SSRG International Journal of Economics and Management Studies
ISSN: 2393 – 9125 / https://doi.org/10.14445/23939125/IJEMS-V7I5P105

Volume 7 Issue 5, 27-34, May, 2020

Review Article

How do the Causality of Inflation and Government Expenditure in Indonesia?

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Received Date: 21 March 2020
Revised Date: 28 April 2020
Accepted Date: 14 May 2020

Abstract *- This research aims to analyze the causality and cointegration relationship between inflation and government expenditure in Indonesia. By using time-series data from 1998-2017 sourced from Bank Indonesia, the used method Granger Causality test. And the results showed that government expenditure and inflation were stationary on the 1st difference. A balanced relationship occurs in the long term. And between inflation and government expenditure, only a one-way causality relationship occurs. Government spending affects inflation but not vice versa. High country spending will result in money falling into the market in many quantities. This will interfere with the stability of the price of goods and services in the market, and this is what characterizes the rate of inflation in Indonesia during the research period. It is expected that the government to maintain price stability by suppressing the inflation rate as an effort to implement state expenditure only on the productivity of output to sustainable development.*

Keywords *— Exchange rate, GDP, Government expenditure, Inflation, Interest rate, Investment.*

I. INTRODUCTION

Economic development in a country is essentially aimed at providing welfare for the whole life of society. A government can be said to succeed when the government can handle problems that occur in the country in the field of economy.

In each economy, a country has always wanted to create a higher level of economic well-being by reducing the unemployment rate. And the country also wants to create a better economy (Sukirno, 2011). However, the use of production factors that are approaching production capacity in the economy can pose another economic problem that is inflation. Countries that open a trading lane with others often respond to inequality issues in their payout balance where more flows are coming out of the incoming flow.

Inflation is an economic problem that can not be ignored because inflation can have a very broad impact. Therefore inflation is the main target of government policy. High inflation is very important to note because of its impact on the economy, which can lead to instability, slowing economic growth, increasing unemployment, and decreasing the value of the rupiah currency.

Inflation can mean a continual increase in prices and an increase in prices that occur in all groups of goods and services (Pohan, 2008). It may even be possible to increase the unison of goods and services, the most important of which is the general price of goods and services occurring continuously over a certain period.

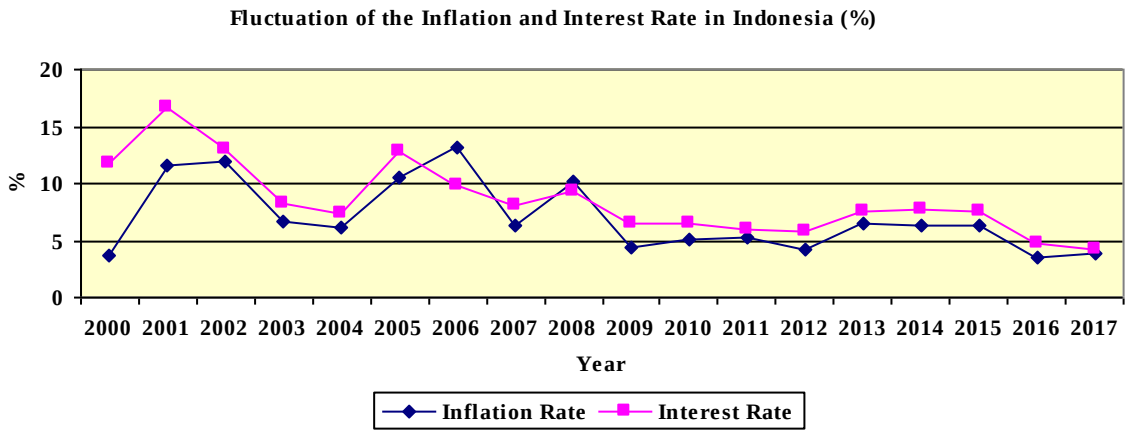

Fig. 1 Fluctuation of the Inflation and Interest Rate in Indonesia (2000-2017)
Source: Bank Indonesia

From Fig.1, The graph shows data on inflation growth and the fluctuating interest rate from 2000 to 2017. In inflation growth year 2000 to 2001 increase is 3.68% and 11.5%. The cause of the high rate of inflation, in addition to the less conducive domestic security triggered by government policies that raise FUEL prices, electricity rates, and telephones.

But in the year 2002, inflation increased by a very high rate of 11.9%. This is due to the increase in fuel prices of fuel which is a major factor in triggering the high rate of inflation in the year 2002. The high price of oil in the international market caused the government to limit the number of FUEL subsidies. In 2016 the inflation rate decreased by up to 3.52% to 2017 inflation at the lowest 17 years.

At interest rates in the year, 2000 to 2001 can be said to be a high number with the number 11.71%. But in the year 2001, the value of interest rates reached the highest value with a figure of 16.59%. This happened due to the impact of the influence of inflation occurring in the year 2001. And with his year-to-year number of interest rate figures that sometimes rise and fall to reach 4.25% in 2017.

Figure 2 above shows GDP growth in the very small year 2000 reaches 1,389,770 billion. This is due to the increase in FUEL prices which is a major factor in declining GDP. Subsequently, the year of GDP growth rate also increased the number of numbers in the billion to 2017 GDP in 3,588,797 billion.

The above government expenditure progress Data is explained that there is an increase in government expenditure that was initially low in the year 2000 with the number 221,466 in billions of rupiah with an increase of years that the number of government expenditure figures increasingly increased with the state BUDGET in its respective areas to build infrastructure in these regions and 2017 reach 3,400,803 billions of rupiah.

The investment amount in the year 2000 is the very lowest, so it reaches the number 275,881 billion. This is due to the lack of capital investment made by investors both domestically and abroad. And the highest investment figures reached 2,623,510 billion in 2017.

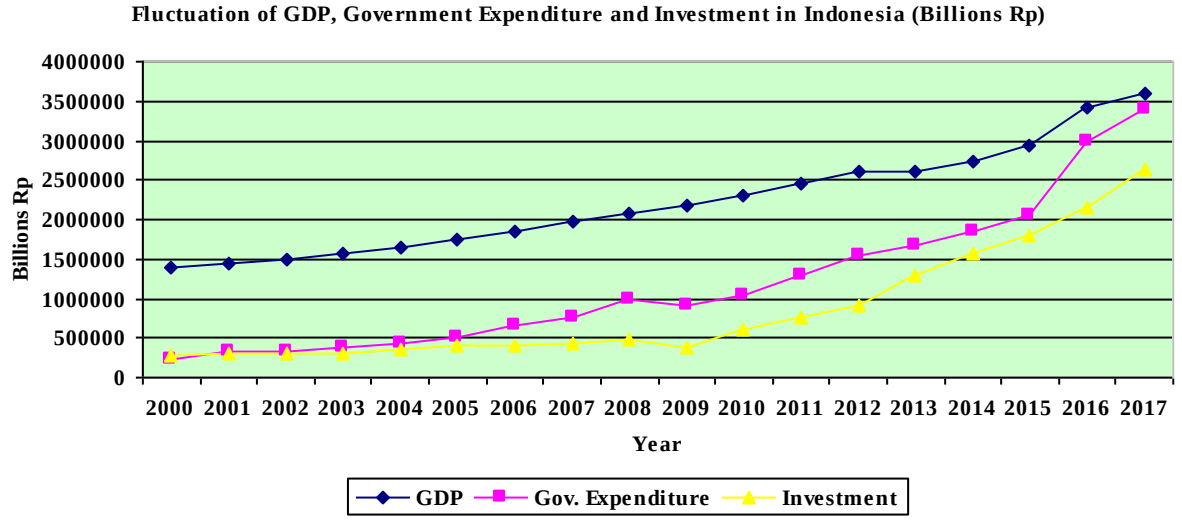

Fig. 2Fluctuation of GDP, Government Expenditure and Investment in Indonesia (2000-2017)
Source: Bank Indonesia

In inflation targeting, the monetary policy framework is carried out with an approach based on monetary magnitude price. Policies with a monetary approach can influence the effectiveness of control of inflation rates on interest rates and exchange rates (Kharie, 2006). Analysis of interest rate roles is achieved by analyzing inflation response, GDP, and some other economic variables. So the purpose of this research is to analyze how the causality between inflation and government expenditure in Indonesia.

II. METHOD

By using time series data sourced from Bank Indonesia from 2000 to 2017, the research method used in this research article is the Granger Causality test and Johansen Cointegration test. The method stages are like the following:

A. Unit Roots Test

A collection of data is said to be stationary if the average value and variant of the data time series does not undergo a systematic change over time and its variation is constant (Nachrowi, 2006). Time-series Data is often not stationary, thus causing a questionable regression result often called a spurious regression. A sunken regression is a situation where regression results show statistically significant regression coefficient results and a high value of coefficient determination but the relationship between variables inside the model is not interconnected. For the resulting regression to be unambiguous, we can convert

nonstationary data to stationary data. Some stationary tests performed are unit root tests.

Test the root unit now famous is the Dickey-Fuller test because the test is very simple. The basis of the DF (Dickey-Fuller) unit root test is the data time series that follows this AR (1) pattern. The procedure for determining whether stationary data is by comparing the statistic value of the ADF with the critical value of the distribution statistic Mackinnon. If the absolute statistic value of the ADF is greater than the critical value, then the observed data indicates stationary, and if otherwise the absolute value statistic the ADF is smaller than the critical value, then one data is not stationary.

No stationers can be used as stationery data. The way is to test the data station at the level of data differentiation that is also known as Test degree integration. So data that is not stationary at a level will be tested again at 1st difference until it generates stationary data. In testing whether the data contains a unit root or not, Dickey-Fuller suggests performing the regression of the following models (Widarjono, 2013):

$$\Delta Y_t = \theta Y_{t-1} + e_t \quad (1)$$

$$\Delta Y_t = \beta_1 + \theta\ Y_{t-1} + e_t \quad (2)$$

$$\Delta Y_t = \beta_1 + \beta_2 t + \theta\ Y_{t-1} + e_t \quad (3)$$

Where: T is a variable trend time. The difference in equations (1) with the other two regression is inserting constants and variable time trends. In each model, if the Data time series contains a root unit which means the data is not stationary, the hypothesis of the nation is Ø = 0, while the alternative hypothesis is Ø < 0, which means stationary data. The procedure to determine whether the data is stationary or not by comparing the value of the DF statistic with the critical value, which is the statistical distribution of τ. The DF value is indicated by the statistical T value of the ØYt-1 coefficient. If the sum of the higher DF statistics is greater than the critical value, then we reject the zero hypothesis so that the observed data is stationary. Conversely, data is not stationary if the DF statistical value is smaller than the critical value of the τ statistical distribution.

One of the assumptions of equations (1) and (2) is that the residual et is not interconnected. In many cases, residual et is often associated and contains autocorrelation elements. Dickey-Fuller then develops the unit root test by incorporating an autocorrelation element in its model, which is then known as the Augmented Dickey-Fuller (ADF). In practice, the ADF test is used to detect whether the data is stationary or not. The ADF test formulation is as follows:

$$\Delta Y_t = \gamma Y_{t-1} + \sum_{t=1}^{n} \beta \Delta Y_{t-1+1} + e_t \quad (4)$$

$$\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + \sum_{t=1}^{n} \beta \Delta Y_{t-1+1} + e_t \quad (5)$$

$$\Delta Y_t = \alpha_0 + \alpha 1T + \gamma Y_{t-1} + \sum_{t=1}^{n} \beta \Delta Y_{t-1+1} + e_t \quad (6)$$

where:
Y : observed variables
Yt : $Y_t - Y_{t-1}$
Q : time trend
n : lag

The procedure to know the stationary data or not by comparing the statistical value of the ADF with the critical value of Mac Kinnon distributions. The value of the ADF statistics is indicated by the statistical value T coefficient of γ-1 in the equation (4-6). If the absolute value of the ADF statistics is greater than the critical indigo, then the observed data indicates stationary, and if the opposite statistics of the ADF are smaller than the critical value, then the data is not stationary. The key point in the ADF test is to determine the length of inaction (Pratomo, 2007). The length of the inaction can be determined based on AIC (Akaike Information Criterion) or SC (Schwarz Information Criterion) criteria. The lower AIC and SIC values of a model will show the most appropriate model.

B. Johansen Cointegration Test

A regression using time series data that is not stationary will most likely result in a Lancung regression. A spurious regression occurs if the coefficient of determination is quite high, but the relationship between independent variables and dependent variables has no meaning. This happens because the relationship between the two, that is, the Data time series, only shows the trend. In general, it can be said that if the time series Y and X data is not stationary at the level, but it becomes stationary at the same difference that is Y is I (d) and X is I (d) where D is the same level of differentiation then both data are cointegrated (have relationships in the long term). Cointegration test is a wide range; however, for tests with some of the commonly used test vectors, the Johansen method (Pratomo, 2007).

Once it is known that all the variables are stationary, then the next will be tested whether there is a long-term balance relationship between those variables. Granger (1988) explains that if two variables integrate at one degree, I (1), and are integrated, then there is at least one direction of the causality of Granger. Based on the representation theorems Granger (Engle, Granger, 1987), it is stated that if a vector n I (1) of the timing of the data sequential Xt is integrated with the vector of cointegration, then there is a representation of the error correction or mathematically can be expressed by:

$$A(L).X_t = -\gamma\alpha X_{t-1} + \beta(L)\,\varepsilon_t \quad (7)$$

Where: A (L) is a polynomial matrix in the operator lag with a (0) = I; γ is (nx1) a constant vector that is not equal to zero; β (L) is a polynomial scale in L, And εt are vectors of white noise (error) variables. In the short term, deviation from the long-term balance (α ' X = 0) will affect the Xt

changes and will adjust back towards the balance. The cointegration test will be used using the Johansen-Juselius cointegration test Procedure (1990). In this paper, the Johansen-Juselius procedure was applied to the system of the Bivariate equation of the exchange rate and the export volume as the dependent variable in the form of an autoregressive vector (AR) covering up to ρ lag of the Xt variable:

$$Xt : \Pi 1Xt\text{-}1 + \Pi 2Xt\text{-}2 + ... \Pi pXt\text{-}p + \varepsilon t \quad (8)$$

Where: Xt is a vector (2X1) from I (1); Πt is a (2x2) matrix parameter and εt ~ I N (0, ε). The long-term balance is determined by:

$$\Pi^* X = 0 \quad (9)$$

Where Π * is a long-term matrix coefficient determined by:

$$I - \Pi 1 - \Pi 2 - ..... - \Pi p = \Pi^* \quad (10)$$

Rank (R) of Π * Specifies the number of vector cointegration that exists between variables. In the case of Bivariate cointegration, there if R equals 1. If Π matrix is the result of two matrices (2x1), or: Π = Γα '. Then, if the variable is integrated, the unique cointegration vector is α, and the coefficient of γ indicates the adjustment speed towards the balance. The hypothesis to be tested is in the system equation at least one vector cointegration between inflation and government expenditure. Johansen suggested two tests to determine the many vector cointegration. The two tests are the trace test and the maximum eigenvalue statistic. Johansen trace statistic is also known as the LR (Likelihood Ratio) statistical test to test the Ho: R < 1 hypothesis against Ha: R = 0, which is formulated in the equation:

$$\text{Trace test } (Qr) = -n\varepsilon \ln(1-\lambda i) \quad (11)$$

Where λi is a squared correlation between the Xt-P and Xt which is a correction to the influence of the lagged process differences variable X, alternative test cointegration of Johansen is to use maximum eigenvalue statistic which can be calculated from trace statistic, namely:

$$Q_{max} = -n\ln(1 - \lambda i) = Q_r - Q_{r+1} \quad (12)$$

Application of cointegration test models in this study:

$$\Delta Xij_t = \sum_{t=1}^{3} \Gamma_t \Delta 1 Xij_{t-1} + \Pi 1 Xij_{t-k} + BYj_t + BNj_t + BDij_t + BPj_t + BERj_t + \varepsilon_t \quad (13)$$

where:

$$\Pi = \sum_{t-1}^{3} A_i - 1 \quad dan \quad \Gamma = -\sum_{j=1+1}^{3} A_j$$

There is no cointegration based on the Trace Statistic and maximum Eigenvalue tests. When the Trace Statistic and maximum Eigenvalue calculated values are greater than the critical values, there is a cointegration in several variables. Otherwise, the Trace Statistic and maximum Eigenvalue count values are smaller than the critical values, and there is no cointegration. The critical value used is developed by Osterwald-Lenum (Widarjono, 2013).

C. Granger Causality Test

The causality test aims to see the reciprocal relationship (Pratomo, 2007) between the Inlasi variable, interest rate, GDP, investment, government expenditure, and exchange rate in Indonesia to be known to both variables statistic influence each other (two-way relationships) or only have a one-way relationship or there is no connection (not mutually affecting).

Table 1. The Decision-Making Criteria Are:

If the probability value of the Granger causality test IR is < 0.05 and INF > 0.05; GDP < 0.05 and INF > 0.05; INV < 0.05 and INF > 0.05; GE < 0.05 and INF > 0.05; ER < 0.05 and INF > 0.05; Then there is one-way causality relationship on variable X to variable Y, so H_a is rejected and H_0 accepted or in other words the hypothesis is rejected.
If the probability values Granger causality test IR > 0.05 and INF < 0.05; GDP > 0.05 and INF < 0.05; INV > 0.05 and INF < 0.05; GE > 0.05 and INF < 0.05; ER > 0.05 and INF < 0.05; Then there is one-way causality relationship on variable X to variable Y, so H_a is rejected and H_0 accepted.
If the probability value of the Granger causality test IR > 0.05 and INF > 0.05; GDP > 0.05 and INF > 0.05; INV > 0.05 and INF > 0.05; GE > 0.05 and INF > 0.05; ER > 0.05 and INF > 0.05; Then there is no one-way causality relationship with the other between variable X to variable Y, so H_a is rejected and H_0 is accepted or the hypothesis is rejected.
If the value of the Probabilita Granger causality test IR < 0.05 and INF < 0.05; GDP < 0.05 and INF < 0.05; INV < 0.05 and INF < 0.05; GE < 0.05 and INF < 0.05; ER < 0.05 and INF < 0.05; Then there is a two-way causality relationship from variable X to variable Y, so H_a is accepted and H_0 is rejected and in other words the hypothesis is accepted.
where: IR = interest rate INF = inflation rate GDP = gross domestic product INV = investment GE = government expenditure ER = exchange rate

III. RESULT AND DISCUSSION

The rate in this study is the exchange rate of rupiah currency against foreign currency, one of the currencies of foreign countries is the dollar that is calculated annually and measured in rupiah converted in logarithm. In this study, exchange rate data were obtained from 2000 until 2017. The following rate data developments:

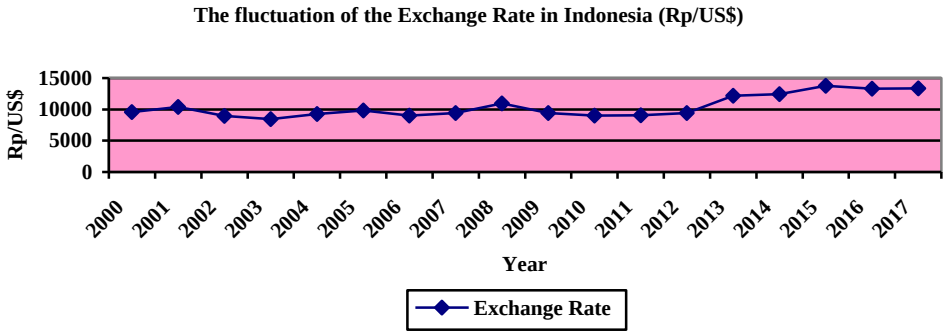

Fig. 3 The fluctuation of the Exchange Rate in Indonesia (2000-2017)

Source: Bank Indonesia

In Figure 3, the rate of rupiah fluctuations against the dollar period 2000-2017. The rate of experiencing that was too weakening depreciated was in 2015, and the most appreciating exchange rate was in 2003. The fluctuation of the exchange rate is in the stability of the domestic currency and other macroeconomic variables included in government expenditure or state spending.

Some research gaps inconsistencies about the occurrence of inflation in Indonesia, as well as the author's motivation to lift back with different approaches such as causality and long-term balance approaches. The increase in Indonesian tribes tends to be followed by a decrease in price levels and appreciation of nominal exchange rates but does not have a significant impact on the output. The impact of monetary policy in the country of Indonesia, where the results of its research mention monetary policy ability in influencing economic activity and inflation, are still limited. Interest rates remain weak in influencing the output gap, but there is a small influence of the interest rate shock on the price. Adrian, Tobias, and Shin (2009) stated monetary policy through an effective price affects the economy.

In inflation targeting, the monetary policy framework is carried out with an approach based on monetary magnitude price. Policies with a monetary approach can influence the effectiveness of control of inflation rates on interest rates and exchange rates (Kharie, 2006). Analysis of interest rate roles is conducted by analyzing GDP inflation response and several other economic variables.

A. Unit Roots Test

A station test can be done with a unit root test developed by Dickey-Fuller. An alternative to the Dickey-Fuller test is an Augmented Dickey-Fuller (ADF) that attempts to minimize autocorrelation. This test contains regressions of the first differentiated data sequential time against such variable lag, lagged difference terms, constants, and variable trends. To view the station using the DF or ADF test is done by comparing the critical value of Mc Kinnon at a significance level of 1% with the value Augmented Dickey-Fuller. Data that is not stationary can lead to a reflective regression, so it is necessary to do the data stationarity test. The research began with stationary tests on the variables used in the study, namely: the results of the data for all variables: inflation (INF), interest rate (IR), gross domestic product (GDP), investment (INV), Government Expenditure (GE), and exchange rate. The results of the data stationarity test for all the termination variables are as follows:

Table 2. ADF-test in Level

Variable	ADF	Critical value Mc Kinnon on significance level 1%	Prob.	Description
INF	-1.522640	-3.699871	0.5072	not stationary
IR	-1.116492	-3.679322	0.6955	not stationary
GDP	-1.458667	-3.679322	0.5398	not stationary
INV	-0.573630	-3.679322	0.8617	not stationary
GE	-0.414350	-3.679322	0.8939	not stationary
ER	-1.365471	-3.689194	0.5845	not stationary

Source: data processed (2020); EViews v.10

Table 3. ADF-test in 1st Difference

Variable	ADF	Critical value Mc Kinnon on significance level 1%	Prob.	Description
INF	-7,924502	-3.699871	0.0000	stationary
IR	-7.267124	-3.689194	0.0000	stationary
GDP	-5.544266	-3.689194	0.0001	stationary
INV	-5.034990	-3.699871	0.0004	stationary
GE	-5.945957	-3.689194	0.0000	stationary
ER	-5.733802	-3.689194	0.0001	stationary

Source: data processed (2020); EViews v.10

The results of the Augmented Dickey-Fuller test on table 2, indicate that all variables are not stationary at a level or in actual data, as demonstrated by the Augmented Dickey-Fuller statistical value of the test that is below Mc Kinnon's critical value at a degree of trust of 1 percent and exceeds 1%, 5%, and 10%.

For inflation variables (INF) on the level that is the value of Augmented Dickey-Fullerteststatistik 1.52 < Critical value of MC Kinnon 3.69 (1%), 2.99 (5%), 2.62 (10%) and probability 0.50 > 0.01. For a variable interest rate (IR) level that is the value of Augmented Dickey-Fuller test statistic 1.11 < Critical value of MC Kinnon 3.67 (1%), 2.96 (5%), 2.62 (10%) and probability 0.69 > 0.01. For the gross domestic (GDP) product variable on the level i.e. Augmented Dickey-Fuller test statistic 1.45 < Critical value of MC Kinnon 3.67 (1%), 2.96 (5%), 2.62 (10%) and probability 0.99 > 0.01. For investment variables (INV) in the level that is the value of Augmented Dickey-Fuller test statistic 0.57 < Critical value of MC Kinnon 3.67 (1%), 2.96 (5%), 2.62 (10%) and probability 0.86 > 0.01. For the Government Expenditure variable (GE) on the level that is the value of Augmented Dickey-Fuller test statistic 0.41 < Critical value of MC Kinnon 3.67 (1%), 2.96 (5%), 2.62 (10%) and probability 0.89 > 0.01. For the rate variable (ER) on the level that is the Augmented Dickey-Fuller test statistical value of 1.36 < Critical value of MC Kinnon 3.68 (1%), 2.97 (5%), 2.62 (10%) and probability 0.58 > 0.01.

Because the data is not stationary at the level, then the completion is to create a new variable using First Difference (called DINF, DIR, DGDP, DINV, DGE, DER) and then retest with the ADF test. Test result Unit Roots test on 1st Difference visible variable inflation, interest rate, gross domestic product, investment, government expenditure, and exchange rate are already stationary, as demonstrated by the value of Augmented Dickey-Fuller test statistics on table 3 already greater than the value of Mc. Kinnon on the degree of trust 1 percent. And for variable inflation (INF) IE, the value of Augmented Dickey-Fuller test statistics 7.92 > critical value of MC Kinnon 3.69 (1%), 2.97 (5%), 2.62 (10%) and probability 0.0000 < 0.01. Interest rate variable (IR) is the value of Augmented Dickey-Fuller test statistics 7.26 > critical value of MC Kinnon 3.68 (1%), 2.97 (5%), 2.62 (10%) and probability 0.0000 < 0.01. The gross domestic product variable (GDP) is, the value of Augmented Dickey-Fuller test stats 5.54 > The critical value of MC Kinnon 3.68 (1%), 2.97 (5%), 2.62 (10%) and probability 0.0001 < 0.01. Investment variables (INV) are, the value of Augmented Dickey-Fuller test stats 5.03 > The critical value of MC Kinnon 3.69 (1%), 2.97 (5%), 2.62 (10%) and probability 0.0004 < 0.01. Government expenditure variable (GE) is the value of Augmented Dickey-Fuller test statistic 5.94 > The critical value of MC Kinnon 3.69 (1%), 2.97 (5%), 2.62 (10%) and probability 0.0000 < 0.01. Variable-rate (ER) IE, the value of Augmented Dickey-Fuller test stats 5.73 > The critical value of MC Kinnon 3.68 (1%), 2.97 (5%), 2.62 (10%) and probability 0.0001 < 0.01.

B. Johansen Cointegration Test

To find out if there is a long-term balance, a cointegration test is performed. The cointegration test results are displayed as follows:

Table 4. Johansen Cointegration test

Sample (adjusted): 1990 2017 Included observations: 28 after adjustments Trend assumption: Linear deterministic trend Series: LOGINF LOGGE LOGINV LOG ER LOGGDP LOGIR Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.839018	110.6250	95.75366	0.0032
At most 1	0.640625	59.48410	69.81889	0.2515
At most 2	0.419295	30.82921	47.85613	0.6756
At most 3	0.321048	15.61085	29.79707	0.7393
At most 4	0.142634	4.769094	15.49471	0.8328
At most 5	0.016300	0.460155	3.841466	0.4976
Trace test indicates 1 cointegrating eqn(s) at the 0.05 level *denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values				

Source: data processed (2020); EViews v.10

From the Cointegration test in Table above, it is known that there is 1 codified equation (such as captions that reside at the bottom of the table) at a 5 percent level, which means that it occurs and has a long term balance relationship in this research variable. From the cointegration test, it is proven that the variables are cointegrated in the long term.

C. Granger Causality Test

It has been described in the previous section that this is the purpose of the Granger causality to see how the relationship patterns between variables. According to the research question, the pattern of the analyzed relationship is limited to the pattern of the relationship between INF, IR, GDP, INV, GE, and ER.

Table 5. Granger Causality Test

Pairwise Granger Causality Tests Sample: 1988 2017 Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LOGGE does not Granger Cause LOGINF	28	3.25778	0.0568
LOGINF does not Granger Cause LOGGE		0.26268	0.7713
LOGINV does not Granger Cause LOGINF	28	2.23020	0.1302
LOGINF does not Granger Cause LOGINV		5.51035	0.0111
LOGER does not Granger Cause LOGINF	28	5.57300	0.0106
LOGINF does not Granger Cause LOGER		1.99730	0.1586
LOGGDP does not Granger Cause LOGINF	28	1.94087	0.1664
LOGINF does not Granger Cause LOGGDP		8.27447	0.0020
LOGIR does not Granger Cause LOGINF	28	4.22334	0.0274
LOGINF does not Granger Cause LOGIR		1.69819	0.2052
LOGINV does not Granger Cause LOGGE	28	1.37801	0.2721
LOGGE does not Granger Cause LOGINV		4.89163	0.0170
LOGER does not Granger Cause LOGGE	28	3.26777	0.0564
LOGGE does not Granger Cause LOGER		0.30884	0.7373
LOGGDP does not Granger Cause LOGGE	28	0.52405	0.5990
LOGGE does not Granger Cause LOGGDP		2.44458	0.1090
LOGIR does not Granger Cause LOGGE	28	0.59489	0.5599
LOGGE does not Granger Cause LOGIR		6.39691	0.0062
LOGER does not Granger Cause LOGINV	28	5.65764	0.0100
LOGINV does not Granger Cause LOGER		0.72686	0.4942

LOGGDP does not Granger Cause LOGINV LOGINV does not Granger Cause LOGGDP	28	0.22408 0.67917	0.8010 0.5169
LOGIR does not Granger Cause LOGINV LOGINV does not Granger Cause LOGIR	28	0.25968 3.52766	0.7735 0.0461
LOGGDP does not Granger Cause LOGER LOGER does not Granger Cause LOGGDP	28	0.58749 12.2637	0.5638 0.0002
LOGIR does not Granger Cause LOGER LOGER does not Granger Cause LOGIR	28	0.02333 10.9048	0.9770 0.0005
LOGIR does not Granger Cause LOGGDP LOGGDP does not Granger Cause LOGIR	28	1.84959 2.91050	0.1799 0.0747

Source: data processed (2020); EViews v.10

The results of causality (Granger causality test) can be explained as follows:

Government spending and inflation have a one-way relationship, as government spending affects inflation with a probability value of 0.0568, but not vice versa, and inflation does not affect government spending marked with the value of probability 0.7713.

Investment and inflation have a one-way relationship because investment does not affect inflation with the value of probability 0.1302, but inflation affects investments marked with the value of probability 0.0111.

The exchange rate and inflation have a one-way relationship because the exchange rate affects inflation with a value of the probability of 0.0106, but inflation does not affect the exchange rate with a probability of 0.1586.

GDP and inflation have a one-way relationship because GDP does not affect inflation with a probability value of 0.1664, but inflation affects GDP with the value of the probability of 0.0020.

Interest rates and inflation have a one-way relationship, as interest rates affect inflation by the value of probability 0.0274, but inflation does not affect interest rates with probability 0.2052.

Government investments and expenditures have a one-way relationship because investments do not affect government spending by the probability of 0.2721 value, but government spending affects investments with a value of the probability of 0.0170.

The exchange rate and expenditure have a one-way relationship because the exchange rate affects the government expenditure with the value probability of 0.0564, but the government expenditure does not affect the exchange rate with a probability of 0.7373.

GDP and government expenditure have no two-way relationship to this because GDP does not affect government spending by the probability value of 0.5990, and government expenditure does not affect GDP with a value of the probability of 0.1090.

Interest rates and government expenditures have a one-way relationship because interest rates do not affect the government spending value of probability 0.5599, but government spending affects interest rates with a value of the probability of 0.0062.

The exchange rate and investment have a one-way relationship because the exchange rate affects the investment with a value probability of 0.0100, but the investment does not affect the exchange rate with a probability of 0.4942.

GDP and investment do not have a two-way relationship to this because GDP does not account for investment with a value of the probability of 0.8010, and so does the investment does not affect GDP with the value of probability 0.5169.

Interest rates and investments have a one-way relationship because interest rates do not affect investments with a value of the probability of 0.7735, but investments affect interest rates with a value of the probability of 0.0461.

GDP and exchange rates have a one-way relationship because GDP does not affect the exchange rate with a value of probability 0.5638, but the exchange rate affects GDP with a value of probability 0.0002.

Interest rates and rates have a one-way relationship because interest rates do not affect the exchange rate with a probability value of 0.9770, but the exchange rate affects the interest rate with the value of the probability of 0.0005.

Interest rates and GDP have a one-way relationship because interest rates do not affect GDP with a probability value of 0.1799, but GDP affects interest rates with a value of the probability of 0.0747.

IV. DISCUSSION

Cointegration is a long-term relationship that, although individually not stationary, the combination of any such variable can be stationary (Juanda and Junaidi, 2012), and a cointegration test can be used whether two or more economic variables have a long-term or cointegrated relationship. In the processed results of the variable interest rates, gross domestic product, investment, government expenditure, exchange rate, and inflation is a cointegration or long-term balance relationship during the research period, cateris paribus.

The analysis of causality (Granger Causality Test) is a principle of causation that science and knowledge can be automatically known without the need for other knowledge and intermediaries that every incident leads to the certainty and necessity and specificity of the extenuation of something or other things that preceded it, or it is accepted without hesitation and does not require disclaimers. The authenticity and necessity of the causal system are part of the human sciences that have been known together and are not covered by doubts.

Causality is built by the relationship between an occurrence of cause and occurrence due to or impact. Which the second occurrence is understood as a consequence of the first this can be seen from the results of the causality test in table 6 that all of these variables are interest rates, gross domestic product, investment, government expenditure, exchange rate, and inflation that have a relationship because of such a one-way relationship with the value of probability above 10% or < 0.10. And the results of this research are similar to the results of previous research (Saidah, 2014) which the overall relationship of research is meant to have a one-way relationship.

Thus, it can be concluded that the causality relationship between variables in this study is happening at (1) The production of exhibitions affects inflation. The high number of government expenditure figures tends to result in the price increase of goods and services, resulting in an impact on inflation. (2) inflation affects investments. A low rate of inflation can be a positive climate for investors to invest in the country, as well as vice versa. (3) The exchange rate affects inflation. The exchange rate of the domestic currency can affect the price of goods and services, so it can impact the rate of inflation. (4) Inflation affects national income. High inflation can disrupt the sustainability of economic activity through the price of goods and services to reduce the rate of economic growth. (5) The interest rate affects inflation. High-interest rates can suppress the amount of money in circulation, thereby preventing an increase in the inflation rate (Bau, 2016). (6)

(6) Government expenditure affects investments. The increase of productive country spending supports the smooth development of the country so that it gives confidence to investors to invest in capital that supports the flow of investment. (7) The exchange rate affects government expenditure. The currency exchange rate affects the strengthening of the value of the domestic currency in government expenditure for development. (8) Government expenditure affects the interest rate. High country spending is influential on the amount of money circulating in the market, so it needs to increase interest rates. (9) The exchange rate affects the investment. An appreciated currency exchange rate supports the smooth flow of investors ' incoming capital. (10) The investment affects the interest rate. Capital flows of investors support the output productivity of a country, so it is necessary to suppress interest rates to maintain the amount of money supply and price stability. (11) The exchange rate affects the national income. Strengthening the value of the rupiah currency against the US dollar supports the balance of payments surplus. The balance of payment Surplus is one component of national income. (12) The exchange rate affects the interest rate. Strengthening of the rupiah currency against the US dollar by pressing the interest rate. (13) Economic growth affects the interest rate. High economic growth is characterized by price stability by maintaining the determination of interest rates by Bank Indonesia.

V. CONCLUSION

Government expenditure and inflation are stationary on the 1st difference. A balanced relationship occurs in the long term. And between inflation and government expenditure, only a one-way causality relationship occurs. Government spending affects inflation but not vice versa. High country spending will result in money falling into the market in many quantities. This will interfere with the stability of the price of goods and services in the market, and this is what characterizes the rate of inflation in Indonesia during the research period. It is expected that the government to maintain price stability by suppressing the inflation rate as an effort to implement state expenditure only on the productivity of output to sustainable development.

This research still has a shortage; hopefully, the next researcher to add the number of variables and add the country to be a comparison for Indonesia.

ACKNOWLEDGMENT

We say thank you to all partners who supported this article/research until finished and published, starting from the collect data up to hunting to the published manuscript.

REFERENCES

[1] Adrian, Tobias dan Hyun Song Shin.,. Liquidity Monetary Policy And Financial Cycles, Current Issues In Economics And Finance. New York: The Federal Reserve Bank Of New York., (2006).

[2] Bau, Asri F; dkk., Faktor-Faktor Yang Mempengaruhi Fluktuasi Nilaitukar Rupiah Terhadap Dolar Amerika Serikat. Jurnal Berkala Ilmiah Efisiensi, 6(3) (2016) 524-535.

[3] Juanda, Bambang dan Junaidi., Ekonometrika Deret Waktu Teori dan Aplikasi. Bogor: IPB Press., (2012)

[4] Kharie, Latif., Hubungan Kausal Dinamis Antara Variabel-variabel Moneter Utama dan Output: Kasus Indonesia di Bawah Sistem Nilai Tukar Mengambang dan Mengambang Terkendali, Jakarta: Pusat Pendidikan dan Studi Kebanksentralan (PPSK) Bank Indonesia., (2006)

[5] Nachrowi D Nachrowi., Ekonometrika, untuk Analisis Ekonomi dan Keuangan, Cetakan Pertama, Jakarta: Lembaga Penerbit FE UI., (2006).

[6] Pohan, Aulia, Kerangka Kebijakan Moneter dan Implikasinya di Indonesia, Raja Grafindo Persada, Jakarta., (2008).

[7] Saidah, Siti., Pengaruh Mekanisme Corporate Terhadap Pengungkapan Risiko Perusahaan : Studi Empiris Laporan Tahunan Perusahaan 71 Nonkeuangan yang Terdaftar di Bursa Efek Indonesia Periode 2011- 2013. Jurnal Akuntansi UNESA. 3(1) (2014) 1-25.

[8] Sukirno, Sadono., Teori Pengantar Ekonomi Makro. Rajawali Press. Jakarta., (2011).

[9] Widarjono, Agus., Ekonometrika Pengantar dan Aplikasinya disertai Panduan Eviews. UPP STIM YKPN Yogyakarta. Yogyakarta., (2013).