

The Effect of Non-Cash Payments on Inflation Rate with Cash Circulation as an Intervening Variable during the Covid 19 Pandemic

¹Fitriani Rahim, ²Muhammad Asdar, ³Muh. Sobarsyah, ⁴Idayanti Nursyamsi

¹Fitriani Rahim Master in Management Science, Faculty of Economics and Business, Hasanuddin University

²Muhammad Asdar Master in Management Science, Faculty of Economics and Business, Hasanuddin University

³Muh.Sobarsyah Master in Management Science, Faculty of Economics and Business, Hasanuddin University

⁴Idayanti Nursyamsi Master in Management Science, Faculty of Economics and Business, Hasanuddin University

Abstract:- This study aims to analyze the effect of non-cash payments on money circulation and inflation during COVID-19 pandemic. It also examines the effects of money circulation on inflation. To determine the impact of non-cash payments on inflation, money circulation is used as an intervening variable during the COVID-19 pandemic (2017-2020). The data was collected using various techniques, including observation and documentation. Furthermore, descriptive analysis, classical assumption testing, simple linear regression analysis (model 1), multiple linear regression analysis (model 2), and hypothesis testing were used to analyze the collected data. The results showed that non-cash payments have significant positive effects on money circulation and inflation rate, while money circulation has a significant effect on inflation. The mediation test results using the Sobel showed that the amount of money circulation might partially mediate non-cash payments on the inflation rate in Indonesia during the COVID-19 pandemic.

Keywords:- Non-Cash Payments, Inflation, and Money Circulation.

I. INTRODUCTION

The rapid spread of the Covid-19 outbreak had a major impact on the Indonesian economy. Apart from the health issue, the pandemic has negatively affected the global economy. To mitigate this problem, Bank Indonesia (BI) has further strengthened all policy mix instruments to stabilize the rupiah exchange rate, control inflation, and support financial system stability. This is carried out through hygienic money circulation and encouraging the public to use non-cash transactions, such as electronic money, internet banking, and QR Code Indonesia Standard (QRIS). Furthermore, Bank Indonesia also accelerated the digital economy and finance implementation to recover the economy through collaboration between banks and fintech. To maintain financial system stability, it controls the economy as the monetary authority. This involves determining the amount of currency in circulation and demand deposits in monetary target commercial banks. This is essential because the stability of the economy is maintained through the amount of money in circulation.

The monetary authority estimates that non-cash transactions will lead to transparency and help limit money circulation. This means that the higher the level of non-cash transaction usage, the less the demand for money. Table 1 shows an overview of data on the money circulation, inflation rate, and the number of non-cash payments in Indonesia from 2017 to 2020.

Table 1. Data on the Amount of Non-Cash Payments, Money Circulation and Inflation Rate in Indonesia in 2017-2020

Year	Non-Cash Payment (IDR)			Total Money circulation (IDR)	Inflation Rate (%)
	Debit Card	Electronic Money	Credit card		
2017	6.200.437.665			12.375.469	297.761.229
2018	6.927.267.513			47.398.616	314.294.067
2019	7.474.323.315			115.165.468	342.682.828
2020	8.916.375.229			204.909.170	233.903.609

Source: Data processed, 2021

According to Table 1, the amount of money circulating in Indonesia is increasing every year. For instance, it increased by 5,518,336.63 trillion, 5,891,380.71 trillion, and 6,520.382.73 trillion in 2018, 2019, and 2020, respectively.

Apart from money circulation, non-cash payments also affect inflation. Table 1 shows Indonesia's general annual inflation average for the last 3 years. The year 2017 experienced inflation of 2.85, which was controlled in line with the target of 2.91 in 2018 and supported strong economic growth. This positive development is attributed to the well-run transmission of monetary policy, controlled financial system stability, and inflation of 3.29 in 2019. The government will try to keep inflation on target at 4.1% to support people purchasing power and good financial management. However, there was a drastic decline of 1.70% in 2020. This is because low and stable inflation is a prerequisite for sustainable economic growth, which ultimately improves the welfare of the people. High and unstable inflation negatively affects money circulation, necessitating the need to control it.

The slowing growth in the amount of money in circulation was also caused by the increased use of non-cash payment transactions in demand, including debit cards, credit cards, and E-money, as shown in Table 1. Non-cash payments have increased every year from 2017 to 2019, indicating that the public accepts them for transactions. Furthermore, it is more popular in the community than cash payments for various reasons, including low transaction costs, lack of energy and time required, and not constrained by time and place to transact. Non-cash payments facilitate and support the needs of human activities such as toll payments, buying credit, online shopping. It also provides security because there is no need to carry large amounts of cash directly for transactions.

In this study, non-cash payment transactions, inflation, and money circulation are independent, dependent, and intervening variables. The purpose of the study was to examine the efforts made by Bank Indonesia and the government to control the money in circulation through inflation and the application of cashless transactions. Furthermore, the impact of non-cash transactions on money circulation and inflation are still current issues that need to be reviewed in line with the emergence of financial technology (fintech) that affects the economy.

II. MATERIALS AND METHODS

Study Location and Design

This is a descriptive study that uses a quantitative approach. The data obtained is analyzed, presented, and described based on the actual conditions to draw conclusions. The study uses time-series data obtained from Bank Indonesia per year, starting from 2017 to 2019.

Population and Sample

The population is non-cash payments, inflation, and the money circulation in Indonesia from 2017 to 2020, which also constitute the sample.

Data Collection Method

The data collection technique used was literature study. This involved collecting literature, scientific articles, research journals, scientific articles, and documents from the official website of Bank Indonesia.

Data Analysis

The data analysis techniques used include descriptive analysis, classical assumption test, simple linear regression analysis (model 1), multiple linear regression analysis (model 2), and hypothesis testing.

III. RESULTS

Descriptive Analysis

The data processing results using SPSS version 23 showed that the average non-payment transactions cash amounted to 606,722,805 with a standard deviation of 62,703,438. The lowest number of non-cash payments was 460.493,909, while the highest was 774,207,153. Furthermore,

the average amount of money in circulation from the samples is 5,773,349, with a standard deviation of 540,730. The smallest value was 4,936.882, while the highest was 6,900,049. The average inflation rate of the samples was 0.277, with a standard deviation of

0.267. The lowest rate was -0.100%, while the highest was 0.740%. Simple Linear Regression Analysis

Table 2. Results of Simple Linear Regression Equation (Model 1)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3,150.907	671.023			
Non-cash payments	0,004	0,001	0,501	3,929	.000
R	= 0,501		Fcount = 15,433		
R-square	= 0,251		Sign. = 0,000		

Source: Processed Data

Regression data processing results showed that non-cash payments have a significant value of 0.000 because the sign value = 0.000 < 0.05. Therefore, non-cash payments have a significant effect on money circulation.

Multiple Linear Regression Analysis

Table 4 shows the results of data processing using the SPSS program.

Table 4. Multiple Linear Regression Analysis of Non-Cash Payments with Money Circulation on the Inflation Rates in Indonesia

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.373	.376		-.990	.327
Non-cash payments	2.958E-9	.000	.694	5.044	.000
Money Circulation	-1.983E-7	.000	-.401	-2.916	.006
R	= 0,602		Fcount = 12,821		
R ²	= 0,363		Sign = 0,000		

Source: Processed Data

The multiple linear regression equation is presented as follows.

$$Y = -0,373 + 0,694X - 0,401$$

The multiple linear regression equation above is interpreted as follows:

- The constant value is -0.373, which means that without non-cash payments and money circulation, inflation is -0.373%.
- The regression coefficient value for non-cash payments is 0.694. This means that non-cash payments have a positive effect on inflation.
- The regression coefficient value for money circulation is -0.401. This means that money circulation has a positive effect on inflation.

Table 5 shows the extent of the relationship or correlation between non-cash payments and money circulation on the inflation rate.

Table 5. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.602 ^a	.363	.335	.21814	1.902

a. Predictors: (Constant), Money Circulation, Non-cash Payments

b. Dependent Variable: Inflation

From the summary model, there is an R-value of 0.602. This means that non-cash payments and money circulation strongly affect inflation because r is close to 1 or 60.2%. The percentage of the influence of non-cash payment and money circulation on inflation is determined from the R-square value, 0.363, translating to 36.3%. Other variables outside this study model influence the remaining 63.7%.

The hypothesis can be tested using the partial test (t-test) and simultaneous test (F test).

1) Partial test (t-test)

The partial test (t-test) examines the effect of each variable by comparing the significant and standard values. In case the significant value is less than the standard value, the effect is significant.

From the results of processing the regression data shown in table 5.10, the hypothesis testing is described as follows:

a) Effect of non-cash payments on inflation

The results of hypothesis testing for non-cash payments obtained a sign value of $0.000 < 0.05$. Since the sign value is smaller than the standard value, non-cash payments have significantly affect inflation.

b) Effect of money circulation on inflation

The results of hypothesis testing for money circulation obtained a sign value. of $0.006 < 0.05$. Since the sign value is smaller than the standard value, money circulation significantly affects inflation.

2) Simultaneous testing (F test)

To determine the simultaneous effect of non-cash payments and money circulation on inflation during the COVID-19 pandemic, the F test was used to compare the sign values with standard values. In case the sign value is smaller than the standard value, the effect is simultaneous. Table 6 shows the results of the simultaneous test (F test).

Table 6. Simultaneous Testing

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1.220	2	.610	12.821	.000 ^b
Residual	2.141	45	.048		
Total	3.362	47			

Source: Processed data

a. Dependent Variable: Inflation

b. Predictors: (Constant), Money Circulation, Non-cash Payments

From the table, a significant value of 0.000 was obtained. Since the value of $0.000 < 0.05$, non-cash payments and money circulation simultaneously affected inflation during the 2017-2020 COVID-19 pandemic.

IV. DISCUSSION

The effect of non-cash payments on money circulation during the COVID-19 pandemic period 2017 to 2020

This study showed that non-cash payments positively affect the circulation of money. The greater the non-cash payments made, such as through ATM cards, E-money, or credit cards, the more the money circulation, especially during the COVID-19 pandemic. Furthermore, the partial test results showed that non-cash payments significantly affect the amount of money circulation. The non-cash payments significantly increased the circulation of money during the COVID-19 pandemic.

The effect of non-cash payments on inflation during the COVID-19 pandemic

The results of data analysis show that non-cash payments affect the inflation rate. The increase in non-cash payments also increased the inflation rate. The partial test results showed that non-cash payments had a significant effect of increasing inflation. Empirical findings showed that non-cash payments have a significant effect on increasing inflation rates.

The Effect of money circulation on inflation rate during the COVID-19 pandemic

The results of data analysis showed that money circulation has a negative effect on inflation rates during the COVID-19 pandemic. Therefore, increased money circulation reduced the inflation rate during the pandemic because of the decline in the use of non-cash payments, such as debit or credit cards, during this crisis.

According to the partial test, the increase in money circulation during the COVID-19 pandemic reduced the inflation rate. This is in line with BPS data in Makassar, which showed that the inflation rate in 2020 decreased compared to 2017 to 2019, the pre-pandemic period. Furthermore, the level of money circulation led to a significant decline in the inflation rate. This indicates that the level of money circulation significantly reduces the rate of inflation. The comparison between money circulation and the inflation rate shows that money demand increased. Previously, the inflation rate increased yearly but started decreasing during the pandemic. Therefore, money circulation has a negative effect on the inflation rate.

The Effect of Non-Cash Payments on Inflation through Money Circulation during the COVID-19 pandemic

The results of data analysis through the mediation test using the Sobel test analysis tool showed that the money circulation mediated the effect of non-cash payments on the

inflation rate. This implies that non-cash payments affect the inflation rate through money circulation. Since non-cash payments increase money circulation, it decreases the inflation rate.

V. CONCLUSIONS AND SUGGESTIONS

This study makes several conclusions from the analysis and discussion, including 1) Non-cash payments have a positive and significant effect on the circulation of money, 2) Non-cash payments have a positive and significant effect on the inflation rate, 3) The circulation of money affects inflation. This means that the circulation of money has a significant influence of declining inflation rate, especially during the COVID-19 pandemic, 4) The results of the mediation test using the Sobel test showed that the amount of money circulation partially mediated non-cash payments and the inflation rate. Since non-cash payments affect the circulation of money, it decreases the inflation rate. Therefore, this study makes 3 suggestions, including 1) The government should pay attention to the value of non-cash payment transactions (debit cards, e-money, and credit cards) to increase the amount of money circulation, 2) Bank Indonesia needs to pay attention to a public understanding regarding the non-cash transaction campaign intensified through the Cashless Society to be further enhanced in the future, and 3) Future research needs to add other factors that affect the inflation rate and add a longer period.

REFERENCES

- [1]. Arikunto, S., 2012, *Prosedure Penelitian Suatu Pendekatan Praktek*, Rikena Cipta, Jakarta Arthur, Eduardus. 2016. *Pengaruh Penggu-naan Sistem Pembayaran Non Tunai (Apmk Dan Uang Elektronik) Terhadap Jumlah Uang Beredar (M1) Di Indonesia*
- [2]. Bank Indonesia, 2004. *Peraturan Bank Indonesia Tentang Penyelenggaraan Alat Pembayaran dengan Menggunakan Kartu*.
- [3]. Bank Indonesia, 2006. *Persepsi, Preferensi dan Perilaku Masyarakat dan Lembaga Penyedia Jasa Terhadap Pembayaran Non Tunai*. Bank Indonesia.
- [4]. Costa Storti, C., & DeGrauwe, P. (2001). *Monetary Policy in a Cashless Society* (SSRN Scholarly Paper No. Centre for Economic Policy Research).
- [5]. Ferdiansyah, F. (2016). Analisis Pengaruh Jumlah Uang Beredar (M1), Suku Bunga SBI, Nilai Tukar Suku Bunga Deposito Terhadap Tingkat Inflasi. *Media Ekonomi Universitas Trisakti*, Vol. 19, No. 3, 43–68
- [6]. Geanakoplos, John, and Pradeep Dubey. 2010. *Credit Card and Inflation*. *Games and Economic Behaviour* 70, 325-353.
- [7]. Gerlach, S., & Tillmann, P. 2011. *Inflation Targeting and Inflation Persistence in Asia-Pacific* (No. 252011). Diambil dari Hong Kong Institute for Monetary.
- [8]. Hancock, Diana dan David B. Humphrey, 1998. *Payment Transactions, Instruments, and Systems: A Survey*, *Journal of Banking and Finance* 21, USA Florida State University.
- [9]. Istanto, Lasondy dan Syarif F Fauzie. 2019. *Analisis Dampak Pembayaran non tunai terhadap jumlah uang beredar di Indonesia*
- [10]. Indah Yuliana, SE., MM. (2008). *Analisis Pengaruh Inflasi, Tingkat Suku Bunga Sbi Dan Nilai Tukar Terhadap Jumlah Uang Yang Beredar Di Indonesia Periode 2001 S/D 2006* [QITISHODUNA], Vol. 4, No. 1.
- [11]. Kasmir, 2015. *Bank dan Lembaga Keuangan Lainnya*, Jakarta : PT. Raja Grafindo Persada. Lintang Sari N. N., Hidayati N., Purnamasari Y., Carolina H., & Febranto W. (2018). *Analisis*
- [12]. *Pengaruh Instrumen Pembayaran Non-Tunai Terhadap Stabilitas Sistem Keuangan Di Indonesia*. *Jurnal DINAMIKA Ekonomi Pembangunan*, 1(1). 47-62. DOI: 10.14710/jdep.1.1.47-62.
- [13]. Mangani, K.S. 2010. *Bank dan Lembaga Keuangan Lain*. Jakarta: Erlangga.
- [14]. Mankiw, G.N. 2017. *Makro Ekonomi*. Edisi Keenam. Alih Bahasa: Fitria Liza dan Imam Nurmawan. Jakarta: Erlangga.
- [15]. Marimon, Ramon, Juan Pablo Nicoli, Pedro Teles. 1997. *Electronic Money: The End of Inflation*. Institute for Empirical Macroeconomics Federal Reserve Bank of Minneapolis Mishkin, S. F. 2011. *Ekonomi Uang, Perbankan, dan Pasar Keuangan*. Edisi Sebelas. Buku Satu. Penerjemah: Barlev Nicodemus Hutagalung. Jakarta: Salemba Empat.
- [16]. Muna, Luchy Nur Arrist. 2020. *Pengaruh E-Money terhadap Jumlah uang Beredar dan Velocity of Money dengan Inflasi sebagai Variabel moderasi*. *Jurnal Manajemen Universitas Maulana Malik Ibrahim*.
- [17]. Nopirin. 2012, *Ekonomi Moneter*, buku Satu, Edisi keempat, Yogyakarta: BPFE.
- [18]. Prasetyo, Bambang. 2011. *Metode Penelitian Kuantitatif: Teori dan Aplikasi*, Raja Grafindo Persada, Jakarta.
- [19]. Priyatama, A., & Apriansyah. 2010. *Correlation Between Electronic Money and the Velocity of Money*. *Global Proceeding Management Conference* (11), 1–6
- [20]. Priyatno, Duwi. 2017. *Belajar Alat Analisis Data Dan Cara Pengolahannya Dengan SPSS Praktis dan Mudah Dipahami untuk Tingkat Pemula dan Menengah*. Yogyakarta: Gava Media Santomero, A. and J. Seater. 1996. *Alternative Monies and the Demand for Media of Exchange*. *Journal of Money, Credit, and Banking*, V ol. 28, No.4, 942-964.
- [21]. Pratama Rahardja, Mandala Manurung, 2010. *Pengantar Ilmu Ekonomi* (Mikro Ekonomi & Makro Ekonomi), Jakarta: Lembaga Penerbit YKPN.
- [22]. Widodo, Tri. 2018. *Analisis Pengaruh Electronic Money terhadap Jumlah Uang beredar di Indonesia periode 2009-2017 menurut Perspektif Ekonomi Islam*
- [23]. Yilmazkuday, H. 2011. "The Effects of Credit and Debit Cards On the Money Demand of a Small Open Economy". *Preliminary journal*
- [24]. Zunaitin, Eliya, Regina Niken W., Fajar Wahyu P. dkk. 2017. *Pengaruh E-money terhadap Inflasi di Indonesia*. *Journal Ekuilibrium*, 2017, Volume II (1) : 18-23