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THE EFFECT OF FINANCIAL INCLUSION ON ECONOMIC GROWTH IN INDONESIA

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Abstract: This study discusses the effect of financial inclusion, *e-money* infrastructure and inflation on economic growth in Indonesia, from an economics standpoint, using a quantitative approach, collecting monthly secondary data from January 2014 to December 2021, which is the starting year. The financial inclusion variable contributes up to 35% in the sixth to tenth period proving that it gives significant positive effect on the growth variable.

Keyword: *Financial Inclusion, Growth.*

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1. Introduction

Macroeconomic growth of a state can be defined as the inclining amount or value of aggregate output or Gross Domestic Product (GDP), which means an increasing level of income per capita in the state. According to The National Strategic Financial Inclusion (SKNI) record that has been launched since 2016, the financial inclusion target in 2019 was 75%, and this inclusion rate is growing rapidly, from 49% in 2017 and in 2019 the Financial Services Authority (OJK) noted the financial inclusion index rose 76.19%, which means that people who reach access to financial services have exceeded 75%. Jumiati&Dhiartho(2022) Economic growth is one of the benchmarks of country's economic success.Today the phenomenon of the influence of corruption to economic growth has been a fairly hot issue of debate, both theoretically and empirically Zainuri (2021). Dias (2000) argues that the use of non-cash payment instruments can provide benefits or improve people's welfare, with the presence of non-cash payment instruments/*e-money* electronic network-based services are expected to increase consumption due to its convenience and this can encourage an increase in the circulation of money (*Velocity of money*). In research conducted by Tumpal Manik (2019), found that the interaction of the moderating variable of electronic money infrastructure was able to strengthen the effect of payless transactions on *cashless society.* This is also in line with research conducted by Akbar (2019), where a cashless payment can save transaction cost that is expected to increase cashless payment.. According to Mieseigha & Ogbodo (2013), cashless payments in every transaction are more secure, transparent, and avoiding fraud is the main key in driving economic growth and development. This is reinforced by (Tee & Ong, 2016) cashless payment will encourage the level of public consumption, economic development, and in the long term will affect economic growth. Therefore, the government needs to promote cashless payment if they want to increase economic growth, especially in Indonesia. As a result, this research was conducted to discuss the effect of financial inclusion, *e-money* infrastructure and inflation on economic growth in Indonesia.

2. Literature Review

There are several definitions of financial inclusion, according to Bank Indonesia (2014) financial inclusion is efforts to increase public access to financial services by removing barriers, both price and non-price. (Hannig and Jansen, 2010) revealed that financial inclusion is an attempt to include the unbanked into the formal financial system so that they have the opportunity to services such as savings, payments, and transfers. In addition, according to the FATF, financial inclusion involves providing access to a range of financial services that are safe, convenient and affordable for the vulnerable and disadvantaged groups, including low-income, rural and undocumented people, who have been underserved or excluded from the formal financial sector. Kodan and Chhikara (2013) argue that although there is no universally accepted definition of financial inclusion but based on financial availability, indicators are seen as easy access for people who need available and appropriate banking services. Electronic money (e-money) is defined as a means of payment in electronic form where the value of money is stored in certain electronic media. Users deposit money with the publisher and store it in electronic media for transaction purposes. Electronic money (*e-money*) according to Hidayati (2006), refers to the definition issued by the Bank for International Settlements BIS (1996) is an amount of money stored in an electronic media owned by someone. E-money is money used in electronic transactions present in Indonesia since 2009, as an alternative to electronic transactions replacing cash systems issued by banks and non-bank institutions regulated on Bank Indonesia Regulation Number 11/12/PBI/ 2009 concerning electronic money (*electronic money*).

The regulation of No.11/12/PBI/2009, as last amended by PBI No.18/17/PBI/2016 which states that electronic money (*electronic money*) is, as a means of payment that fulfills the elements, namely a) issued on the basis of the value of money deposited in advance by the holder to the issuer, b) the value of money is stored electronically in a medium such as*server* or*chip*, c) used as a means of payment to merchants who are not issuers of electronic money; and d) the value of electronic money deposited by the holder and managed by the issuer is not a deposit as referred to in the law governing banking.

Infrastructure has been identified as one of the main determinants of the successful implementation of cashless economic policies in Bayero & Daneji's financial inclusion efforts, (2014). The Central Bank of Nigeria (2007) states that among the e-banking processes adopted by Nigerian banks, ATMs are the most protected by customers. In addition, it was found that attitudinal disposition significantly influenced their ATM use. Klynveld, Peat, Marwick & Goerdeler (2009) in this case found that Nigerian bank customers give special consideration to banking, especially ATMs. With this, it seems that customers of Nigerian banks are increasingly associating quality of bank services with online real time. They are now more vigilant and careful in choosing a bank to protect Idowu, Aliu, & Adagunodo, (2002).

Another important electronic channel is the mobile phone which continues to shape the mode of access to finance (Jack & Suri, 2012). Gangopadhayay (2009) shows that cellular penetration can increase only when at least one of two conditions is met – decreasing costs or increasing benefits. If there is unmet demand for financial services, and mobile phones make the transaction costs of using these services lower than they otherwise would be, the benefits of owning a cell phone will increase and then more people will take advantage of them. He finally suggested that the lack of mobile users should not lead to a lack of interest in using these platforms by financial institutions to drive greater financial inclusion.

3. Research Method

This type of research uses a quantitative approach collecting monthly secondary data from January 2014 to December 2021, which is the starting year**..** The base period from 2014 to 2021 was chosen because it has several economic conditions starting to be normal until facing the Covid-19 pandemic and the new normal in Indonesia. Data obtained from the publication of the Bank Indonesia website www.bi.go.id and www.bps.go.id in the form of e-money, infrastructure, inflation, and GDP data for the January 2014-2021 period. The reduction in model specifications in this study was adopted from previous research (Manik, 2019) which aims to find the effect of financial inclusion, e-money, infrastructure and inflation on economic growth in Indonesia with the following equation:

$$Y(Gt) = \beta_0 + \beta_1 IK + \beta_2 EM + \beta_3 IM + \beta_4 I + \varepsilon$$

Notes:

Y(Gt)	: Growth value
IK	: Financial Inclusion
EM	: E-Money
IM	:e-money infrastructure
I	: Inflation

This study uses analytical methods *Vector Autoregressive* (VAR) which treats all variables symmetrically. One vector contains more than two variables and on the right side of the regression equation there is a *lag* value (*lagged value*) of the dependent variable as a presentation of the trait *autoregressive* in the model (Asteriou and Hall, 2007). VAR is an a priori model of economics; however, this model is very useful in determining the exogenous level of an economic variable in an economic system where there is dependence between variables in the economy is the beginning of the emerge of.*Johansen co-integration* method.

This test is carried out to prove the stability (normality) of the pattern of relationships in each variable so that the resulting regression is not spurious (false) so as to produce a correct interpretation. For stationarity testing, the most frequently used is Augmented *Dickey-Fuller* (ADF Test) and *Philip-Perron* (PP test). In the ADF test using *Schwarz Info Criterion* and*lag*a maximum of 9. While the PP Test uses *Newey-West Bandwidth*.

Optimal *lag* length determination is used to determine the length of the period of a variable influenced by past variables and other variables. The var model is very sensitive to the amount of lag data used. (Vitriyah, 2020) The determination of the length of the lag aims to determine the influence of a variable at a certain time on other variables. Determination of the length of the lag seen from the value *likehold rasio* (LR), *Final Prediction error* (FPE), *akaike information criterion* (AIC) and *schwarz information* (SC). If the lag is determined to be too long, the degree of freedom will be reduced thereby eliminating the necessary information. Meanwhile, if the number of lags is determined to be too short, then the resulting general model may have an error, which is marked by a high standard error.

The use of the VAR model stability test is to determine the value of the inverse roots characteristic of the magnitude of the polynomial value (Yahya, 2007). The stability test of the VAR model can be known from the magnitude of the modulus value under the AR table. The provisions used are the value of the magnitude of the modulus must be below 1 (one)

A time series data is integrated at the d-level or ring, abbreviated as I(d) if the data is stationary after d times of differentiation. Non-stationary variables integrated at the same level can form stationary linear combinations (Sas, 2005). Component of vectors *Yt*

integrated if there is a vector *b*=(b1,b2,b3….bn) then the linear combination for byt has a stationary character, so the vector *b* is a cointegration vector.

In research using the method *Model Vector Autoregressive* (VAR) must use the lag determined from the calculation criteria that have been carried out to find the optimal lag before. With the endogenous variables in this study, namely: Growth (Y), Financial Inclusion (INK), E-Money (EM), e-money Infrastructure (IEM), and Inflation (INF). The hypotheses used in this study are:

H0 : The dependent variable is not significantly influenced by the independent variable
H1 : The dependent variable is significantly influenced by the independent variable

The existence of co-integration indicates a long-term relationship between variables. Even when these variables are not co-integrated in a long-term relationship, these variables are still possible to have a short-term relationship, in understanding the interdependence among variables, use *Granger Causality Test*.

4. Result and Discussion

Based on testing on the F test, it seeks to determine the possibility of a change in one variable due to changes in other variables. A variable X is said to be "*granger Cause*" on the variable Y Impulse Response Function is an analysis in the VAR model. IRF analysis is used to determine the response of an endogenous variable to shocks

Variable	Unit Root	ADF Test Statistic	Prob *	Is
Growth	Level	-2.3828	0.154500	Not Stationary
	First Diff	-5.3293	0.000200	stationary
	Second Diff	-3.5252	0.016100	stationary
Financial Inclusion	Level	1.6938	0.999400	Not Stationary
	First Diff	-4.5013	0.001200	stationary
	Second Diff	-8.5213	0.000000	stationary
E-money	Level	6.4168	1.000000	Not Stationary
	First Diff	-0.6336	0.847400	Not Stationary
	Second Diff	-7.1781	0.000000	stationary
Infrastructure e-money	Level	-1.9009	0.327300	Not Stationary
	First Diff	-2.1629	0.223200	Not Stationary
	Second Diff	-13.251	0.000000	stationary
Inflation	Level	-1.6845	0.428600	Not Stationary
	First Diff	-9.0895	0.000000	stationary

	Second Diff	-12.904	0.000000	stationary

Table of Augmented Dickey Fuller (ADF) test results

endogenous to certain variable shocks and how long the effect lasts. Through IRF, the response to an independent change of one standard deviation can be seen. Responses can show positive results, negative, and cannot give any respond. Positive responses are above the horizon line, while negative responses are below the horizon line. If it doesn't respond then the chart tends to come closer to the horizon line. IRF also examines the impact of disruption of one standard error as an innovation for one endogenous variable on other endogenous variables (Nugroho, 2009).

Variance Decomposition according to Nugroho, 2009 is an analysis to describe the influence of each individual variable on other variable components in the VAR estimation. *Variance Decomposition information* is the proportion of sequential movements that result the shock itself and other variables

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1143.935	THAT	1.78E+28	79.23687	79.47261*	79.3107
1	-1104.859	61.98126	6.94E+27	78.26617	79.68061	78.70915
2	-1071.032	41.99323*	4.47e+27*	77.65735*	80.2505	78.46949*

Table of lag optimum test result

Stationarity test using the Augmented Dickey Fuller (ADF) test using the intercept model based on the table above shows the results *unit root test, Augmanted Dickey Fuller* with a test ADF less than *Critical Value* and has a probability of <0.05 or 5%. The variables of Growth, Financial Inclusion and Inflation are stationary at the level *first difference*, while e-money variables and e-money infrastructure are stationary at the level *second difference*.

Usage *lag optimum* on the VAR equation to determine the effect of the time required from each past variable. Determination of the length of the lag can use the largest or highest value of *sequential modified LR test statistic*. *Lag optimal* can be seen in the following table: Based on the table above, the optimal lag position found in the value *Akaike Information Criterion* (AIC) is the smallest, 77.65735, so the optimal lag length in this study is located at lag 2.

The VAR Stability Test in this study used the VAR *Stability Condition Check* through *Root of Characteristic Polynomial*. The results of testing the stability of the var model are as follows:

Root	Modulus
0.839054	0.839054
0.719162	0.719162

-0.681955 - 0.039486i	0.683097
-0.681955 + 0.039486i	0.683097
0.344397 - 0.504292i	0.610671
0.344397 + 0.504292i	0.610671
-0.421751 - 0.337143i	0.539944
-0.421751 + 0.337143i	0.539944
-0.308011 - 0.266166i	0.407081
-0.308011 + 0.266166i	0.407081

Table of VAR model Stability Test Results

It can be concluded that the variables in this study do not have co-integration, which means there is no long-term relationship between variables. In the table, it is explained that the highest modulus value has a value of less than 1 (one), thus the results of the test are in optimal condition and the VAR model already has a stable condition.

Hypothesized No. of CE(s)	*Eigenvalue*	*Max-Eigen Statistic*	*0.05 Critical Value*	*Prob.***
None *	0.932351	78.10910	33.87687	0
At most 1 *	0.911321	70.25919	27.58434	0
At most 2 *	0.628407	28.70874	21.13162	0.003
At most 3	0.117382	3.621029	14.26460	0.897
At most 4	0.063489	1.902221	3.841466	0.167

Johansen Cointegration test result, based on *Max-Eigen Value*

Hypothesized No. of CE(s)	*Eigenvalue*	*Trace Statistic*	*0.05 Critical Value*	*Prob.***
None *	0.932351	182.6003	69.81889	0
At most 1 *	0.911321	104.4912	47.85613	0
At most 2 *	0.628407	34.23199	29.79707	0.014
At most 3	0.117382	5.523250	15.49471	0.751
At most 4	0.063489	1.902221	3.841466	0.167

Johansen Co-integration, test result, based on *Trace Statistic*

The use of the co-integration test in this study uses the Johansen co-integration method. The importance of knowing the estimation of the VAR model is to get the significance value of the lag of a variable with respect to other variables which can be known by using the absolute value of the t-statistic. As a comparison, you can use a critical value. The variables indicated to be significant based on the partial t-statistic values compared to the values in the table (Alpha/2,n-1), 2.051831. Based on the t-statistic value, the H0 area is -2.051831 to 2.051831, so that the region of rejecting H0 is an area <-2.051831 and >2.051831. The

estimation results of the VAR model are presented in the following table: Based on the results *Trace Statistic Johansen Co-integration* show that *Trace Statistic* on the *Johansen Co-integration* greater than *Critical Value*. Likewise with value *Maximum Eigenvalue* has a value greater than *Critical.*

The VAR model formed is a variable model which is estimated using the small squares model. The VAR equation model formed has significant influencing variables including:

1. Growth (Y) with the estimation results of the variable that influences it is -0.04857 D(INK(-1)) with t-statistic value of -2.71351 or <-2.051831 which shows that financial inclusion (INK) affects growth (Y) at lag 1.
2. Financial inclusion (INK) with the estimation results of the variables that influence it is 6.278493 D(Y(-2)) with t-statistic value of 2.12115 or > 2.051831 which indicates that growth (Y) has an effect on financial inclusion (INK) on lag 2.
3. E-money (EM) with the estimation results of the variables that affect the variable is -25.36186 D(Y(-1)) with t-statistic value of -2.14388 or <-2.051831 which shows that growth (Y) has an effect on e -money (EM) on lag 1.
   25.32997 D(Y(-2)) with t-statistic value of 2.86553 or > 2.051831 which indicates that growth (Y) affects e-money (EM) in lag 2.
   0.58597 D(EM(-1)) with t-statistic value of 2.79875 or >2.051831 which indicates that growth (Y) affects e-money (EM) in lag 1.
4. Inflation (INF) with the estimated variable that affects it is -0.623 D(INF(-1)) with t-statistic value of -2.78658 or <-2.051831 which shows that growth (Y) has an effect on e-money (EM) at lag 1.

In this test, researchers want to know the causal relationship between the variables of growth, financial inclusion, e-money, e-money infrastructure and inflation. The decision criterion used is H0: if the probability value is > 0.05 then there is no relationship, and reject H0 if the probability value is <0.05 then there is a relationship between variables. The causality relationship from the granger causality test can be presented in the following table:

Table of Granger Causality Test Results

Null Hypothesis:	*Obs*	*F Statistic*	*Prob.*
INK does not Granger Cause Y	30	10.958	0.000
Y does not Granger Cause INK		3.9592	0.032
EM does not Granger Cause Y	30	1.6398	0.214
Y does not Granger Cause EM		5.0816	0.014
IEM does not Granger Cause Y	30	0.1083	0.897
Y does not Granger Cause IEM		0.0459	0.955
INF does not Granger Cause Y	30	0.6822	0.514
Y does not Granger Cause INF		0.1137	0.893

EM does not Granger Cause INK	30	6.3273	0.006
INK does not Granger Cause EM		5.3119	0.012
IEM does not Granger Cause INK	30	3.6913	0.039
INK does not Granger Cause IEM		0.0840	0.919
INF does not Granger Cause INK	30	0.0947	0.91
INK does not Granger Cause INF		0.2156	0.807
IEM does not Granger Cause EM	30	7.4639	0.002
EM does not Granger Cause IEM		1.3995	0.265
INF does not Granger Cause EM	30	1.1281	0.339
EM does not Granger Cause INF		0.6973	0.507
INF does not Granger Cause IEM	30	0.3142	0.733
IEM does not Granger Cause INF		0.3516	0.707

From Granger causality test in the table above, it can be seen that those that have causal relationship between variables have relationship with other variables, are as follows:

1. The financial inclusion variable statistically has a relationship to the growth variable with a probability value of 0.0004 and conversely the growth variable also has a relationship to the financial inclusion variable with a probability value of 0.0321 so that H0 is rejected with the conclusion that there is significant two-way causality between growth and financial inclusion .
2. The e-money variable statistically has no relationship to the growth variable with a probability value of 0.2142 and conversely the growth variable has a relationship to the financial inclusion variable with a probability value of 0.0141 so that H0 is rejected with the conclusion that there is one-way causality between growth and e- -money significantly.
3. The e-money variable statistically has a relationship with the financial inclusion variable with a probability value of 0.006 and conversely the financial inclusion variable also has a relationship with the e-money variable with a probability value of 0.012 so that H0 is rejected with the conclusion is that there is a significant two-way causality between growth and financial inclusion.
4. The e-money variable statistically has no relationship to the financial inclusion variable with a probability value of 0.0060 and conversely, financial inclusion has a relationship to the e-money variable with a probability value of 0.0120 so that H0 is rejected with the conclusion that there is a two-way causality between e-moeny and financial inclusion significantly.

Table of VAR model regression results				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12.96839	0.572140	0.226665	0.8225
D(INK(-1))	0.035400	0.011969	-2.957.571	0.0067
D(EM(-1))	1.25E-08	2.60E-08	0.479662	0.0364
D(IEM(-1))	3.99E-06	4.84E-06	0.823194	0.4182
D(INF(-1))	-0.175657	0.324471	0.541363	0.5930

1. The e-money infrastructure variable statistically has a relationship to the financial inclusion variable with a probability value of 0.0394 and the financial inclusion variable has no relationship to the e-money variable with a probability value of 0.9196 so that H0 is rejected with the conclusion that there is one-way causality between financial inclusion infrastructure significantly.
2. The e-money infrastructure variable statistically has a relationship to the e-money variable with a probability value of 0.0029 and the e-money variable has no relationship to the e-money infrastructure variable with a probability value of 0.2654 so that H0 is rejected with the conclusion that there is one-way causality between e-money and e-money infrastructure significantly.

The next step in this research is to construct a VAR model regression using the following equation:

$$d(Y(-1)) = C + d(INK(-1)) + d(EM(-1)) + d(IEM(-1)) + d(INF(-1))$$

Notes:
Y : Growth
INK : Financial Inclusion
IN : E-money
IEM : Infrastruktur e-
INF : Inflation

Based on the table below, we can see that the VAR model regression equation is:

$$Y = 12.96839 + 0.035400\ D(INK(-1)) + 1.25E\text{-}08\ D(EM(-1)) + 3.99E\text{-}06\ D(IEM(-1)) - 0.175657\ D(INF(-1)) + e$$

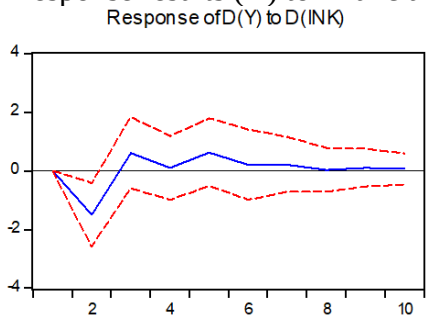
The above equation can provide an explanation:

1. Constanta is 12.96839 meaning that if the financial inclusion, e-money, e-money infrastructure and inflation variables have value of 0 then the growth rate is 12.96839 percent.
2. The coefficient variable value of financial inclusion is 0.03540, meaning that if the other variables remain the same and the financial inclusion variable increases by 1 percent, it will increase the growth value by 0.03540 with a probability level of 0.0067 which significantly affects growth. Then H0 hypothesis is accepted that the financial inclusion variable has a positive and significant effect on the growth variable.
3. The coefficient variable value of e-money is 1.2469, meaning that if the other variables remain the same and e-money variable increases by 1 percent, it will increase the growth value by 1.2469 with a probability level of 0.0364 which significantly affects growth.

Then the H0 hypothesis is accepted that the financial e-money variable has a positive and significant influence on the growth variable.

1. The coefficient variable value of e-money infrastructure is 3.9852, meaning that if other variables remain constant and the e-money infrastructure variable increases by 1 percent, it will increase the growth value by 3.9852 with a probability level of 0.4182 which does not significantly affect growth. Then the H0 hypothesis is rejected, the financial e-money infrastructure variable has a positive and insignificant effect on the growth variable.
2. The coefficient value of the inflation variable is 0.1756, meaning that if the other variables are fixed and the inflation variable increases by 1 percent, it will reduce the growth value by 0.1756 with a probability level of 0.5930 which does not significantly affect growth. Then the H0 hypothesis is rejected, the financial inflation variable has a negative and insignificant effect on the growth variable.
3. The purpose of Impulse Response Function (IRF) analysis is to explain the impact of a shock or shock on a variable that is used on other variables. In the analysis of the Impulse Response Function (IRF) this does not only explain in the short term but in a certain period of time it can become information material in the long term. The following are the results of the Impulse Response Function (IRF) test consisting of the dependent variable Growth (Y) on the independent variables namely financial inclusion (INK), e-money (EM), e-money infrastructure (IEM), and inflation (INF) presented in picture:

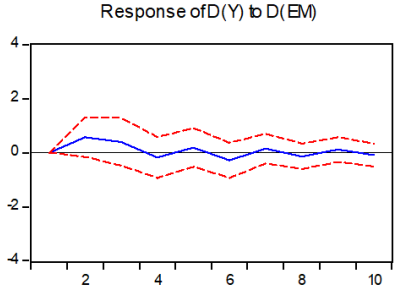
Figure 4.1 Growth response results (Y) to financial inclusion (INK)



Source: Results of processing using Eviews 9

In the figure the results of the response of the growth variable (Y) to the financial inclusion variable (INK) show shocks in the period that were responded to from the second period in the third period with a value of -1.524371 and then there was a decrease which was then responded positively in the fifth period with a value of 0.704593 then stabilized in the period sixth to tenth.

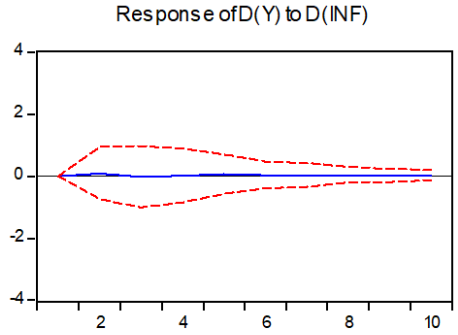
Figure 4.2 The results of the growth response (Y) to e-money (EM)



Source: Results of processing using Eviews 9

In the figure the results of the response of the growth variable (Y) to the e-money variable (EM) show a negative response in the fourth period with a value of -0.341916 and it starts to stabilize in subsequent periods up to the tenth period.

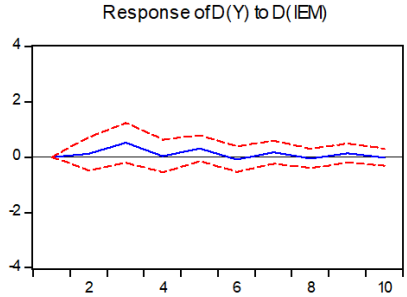
Figure 4.3 The results of the growth response (Y) to e-money infrastructure (IEM)



Source: Results of processing using Eviews 9

In the figure the results of the response of the growth variable (Y) to the e-money infrastructure variable (IEM) show a positive response in the first and second periods of 0.148504 and 0.465820. There was a negative response in the fourth period of -0.052202 and was stable in subsequent periods up to the tenth period.

Figure 4.4 The results of growth response (Y) to inflation (INF)



Source: Results of processing using Eviews 9

The results of the growth variable (Y) to the inflation variable (INF) show a positive response up to the fourth period of 0.100214 and get a negative response in the fifth period with a value of -0.002401 which is then stable in the next period up to tenth period. The results of the Variance Decomposition Analysis test are for the variation of one endogenous variable into the components of other endogenous variables and in the VAR system as follows:

Table of Variance Decomposition Analysis Results						
Period	S.E.	D(Y)	D(INK)	D(EM)	D(IEM)	D(INF)
1	2.135624	100.0000	0.000000	0.000000	0.000000	0.000000
2	2.722716	62.51980	31.34559	5.825749	0.297488	0.011367
3	2.854582	57.07488	33.94037	5.987120	2.933522	0.064107
4	2.910012	56.89178	32.93118	7.141749	2.855010	0.180284
5	3.012826	53.17590	36.19122	6.751792	3.712833	0.168253
6	3.036469	52.37686	35.94333	7.733785	3.767233	0.178795

7	3.061862	51.84379	35.81884	7.970044	4.191420	0.175908
8	3.065860	51.71195	35.74712	8.164077	4.195585	0.181274
9	3.075701	51.43017	35.68852	8.284785	4.415163	0.181368
10	3.078888	51.33182	35.70134	8.376067	4.406965	0.183809

Based on the table above, changes in growth are generally dominated by shocks from the growth variable itself with a 100 percent variance composition in the first period and decreased in the following period to touch a variance of 62.51 percent in the second period. The financial inclusion variable (INK) contributed 31.34 percent in the second period, increased by 36.19 percent in the fifth period and remained stable until the tenth period. The e-money variable contributed 5.82 percent in the second period and decreased to 6.75 percent in the fifth period from the previous period of 7.14 in the fourth period and increased to 8.37 percent in the tenth period. The e-money infrastructure variable contributed 2.93 percent in the second period and continued to increase until the tenth period of 4.40 percent. The inflation variable contributed 0.18 in the fourth period and continued to increase until the tenth period of 0.18.

5. Conclusion

The results of the VAR analysis above can be described and compared to previous studies, the test results in this study are as follows:

Based on the VAR estimation results, the financial inclusion variable shows that it has effect on growth of 6.278493 D(Y(-2)) with t-statistic value of 2.12115 or > 2.051831 which indicates that growth (Y) has an effect on financial inclusion (INK) at lag 2. Based on the VAR regression equation, the financial inclusion variable has a positive and significant influence on growth. While based on the Variance Decomposition value the financial inclusion variable contributes up to 35% in the sixth to tenth periods. The financial inclusion variable has a significant positive effect on the growth variable; this is in accordance with Dienillah (2016) and Anwar (2017) which outlines that financial inclusion has an effect on growth in Indonesia.

Meanwhile, e-money variable based on the VAR estimation results affects 25.36186 D(Y(-1)) with t-statistic value of -2.14388 or <-2.051831 which indicates that growth (Y) has effect on e-money (EM) at lag 1. 25.32997 D(Y(-2)) with t-statistic value of 2.86553 or > 2.051831 which shows that growth (Y) affects e-money (EM) in lag 2 and 0.58597 D(EM(-1))) with t-statistic value of 2.79875 or > 2.051831 which indicates that growth (Y) affects e-money (EM) at lag 1. Based on the VAR model regression equation the variable of e-money is 1.2469 meaning that if the variable other fixed and financial inclusion variables experience an increase of 1 percent, it will increase the value of growth by 1.2469 with probability level of 0.0364 which significantly affects growth. In the Variance Decomposition, the e-money variable has a contribution of 5% to 8% in the eighth to tenth periods. The e-money variable has a significant positive effect on growth in accordance with Amalia's research (2022) where the higher the e-money transaction, the higher the growth, where there is an increase in public consumption through e-money, it will increase national income.

The e-money infrastructure variable based on the regression equation is 3.9852, meaning that if other variables are constant and the financial inclusion variable increases by 1 percent, it will increase the growth value by 3.9852 with a probability level of 0.4182 which does not significantly affect growth. In the Variance Decomposition, the e-money variable has a

contribution of 2% to 4% in the seventh to tenth periods. The e-money infrastructure variable has a positive but not significant effect on growth, this is in accordance with Anwar's research (2017) where e-money infrastructure has a positive effect on GDP.

The VAR estimation results for the influencing variable of inflation are -0.623 D(INF(-1)) with a t-statistic value of -2.78658 or <-2.051831 which indicates that growth (Y) has an effect on inflation (INF) at lag 1, based on The regression equation for inflation is 0.1756, meaning that if other variables are fixed and the financial inclusion variable increases by 1 percent, it will increase the growth value by 0.1756 with a probability level of 0.5930 which does not significantly affect growth. The inflation variable has an insignificant negative effect on growth, this is in accordance with Salim's research (2021) where inflation is also influenced by the level of people's purchasing power.

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