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Analysis of the Effect of E-Money on Economic Growth in Indonesia

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Abstract

This study aims to determine and analyze the effect of e-money, money supply, inflation, and exchange rate on economic growth in Indonesia. This study uses monthly time series data from January 2009 to December 2018 with a sample size of 120 months. The model used is the vector error correction model (VECM) using the EViews 10 software. The results show that in the long run there is a relationship between e-money, money supply, and exchange rate on economic growth in Indonesia. E-Money and money supply have a positive and significant effect on economic growth in Indonesia. Then, inflation has a positive and insignificant effect on economic growth in Indonesia, while exchange rate has a negative and significant effect on economic growth in Indonesia. Based on the granger causality test, there is no two-way relationship between each research variable.

Keywords

E-Money, money supply, inflation, exchange rate, economic growth

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1. Introduction

The function of money can be seen in economic transactions, namely as a payment system and also as a means of payment. So that in a country's economy, money is a very important indicator. This is because money is closely related to all economic activities such as production, distribution and consumption. The government, namely the central bank as the monetary authority in carrying out economic policy, uses money instruments, especially in the financial and banking sectors (Istanto & Fauzie, 2014). The rapid development of technology today has resulted in significant changes in payment patterns and systems in economic transactions. Technological advances in this payment system have been able to shift the role of cash as a means of payment into a more practical, efficient and economical form of non-cash payment. The encouragement and development of this technology can bring innovations and electronic-based non-cash payments such as debit cards, credit cards and e-money (Pramono *et al.*, 2006).

Research conducted by Costa & De Grauwe (2001) suggests that the widespread use of non-cash payment instruments can be seen from the decreasing demand for money for money issued by the central bank so that it will have an influence on the implementation of the central bank's duties in implementing monetary policy. specifically in controlling monetary quantities. It is the same as stated by Friedman (1999) that the impact of the development of information technology can be seen from the reduced role of base money in payment transactions. When viewed from the number of debit cards, credit cards, and e-money in circulation, e-money continues to increase from year to year. This growth is much higher than that of debit cards and credit cards, which tend to be stagnant. For the record, the number of debit cards in Indonesia in 2018 reached 8.8 million cards and the number of credit cards in Indonesia in 2018 reached 17.2 million cards. Meanwhile, the number of e-money in Indonesia in 2018 reached 167.2 million cards.

Electronic payment products or what is often called e-money have developed very rapidly in several countries, such as Singapore in 2010 the volume of e-money transactions reached 2.5 billion transactions and increased to 3.1 billion transactions in 2014, Malaysia in 2010 the volume e-money transactions reached 699 million transactions and increased to 1.1 billion transactions in 2014, the Philippines in 2010 the volume of e-money transactions reached 138 million transactions and increased to 248 billion transactions in 2014, and Thailand in 2010 the volume of e-money transactions money reached 221 million transactions and increased to 787 million transactions

in 2014 (Kartika & Nugroho, 2015). E-Money is one of the potential alternatives in encouraging increased financial inclusion. Bank Indonesia data noted that the number of e-money circulating in 2018 was 167.2 million cards. Meanwhile, the volume of transactions via e-money reached 2.9 billion times a value of Rp. 47.1 trillion. Based on the data below, it can be seen that the use of e-money is growing very rapidly.

Bank Indonesia data also notes that in 2009 the nominal percentage of e-money transactions was 0.02 percent of the broad money supply. Meanwhile, in 2018 the nominal percentage of e-money transactions was 0.82 percent of the broad money supply. Based on the data above, it can be said that the growth of e-money from year to year has developed quite rapidly. Several telecommunications and banking companies have issued e-money services and products, such as BNI Tapcash, Mandiri e-money, BCA Flazz, BRI Brizzi and T-cash. This can also be seen through startup business players, namely in the fintech sector which is smaller in scale but their movements are also doing the same thing, such as Tokocash by Tokopedia, Bukadompet by Bukalapak and Gopay by Gojek, and many more.

Table 1. E-Money Transactions 2009-2018 in Indonesia

Year	E-Money in Circulation	E-Money Transaction Volume	E-Money Transaction Nominal (Million Rupiah)	Broad Money Supply (Billion Rupiah)	Percentage of Nominal E-money Transactions
2009	3,016,272	17,436,631	519,213	2,141,384	0.02
2010	7,914,018	26,541,982	628,827	2,471,206	0.03
2011	14,299,726	41,060,149	981,297	2,877,220	0.03
2012	21,869,946	100,623,916	1,971,550	3,307,508	0.06
2013	36,225,373	137,900,779	2,907,432	3,730,409	0.08
2014	35,738,233	203,369,990	3,319,556	4,173,327	0.08
2015	34,314,795	535,579,528	5,283,018	4,548,800	0.12
2016	51,204,580	683,133,352	7,063,689	5,004,977	0.14
2017	90,003,848	943,319,933	12,375,469	5,419,165	0.23
2018	167,205,578	2,922,698,905	47,198,616	5,760,046	0.82

Source: Bank Indonesia (Processed Data)

Indonesia as a small open economy country, increasing the use of e-money payment instruments will have an impact on reducing the demand for money in the community. Theoretically, this decrease in demand for money will cause a decrease in interest rates on the money market because people will prefer to use non-cash payment instruments that can simultaneously save money in the bank concerned (Mankiw, 2009). This makes borrowing costs more competitive, so that the level of consumption and investment will increase, the impact of which will be seen in an increase in national real output. So it can be said that the use of e-money will lead to economic growth. There are several empirical studies examining the effect of e-money on consumption and economic growth. Electronic payments as investigated by Wondwossen & Tsegai (2005) have a large number of economic benefits regardless of their convenience and security. At the maximum, these benefits will have a huge effect in building a country's economy. Electronic payments can thus lower transaction costs which can stimulate higher consumption and GDP, increase government efficiency, increase financial intermediation and increase financial transparency.

Tee & Ong (2016) found that any policies related to non-cash payments will not directly affect the economy, but the impact of increasing non-cash payments will significantly affect future economic growth. Economic growth can be used as a macro-economic indicator that shows the level of welfare of a country's people. Not least for developing countries like Indonesia, economic growth has always been the center of attention to see the level of the country's economy. To achieve a high and stable economic level is not easy, it must be followed by the ability of macro-economic variables to overcome every problem (Seprillina, 2013). The government also uses monetary policy to maintain economic stability. To reduce instability in the economy, the government through the central bank will carry out monetary policy. According to Nanga (2005), the government's monetary policy is by controlling the interest rate and the money supply. This policy is to influence the development of money supply, interest rates, credit interest rates, and exchange rates which are monetary variables in achieving the desired targets, namely economic growth, employment, price stability, and balance of payments (Natsir, 2011).

2. Literature review

2.1. Economic growth

According to Sukirno (2007), economic growth can be seen from economic development and the achievement of long-term prosperity in an economy. There are three aspects included in the definition of economic growth, namely the growth process to be achieved, an increase in per capita income, and long-term economic growth. Gross domestic product (GDP) is reflected in economic performance, where the higher the gross domestic product of a country, the better the economic performance of that country. Gross domestic product is obtained from total income or total expenditure on output of goods and services in a certain time. According to Keynes's theory, the factors that influence gross domestic product are consumption (C), investment (I), government spending (G), and net exports (NX). These factors also influence other factors such as the price level, inflation, money supply, interest rates, exchange rates and income levels.

2.2. E-Money

The definition of e-money refers to the definition issued by the Bank for International Settlements in one of its publications in October 1961 which contained stored value or prepaid products in which a record of the funds or value available to a consumer is stored on an electronic device in the consumer's possession. According to Andresen (2013) in the current system with the creation of money credit through bank loans, money control, as emphasized in the monetary and mainstream economies, is impossible because money credit is in conflict with regulations that grow endogenously. Central Bank monopoly in the money creation process and resulting in all the money will make control more feasible. With electronic money, one can not only improve the quantity control of money but also achieve control over the circulation of money, which hitherto has been largely ignored.

2.3. Money supply

The money supply is the total value of money in public hands. The money supply in a narrow sense is the money supply consisting of currency and demand deposits. The development of the money supply reflects or is in line with economic development. Usually when the economy grows and develops, the money supply also increases, while its composition changes (Mishkin, 2008). With higher interest rates and lower wealth, interest rate sensitive spending, particularly investment, will tend to fall. Ultimately, tight money pressure, with a reduction in aggregate demand, will reduce income, output and employment. This is in accordance with the opinion of Dornbusch *et al.* (2004), that the demand for real money balances has a negative response to the interest rate. An increase in interest rates will reduce the demand for money.

2.4. Inflation

The rationale for the inflation model from Keynes, that inflation occurs because people want to live outside the limits of their economic capacity, thus causing the effective demand of the public for goods to exceed the number of goods available, resulting in an inflationary gap. This limited supply of goods occurs because in the short run production capacity cannot be developed to offset the increase in aggregate demand. Therefore, just like the view of the monetarist, Keynesian model is more widely used to explain the phenomenon of inflation in the short run.

2.5. Exchange rate

The exchange rate is the price level agreed upon between the two countries in conducting trade (Mankiw, 2009). Exchange rate is the amount of domestic money needed, namely the amount of rupiah needed to get 1 unit of foreign currency. Exchange rate as an important variable in an open economy. The exchange rate has an influence on other variables, such as: the price level, interest rates, balance of payments and current account. Mundell Fleming's theory states that the exchange rate has a negative relationship with economic growth. If the exchange rate increases, it will result in lower exports. The decline has an impact on reducing output and will affect GDP. This condition shows that economic growth has decreased.

3. Methodology of research

The scope of this research is in the field of monetary economics which discusses the effects of e-money, money supply, inflation, and exchange rate on economic growth in Indonesia. Types and sources of data used in this study are secondary data in the form of monthly times series from January 2009 to December 2018 with a sample size of 120 months and obtained from the Bank Indonesia website.

The analysis model used is the vector error correction model (VECM) through the EViews 10 software.The vector error correction model (VECM) is an analytical model that can be used to determine the short-term behavior of a variable in the long term due to permanent shock (Kostov and Lingard in Ajija, 2011). In addition, the VECM model can also be used to find solutions to problems with time series variables that are not stationary and direct regression or direct correlation in econometric analysis (Ajija, 2011). Long-term analysis uses cointegration equations, while short-term analysis uses vector error correction model (VECM). The data stationarity test was carried out on all variables in the research model based on the augmented dickey-fuller (ADF) approach. To see the causal relationship between two variables using the granger causality test. By doing the granger causality test, we will be able to find out the relationship between two variables, whether they have a unidirectional relationship (only one affects), or both variables have a two-way relationship (interconnected between one variable and the other).

4. Results and Discussions

4.1. Results

During the period 2009 to 2019 Indonesia experienced an average increase of 5.33 percent per year. The highest increase in gross domestic product in this study period was in 2010, namely 6.22 percent and the lowest was in 2009 at 4.63 percent. In 2019, economic growth measured in gross domestic product was 5.02% which was classified as good, although it was lower than the achievement in 2018 of 5.17%. From the production side, the highest growth was achieved by other service business fields at 10.55 percent. From the expenditure side, the highest growth was achieved by the consumption expenditure component of non-profit institutions serving households at 10.62 percent. An increase in the volume of e-money transactions in Indonesia from 2009 to 2018. In 2009 the volume of e-money transactions was 17.4 million, then in 2018 it increased significantly by 2.9 billion. This shows that the trend of using e-money in Indonesia has been increasing continuously from year to year. The increase in the use of e-money occurred due to the rapid advancement of technology, thus encouraging the public to use it.

The development of the money circulating widely from 2009 to 2018. In 2009 the amount of money in circulation was Rp. 2.1 billion, while in 2018 it was Rp. 5.7 billion. The development of the money supply in a broad sense shows an increase over time during the period of observation. In this case, there are three actors that encourage an increase in the money supply in Indonesia, namely the government, companies and the public. The government as an economic actor needs money to implement development programs. For companies, money is needed to finance the production and distribution of goods and services produced by the company. And people need money to be used as a tool in carrying out economic transactions every day. So that the money supply in Indonesia always increases. General annual inflation is the average increase in the price of all goods surveyed by the Central Bureau of Statistics in a year. From Figure 4.4 in 2009 to 2018, the average annual general inflation of Indonesia for 10 years is 4.77% per year. The unstable characteristic of the inflation rate in Indonesia causes a larger deviation from the annual inflation projection by Bank Indonesia. The result of this kind of inflation uncertainty is the creation of economic costs, such as higher borrowing costs in Indonesia (domestic and international) compared to other developing countries. When the achievement of the inflation target improves, greater credibility of monetary policy will follow. The high rate of inflation in Indonesia will decrease the use of public consumption for domestic goods and services. The cause of high inflation in Indonesia is due to an increase in demand which causes prices to rise due to constant supply so that the price of goods in Indonesia becomes more expensive. If the inflation rate continues to soar this will hamper the development process and economic growth in Indonesia.

The development of the exchange rate weakened or depreciated from 2009 to 2018. In January 2009 the Rupiah exchange rate against the USD was IDR 11,167.21 and it strengthened in August 2011 by IDR 8,532. Then until December 2018, the Rupah exchange rate against the USD continued to depreciate, amounting to IDR 14,496.95. The fluctuation of the exchange rate from 2009-2013 was influenced by many factors, ranging from export-import, inflation rates, interest rates, real income to government policies that had specific objectives in devaluing and revaluing the exchange rate. The rupiah exchange rate against the USD based on the middle rate of Bank Indonesia in June 2009 was Rp.10,206.64 /USD or slightly strengthened by 7.29% compared to the exchange rate position in December 2008 of Rp.10,950/USD. The ongoing process of global economic recovery, particularly in Asia, has provided positive sentiment, thereby improving risk perceptions for developing countries. From the domestic side, the performance of Indonesia's balance of payments, especially the current account, recorded a surplus and adequate foreign exchange reserves.

Before regressing the times series data, first of all what must be done is to look at whether or not the data used for this research is stationary using the unit roots test. This is intended to avoid a sloppy or pointless regression. The unit root test was carried out for each variable in the study, both the dependent variable in the study, namely the gross domestic product (GDP) and the independent variables, namely e-money, money supply, inflation, and exchange rate. The unit root test was carried out using the augmented dickey-fuller (ADF) approach.

Table 2. Result of Unit Roots Test with Augmented Dickey-Fuller (ADF) Approach

Variable	Critical Value (α)	Level		1st Difference		2nd Difference	
		Stat. ADF	P. Value	Stat. ADF	P. Value	Stat. ADF	P. Value
LGDP		-1.252092	0.6499	-5.620124	0.0000	-9.613309	0.0000
	5%	-2.886074		-2.886074		-2.886732	
LE-Money		0.461948	0.9847	-10.57948	0.0000	-7.745689	0.0000
	5%	-2.886290		-2.886290		-2.888669	
L Money Supply		-2.398658	0.1443	-1.478017	0.5410	-7.840927	0.0000
	5%	-2.886290		-2.888669		-2.888669	
Inflation		-3.298667	0.0171	-7.546292	0.0000	-8.363381	0.0000
	5%	-2.886074		-2.886290		-2.887190	
Exchange Rate		-0.298571	0.9206	-7.938726	0.0000	-11.17961	0.0000
	5%	-2.886074		-2.886074		-2.886732	

Source: Processed Using EViews 10 Software (2020)

Based on Table 2, it can be seen that the money supply variable is a variable that does not contain a unit root or is stationary at the second difference level with an ADF statistical value of -7.840927 which is smaller than the critical value of -2.888669 or is not stationary at the level and the first difference level. GDP, e-money, and exchange rate variables are variables that do not contain a unit root or are stationary at the first difference. Where the statistical value of the GDP variable is -5.620124, the smaller the critical value is -2.886074, the statistical value of the e-money variable is -10.57948, the smaller the critical value is -2.886290, and the statistical value of the exchange rate variable is -7.938726, the smaller the critical value value of -2.886074 or not stationary at the level. While the INF variable is a variable that does not contain a unit root or is stationary at the level with the ADF statistical value of -3.298667, which is smaller than the critical value of -2.886074. Since most of the variables are not stationary at the level and frist difference, the data used in this study are stationary results at the second difference level.

The cointegration test is carried out to see the balance between research variables in the long term (Ajija, 2011). Long-term systems can be obtained from variables that are not stationary, as long as there is cointegration in these variables so that a linear combination between variables is stationary. Cointegration testing is carried out to obtain long-term relationships between variables. In this study, the cointegration test used was the johansen cointegration test. The cointegration relationship can be seen from the magnitude of the trace statistic and max-eigen statistic compared to the critical value at the five percent confidence level.

Table 3. Result of Johansen Cointegration Test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.345291	108.8240	88.80380	0.0009
At most 1	0.228943	59.26702	63.87610	0.1149
At most 2	0.108477	28.84787	42.91525	0.5711
At most 3	0.077628	15.41343	25.87211	0.5403
At most 4	0.049656	5.958993	12.51798	0.4655

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

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.345291	49.55700	38.33101	0.0018
At most 1	0.228943	30.41914	32.11832	0.0795
At most 2	0.108477	13.43444	25.82321	0.7695
At most 3	0.077628	9.454436	19.38704	0.6770
At most 4	0.049656	5.958993	12.51798	0.4655

Max-eigenvalue 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: Processed Using EViews 10 Software (2020)

Table 3 can be seen that based on the cointegrated rank, the trace statistic is obtained greater than the critical value, which is 108.8240> 88.80380. Then based on the cointegrated rank, the max-eigen statistic is obtained greater than the critical value, which is 49.55700> 38.33101. So it can be concluded that in the long run there is a relationship between e-money, money supply, and the exchange rate on economic growth (GDP) in Indonesia. Thus it is evident that there is cointegration in the model so that the vector error correction model (VECM) modeling can be continued because it has met the second requirement, namely the occurrence of cointegration (long-term balance).

The cointegration test results have proven that there are five rank cointegration models, so the cointegration equation shows that VECM modeling can be done. VECM modeling is carried out to show long-term relationships between variables. Based on the long-term estimation results in Table 4, it shows that e-money and money supply have a positive and significant effect on economic growth in Indonesia. Then, inflation has a positive and insignificant effect on economic growth in Indonesia, while the exchange rate has a negative and significant effect on economic growth in Indonesia.

Table 4. Result of Long Term VECM Modeling

Long Term		
Variabel	Koefisien	t-Statistik
LOGEM(-1)	3.706770	3.65709*
LOGJUB(-1)	29.28229	3.41142*
INF(-1)	22.52421	1.09076
LOGKURS(-1)	-13.04321	-3.81578*

Source: Processed Using EViews 10 Software (2020)

The granger causality test is useful for seeing the relationship between variables in research, namely GDP, e-money, money supply, inflation, exchange rate, and economic growth. With the Granger causality test, it can be seen that one variable with another variable is reciprocally related or only has one direction with a five percent confidence level. In other words, the Granger causality test can see whether one variable has a significant causal relationship with other variables, because each variable in the study has the opportunity to become an endogenous or exogenous variable. The results of the Granger causality test can be seen in Table 5. Based on the granger causality test, there is no two-way relationship between each research variable.

4.2. Discussions

The results in this study indicate the correspondence between the hypothesis which states that there is an alleged positive effect of e-money on economic growth in Indonesia.

Table 5. Result of Granger Causality

Null Hypothesis:	Obs	F-Statistic	Prob.
LOGEM does not Granger Cause LOGPDB	118	0.75866	0.4707
LOGPDB does not Granger Cause LOGEM		0.72347	0.4873
LOGJUB does not Granger Cause LOGPDB	118	2.66234	0.0742
LOGPDB does not Granger Cause LOGJUB		0.18738	0.8294
INF does not Granger Cause LOGPDB	118	0.12066	0.8864
LOGPDB does not Granger Cause INF		0.29745	0.7433
LOGKURS does not Granger Cause LOGPDB	118	0.12356	0.8839
LOGPDB does not Granger Cause LOGKURS		15.3338	1.E-06
LOGJUB does not Granger Cause LOGEM	118	1.19678	0.3060
LOGEM does not Granger Cause LOGJUB		0.09883	0.9060
INF does not Granger Cause LOGEM	118	0.37332	0.6893
LOGEM does not Granger Cause INF		1.14797	0.3210
LOGKURS does not Granger Cause LOGEM	118	0.78028	0.4607
LOGEM does not Granger Cause LOGKURS		13.3446	6.E-06
INF does not Granger Cause LOGJUB	118	0.12109	0.8861
LOGJUB does not Granger Cause INF		0.12215	0.8851
LOGKURS does not Granger Cause LOGJUB	118	2.11196	0.1258
LOGJUB does not Granger Cause LOGKURS		14.4149	3.E-06
LOGKURS does not Granger Cause INF	118	3.64736	0.0292
INF does not Granger Cause LOGKURS		1.62940	0.2006

Source: Processed Using EViews 10 Software (2020)

The analysis shows that e-money has a positive and significant effect on GDP. The higher the increase in e-money, the GDP will increase.The results of this study are in line with research conducted by (Nursari *et al.*, 2019) which analyzed the effect of non-cash payments on the amount of money demanded by the public and the economy. The analysis used is the error correction model (ECM). The results showed that e-money in the long run has a positive effect on GDP in the Indonesian economy. The same research was also conducted by (Kartika & Nugroho, 2015) who analyzed electronic money transactions on the speed of money in five ASEAN countries, namely Indonesia, Malaysia, Thailand, Singapore and the Philippines using panel data analysis. The results of his research show that e-money transactions in these five ASEAN countries have increased from 2010 to 2014 where there is a positive trend in the use of e-money. This increase was due to the awareness of the public and government in the five ASEAN countries that encouraged the use of e-money.

The results in this study indicate the agreement between the hypothesis which states that there is an alleged positive effect of money supply on economic growth in Indonesia. This result is in accordance with the Keynesian theory in which everyone holds money to fulfill and carry out transactions carried out, and the demand for money from the public for this purpose is influenced by the level of national income and the interest rate. The greater the level of national income, the greater the volume of transactions and the greater the need for money to fulfill transaction objectives. When the demand for money for the purpose of transactions is not a constant proportion, but is also influenced by the high and low interest rates. If the money supply is excess, Bank Indonesia will make a policy to lower interest rates which will encourage investors to invest. When a lot of investment enters Indonesia, the resulting output will also increase and will trigger economic growth. This condition is in line with the research conducted by Tambunan (2015) entitled the effect of the money supply and government spending on Indonesia's GDP, using multiple linear regression analysis. The results showed that the money supply had a positive and

significant relationship to Indonesia's GDP. The same results were also carried out by Mutia *et al.* (2018) who examined how the influence of government spending and the money supply on Indonesia's GDP in 2004–2018 using the ordinary least square method analysis, where the results of their research stated that there was a positive and of the money supply to Indonesia's GDP.

The results in this study indicate a positive and insignificant effect of inflation on economic growth in Indonesia. This is because inflation has an indirect effect on economic growth. The results in this study are not in accordance with the research hypothesis which states that there is an alleged negative effect of inflation on economic growth in Indonesia. Based on the quantity theory of money put forward by Irving Fisher, it is said that the more money circulating in the economy for the level of economic output, the condition will cause inflation and this will cause economic growth to decline further. This research is not in line with research conducted by (Ardiansyah, 2017) with the title the effect of inflation on economic growth, namely that inflation has a negative and significant effect on economic growth in Indonesia. This is related because the increase in inflation will lead to reduced investment and foreign investment which in turn will have an impact on economic growth.

The results in this study indicate the agreement between the hypothesis which states that there is an alleged negative effect of exchange rates on economic growth in Indonesia. The analysis shows that the exchange rate has a negative and significant effect on economic growth in Indonesia, where an increase in the exchange rate will cause the Rupiah to weaken or depreciate. The occurrence of this depreciation will cause the demand for exported goods to decrease and the demand for imported goods to increase, so that Indonesia's net exports will be negative or decrease which results in a decline in GDP and reduce domestic economic growth. The same research was also conducted by Ismanto *et al.* (2019) entitled the effect of exchange rates and imports on Indonesia's economic growth for the period 2007-2017, which states in his research that the exchange rate variable has a negative and significant effect on economic growth, where the higher the value of the rupiah exchange rate, the higher the economic growth.

5. Conclusions and Recommendations

The result of the research showed that in the long run there is a relationship between e-money, money supply, and exchange rate on economic growth in Indonesia. E-Money and money supply have a positive and significant effect on economic growth in Indonesia. Then, inflation has a positive and insignificant effect on economic growth in Indonesia, while exchange rate has a negative and significant effect on economic growth in Indonesia. Based on the granger causality test, there is no two-way relationship between each research variable.

This recommendation about that Bank Indonesia, as the party that has the authority to regulate the payment system in Indonesia, is expected to maintain policies regarding the national non-cash movement aimed at advancing the development of non-cash in Indonesia towards a cashless society because the results of this study show that the development of e-money from year to year. The year is increasing. The monetary authority is expected to continue to be able to control the money supply, because the money supply has a huge influence on the increase in gross domestic product (GDP). It is hoped that the Indonesian government can make policies that can reduce the inflation rate so that it does not lead to hyperinflation through fiscal policy and monetary policy.

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