variable	ADF t-statistics	Critical Values			Results	Conclusion
		1%	5%	10%		
INF	-4,947	-3,577	-2,925	-2,600	Reject H_0	Stationary
JUB	-5,647	-3,588	-2,929	-2,603	Reject H_0	Stationary
SBK	-4,083	-3,568	-2,921	-2,598	Reject H_0	Stationary
PMTB	-25,294	-3,574	-2,923	-2,599	Reject H_0	Stationary
EXCHANGE RATE	-5,344	-3,584	-2,928	-2,602	Reject H_0	Stationary
HM	-6013	-3,581	-2,926	-2,601	Reject H_0	Stationary
OG	-4,173	-3,584	-2,928	-2,602	Reject H_0	Stationary

Source: EViews 10

Table 4. Cointegration Test

Variable	ADF t-statistics	Critical Value			Results	Conclusion
		1%	5%	10%		
ECT	-2,890	-2,611	-1,947	-1,612	Reject H_0	Cointegrated

Source: EViews 10

Table 5. Estimation Period Short-Term

Variable	Coefficient	t- Statistics	Probability	Information
C	-0.042334	-0.546462	0.5876	-
D(JUB)	0.047257	1.783667	0.0185	Significant
D(SBK)	-0.642743	-4.349858	0.0001	Significant
D(PMTB)	0.005669	0.265498	0.7919	Not Significant
D(EXCHANGE)	0.033460	2.269642	0.0283	Significant
D(HM)	0.000225	2.066461	0.0473	Significant
D(OG)	0.005116	0.041067	0.9014	Not Significant
ECT(-1)	-0.223467	-2.300127	0.0264	Significant
R-Squared	0.570367			
f-Statistics	5.455463			

Source: Eviews

Table 6. Estimation Test Long-Term

Variable	Coefficient	t- Statistics	Probability	Information
C	-0.047700	-0.588014	0.5595	-
D(JUB)	0.051766	1.870131	0.0081	Significant
D(SBK)	-0.622986	-4.031311	0.0002	Significant
D(PMTB)	0.007141	0.319378	0.7510	Not Significant
D(EXCHANGE)	0.031515	2.043872	0.0470	Significant
D(HM)	0.001199	3.340715	0.0349	Significant
D(OG)	0.008171	0.190024	0.8502	Not Significant
R-Squared	0.405202			
f-Statistics	4.995787			

Source: EViews 10

Table 7. Inflation Stability Test

Variable	Undervalued Period	Stable Period		Overvalued Period	
Inflation Indonesia 2006:Q 120018Q4	2010 (Q1)	2006	(Q4)	2006 (Q 1,Q 2,Q3)	
		2007	(Q 1,Q 2,Q3,Q4)	2008	(Q 1,Q 2,Q3,Q4)
		2009	(Q 2,Q 3,Q4)	2009	(Q1)
		2010	(Q 2,Q 3,Q4)		
		2011	(Q 1,Q 2,Q3,Q4)		
		2012	(Q 1,Q 2,Q3,Q4)		
		2013	(Q 1,Q 2,Q3,Q4)		
		2014	(Q 1,Q 2,Q3,Q4)		
		2015	(Q 1,Q 2,Q3,Q4)		
		2016	(Q 1,Q 2,Q3,Q4)		
		2017	(Q 1,Q 2,Q3,Q4)		
		2018	(Q 1,Q 2,Q3,Q4)		

Source: EViews 10

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