



THE EFFECT OF MACROECONOMIC STABILITY ON GOVERNMENT SPENDING IN THE PERIOD BEFORE THE COVID-19 PANDEMIC AND THE COVID-19 PERIOD: EVIDENCE FROM INDONESIA

Imam Mukhlis 

Faculty of Economics, Universitas Negeri Malang, Indonesia

imam.mukhlis.fe@um.ac.id

Andik Pratama

Master of Economics, Faculty of Economics,

Universitas Negeri Malang, Indonesia

Abstract

This study aims to analyze macroeconomic stability in Indonesia using the variables of Inflation/CPI, Government Spending, GDP, Rupiah Exchange, Crude Oil Price, and Interest Rates/SBI for the period 1990 – 2020. The data used in the form of time series data were analyzed using the Vector Error Correction Model (VECM) in software Eviews 10 to estimate the relationship between variables and descriptive analysis. The results of the analysis show that there is a long-term and short-term relationship between variables. The IRF test explains the variables of government spending, GDP, exchange rate, inflation, oil prices, and interest rates positively and negatively responding to changes in the CPI, while the VD test shows the CPI and Government Spending variables to be variables that have dominant values among other variables.

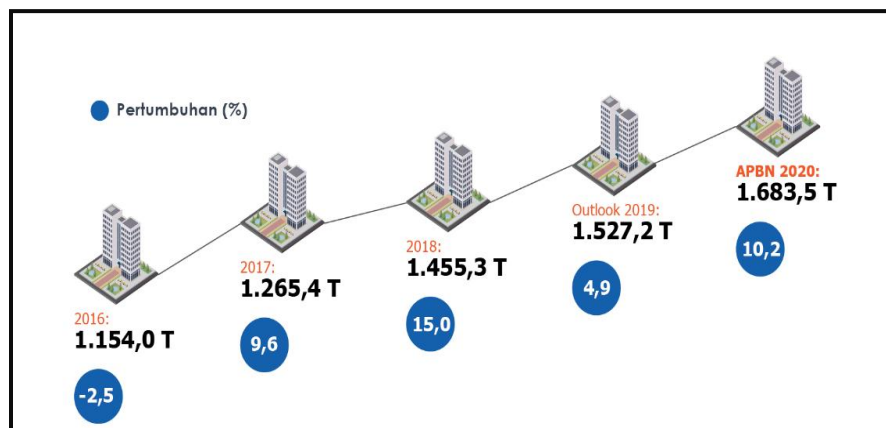
Keywords: Macroeconomics, Government Spending, VECM, Indonesia

INTRODUCTION

As one of the main instruments in fiscal policy and budget allocation policy, government spending has a very central position in supporting the acceleration of sustainable development and has a regional dimension to achieve economic growth and public welfare. With the policy and allocation of the government budget, the central government can directly encourage the achievement of various goals and objectives of development programs in all sectors of life, this is intended to create economic stability and support a more equitable distribution of income.

According to the Law of the Republic of Indonesia No. 12 of 2014 concerning the Government Revenue and Expenditure Budget, Article 1 Paragraph 8, Government spendings are obligations of the central government which are recognized as deductions from the value of net assets consisting of central Government spendings and transfers to regions. Article 11 of Law No. 17 of 2003, concerning Government Finance establishes the classification of types of expenditures, among others, personnel expenditures, goods expenditures, capital expenditures, interest, subsidies, grants, social assistance, and other expenditures. In the last 5 years, Indonesia's government spending has increased, as can be seen from the following figure 1.

Figure 1. Government Spending Growth Chart



Source: Ministry of Finance, 2021

The limited capacity of the country in providing the government budget will be the main obstacle to the implementation of its economic activity program, considering that the program requires large capital. The issue of government spending is not only a matter of country needs, but changes to basic macro assumptions such as economic growth, the rupiah exchange rate, inflation, international oil prices, and interest rates (SBI) can suppress the State Budget (APBN) especially in the spending sector. state, so that the sustainability of government will be

disrupted. This threat to the sustainability of government is a risk in the future, whether caused by changes in policy, external, internal, or market factors.

The current economic condition is faced with many problems. Global economic growth is threatened to decline, this is due to the emergence of a frightening phenomenon, namely the emergence of a new virus called Covid-19. The *World Health Organization* (WHO) said that Covid-19 infects the human respiratory tract. The Covid-19 virus pandemic spreads very quickly and widely, this has a negative impact on the world economy, including Indonesia, as a result of which economic activity has decreased.

The emergence of the Covid-19 pandemic, which is an external threat to the Indonesian economy, has hampered economic activity, hampered economic activity, making the coffers entering the state treasury not as expected, even though on the one hand the government must continue to spend money for the government. Figure 1 explains the increase in government continues to increase. The highest increase in government was social assistance spending reaching 139 Billion / 76.9 percent from the previous year only 78.7 Billion, this was because various social assistances were carried out by the government in an extraordinary manner in dealing with the Covid-19 Pandemic for community resilience (Minister of Finance, 2020). Based on the description that has been stated previously, this study intends to analyze the stability of Indonesia's macroeconomic conditions and spending in the period before the Covid-19 pandemic and provide an overview of Indonesia's macroeconomic conditions when facing the Covid-19 pandemic conditions.

LITERATURE REVIEW

A study by Mahmoud and Rusdati (2017), explaining that government spending influences economic growth in Indonesia, Malaysia, and Singapore, while Nkiru and Daniel (2013) show that total government spending has a significant positive effect and has a positive relationship on growth economy in Nigeria in the long run.

Nurlina (2015), explained that from 2004 – 2013, government spending had a significant positive effect, and statistical test results indicated a positive relationship between government spending and Indonesia's economic growth, while Keyvan *et.al* (2016) stated that the variable price index had a positive effect on the government expenditure variable, while the exchange rate variable, government expenditure, and government income have a negative effect on the economic growth variable. In contrast to conditions during the pandemic, Terence *et.al* (2020), explained that ASEAN countries during the pandemic experienced negative economic growth, in line with the research by Levert and Izzet (2020), which stated that the pandemic reduced

Turkey's GDP by 1.16 percent, however, this can be offset by falling crude oil prices which can increase GDP.

A study conducted by Emmanuel and Nicholas (2020), explaining the estimation results of the equation showed significant positive results on inflation and its volatility, the standard deviation of Covid-19 deaths in the US and the world resulted in inflation of 0.84 and 0.91 continuously. Rozi and Ririn (2020), explained that this pandemic had an impact on Indonesia, among others, many layoffs, decreased imports, increased inflation, and the tourism sector which caused a decrease in occupancy. Tauseef *et al.* (2020), explained the IMF's prediction to grow from 3.7 percent of global gross domestic product, in 2019 to 9.9 percent in 2020. The GDP ratio is projected from 3.0 percent in 2019 to increase to 10.7 percent in 2020. Regional and international cooperation is needed to prevent the further spread of Covid-19.

METHODOLOGY

This research is a study that uses quantitative methods, in which the method aims to explain, observe and measure the relationships of the variables studied with research data in the form of numbers. The data is secondary series data for the period 1990 – 2020 obtained from the *Indonesian Central Statistics Agency* (BPS) and data from the *Indonesian State Budget for Fiscal* 1990-2020. Data analysis in this study uses the dynamic *Vector Error Correction Model* (VECM) and also uses descriptive statistical analysis.

The variables studied in this study are Inflation/CPI (X1), Government Spending (X2), GDP (X3), Rupiah Exchange Rate (X4), Crude Oil Price (X5), Interest Rates/SBI (X6). Because in this study it is not known how the variables are related, then these variables are assumed to be independent variables.

Testing this research was done using software version 10 *Eviews*, there are several stages in the test:

a. Stationary Test / ADF (*Augmented Dickey-Fuller test*)

The ADF test can be formulated as follows:

$$X_t = \alpha + \beta_1 X_{t-1} + \beta_2 X_{t-2} + \dots + \beta_{r-1} X_{t-r+1} + u_t$$

From this test, the data is said to be stationary / does not contain unit roots if the probability value of this test is less than the error tolerance value (Alpha 0.05)

b. Optimum Lag Test

Determine the lag length of Inflation/CPI (X1), Government Spending (X2), GDP (X3), Rupiah Exchange Rate (X4), Crude Oil Price (X5), Interest Rates/SBI (X6).

c. Model Stability Test

To specify the *Vector Autoregressions* (VAR) or *Vector Error Correction Model* (VECM) model.

d. Cointegration Test

The cointegration test of this study uses the *Johansen Method* approach. This test can be formulated as follows:

$$\text{Trace}(r) = -T \sum_{i=r+1}^g \ln(1 - \lambda_i)$$

$$\text{Max}(r, r+1) = -T \ln(1 - \lambda_{r+1})$$

e. Estimation Result Significance Test

This test is carried out after getting the results of the cointegration test, the VAR test is carried out if there is no cointegration, but if there is cointegration, the analysis used is VECM.

f. Causality test (*Granger Causality test*)

This test was conducted to see the relationship between the variables being tested.

g. Forecasting

This test is carried out through the analysis of Impulse Response Function (IRF) and Variance Decomposition (VD).

RESULTS AND DISCUSSION

Unit Root Test

The first stage in this study is the unit root test of the variables in this study. This study uses time-series data, therefore a stationary test needs to be done. According to Thomas (1996), time-series data will be called *stationary* if the data used have the mean, variance, and covariance values are constant during the observation. The unit root test in this study used the *Augmented Dickey-Fuller* (ADF) test. The following are the test results from *Augmented Dickey-Fuller*.

Table 1. Unit Root Test

Variable	Prob.	Information
Inflation (Consumer Price Index)	0.0022	<i>Stationary at level</i>
Government Spending	0.0080	<i>Stationary at 1st difference</i>
GDP	0.0065	<i>Stationary at level</i>
Exchange rate	0.0000	<i>Stationary at 1st difference</i>
Crude oil	0.0007	<i>Stationary at 1st difference</i>
Interest rate (SBI)	0.0001	<i>Stationary at level</i>

Based on the results of the unit root test using *Augmented Dickey-Fuller*, it can be seen that the variables of CPI (consumer price index), economic growth (Gross Domestic Product), and interest rates are stationary at the level, while the variables of government, exchange rates,

and crude oil prices are stationary. on the degree of *first difference*. After knowing the unit root of the tested variables, the next step is to determine the *lag criteria*.

Determination of Lag Criteria

Determination of *Lag Criteria* in the *Vector Autoregressions* (VAR) model is determined on the information criteria recommended in the test. The *lag Criteria* test is important to do to eliminate autocorrelation problems in a model. The following is the result of determining the *Lag Criteria* in the *Vector Autoregressions* (VAR) model using the *Eviews 10* software.

Table 2. Lag Criteria Test Results

VAR Lag Order Selection Criteria						
Endogenous variables: CPI D(EXPEND) GDP D(EXCHANGE) D(OIL) SBI						
Exogenous variables: C						
Date: 04/09/21 Time: 21:24						
Sample: 1990 2019						
Included observations: 27						
lag	LogL	LR	FPE	AIC	SC	HQ
0	-894.5045	NA	3.75e+21	66.70404	66.99200*	66,78966
1	-843.3059	75.84974	1.31e+21	65.57821	67.59396	66.17760
2	-790.5311	54,72937*	5.92e+20*	64.33564*	68.07917	65.44879*
* indicates lag order selected by the criterion						
LR: sequential modified LR test statistics (each test at 5% level)						
FPE: Final prediction error						
AIC: Akaike information criterion						
SC: Schwarz information criterion						
HQ: Hannan-Quinn information criterion						

From the results of the table above, it shows that the recommended Lag Criteria value is Lag 2, so the Lag Criteria taken is lag 2. If the results of the Lag Criteria determination are known, the next step is to test the stability of the model using the *Vector Autoregressions* (VAR) model. This is done because if the estimation results of the *Vector Autoregressions* (VAR) stability test are not stable, then the *Impulse Response Function* (IRF) and *Variance Decomposition* (VD) analysis are considered invalid.

Model Stability Test

The model is said to be stable if the modulus value is less than one (< 1), it can be seen from the stability test results in table 3, the modulus value in the table has a number/value less than one (<1), so the stability model used is valid for modeling on *Impulse Response Function* (IRF) and *Variance Decomposition* (VD). The following are the results of the model stability test.

Table 3. Stability Test

Roots of Characteristic Polynomial	
Endogenous variables: CPI D(EXPEND)	
GDP D(EXCHANGE) D(OIL) SBI	
Exogenous variables: C	
Root	Modulus
0.852375	0.852375
-0.144183 - 0.786186i	0.799298
-0.144183 + 0.786186i	0.799298
0.598072 - 0.472334i	0.762095
0.598072 + 0.472334i	0.762095
0.722445	0.722445
-0.643707	0.643707
0.237413 - 0.552433i	0.601288
0.237413 + 0.552433i	0.601288
-0.551352	0.551352
-0.306905 - 0.416949i	0.517723
-0.306905 + 0.416949i	0.517723
No root lies outside the unit circle.	
VAR satisfies the stability condition.	

After knowing the results of the data stability, the next step is Cointegration Test, in cointegration testing in this study using the *Johansen Method* approach. The test aims to determine whether or not there is a long-term effect for the variables studied, if it is proven that there is cointegration then the *Vector Error Correction Model* (VECM) test stage can be continued, but if there is no cointegration proven then the *Vector Error Correction Model* (VECM) will not be performed, and the test is performed using the *Vector Autoregressions* (VAR) method. The following are the results of the cointegration test with the *Johansen Method* :

Test Johansen Method

Table 4. Test Johansen Method

Sample (adjusted): 1993 2019				
Included observations: 27 after adjustments				
Trend assumption: Linear deterministic trend				
Series: CPI D(EXPEND) GDP D(EXCHANGE) D(OIL) SBI				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistics	Critical Value	Prob.**
None *	0.843826	124.6160	95.75366	0.0001
At most 1 *	0.753557	74.48288	69.81889	0.0202
At most 2	0.442375	36.66602	47.85613	0.3635

At most 3	0.342012	20.89616	29.79707	0.3642
At most 4	0.250559	9.594808	15.49471	0.3132
At most 5	0.064745	1.807277	3.841466	0.1788
Trace test indicates 2 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistics	Critical Value	Prob.**
None *	0.843826	50.13312	40.07757	0.0027
At most 1 *	0.753557	37.81686	33.87687	0.0161
At most 2	0.442375	15.76986	27.58434	0.6852
At most 3	0.342012	11.30135	21.13162	0.6172
At most 4	0.250559	7.787532	14.26460	0.4007
At most 5	0.064745	1.807277	3.841466	0.1788
Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Based on the results of the cointegration test using the Johansen Method, it can be seen that the value of the probability has a value less than 0.05 or 5 percent, which is equal to 0.0202. In the *Maximum Eigenvalue* test, it can also be seen from the probability value which is smaller than the 5 percent / 0.05 alpha value, which is 0.0161. From the cointegration test results of the Johansen Method, it is known that six variables, namely the Consumer Price Index (CPI), government spending, interest rates, exchange rates/USD, oil prices, and economic growth in Indonesia in the period 1990 – 2019 are cointegrated, then the method is cointegrated. *Vector Error Correction Model* (VECM) can be applied to this study. The following are the results of the *Vector Error Correction Model* (VECM) modeling.

VECM Test

Table 5. VECM Test

Vector Error Correction Estimates	
Date: 04/09/21 Time: 21:35	
Sample (adjusted): 1993 2019	
Included observations: 27 after adjustments	
Standard errors in () & t-statistics in []	
Cointegrating Eq:	CointEq1
CPI(-1)	1.000
D(EXPEND(-1))	5.73E-05
	(5.7E-06)
	[9.97355]

GDP(-1)	0.673280					
	(0.21872)					
	[3.07831]					
D(EXCHANGE(-1))	-0.004086					
	(0.00084)					
	[-4.88783]					
D(OIL(-1))	-0.112006					
	(0.04199)					
	[-266769]					
SBI(-1)	0.496234					
	(0.09623)					
	[5.15692]					
C	-17.65784					
Error Correction:	D(CPI)	D(EXPEND, 2)	D(GDP)	D(EXCHAN GE,2)	D(OIL,2)	D(SBI)
CointEq1	-1.486046	-6901.384	0.375342	21.90207	-2.323040	0.313717
	(0.70971)	(4907.43)	(0.26094)	(102,707)	(1.21789)	(0.46081)
	[-2.09389]	[-1.40631]	[1.43840]	[0.21325]	[-1.90743]	[0.68080]
D(CPI(-1))	-1.824008	-2334,966	0.648473	-382.0205	0.354536	1.804464
	(0.67093)	(4639.30)	(0.24669)	(97,0949)	(1.15134)	(0.43563)
	[-2.71863]	[-0.50330]	[2.62873]	[-3,93451]	[0.30793]	[4.14221]
D(EXPEND(-1),2)	8.09E-05	-0.693525	-2.91E-05	0.007740	-3.31E-05	-2.59E-05
	(4.3E-05)	(0.29392)	(1.6E-05)	(0.00615)	(7.3E-05)	(2.8E-05)
	[1.90429]	[-2.35956]	[-1.85976]	[1.25822]	[-0.45378]	[-0.93681]
D(GDP(-1))	-4.866006	-10585.29	1.722281	-726.5164	-2.788629	4.901897
	(2.04178)	(14118.4)	(0.75072)	(295,480)	(3,50379)	(1.32571)
	[-2.38322]	[-0.74975]	[2,29417]	[-2.45876]	[-0.79589]	[3.69756]
D(EXCHANGE(-1),2)	-0.002472	-14.30039	0.000919	-0.227775	-0.010950	0.002158
	(0.00278)	(19.1985)	(0.00102)	(0.40180)	(0.00476)	(0.00180)
	[-0.89042]	[-0.74487]	[0.90039]	[-0.56688]	[-2.29814]	[1.19699]
D(OIL(-1),2)	-0.090015	2486,828	0.032084	8.704444	-0.275557	0.015824
	(0.18975)	(132.11)	(0.06977)	(27,4608)	(0.32563)	(0.12321)
	[-0.47438]	[1.89529]	[0.45986]	[0.31698]	[-0.84623]	[0.12844]
D(SBI(-1))	0.198679	-423.3225	-0.034216	-51.54793	0.151537	-0.241276
	(0.49696)	(3436.35)	(0.18272)	(71.9186)	(0.85281)	(0.32267)
	[0.39979]	[-0.12319]	[-0.18726]	[-0.71675]	[0.17769]	[-0.74774]

C	-1.300599	5559,329	0.361319	-216.4434	0.475606	0.515234
	(2.13782)	(14782.5)	(0.78603)	(309,379)	(3.66860)	(1.38807)
	[-0.60838]	[0.37608]	[0.45967]	[-0.69961]	[0.12964]	[0.37119]
R-squared	0.519856	0.551975	0.445068	0.704761	0.467274	0.711443
adj. R-squared	0.342961	0.386913	0.240619	0.595989	0.271007	0.605132
Sum sq. resids	2249,610	1.08E+11	304.1214	47113707	6624,686	948.3907
SE equation	10.88120	75240.73	4000799	1574,696	18.67265	7.065076
F-statistics	2.938778	3.344053	2.176917	6.479247	2.380804	6.692120
Likelihood logs	-98.01746	-336.7356	-71.00281	-232.3365	-112.5981	-86.35689
Akaike AIC	7.853145	25.53597	5.852060	17.80271	8.933191	6.989399
Schwarz SC	8.237097	25.91992	6.236011	18.18666	9.317143	7.373351
Mean dependent	-0.166405	3285,259	-0.054444	-6.255556	-0.238148	-0.258666
SD dependent	13.42397	96093.07	4.591101	2477,424	21.86977	11.24323
Determinant resid covariance (dof adj.)		1.41E+20				
Determinant resid covariance		1.72E+19				
Likelihood logs		-827.7726				
Akaike information criterion		65.31649				
Schwarz criterion		67.90816				
Number of coefficients		54				

From the VECM estimation results, the following equation can be written:

$$D(\text{CPI}) = -1.486046 (\text{CointEq1}) + 5.73\text{E-}05 D(\text{EXPEND}(-1)) + 0.673280 \text{GDP}(-1) - 0.004086 D(\text{EXCHANGE}(-1)) - 0.112006 D(\text{OIL}(-1)) + 0.496234 \text{SBI}(-1) - 1.824008 D(\text{CPI}(-1)) - 4.866006D(\text{GDP}(-1))\dots\dots\dots(1)$$

Based on the estimation results using the VECM test, it can be seen the value of the coefficient CointEq1 (ECT) has a significant value and has a negative sign, the value of the CointEq1 (ECT) coefficient shows the adjustment time from short to long term periods, the significance of the CointEq1 (ECT) coefficient means that the estimated model formed is valid. According to the estimation results of CointEq1 (ECT), the variable used as the model is the CPI (Consumer Price Index) or inflation variable, the CPI (Consumer Price Index) variable has a *t-statistic* value of -2.71863, which means it is significant. In the long-term relationship, all variables have a significant value, meaning that all variables have a long-term relationship, while in the short term only GDP has a relationship/significant with CPI (Consumer Price Index). The estimation results above show that several variables have a positive effect on the movement of changes in the Consumer Price Index including Government spendings for the previous period of 5.73E-05, meaning an increase in government spending by 1 percent will increase the Consumer Price Index by 5.73E-05 percent, the next variable is GDP, which means an increase of 1 percent in GDP in the previous period, will increase CPI 0.673280 in the current year, then Interest Rates in the previous 1 period, an increase in CPI (Consumer Price

Index) 1 percent could increase interest rates in the previous period by 0.496234 percent, and interest rates in the previous 1 period by 0.555442, while the exchange rate and oil prices in the previous 1 period had negative values, with their respective values, the exchange rate is -0.004086 and the oil price is -0.112006.

Model Feasibility Test

After getting the estimation results from the VECM model, it is necessary to re-test the model feasibility test, below are the results from the model feasibility test.

Table 6. Model Feasibility Test

VEC Residual Portmanteau Tests for Autocorrelations					
Null Hypothesis: No residual autocorrelations up to lag h					
Date: 04/09/21 Time: 21:58					
Sample: 1990 2019					
Included observations: 27					
Lags	Q-Stat	Prob.*	Adj Q-Stat	Prob.*	df
1	21.45706	---	22.28233	---	---
2	44.81449	0.9788	47.50835	0.9583	66
3	76.07492	0.9743	82.67634	0.9195	102
4	105.5867	0.9816	117.3205	0.8984	138
5	132.9881	0.9909	150.9496	0.8959	174
6	161.2389	0.9948	187.2720	0.8684	210
7	183.8426	0.9989	217.7871	0.9021	246
8	208.1315	0.9997	252.3028	0.8978	282
9	240.8449	0.9996	301.3730	0.7404	318
10	270.6300	0.9997	348.6788	0.5698	354
11	295.7255	0.9999	391.0274	0.4758	390
12	327.9804	0.9999	449.0861	0.2119	426
13	345.5625	1.0000	482.9946	0.2412	462
14	357.0566	1.0000	506.8669	0.3819	498
15	372.6532	1.0000	541.9593	0.3964	534
16	385.5266	1.0000	573.5576	0.4503	570
17	401.7530	1.0000	617.3687	0.3656	606
18	414.8524	1.0000	656.6670	0.3355	642
19	422.4887	1.0000	682.4394	0.4450	678
20	435.7822	1.0000	733.7146	0.2965	714
21	445.5748	1.0000	777.7810	0.2340	750
22	456.6853	1.0000	837.7779	0.0977	786
23	460.1863	1.0000	861.4098	0.1652	822
24	463.5108	1.0000	891.3301	0.2088	858
25	468.5025	1.0000	958.7182	0.0654	894

*Test is valid only for lags larger than the VAR lag order.
df is degrees of freedom for (approximate) chi-square distribution after adjustment for VEC estimation (Bruggemann, et al. 2005)

From the results of the feasibility test, it can be seen that most of the lags obtained have met the model's feasibility test and do not contain residual autocorrelation because the probability value is greater than the critical alpha value of 5 percent (0.05).

Granger Causality Test

To find out the relationship of several variables being tested, it can be seen from the probability value of the variables in the Granger Causality test (Table 7).

Table 7. Granger Causality Test

Null Hypothesis:	Obs	F-Statistics	Prob.
Expend does not Granger Cause CPI	28	1.95567	0.1643
CPI does not Granger Cause EXPEND		0.23453	0.7928
GDP does not Granger Cause CPI	28	4.29546	0.0260
CPI does not Granger Cause GDP		4.35266	0.0249
EXCHANGE does not Granger Cause CPI	28	2.96852	0.0713
CPI does not Granger Cause EXCHANGE		2.92009	0.0741
OIL does not Granger Cause CPI	28	1.28786	0.2950
CPI does not Granger Cause OIL		0.07556	0.9275
SBI does not Granger Cause CPI	28	0.50662	0.6091
CPI does not Granger Cause SBI		1.69529	0.2057
GDP does not Granger Cause EXPEND	28	0.04816	0.9531
Expend does not Granger Cause GDP		0.12504	0.8831
EXCHANGE does not Granger Cause EXPEND	28	0.53365	0.5935
EXPEND does not Granger Cause EXCHANGE		1.01993	0.3764
OIL does not Granger Cause EXPEND	28	5.54757	0.0108
Expend does not Granger Cause OIL		1.10989	0.3466
SBI does not Granger Cause EXPEND	28	0.63791	0.5375
Expend does not Granger Cause SBI		0.29071	0.7504
EXCHANGE does not Granger Cause GDP	28	0.33017	0.7221
GDP does not Granger Cause EXCHANGE		0.25170	0.7796
OIL does not Granger Cause GDP	28	0.20735	0.8142
GDP does not Granger Cause OIL		0.15867	0.8542
SBI does not Granger Cause GDP	28	0.33759	0.7170
GDP does not Granger Cause SBI		0.06284	0.9393

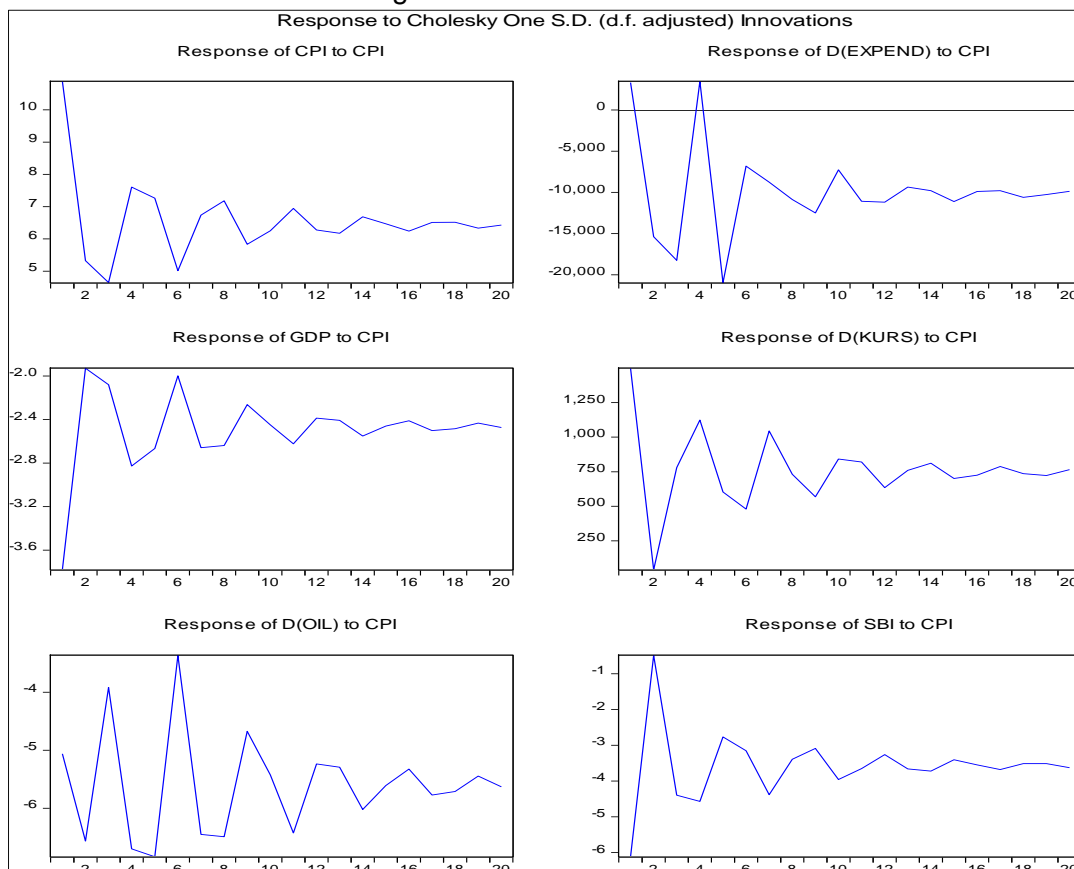
OIL does not Granger Cause KURS	28	0.47039	0.6306
KURS does not Granger Cause OIL		1.63076	0.2176
SBI does not Granger Cause KURS	28	0.48130	0.6241
EXCHANGE does not Granger Cause SBI		0.64923	0.5318
SBI does not Granger Cause OIL	28	0.39151	0.6805
OIL does not Granger Cause SBI		0.06514	0.9371

It can be seen that only 3 variables have a relationship, including GDP (economic growth) with CPI (Consumer Price Index) or inflation, both of which have a causal relationship with probability values of 0.0260 and 0.0249, which means the probability value is less. from a value of 0.05 or 5 percent, and the oil price variable also has a one-way relationship to *government* spending with a probability value smaller than the 5 percent value of 0.0108.

Impulse Responses Function Test

The results of the Impulse Responses Function describe how the impact of the shock of a variable on other variables can be seen so that it can be seen how long the effect of the shock of a variable on other variables is felt, and which variable will give the greatest response in the presence of a shock. The below is the result of IRF with CPI as an impulse.

Figure 2. IRF Test Results



The vertical axis shows the value that measures the magnitude of the response of a variable if there is a shock to other variables. The horizontal axis shows the length of the year/period of the response given to the shock. The response given above the horizontal axis means that the shock will have a positive effect, on the contrary, if the response is given below the horizontal axis, the shock will have a negative effect, the horizontal line also shows the variable adjustment time from short to long term periods.

From the picture of the IRF test results in Figure 2, it can be seen that the response of *government* spending to the Consumer Price Index has a positive value in the first period, in the second to the third period the graph of *government* spending decreased sharply to a negative point of -18.000, but in the second period until the third period four experienced a sharp increase to the positive point, then fell back in the fifth period to the negative point, the graph of *government* spending in the fifth to the 16th period tends to fluctuate very sharply at the negative point, in the 17th period until the end of the period it tends to be stable but remains at negative points.

The IRF GDP test as a response to the CPI shows a negative graph, since the beginning of the period the graph of GDP shows very sharp fluctuations at negative points, this happened until the 17th period, in the 18th period the graph has tended to be stable even though it remains at negative points. The IRF test of the exchange rate variable as a response has a positive value, as well as the GDP variable since in the first period the exchange rate shows a graph that fluctuates sharply up to 17th, but the difference is, the exchange rate fluctuates at a positive point, in the 18th period until the end of the period the exchange rate begins to show a graph which tends to be stable at a positive point of 750, the IRF test of the oil price variable in response to the Consumer Price Index, can be seen extreme fluctuations in the first period until the end of the period, but at the end of the period the fluctuation tends to be low, and the graph shows a negative point. The IRF test on interest rates as a response showed fluctuating results, like other variables, interest rates fluctuated very sharply from the beginning of the period to the 13th period at negative points, but in the 14th period to the end of the period, interest rate fluctuations tended to be low.

Test for Variance of Decomposition

Analysis of *Variance Decomposition* is part of a dynamic analysis that serves to strengthen the results of the analysis that has been done previously. This analysis provides an overview of how much impact a variable has on the variable itself and other variables, below are the test results of *Variance Decomposition*:

Table 8. VD Test Results

Variance Decomposition of CPI:							
Period	SE	CPI	D(Expend)	GDP	D(EXCHA		
					NGE)	D(OIL)	SBI
1	10.88120	100,0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	14,32777	71.48574	2.351501	23,85989	0.372173	0.633571	1.297131
3	15.99291	65.80833	2.558060	27.97078	0.611497	0.942870	2.108469
4	18.37325	67.00801	2.855747	27.19088	0.534253	0.716924	1.694193
5	20.58543	65.82998	2.929081	28.31338	0.445915	0.736932	1.744710
6	22.11041	62.20740	3.197307	31.30769	0.410780	0.847370	2.029463
7	23.65476	62.46311	3.246387	31.15927	0.417713	0.773534	1.939980
8	25.33969	62.47030	3.290405	31.26255	0.364042	0.736551	1.876142
9	26.69449	61.06207	3.387413	32.44944	0.332283	0.779784	1.989015
10	27.95390	60.68269	3.444685	32.79511	0.329730	0.761052	1.986734
11	29.31050	60.80949	3.462214	32.74826	0.303588	0.732821	1.943551
12	30.53947	60.23486	3.508604	33.25185	0.281745	0.744723	1.978226
13	31.66172	59.84370	3.548924	33.59481	0.274381	0.742723	1.995461
14	32.81780	59.85051	3.565304	33.62085	0.261666	0.726808	1.974860
15	33.93192	59.61915	3.589004	33,83620	0.247179	0.726495	1.981968
16	34.96617	59.33377	3.616022	34.08683	0.239145	0.727815	1.996423
17	35.99529	59.26356	3.631401	34.16381	0.231729	0.719766	1.989734
18	37.01095	59.15638	3.645786	34.27035	0.222210	0.716379	1.988899
19	37.97536	58.97079	3.663747	34,43595	0.215235	0.716932	1.997352
20	38.91893	58.87752	3.676929	34.52560	0.209884	0.713153	1.996920

From the test results above, it can be seen that in the first period all variables have no impact or influence on the CPI, in the second period to the fifth period, the variable that has a dominant impact on the CPI is GDP, with a value of 23 percent to 28 percent, this continues until the end of the period, GDP became one of the variables with the dominant impact on the CPI, this was indicated by a value of 31 percent to 34 percent, while the variable with the smallest impact was indicated by oil prices, with a value of 0 percent to 0.7 percent.

Descriptive Analysis

Descriptive analysis is used to describe special economic conditions in the period when there is a pandemic, a pandemic that spreads throughout the country, developed countries, and developing countries, pandemics have a bad impact on various sectors and the most important is economic conditions. The wheels of the economy have become sluggish, this is due to government policies around the world that require citizens to reduce outdoor activities, and interact with other people. Such conditions have resulted in many large and small business

entities going out of business, layoffs everywhere, this has also happened in Indonesia, since the enactment of the government's PSBB (Large-Scale Social Restrictions) policy, economic activities seem to recede.

The decline in economic activity in the community has resulted in the government having to take policies that are expected to boost economic activity, one of the important instruments in boosting the economy is *government* spending. This is intended to maintain stable economic conditions during the Covid-19 pandemic. During the pandemic, *government* spending tends to be used more for social protection activities and economic recovery, this condition causes *government* spending to soar to greater than revenue. Indonesia's Government spending during the pandemic touched 2,540.4 trillion while the *government's* income was 2,233.2 trillion, this is natural because, with a pandemic that has never been experienced before, the government is trying various ways to restore the economy, especially to encourage the community's economy. Below is a descriptive macroeconomic analysis for the period 1990 – 2019 and a descriptive analysis for the 2020 period during the pandemic.

For further descriptive analysis in 30 periods before 2020, it can be seen from the results of the table test below:

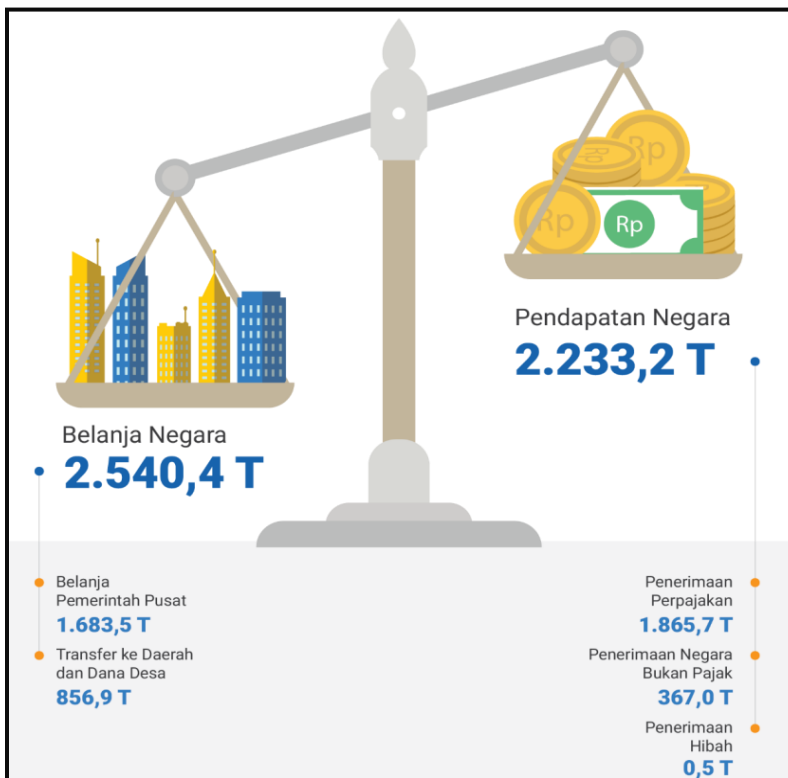
Table 9. Descriptive Analysis Results

	CPI	Expend	GDP	EXCHANGE RATE	OIL	SBI
mean	9.250329	797415.7	4.939000	8235.990	49.16867	5.483350
median	6.584915	468404.5	5.330000	9150.150	40.99500	6.646841
Maximum	58.45104	2309287.	8.220000	14236.90	111.6600	15.60691
Minimum	3.030587	39754.00	-13.12000	1842,800	12.71000	-24.60017
Std. Dev.	9.984110	757418.5	3.685529	4079,234	32.43766	7.446991
Skewness	4.196278	0.663449	-4.098151	-0.441891	0.658051	-2.204204
Kurtosis	21.12313	1.984135	20.67868	2.016236	2.133524	9.979073
Jarque-Bera	498.6034	3.490803	474.6440	2.186077	3.103632	85.17691
Probability	0.000000	0.174575	0.000000	0.335196	0.211863	0.000000
Sum	277.5099	23922472	148.1700	247079.7	1475,060	164.505
Sum Sq. Dev.	2890,791	1.66E+13	3939107	4.83E+08	30513.84	1608.273
Observations	30	30	30	30	30	30

It can be seen from the table above that there are 30 observational data, namely CPI data, *government* spending, GDP, exchange rates, oil prices, and interest rates in the period 1990 to 2019. From these results, it shows that for 30 periods the Consumer Price Index variable has a mean value. or an average of 9.25 percent, while *government* spending has an average of 797415.7 (Billion), the average GDP growth over the last 30 periods is 4.93 percent,

while the exchange rate is averaged for 30 years the latest is Rp. 8235.990, on world oil prices the average yield for the last 30 years is 49.1 USD/Barrel, while interest rates for the last 30 years have an average value of 5.4 percent. The maximum value for the last 30 years can be known as CPI (58.45104 percent).

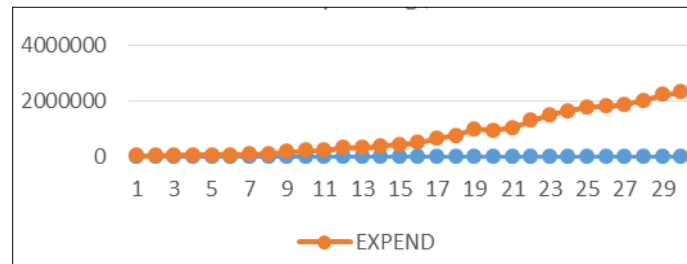
Figure 3. Government Spending Fiscal Year 2020



Source: (<https://www.kemenkeu.go.id/apbn2020>)

It is known from Figure 3 above that the amount of government spending is greater than its revenue in 2020, this is of course caused by the Covid-19 pandemic. In line with research conducted by Terence *et.al* (2020), their study showed that ASEAN countries during the pandemic experienced negative economic growth, also supported by research by Levert and Izzet (2020), which stated that the pandemic reduced Turkey's GDP by 1.16. percent, the impact of the pandemic is also supported by the opinion expressed by Rozi and Ririn (2020), in their study explaining that this pandemic has an impact on Indonesia, among others, many layoffs, decreased imports, increased inflation, and the tourism sector which caused a decrease in occupancy. The increase in government spending always occurs every year, as illustrated in the graph below, which is the condition of government spending in the last 30 years:

Figure 4. Government Spending 1990-2019



From the results that have been presented, it can be seen that the differences in Indonesia's macroeconomic conditions before the pandemic and before the pandemic occurred, its happens because the negative impact was not only received on the health side, but the economic side also experienced a significant impact.

CONCLUSION

Based on the results of the analysis and discussion that has been carried out, there are several conclusions obtained, including:

- 1) From the estimation results of the VECM test, it shows that there is a long-term and short-term relationship of several variables, in the long-term relationship, there are four variables that have significant values, namely Government spending, GDP, exchange rate, and SBI, while in the short term there are only two significant variables. namely the price of oil and the exchange rate/USD.
- 2) In the causality test, three variables have a relationship, GDP and the Consumer Price Index have a two-way relationship while the price of oil has a one-way relationship with government spending.
- 3) In the IRF test, the variables of government spending, GDP, exchange rate, CPI, oil prices, and interest rates positively and negatively respond to changes in the CPI, while the VD test shows the CPI and Government spending variables to be variables that have dominant values among other variables.
- 4) In the descriptive analysis, it can be seen from the results of the graph that shows an increase in government spending every year, starting from 1990 to 2019, and the occurrence of a pandemic in 2020, causing many changes in economic conditions, this causes government spending to soar higher than total government revenues. This is of course intended for economic recovery during the pandemic.
- 5) This study is limited to the location that is the object of research, further studies are needed to provide a deeper explanation, especially regarding the variables studied in this study.

SUGGESTIONS

Based on the conclusions formed, there are several suggestions obtained, including:

- 1) The government is expected to control Government spendings/expenditures, except for things that are conducive to economic growth or economic development, namely priorities on infrastructure and human resources,
- 2) In addition, the government must also limit consumptive spending, especially if the source of income used is government debt, and during a pandemic, government spending should be more targeted in providing direct assistance to the community, to provide economic stimulus, as well as selectively providing direct aid funds expected to avoid the existence of *Moral Hazard*.

REFERENCES

2007 Law on General Provisions and Tax Procedures

Abdullah, MA (2017). the Impact of Government Expenditure on Economic Growth in Indonesia, Malaysia, and Singapore. *Journal of Economic Education*, 6(1), 11–18.

Apergis, E., & Apergis, N. (2020). Inflation expectations, volatility, and Covid-19: evidence from the US inflation swap rates. *Applied Economics Letters*, 00(00), 1–5. <https://doi.org/10.1080/13504851.2020.1813245>

Aydın, L., & Ari, I. (2020). The impact of Covid-19 on Turkey's non-recoverable economic sectors compensating with falling crude oil prices: A computable general equilibrium analysis. *Energy Exploration and Exploitation*, 38(5), 1810–1830. <https://doi.org/10.1177/0144598720934007>

Chong, TTL, Li, X., & Yip, C. (2020). The impact of COVID-19 on ASEAN. *Economics and Political Studies*, 0(0), 1–20. <https://doi.org/10.1080/20954816.2020.1839166>.

Chude, PN, & Chude, ID (2013). Impact of government expenditure on economic growth in Nigeria. *International Journal of Business and Management Review*, 1(4), 64–71. <https://doi.org/10.1007/s13398-014-0173-7.2>

Crude oil prices, <https://ourworldindata.org/grapher/crude-oil-prices?time=earliest..latest>

Fakhrul Rozi, Y & Ririn Noviyanti, P. (2020). The Impact of Covid-19 on the Indonesian Economy. *Economics: Journals of Economics and Business*, 4(2), 384-388

Karimi, K., Ghasemzade, R., Khodaei, P., & Abdi, P. (2016). The effect of government spending on macroeconomic stability. *Accounting*, 2, 31–36. <https://doi.org/10.5267/j.ac.2015.12.006>

Law No. 17 of 2003, concerning Government Finance.

Minister of Finance Regulation Number 101/PMK.02/2011 concerning Budget Classification.

Nurlina, N. (2015). The effect of government expenditures on Indonesia's economic growth. *Journal of Economics, Business & Accountancy Venture*, 18(1), 1. <https://doi.org/10.14414/jebav.v18i1.377>

Statistics, https://www.bi.go.id/seki/tabel/TABEL4_2.xls

Thauseef et al.(2020). Coronavirus Disease 2019 (Covid-19) Pandemic and Economic Impact. *Pakistan Journal of Medicine Sciences*. Vol. 36, No. COVID19-S4

The Republic of Indonesia Law No. 12 of 2014 concerning the Government Revenue and Expenditure Budget.

Thomas, RL 1997. *Modern Econometrics an Introduction*. Addison – Wesley

World Bank national accounts data, and OECD National Accounts data files, <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD>