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RELATIONSHIP BETWEEN ELECTRONIC MONEY AND GROWTH IN INDONESIA

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Abstract

Money including electronic money has a very important role for growth, especially in revolution industry 4.0. era. The success of the digital payment system has supported the development of the financial and banking system. This study aims to analyze the relationship between e-money, M2, and economic growth in Indonesia from 2012 January to 2021 December. Granger causality test and Error Correction Model (ECM) are used in this model to analyze the relationship between variables in this study. The results of the granger causality test shows that e-money and money have one-way relationship with growth. In short run, money shows a positive and significant effect on growth, while e-money does not have a significant effect. Meanwhile, in the long run, both money and e-money does not have any influence on growth. Coefficient of error term shows a negative and significant effect implies that the model in this study is converging to equilibrium and stable. Therefore, it is recommended for the government to increase the use of money including e-money to enhance the economy.

Keywords : ***M2, e-money; economic growth; granger causality; ECM***

1. INTRODUCTION

In a country economic growth has a very important role, because without economic growth, the country cannot be said to be prosperous, grow, productivity increases, and the distribution of income smoothly (Susilawati and Putri, 2019). The issue of economic growth has received great attention since a few centuries ago. Economic growth is needed and is the main source of improving living standards. In other words, the ability of a country to improve the standard of living of its population is very dependent and it is determined by the long-term pace of economic growth.

Economic growth is defined as an increase in GDP that is larger or less than the rate of population growth, and whether or not there is a change in economic structure or improvement in the institutional system (Diana et al, 2021). Putro (2010) and Pambudi (2013) define economic growth as the expansion of economic activities that result in higher production of goods and services and increased societal prosperity. Economic growth can also be defined as an increase in GDP / GNP, whether the increase is larger or less than the rate of population growth, and whether or not there is a change in economic structure.

The money supply is a collection of moneys issued and distributed by the Central Bank, with money in circulation divided into two types: metal money and banknotes (Wijaya & Seprillina, 2021). The money supply is defined by Bank Indonesia in two ways: narrow (M1) and broad (M2). The restricted notion of money supply (M1) is cash owned by the public and deposit money. On the other hand, money supply in a broad sense (M2) includes M1, quasi-money (including savings, term deposits in rupiah and foreign currencies, as well as current accounts in foreign currencies), and securities.

The development of technology has had an impact on changes in people's lifestyles towards a cashless Society. People are now greatly facilitated by the existence of non-cash payment

transactions which are considered more practical and efficient than traditional or cash payment transactions. Advances in technological digitalization in cashless payment transactions have changed the role of cash as a means of payment transactions to be in the form of more economical cashless payment transactions. Cashless payment transactions can benefit the public as well as the government. People can process payments quickly and no longer need to worry about the amount of money that will be brought.

People's lifestyles and the development of innovations have expanded the forms of non-cash transactions for financial purposes; there are currently numerous technologies that can be employed, such as the development of e-money. According to Nazamuddin (2020:74) electronic money is basically a representation of actual money, namely banknotes and metals. A person must first have a deposit in a bank or place a certain amount of money in an electronic system. Electronic money can be divided into two types based on its storage media: electronic money with servers and electronic money with chips.

According to Bank Indonesia, the use of digital money or e-money as an innovative and practical means of payment can assist in the smooth payment of economic activities that are mass, fast, and micro, so that its development can assist in the smooth payment of transactions such as toll roads, transportation transactions such as trains and other public transportation, or transactions at minimarkets, food courts, or parking. The advance of electronic money can be utilized as an alternative to non-cash payment instruments, allowing people who were previously excluded from the financial system to obtain access to it.

Based on the previous study that conduct by Asnawi and Fitria (2018), the money supply has a positive and significant influence on economic growth in Indonesia. This means that the increasing money supply, it can increase economic growth. The same result is also found in the research of Mutia et al., (2019) that there is a positive and significant influence on the Money Supply on Indonesia's Gross Domestic Product. According to another study conducted by Omodero (2019) broad money supply (M2) has an insignificant negative influence on GDP in Nigeria. Furthermore, the results of Sitompul's research (2022) have a positive influence of e-money on economic growth in Indonesia. From the results of the analysis shows that e-money has a positive and significant influence on GDP. The higher the increase in e-money, the higher the GDP will increase. Thus, based on the previous research, it is necessary to examine the relationship between e-money, M2, and economic growth.

2. IMPLEMENTATION METHOD

The scope of this study is to analyze the relationship between e-money, and economic growth in Indonesia. Variables in this study include e-money which is the nominal e-money transaction in Rupiah in Indonesia from 2012-2021 in the monthly intervals, economic growth which is Gross Domestic Product (GDP growth rate) by expenditure in percent interpolated from January 2012 to December 2021 in Indonesia, taken by the Central Bureau of Statistics of Indonesia and Money Supply (M2), namely the sum of currency, quasi-money, and securities other than shares in billion Rupiah in Indonesia in 2010-2021 in monthly intervals.

This study used an ECM (Error Correction Model) model and granger causality test. The error correction model or ECM is known as the dynamic linear model to find out the possibility of structural changes, that is, the form of long-term and short-term equilibrium relationships between bound variables and exogenous variables and to see how much influence the relationship between independent variables and dependent variables is (Wilantari, 2021). Granger causality test is a method of knowing where a bound variable can be affected by another variable. This kind of relationship is called causality or two-way.

When a variable is bound and a another variable co-integrates, then there is a long-term relationship between the two variables. In the short term, an imbalance (disequilibrium) can occur between the two variables. When variable Y and variable X cointegrate, the nature of the short-

term relationship between them can be expressed in the form of an Error Correction Model (ECM). The ECM model can be written as:

ΔYt = α0 + α1ΔXt + α2ΔXt + α3ECTt-1 + et…… ……………………………..(3.1)
Yt = β0 + β1X1t + β2X2t + et………………………………………………………..(3.2)
ΔINFt = α0 + α1ΔM2t + α2EMt + α3ECTt-1 + et………..……………...………..(3.3)
INFt = β0 + β1M2t + β2EMt + et ………………..……………………..…………….(3.4)

3. RESULTS AND DISCUSSION

The Stationery Test

The first step that must be estimating an economic model with time series data is to test the stationary of the data or also called the stationery stochastic process (Savitri *et al.*, 2021).

Table 1. ADF Unit Root Test Results

Variable	ADF Statistic	Value of Mac Kinnon 5 percent	Probability	Description
Growth	-10,93168	-3,449020	0,0000	Stationer
LM2	-15,66973	-3,448348	0,0000	Stationer
Lemoney	-12,03070	-3,448348	0,0000	Stationer

Source: Data Processed, (2022)

Based on the results of the unit root test from the table, it can be seen that all research variables, namely economic growth, Money Supply (M2), and e-money, have probability values smaller than alpha 0.05 at the first difference level with a probability value of 0.0000. That is, all research variables used have been stationary at the level of first difference or at I (1) and can proceed to the next test.

Cointegration Test

The results of the cointegration test are obtained by forming residuals obtained by regressing independent variables against dependent variables by OLS.

Table 2. Cointegration Test Results

Variable	ADF Statistic	Value of Mac Kinnon 5 percent	Probability	Description
ECT	-3,361796	-1,943768	0,0009	Stationer

Source: Data Processed, (2022)

After conducting a root test of the unit against the residual, the result was obtained that the residual (ECT) had been stationary at the level. Based on the table, it can be seen that the residual variable (ECT) has a probability value smaller than alpha 0.05 which is 0.0009 so that it can be concluded that the variables used in this study have been integrated or there is an indication that between one variable and another variable affects each other for long-term balance.

Error Correction Model (ECM) Estimation

In this study, we study the cointegration relationship between money supply (M2), e-money and economic growth, both in the short run and in the long run. Economic growth is the dependent variable, while money supply (M2) and digitalization of e-money (EM) transactions are the independent variables.

Table 3. ECM Estimate Results in the Short Term

Variable	Coefficient	Standard Error	t-statistic	Probability
D(LM2)	26,64683	9,697046	2,747932	0,0070
D(LEM)	-0,199070	0,692431	-0,287494	0,7743
ECT(-1)	-0,269434	0,063277	-4,257997	0,0000
C	-0,233500	0,152531	-1,530840	0,1286

Source: Data Processed, (2022)

Table 4. ECM Estimate Results in the Long Term

Variable	Coefficient	Standard Error	t-statistic	Probability
LM2	-1,195049	2,120769	-0,563498	0,5742
LEM	-0,416670	0,307658	-1,354327	0,1782
C	28,81418	28,54143	1,009556	0,3148

Source: Data Processed, (2022)

Granger Causality Test

In this study, the level of test used in this granger causality test was a confidence level of 0.05 percent or 0.10 percent. A lag length of up to 2 lags according to the optimal lag length test had been carried out.

Table 5. Granger Causality Test

Variable	f-statistic	Probability
M2 does not Granger Cause Economic Growth	5.72728	0.0043
Economic Growth does not Granger Cause L2	0.47820	0.6211
E-Money does not Granger Cause Economic Growth	2.85710	0.0616
Economic Growth does not Granger Cause E-Money	0.84502	0.4322

Source: Data Processed, (2022)

Discussion

The residual (ECT) had been stationary at the level. It can be seen that the residual variable (ECT) has a probability value smaller than alpha 0.05 which is 0.0009 so that it can be concluded that the variables used in this study have been integrated or there is an indication that between one variable and another variable affects each other for long-term balance.

Error Correction Model (ECM) estimation in the short term shows that the variable money supply or money supply in a broad sense (M2) has a probability value smaller than alpha 0.05 which is 0.0070. This means that in the short-term Money Supply (M2) can have an influence on the level of economic growth in Indonesia. The increasing Money Supply (M2) in the economy means that the amount of money is held by the community. This will affect the increase in consumption, productivity of entrepreneurs, and per capita income and will then increase the growth of economists (Ambarwati et al., 2021).

Meanwhile, the e-money variable has no effect on the economic growth rate in Indonesia in the short term which is characterized by a probability value greater than alpha 0.05, namely 0.7743. This means that when there is an increase in the nominal e-money transaction, it does not affect the level of economic growth in the short term. The results of this analysis are in accordance with those revealed by the results of the research conducted by (Qori'ah et al., 2020) where e-money has not effect on economic growth.

Error Correction Model (ECM) estimation in the long term shows that based on the results of ECM estimates in the long term, the variable money supply or money supply in a broad sense (M2) and the digitization of e-money have an insignificant relationship with the level of economic growth in Indonesia. This can be seen from the probability value of each variable which is greater than alpha 0.05, namely 0.5742 and 0.1782. Variable C is a constant of 28.81418 which means that if all independent variables are constant then long-term inflation growth is 28.81418.

From table above, it can be explained that which has a relationship causality is a variable with a probability value smaller than α = 0.05 or 0.10. At the table above is known that the variable Money supply is significantly affects economic growth with a probability of 0.0043 > 0.05 percent, so that H0 is rejected and H1 is accepted or in other words, there is causality relationship between Money Supply and economic growth. The results of this analysis are in accordance with research conducted by (Budiyanto and Wibowo, 2021) where the money supply policy has an influence on economic growth. Different things are shown by the influence of the economic growth variable on the money supply. It is known that the economic growth variable not significantly affects the money supply variable with a probability of 0.6211 > 0.05 or 0.10 percent which means, H0 is accepted and H1 is rejected or in other words, there is not a causality relationship between economic growth and money supply. This analysis same like the previous study who conduct by Hussain and Zafar (2017) where economic growth has not influence on money supply. Thus, it can be concluded that there is causality relationship between the money supply variable and economic growth where the money supply variable effects on economic growth, but this situation is inversely proportional where economic growth has not an influence on the money supply.

The different thing is shown by the e-money variable, it is known that it is statistically significant that it affects the economic growth variable with a probability of 0.0616 < 0.10 percent which means, H0 is rejected and H1 is accepted or in other words, there is a causality relationship between e-money and economic growth. The result of this analysis is same with the previous study by Sitompul (2022) that shows e-money has significant influence on economic growth. However, different thing is shown by the variable of economic growth to e-money. It is known that the economic growth variable significantly not affects the e-money variable with a probability of 0.4322 > 0.05 percent which means, H0 is accepted and H1 is rejected or in other words, there is not a causality relationship between economic growth and e-money. The results of this analysis are in accordance with research conducted by (Susilawati and putri, 2019) where the economic growth has not an influence on e-money. Thus, it can be concluded that there is a one-way causality relationship, namely the e-money variable affects economic growth, and does not apply the other way around. Based on the explanation above, it can be concluded that there are two causality relationships in this study, namely money supply has an influence on economic growth, then e-money has an influence on economic growth.

4. CONCLUSION

Causality test result shows that there is one way relationship between money supply and economic growth. Furthermore, one way relationship is noted between e-money and economic growth. Moreover, the ECM regression results show that M2 does not have any significant effect on growth in the long run, while M2 has a positive and significant effect in the short run. Moreover, e-money has no significant effect both in the short run and in the long run.

Therefore, it is suggested that the financial sector in Indonesia should be more regulated and supervised by ministries of finance and central banks to achieve monetary policy efficiency. Economic growth should be a key consideration when implementing policies Monetary. Researchers suggest that the government and Bank Indonesia intensify economic programs on E-money so that it is increasing many communities both in cities and villages know and using E-money so as to be expected economic growth is increasing.

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