E-ISSN 2985-7910

Proceeding Medan International Conference Economics and Business

Volume 1, Year 2023
"Entrepreneurship on Global Economics Development in the Era of Society 5.0"

The Effect of E-Money on Inflation in Indonesia: an Aplication of the Quantity Theory of Money

Dhestiane Sherly Puspita[1], Birgitta Dian Saraswati[1*], Angelita Titis Pertiwi[1]
[1]Universitas Kristen Satya Wacana
Jl. Diponegoro 55-60 Salatiga, Jawa Tengah, Indonesia
***Email:** birgitta.saraswati@uksw.edu

ABSTRACT
The main problem that has a very large impact on the economy and becoming one of the government's policy focuses is inflation. Technological developments in various fields, including financial technology remarked by the start of non-cash payments, are expected to have an impact on price stability or inflation. This study aims to identify the effect of e-money, demand deposits, currency, and quasi-money on inflation in Indonesia. Using the Error Correction Model approach and the observation period from 2010 to 2020, this study shows that demand deposits have no effect on inflation in Indonesia. Meanwhile, currency has a positive effect on inflation both in the long and in the short term. The e-money and quasi-money variables have been proven to have a negative effect on inflation in Indonesia in the long run. This indicates that the more e-money and quasi-money, the more people use non-cash transactions and they, in turn, can reduce the inflation rate.

Keywords: Inflation, Electronic money, Demand deposits, Currency, Quasi money, Error Correction Model (ECM)

INTRODUCTION

One of two main economic problems mostly discussed is inflation as the effect of macroeconomy. The inflation often occurs in developing countries, such as Indonesia. Inflation stability is crucial in relation to economic growth, which has an impact on the community welfare. A high inflation causes prices to continue to increase, making it difficult for the community to buy goods they need. Inflation control is highly important to prevent a high inflation and inflation instability which can bring negative impacts on the socio-economic condition of the community in Indonesia. Further, the inflation has been one of the macroeconomic problems and the focus of the Indonesian government at the moment. The inflation in Indonesia for the last 21 years has been fluctuative (Figure 1).

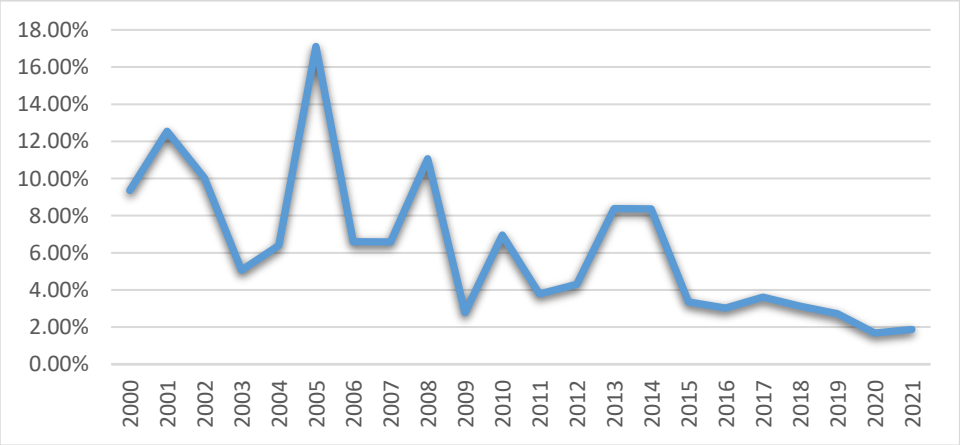

Figure 1. Inflation in 2000-2021

Source: Statistics Indonesia, 2021 (Processed Data)

Figure 1 shows that during the period of 2000-2021, the economy in Indonesia experiencedthe highest inflation in 2005, reaching 17.11%. One of the main factors causing a high inflation in 2005 was the increase in the price of fuel oil. The fuel oil price increased by an average of 29%, and the most influential increase was the Premium fuel oil in March which increased from IDR 1,810 to IDR 2,400 per liter. Meanwhile, in October, the Premium fuel oil increased to IDR 4,500 per liter. In 2006 and 2007, the inflation decreased, although later it drastically increased to double digits in 2008. The inflation in 2008 reached 11.06%, triggered by the global crisis that started in the United States and impacted the whole world, including Indonesia. The crisis caused Indonesia to experience slow economic growth, especially declining export performance. Further, from the external side, the balance of payments experienced an increase in deficit and the Rupiah exchange rate was also significantly decreasing. A high and unstable inflation would certainly bring negative impacts on the economy in Indonesia.

Since July 2005, in order to control the inflation rate, Bank Indonesia has explicitly announced the inflation target to be achieved by implementing Inflation Targeting Framework (ITF). The ITF is a monetary policy framework believed to help Bank Indonesia maintain the price stability by setting monetary policy objectives explicitly based on the inflation target. Law No. 23 of 1999 which has been amended to Law No. 3 of 2004 is an implementation of the ITF. The law explains that Bank Indonesia is an independent institution and the main objective of monetary policy is the price stability as reflected in a

low and stable inflation rate. However, the inflation target set by Bank Indonesia is not always achieved, as shown in Table 1. as follows:

Table 1. Inflation Rate in Indonesia in 2001-2022

Year	Inflation Target	Actual Inflation (yoy)
2001	9% - 10%	10.02%
2002	4% - 6%	12.55%
2003	9+1%	50.6%
2004	5.5+1%	6.40%
2005	6+1%	17.11%
2006	8+1%	6.60%
2007	6+1%	6.59%
2008	5+1%	11.06%
2009	4.5+1%	2.78%
2010	5+1%	6.96%
2011	5+1%	3.79%
2012	4.5+1%	4.30%
2013	4.5+1%	8.38%
2014	4.5+1%	8.36%
2015	4+1%	3.35%
2016	4±1%	3.02%
2017	4±1%	3.61%
2018	3.5±1%	3.13%
2019**	3.5±1%	2.72%
2020**	3±1%	1.68%
2021**	3±1%	1.87%
2022*	3±1%	

Source: Bank Indonesia, 2021

*) Based on PMK No.101/PMK.010/2021 on July 28, 2021

**) Based on PMK No.124/PMK01.1/2017 on September 18, 2017

Table 1. shows that during the period of 2001 – 2021, the inflation target set by Bank Indonesia was not always achieved. The inflation targets set by Bank Indonesia in 2001, 2002 and 2003 were 9% -10% , 4% - 6%, and 9 ± 1% respectively. However, in reality, they were 10.02%, 12.55%, and 50.6% respectively. In 2015, the inflation target was 6+1% and the actual inflation reached was 17.11%. Furthermore, in 2020 and 2021, the inflation targets were also not achieved. These conditions emphasize that the inflation is still a related problem.

There are many factors affecting the inflation rate. The quantity theory of money – a classic theory proposed by Irving Fisher – is one of the theories explaining the occurrence of inflation in the economy. The quantity theory of money explains that the only factor causing the occurance of inflation in the economy is the growth of money supply. This theoretical concept is called the velocity of money and is explained in terms of changes in the money supply in balance with the changes in prices. In a study by Kalbuadi (2021), it was explained that the money supply had a positive and significant effect on the inflation. However, Damayanti (2020) found the opposite, where the money supply had a negative and

significant effect on the inflation. This shows that the money supply is an important factor in the occurence of inflation in Indonesia.

Current developments in financial technology certainly have an effect on the money supply. Technological advances in payment systems are in the form of more economical and efficient cashless payments. The payment system continues to develop from cash to cashless payments. There are various types of cashless payments, ranging from card-based transactions to electronic network-based transactions. The electronic network-based cashless payment system is known as electronic money (e-money). The Regulation of Bank Indonesia No. 20/06/PBI/2018 defines the e-money as a means of payment issued on the basis of the value of money deposited in advance through the holder to the issuer. The value of money is deposited electronically on an application, media or in a card, and can be used as a valid means of payment to the payment machine providers, but not as a card or e-money issuer.

According to the Regulation of Bank Indonesia No.7/52/PBI/2005, the e-money includes Card-Based Payment Instruments (*Alat Pembayaran Menggunakan Kartu* (APMK)), such as credit card, debit card and automated teller machine (ATM) card. The use of e-money supports the increasingly varied needs of the community. It is very convenient to be used, because instead of bringing a lot of cash, the customers only need to bring the ATM card, debit card, credit card, or their mobile phone in which they can benefit from the features provided by the applications developed the banks to pay the goods they need at stores.

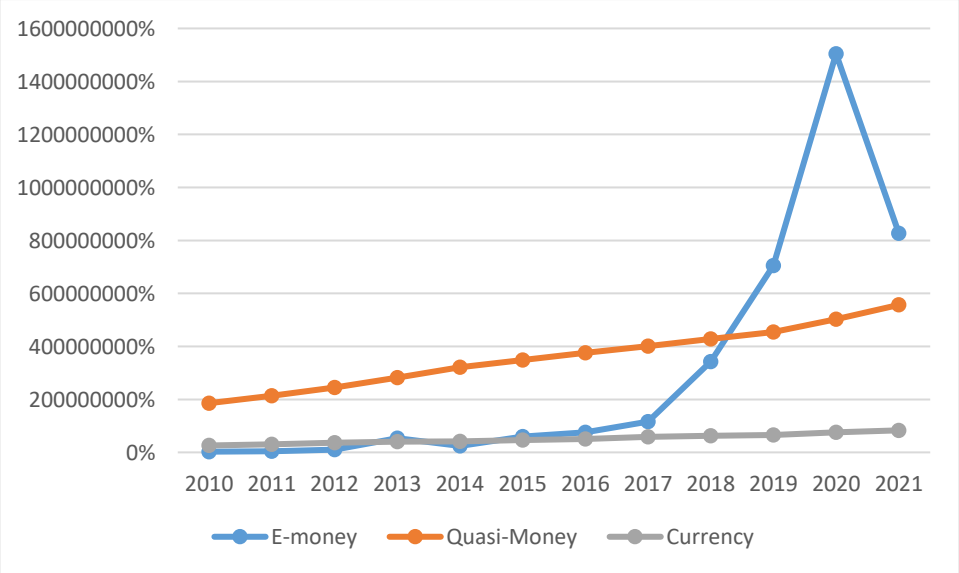

Figure 2. E-money, Quasi-Money, Demand Deposits, and Currency in 2010-2021

Source: Bank Indonesia, Statistics Indonesia, 2021 (Processed Data)

Bank Indonesia stated that the cashless transactions have increased significantly, especially the e-money transactions. Figure 2 shows the development of e-money, quasi-money and currency transactions in 2010 – 2021. The e-money transactions increased every year, although it was slow. The peak of the increase happened in 2020 (15%), however it decreased in 2021 by 8.26%. In addition, the quasi-money transactions had also increased significantly. In 2010, it reached 1.85% and continued to increase every year. Besides, the currency transactions had increased from 2010 – 2021 by 2.6% to 8.3% respectively.

According to the quantity theory of money, the growth in the money supply – both in terms of quasi-money, currency and demand deposits – would potentially trigger the inflation. Studies by Wulandari (2017), Ningsih et al. (2018), Mahatir et al. (2020), Adim (2021), and Kalbuadi (2021) found that the money supply had a positive and significant effect on the inflation. In contrast, Setiartiti et al. (2019) and Yulia Eka (2022) found that the money supply had no effect on the inflation. In fact, the e-money transactions have developed rapidly. As a result, it will have an impact on the economy in Indonesia. On the one hand, the e-money will cause output supply in the economy to be efficient, causing the inflation rate to decrease. According to Rahmayuni (2019), Damayanti (2020), Permatasari (2020), Arifin et al. (2020), and Nainggolan et al. (2022) , the e-money had a positive and significant effect on the inflation. However, Safitri et al. (2021) and Soraya et al. (2022) found the opposite, where the e-money had no effect on the inflation.

According to the above phenomena, there are inconclusive research results and limited researches on the effect of money supply on the inflation. For this reason, this study aims to identify the effect of the amount of currency, demand deposits, quasi-money and e-money on the inflation in Indonesia, both in the long term and short term.

METHOD

This study was done in a quantitative manner. The data used was time-series and secondary data collected monthly from January 2010 to December 2021. The data studied consisted of the inflation data calculated using Consumer Price Index (CPI); the e-money data calculated based on the number of transactions; and the money supply data consisting of demand deposits, currency, and quasi-money obtained from Bank Indonesia and Statistics Indonesia.

The data was analyzed using Error Correction Model (ECM) analysis. The ECM was used to analyze variables considered to have an effect on the inflation in Indonesia. According to Anggraeni and Dwiputri (2022), the ECM was a type of model used to analyze long-term and short-term effects according to the relationships between independent variables on the dependent variable.

The following Equation (1) is the long-term regression equation model used in this study;

$$LIHK_t = \beta_0 + \beta_1 Emoney_t + \beta_2 Demand\_Deposits_t + \beta_3 Currency_t + \beta_4 Quasi\_Money_t + e_t \quad (1)$$

Meanwhile, the following Equation (2) is the the short-term regression equation model used in this study;

$$\Delta LIHK_t = \alpha_0 + \alpha_1 \Delta Emoney_t + \alpha_2 \Delta Demand\_Deposits_t + \alpha_3 \Delta Currency_t + \alpha_4 \Delta Quasi\_Money_t + \alpha_5 ECT_{(i-1)} + \mu_t \quad (2)$$

Note:

$LIHK_t$	= Inflation in period t
$Emoney_t$	= E-money in period t (in billion IDR)
$Demand\_Deposits_t$	= Demand deposits in period t (in billion IDR)
$Currency_t$	= Currency in period t (in billion IDR)
$Quasi\_Money_t$	= Quasi-money in period t (in billion IDR)
β_0, α_0	= Constants
$\beta_1 ....\beta_4$	= Long-term coefficient

$\alpha_1 ... \alpha_4$ = Short-term coefficient
ECT_t = Error Correction Term
e_t = Error term

RESULT AND DISCUSSION

Before estimating the ECM, the data should be examined for its stationarity at the first difference level. Then, the lag length test, classic assumption test and estimating the ECM model were done.

Table 2. Results of Stationarity Test (ADF Test)

Variable	Level	t-Statistic	Prob.	Result
LIHK	Level	-1.962477	0.3032	Not stationary
	1st Difference	-11.9298	0.0000	Stationary
E-money	Level	1.647544	0.9996	Not stationary
	1st Difference	-14.43378	0.0000	Stationary
Demand Deposits	Level	2.829586	1.0000	Not stationary
	1st Difference	-14.4889	0.0000	Stationary
Currency	Level	2.611844	1.0000	Not stationary
	1st Difference	-3.044122	0.0335	Stationary
Quasi-money	Level	1.181059	0.9980	Not stationary
	1st Difference	-17.24714	0.0000	Stationary

Source: Author Compilation

Table 2. shows that all data is not stationary at the level , but they are stationary at the first difference level. This stationary test at the first difference level was analyzed using the Augmented Dickey Fuller indicators. The probability value has a smaller α of 5% or 0.05. Therefore, it can be concluded that all variables – including the inflation, e-money, demand deposits, currency, and quasi-money – are stationary at the same degree, namely the first difference level.

After confirming that the data used in the model was stationary, the optimal lag length was determined.

Table 3. Results of Lag Length Test

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-9146.561	NA	1.93e+52	134.5818	134.6889	134.6253
1	-8404.254	1419.115	5.07e+47*	124.0332*	124.6757*	124.2942*
2	-8381.840	41.20377	5.27e+47	124.0712	125.2491	124.5498
3	-8354.675	47.93754	5.12e+47	124.0393	125.7527	124.7356
4	-8335.687	32.11230	5.64e+47	124.1277	126.3765	125.0416
5	-8312.226	37.95125	5.83e+47	124.1504	126.9345	125.2818
6	-8293.411	29.05228	6.50e+47	124.2413	127.5609	125.5903
7	-8267.908	37.50464	6.60e+47	124.2339	128.0889	125.8005
8	-8231.797	50.44882*	5.79e+47	124.0705	128.4609	125.8547

Source: Author Compilation

The results of the lag length test confirm that the optimal lag length obtained is 1. The optimal lag length is lag 1, and the results show that lag 1 has the smallest values of FPE, AIC, SC, and HQ.

Furthermore, the ECM model estimate was carried out. The long-term and short-term regression estimates could be obtained using the ECM approach. The results are presented in the following Table 4;

Table 4. Error Correction Model (ECM) Estimate

Long-term Estimate			
Variable	Coefficient	t-Statistic	Prob.
C	4.822582	158.3117	0.0000
Emoney	-2.94E-06	-4.33504	0.0000
Demand_Deposits	-1.03E-09	-0.66719	0.5058
Currency	1.05E-08	3.402117	0.0009
Quasi_Money	-1.11E-09	-2.42153	0.0167
R-squared 0.295109		F-stat 14.54838	
Adjust R-square 0.274824		Prob (F-stat) 0.000000	
Short-term Estimate			
Variable	Coefficient	t-Statistic	Prob.
C	-0.00214	-0.67975	0.4978
D(Emoney)	5.55E-08	0.12063	0.9042
D(Demand_Deposits)	1.59E-09	1.504942	0.1346
D(Currency)	3.09E-09	2.35221	0.0201
D(Quasi_Money)	-4.17E-10	-0.61609	0.5389
ECT(-1)	-8.79E-02	-2.46206	0.0151
R-squared 0.092949		F-stat 2.807783	
Adjust R-square 0.059845		Prob (F-stat) 0.019042	

Source: Author Compilation

The results of the long-term regression equation find that most of the independent variables individually have a significant effect on the inflation, except for the demand deposits because its t-stat probability value exceeds α of 5% or 0.05. The probability value of the F-stat is below the significance of 0.05, which is equal to 0.00000. This indicates that the long-term estimate together with the independent variables affected the dependent variable. The coefficient of determination in the adjusted R^2 value is 0.274824, indicating that the independent variable is able to explain the the variation occured in the dependent variable by 27.48% in the long-term regression estimate.

Furthermore, the results of the short-term regression equation find that the currency has a significant effect on the inflation because its probability value of the t-stat value is 0.0201, below the 5% significance. Meanwhile, the e-money, demand deposits, and quasi-money are confirmed to have no significant effect on the inflation, because their probability values of the t-stat exceed the 5% significance level. In addition, the ECT coefficient is -0.0879 with a probability value of 0.0151, less than the significance level of 0.05. This indicates that the ECM estimate is valid to be used because there would be an imbalance adjustment process in the short-term balance towards the long-term balance. Further, the probability value of the F-stat is only 0.019042, which is also below the significance of 0.05. This implies that the short-term estimate together with the independent variables affected the dependent variable. The coefficient of determination in the adjusted R^2 value is

0.059845, indicating that the independent variable is able to explain the the variation occured in the dependent variable by 5.98% in the short-term regression estimate.

DISCUSSION

This study aims to analyze the effect of money supply – in the narrow sense of demand deposits and currency, as well as in the broad sense of quasi-money and e-money – on the inflation, both in the long term and short term.

The Effect of E-money on the Inflation in Indonesia

The estimate result explains that the e-money has a negative effect on the inflation in the long term. This finding is in line with researches conducted by Arifin et al. (2020), Safitri et al. (2021) and Soraya et al. (2022). An increase in the number of e-money transactions would decrease the inflation rate. It happened because the increasing volume of e-money transactions would reduce the liquidity of money held by the public, so that it would also lower the household consumption.

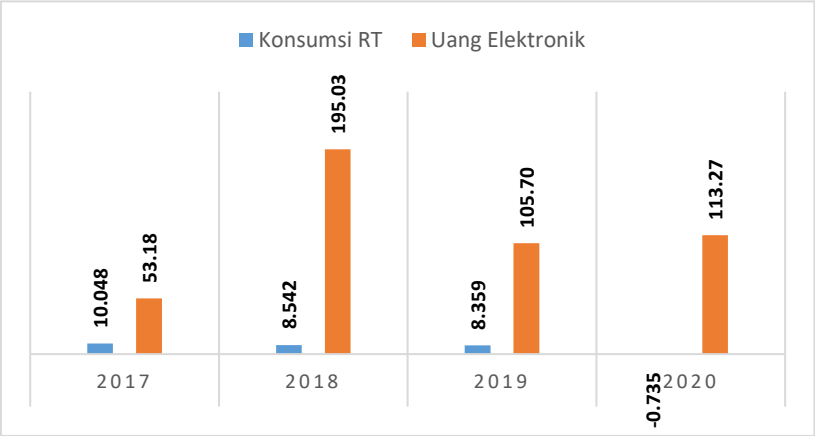

Figure 3. The Growth of E-money and Household Consumption in Indonesia in 2017-2020 (%)
Source: Statistics Indonesia and the Financial Service Authority (processed)

The increasing growth of e-money transactions would result in the declining growth of household consumption. The decrease in household consumption would lower the aggregate demand and ultimately decrease the inflation rate. The e-money money is found to have a negative effect on the inflation rate, and it indicates that the e-money was able to control the inflation rate. Therefore, the cashless society policy was the right policy to control the inflation rate. One of the policies carried out by Bank Indonesia in order to increase the use of e-money or cashless payments was by educating the public about the cashless transaction services.

The Effect of Currency on the Inflation in Indonesia

The estimate result shows that the currency has a positive effect on the inflation in Indonesia, both in the long term and short term. This finding supports research results found by Wulandari (2017), Ningsih et al. (2018), Mahatir et al. (2020), and Adim (2021). Further, this finding is in line with the quantity theory of money which explains that the growth in the quantity of money was the cause of inflation (Mankiw, 2018), so that an increase in the money supply would result in the inflation. This finding was confirmed considering that M1 was part of the most liquid monetary aggregate compared to M2. The M1 consisted of demand deposits and currency. The currency was relatively more liquid than the demand

deposits. Therefore, the increase in currency held by the public in the form of cash would simultaneously increase the household consumption. This increased consumption would lead to the inflation. In order to maintain the inflation stability, the government must control the community's behavior in holding cash. The policies that could be carried out by the government were to provide more information, encourage the community to use more cashless transactions (and be a cashless society), and provide convenience (facilities) for business actors to provide cashless transaction services in their business activities.

The Effect of Demand Deposits on the Inflation in Indonesia

The estimate result confirms that the demand deposits has no effect on the inflation, neither in the long term or in the short term. This finding is in line with the researches by Setiartiti et al. (2019) and Eka et al. (2022). A checking account referred to a savings account at a commercial bank where withdrawals could be made at any time, and the money in the checking account was the demand deposits. The demand deposits consisted of checks, demand deposits and banknotes. The demand deposits did not affect the inflation allegedly because if the community wanted to make payments using the demand deposits, they would only need to write the amount of payment on a check and use the demand deposits by transferring funds from a checking account to another account. In this case, the demand deposits was an illiquid value. This indicated that during the payment process, the demand deposits was difficult to be used directly. This caused the demand deposits to be not widely used by the public in making daily transactions. For this reason, the demand deposits did not affect the inflation in Indonesia.

The Effect of Quasi-Money on the Inflation in Indonesia

The estimate result explains that the quasi-money has a negative effect on the inflation in Indonesia in the long term. This finding is in line with the researches by Setiartiti et al. (2019) and Eka et al. (2022). They explained that in a broader sense, the money supply consisted of the quasi-money. The quasi-money consisted of time deposits (Rupiah and Foreign Currency), savings (Rupiah and Foreign Currency) and demand deposits. In this case, the quasi-money was an illiquid value. If the public savings experienced an increase, there would be less money used for the household consumption. Therefore, the demand for goods would decrease, causing a decrease in the price of goods and the inflation would also decrease.

CONCLUSION

Based on the results and discussion of this study, it can be concluded that the quantity theory of money has been applied in Indonesia. This was proved by the currency variable which has a positive effect on the inflation, both in the long term and short term. Meanwhile, the e-money and quasi-money have proven to have a negative effect on the inflation in Indonesia in the long term. This was presumably because the currency was relatively more liquid than the demand deposits. Therefore, by increasing the cash held by the public (currency), it would increase the household consumption. This increased consumption would encourage the inflation. Conversely, a higher amount of e-money and quasi-money indicated that there were more people using the cashless transactions. Thus, it would be able to decrease the inflation rate.

Meanwhile, the demand deposits has no effect on the inflation in Indonesia. It happened because the demand deposits in this case was of illiquid value. This indicated that during the payment process, the demand deposits was difficult to be used directly. Thus, the

demand deposits had not been widely used by the public in making daily transactions. As a result, the demand deposits did not affect the inflation in Indonesia.

IMPLICATIONS

This study confirms that the currency has a positive effect on the inflation in Indonesia, both in the short term and long term. Further, this study also finds that thee-money has a negative effect on the inflation in Indonesia in the long term. These findings suggest a policy implication in order to maintain the inflation stability. These findings imply that the government must control the community's behavior in holding the cash. The policies that can be carried out by the government are to provide more information, encourage the community to use more cashless transactions (and be a cashless society), and provide convenience (facilities) for the business actors to provide cashless transaction services in their business activities.

REFERENCES

Adim, A. (2021). Pengaruh Uang Beredar Dan Nilai Rupiah (Kurs) Terhadap Inflasi (Periode Januari 2015-Desember 2019.. 2(I).

Anggraeni, D., & Dwiputri, I. N. (2022). Variabel-Variabel Yang Mempengaruhi Inflasi Di Indonesia. Jurnal Ekonomi Pembangunan, 11(2), 119–128. Https://Doi.Org/10.23960/Jep.V11i2.490

Arifin, M. Q. N., & Oktavilia, S. (2020). Analysis Journal Analysis The Use Of Electronic Money In Indonesia. Economics Development Analysis Journal, 9(4), 361–373.

Budiman, P. A. (2021). Analisis Ecm Pdb, Kurs Dan Jumlah Uang Beredar Terhadap Inflasi. Jurnal Kajian Ekonomi Dan Kebijakan Publik, 6(2).

Damayanti, R. (2020). Analisis Pengaruh Transaksi Uang Elektronik Terhadap Tingkat Inflasi Di Indonesia. Jurnal Ekonomi Pembangunan, 10(1), 56–63. Https://Doi.Org/10.23960/Jep.V10i1.231

Kalbuadi, K. (2021). Analisis Pengaruh Peluncuran Sistem E-Money Dan Jumlah Uang Beredar Terhadap Inflasi Di Indonesia. Jca (Jurnal Cendekia Akuntansi), 2(1), 11. Https://Doi.Org/10.32503/Akuntansi.V2i1.1671

Mahatir, M. R., Aimon, H., & Sentosa, S. U. (2020). Stability Of Money Supply, E-Money, Interest Rate, And Inflation In Indonesia. 152, 92–100. Https://Doi.Org/10.2991/Aebmr.K.201126.012

Mankiw, N. G. (2018). Pengantar Ekonomi Makro (7th Ed.). Salemba Empat.

Mishkin, F. S. (2016). The Economics Of Money, Banking, And Financial Market (11th Ed.). Education Limited 2016.

Nainggolan, I. M., & Garnia, E. (2022). The Effect Of Volume And Nominal Of E-Money Transaction Of Inflation In Indonesia. Procuratio: Jurnal Ilmiah Manajemen, 9(2), 491–502.

Nanga, M. (2001). Makroekonomi Teori Masalah Dan Kebijakan (1st Ed.). PT Rajagrafindo Persada.

Ningsih, S., & Kristiyanti. (2018). ANALISIS PENGARUH JUMLAH UANG BEREDAR, SUKU BUNGA, DAN NILAI TUKAR TERHADAP INFLASI DI INDONESIA PERIODE 2014-2016. Jurnal Riset Akuntansi & Keuangan, 20(2). Https://Doi.Org/10.54367/Jrak.V2i1.170

Permatasari, K., & Purwohandoko. (2020). Pengaruh Pembayaran Non Tunai Terhadap Variabel Makroekonomi Di Indonesia Tahun 2010-2017. Jurnal Ilmu Manajemen,

8(1), 225–232.

Pohan, M., Azhar, M. E., Purnama, N. I., & Jasin, H. (2022). Model Perilaku Konsumtif Mahasiswa Fakultas Ekonomi Dan Bisnis Universitas Swasta Di Kota Medan. Riset Dan Jurnal Akuntansi, 6(2), 1498–1508. Https://Doi.Org/10.33395/Owner.V6i2.777

Rahmayuni, S. (2019). Pengaruh E-Money Dan E-Commerce Terhadap Tingkat Inflasi. Sebatik, 23(1), 148–152. Https://Doi.Org/10.46984/Sebatik.V23i1.460

Safitri, A., & Ariza, A. (2021). Pengaruh Pembayaran Non Tunai, Velocity Of Money Dan Suku Bunga Terhadap Inflasi Di Indonesia. Prosiding Seminar Nasional SATIESP, 978–602.

Setiartiti, L., & Hapsari, Y. (2019). The Determinants Of Inflation Rate In Indonesia. Jurnal Ekonomi & Studi Pembangunan, 20(1). Https://Doi.Org/10.18196/Jesp.20.1.5016

Setiawan, I. (2017). Peran Perbankan Syariah Terhadap Perekonomian Di Indonesia (Pendekatan Model VAR/VECM). Politeknik Negeri Bandung, 11(2), 172–178.

Solikin, S. (2002). UANG Pengertian, Penciptaan Dan Peranannya Dalam Perekonomian. Pusat Pendidikan Dan Studi Kebanksentralan (PPSK) BANK INDONESIA.

Soraya, J. L., & Abbas, M. H. I. (2022). Does Non-Cash Payments Affect The Inflation Rate In Indonesia? Management Studies And Entrepreneurship Journal, 3(6), 12. Http://Journal.Yrpipku.Com/Index.Php/Msej

Was'an, G. H. (2022). Pendekatan Analisis Vector Error Correction Model (VECM) Dalam Hubungan Kondisi Makro Ekonomi Dengan Non Performing Financing Berdasarkan Pengelompokan Modal Inti Bank Umum Syariah Di Indonesia. Jurnal Neraca Peradaban, 2(2), 129–136. Https://Doi.Org/10.55182/Jnp.V2i2.180

Widiarsih, D., & Romanda, R. (2020). Analisis Faktor-Faktor Yang Mempengaruhi Inflasi Di Indonesia Tahun 2015-2019 Dengan Pendekatan Error Corection Model (ECM). Jurnal Akuntansi Dan Ekonomika, 10(1), 119–128. Https://Doi.Org/10.37859/Jae.V10i1.1917

Wulandari, S. (2017). The Effect Of Money Supply , Interest Rate , And Exchange Rate On Inflation In Indonesia 2001-2013. 26–32.

Yulia Eka Riyanti, S. (2022). Pengaruh Jumlah Uang Beredar, Suku Bunga Dan Nilai Tukar Terhadap Tingkat Inflasi Di Indonesia. Jurnal Ilmiah Indonesia, 7(7).