Analysis the Effect of Money Supply, Velocity of Money, Interest Rates and Inflation on Non-Cash Payments: Evidence in Indonesia

Purwohandoko¹*, Abshor Marantika², Citrawati Jatiningrum³
¹Department of Management, Universitas Negeri Surabaya, Indonesia
²Department of Management, STIE Bangkinang, Indonesia
³Departement of System Information, STMIK Pringsewu Lampung, Indonesia
*Correspondent e-mail: purwohandoko@unesa.ac.id

Abstract
This study investigates the effect of the money supply, velocity of money, interest rate, and inflation on non-cash payments in Indonesia either partially and simultaneously. The study used quantitative research method with a causality approach with the secondary data where obtained from the official website of Bank Indonesia and the Central Statistics Agency. The population in this study reached 480 data obtained from e-money payment data, money supply, velocity of money, interest rates and inflation in Indonesia in 2012-2019 (8 years). The techniques sampling is a sample or saturated sample, using the multiple linear regression analysis. Result finding reveal that the money supply amount, velocity of money, and inflation have an effect on non-tuned payments. Evidence shows that money supply will be elastic in response to changes in the volume of non-cash payment transactions. The relationship pattern shows a strong effect in each variables. The implication of the results of this study for the government policies, especially Bank Indonesia related with demand for money supply on monetary policy in Indonesia.

Keywords: Money Supply, Velocity of money, Interest Rate, Inflation, Non-Cash Payments

INTRODUCTION
The increasing of digital technology developments is growing rapidly. This condition is also leading the financial economy structure changes in Indonesia. In line with this, the consequences faced are changes in payment patterns and systems in economic transactions, and also these phenomena continue to develop towards the digital economy. The digital economy refers to an economy that is based on digital technology such as communication networks, computers, software and other related information technology (Mondego & Gide, 2020; Rumata & Sastrosubroto, 2020). In current conditions, people need a strong, safe and reliable payment system to increase trust and effectiveness (Singh & Sinha, 2020). This fact was also triggered by the conditions of the Covid-19 pandemic that happened around the world which led to tendency the Indonesia people more inclined to shop by online, and also had an impact on the use of transactions that previously used cash, now using e-money or non-cash payments (Gerristen et al, 2014, Fandiyanto & Karnadi, 2020). Technological advances in the payment system shift the role of cash as a means of payment in the form of more efficient and economical non-cash payments, in this case the background of Indonesia issuing regulation on Bank Indonesia Regulation
No. 11/12 / PBI / 2009 dated April 13, 2009 concerning Electronic Money. E-money in Indonesia, as of July 2016 from 2009, BI noted that there are 20 e-money issuers which is 9 banks and 11 institutions other than a bank. Sugito and Saragih (2020) stated that the benefits of use e-money is very much. Besides simplify, speed up and prioritizing practicality, e-money is also classified as very practical and flexible because it is easy taken anywhere.

Non-cash payments are generally carried out not by using money as a means of payment but by way of inter-bank transfers or intra-bank transfers through the bank's own internal network (Wasiaturrahma et al, 2019) along with the development of non-cash electronic payment technology called e-money (Lintangsari, et al. 2018; Fatmawati & Yuliana, 2019). In addition, non-cash payments can also be made using cards as a means of payment, for example by using debit cards, credit cards and Electronic Money (e-money) (Pramono & Yanuarti, 2006; Ginting et al, 2018).

Figure 1. Amount of Non-Cash Payments Circulating in Indonesia
(Source: Indonesian Bank, 2020)

Based on Figure 1 shows that the tendency for the use of non-cash payment systems is increasingly in demand by the public. This can be seen from the increase in the number of debit and e-money cards circulating in the community. However, the increase in e-money is greater than debit cards, due to rapid technological developments in Indonesia. This is based on the increase in the number of e-money circulating in the amount of 38,799,268 in 2019. Based on this phenomena, the growth in the number of non-cash payments in Indonesia has increased significantly every year. This condition would impact on the economy structure. The use of a non-cash payment system will also affect inflation (Zunaitin, et al, 2017).

The advantages of using e-money are effective and efficient use of money. The use of e-money will be more effective in reducing the circulation of counterfeit money in the community and to prevent criminal acts because someone brings large amounts of cash. Efficiency in the use of e-money occurs when consumer transactions do not have to bother counting money, saving queue time and saving paper usage that can threaten environmental damage. While the disadvantages of e-money are from the security aspect, in the payment process there is absolutely no authorization process to increase the security risks borne by the user. Furthermore, the issue of interoperability, which the capability of a product or system whose interface is fully disclosed to interact and function with other products or systems, now or in the future without access restrictions, the issue of interoperability of e-money payment instruments is that one publisher cannot be used for payments at other publisher merchants (Nur, 2013; Arewa & Nwakanma, 2013).
Figure 2. Electronic Money Transactions (e-money)
Source: Indonesian Bank, 2019

The existence of these weaknesses does not reduce the number and transactions of e-money in Indonesia as seen in Figure 2 shows that from 2015 to 2019 there was an increase in e-money significantly both in total volume and total nominal transactions. This condition, eventually increasing in the community's need to e-money or non-cash would be utilized by the government to reduce the amount of money circulating so that people switch to using non-cash payments.

In Indonesia, Bank Indonesia (BI) is intensifying the National Non-Cash Movement (GNNT) for the Indonesian people in the use of e-money electronic money. This National Non-Cash Movement is being intensified to answer the challenges of the digital economy for the government and is a form of convenience for the community to carry out fast and safe transactions, the process is still relatively gradual (Fandiyanto & Karnadi, 2019). Bank Indonesia states that financial system stability can be understood by conducting research on factors that can cause instability in the financial sector. Financial system instability can be triggered by a variety of causes and fluctuations. This is a combination of market failure, this is due to structural and behavioral factors.

The amount of money supply in Indonesia through two sides, namely, the money supply in the narrow sense (M1) and in the broad sense (M2) (Cahyono, et al, 2016). Where M1 is currency outside the public bank plus demand deposits and M2, namely M1 plus quasi money (R), where quasi consists of savings and time deposits. Velocity of money is used to measure the speed (level) of circulation of one unit of money used to make transactions in the economy (Pramono & Yanuarti, 2006). Interest rates are one indicator of financial system stability. The rise and fall of interest rates will affect the money supply in the community. Thus, the rise and fall of interest rates will influence people's decisions on the demand for M1 (Carolina et al., 2018). Inflation is an increase in the price level that occurs continuously, affecting individuals, entrepreneurs and the government (Azizah, 201; Permatasari & Purwohandoko, 2020).

Several previous research has mix result. Qin (2017) studies mention the effect of e-money on circulation and amount of money supply found that in his research there was no influence between e-money, money circulation and the money supply. In contrast to the research conducted by Priyatama & Apriansyah (2010) there is an influence between e-money and the velocity of money and the money supply. As for Rohmah (2017) there is an effect of e-money inflation that is different from the research conducted by Humphrey, et al (2015) there is no influence of e-money with inflation. Unlike Carolina et al. (2018), Syarifuddin, et al (2017) and Qin (2017), stated that e-money has no influence on the Interest Rate. Based on discussion above, this study aims to determine the effect of the money supply, velocity of money, interest rates and inflation on non-cash payments in Indonesia. This result has supporting to Financial System Stability in Indonesia, while this expected to be a recommendation for regulator to make a policy and regulation related non-cash payments.
1. LITERATURE REVIEW

   a. Money Supply Theory and Quantity Theory of Money

   The money supply theory used in this study is the Irving Fisher Theory and the Keynesian Theory originating as for the explanation of Irving Fisher's theory and Keynes's theory as follows. According to the theory of Irving Fisher (explained that a classical quantity theory approach found by Irving Fisher. In this theory it is explained that the change in the money supply will be proportional to the change in price. The amount of money in circulation is M1, which consists of currency, demand deposits, Payment Instruments Using Cards and e-money. Based on the characteristics of the e-money that can be used at any time as a means of payment, these types of funds are categorized as highly liquid funds so that e-money are equated with currency and demand (Carolina et al., 2018). According to the ‘quantity theory of money’ the velocity of money is considered constant, but in reality, the velocity of money is not constant.

   The amount of money circulating in Indonesia is identified from two sides, narrow money-M1 and broad money-M2. M1 includes currency held by the public and demand deposits. M2 includes M1, quasi money and securities issued by a monetary system owned by the domestic private sector with a remaining tenure of up to one year (Fauzie & Istanto, 2014). The financial system plays a very important role in the economy. As a party that has a surplus to those who have a deficit. If the financial system is unstable and does not function efficiently, the allocation of funds will not run well so that it can hinder economic growth. An unstable financial system, resulting in a crisis, which requires very high costs for rescue efforts (Carolina et al., 2018). Warjiyo (2016) states that monetary policy influences or impacts on financial system stability through interest rates, exchange rates, liquidity, banking credit, and company decisions. According to (Carolina et al., 2018) M1 consisting of currency, demand deposits, CBPI and e-money, money circulation, interest rates, and inflation are indicators of Bank Indonesia as the monetary authority to control monetary stability in order to maintain system stability finance. According to Pramono & Yanuarti (2006) in his research the circulation of money in Indonesia showed an increasing tendency before the crisis, then declined during the crisis and increased again after the crisis, especially since 2002, which was accompanied by improved economic conditions.

   Velocity of money is a measure of the velocity of circulation money in the economy. It is a way to measure national income compared to buying behavior by describing the relationship between money, purchasing goods and services. The central bank can control prices by targeting the money supply. Money rotation is measured by three types of variables, namely base money, total currency and currency outside the bank. The use of velocity of money as an indicator of the use of non-cash payment instruments still contains weaknesses considering the increase in the circulation of money may be due to other factors (Pramono & Yanuarti, 2006). Interest rate is the price of using money for a certain period of time. In addition, interest rates can also be interpreted as the price that must be paid if there is an exchange between one rupiah now and one rupiah later (Boediono, 2001). Indonesian interest rates are divided into several parts, one of which is the BI Rate, the interest rate that reflects the monetary policy stance set by Bank Indonesia and announced to the public (Bank Indonesia). This increase in the velocity of money indicates an increase in the role of non-cash payment instruments in replacing cash in economic activities. Inflation is an increase in the price level that occurs continuously, affecting individuals, entrepreneurs and the government (Mishkin, 2008: 13). The inflation rate in Indonesia is measured by the Consumer Price Index (CPI). Changes in CPI from time to time describe the rate of increase or decrease in the value of goods and services. This increase can occur because non-cash payment instruments have not been included in the calculation of the variable money supply. Referring to the
quantity theory of money, inflation is a proxy of price (P), where the change is proportional to the change in the money supply (M), ceteris paribus. If there is too much money in circulation in the community, it will trigger a price increase and a continuous increase in prices will potentially cause inflation. Inflation that continues to increase until it is unable to be controlled by the monetary authority will disrupt financial system stability (Syarifuddin, et al. 2017).

b. Non-Cash Payments

Central banks in the world now encourage the use of non-cash payment instruments to be relatively safer, besides that they can also increase the effectiveness and efficiency of the payment system because the transactions are cheaper and faster (Kartika & Nugroho, 2015). Currently there are quite a variety of non-cash payment instruments, some examples that are often used include debit cards, credit cards and electronic money (e-money). Where e-money according to Bank Indonesia Regulations has rules and definitions different from other card-based payment instruments, where e-money is a prepaid product.
Based on the theoretical basis, previous research and research problem formulation, the hypothesis proposed in this study are as follows:

![Diagram](image)

**Figure 3. Research Framework**

3. **RESEARCH METHOD**

   a. **Sample and Data source**
   
The data obtain from the bank Indonesia data since 2012-2019 (8 years). Data sources in this study are secondary data from Bank Indonesia [www.bi.go.id](http://www.bi.go.id), which data consisting of amount of money supply, Velocity of money, interest rate, and Inflation.

   b. **Variables, Definition and Measurement**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Definition and Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money Supply (X1)</td>
<td>The money supply is the amount of money in circulation in Indonesia which is approached from 2 sides, namely in a narrow sense (narrow money - M1) including currency held by the public and demand deposits, and broad meaning (broad money - M2 includes M1, quasi money) and securities issued by the monetary system owned by the domestic private sector with a remaining term of up to one year (Syarifuddin et al, 2009; Ulina &amp; Maryatmo, 2021)</td>
</tr>
<tr>
<td>Velocity of money (X2)</td>
<td>Velocity of money menjadi variabel perputaran uang atau percepatan uang ini adalah variabel independen yang dikur dengan pendapatan nasional (GDP) M2 diolah menjadi jadi nilai velocity. Data diperoleh dari badan Pusat Statistik (Pambudi &amp; Mubin, 2020)</td>
</tr>
</tbody>
</table>
Interst Rate (X3)

The interest rate is the value that must be paid by Indonesian banks to investors for securities issued by Bank Indonesia (Jayanti, 2013). In this study, interest rates using SBI were measured by changes in SBI interest rates at the end of each month during 2012 until 2019. Measured by formula: (Permatasari & Purwohandoko, 2020)

\[ \text{SBI} = \text{SBI}_t - \text{SBI}_{t-1} / \text{SBI}_{t-1} \]

*Information:
- \( \text{SBI}_t = \text{SBI period } t 
- \text{SBI}_{t-1} = \text{SBI period } t-1 

Inflation

An economic measure that provides an overview of the average price of goods and services in an economic system (Sugeng, 2004). The inflation rate in Indonesia is usually measured by the Consumer Price Index (CPI) which is an indicator commonly used to describe price movements. Inflation measured by formula: (Zunaitin, et al 2017)

\[ \text{IHK}_t - \text{IHK}_{t-1} / \text{IHK}_t \]

*Information:
- \( \text{IHK}_1 = \text{IHK period } t 
- \text{IHK}_{t-1} = \text{IHK period } t-1 

\[ \text{NCP}_t = \alpha + \beta_1 \text{MS}_t + \beta_2 \text{V}_t + \beta_3 \text{IR}_t + \beta_4 \text{IF}_t + \epsilon_t \]

The information above explained the notation of NCP represents the non-cash payments, MS denotes the Money Supply. V embodies for Velocity of Money, IR represents Interest of Rate and IF denotes the Inflation. Notation of \( \alpha, \beta \), means constant and coefficient of the regression while \( \epsilon \) is an error term. The analysis method used in this research is the Multiple Linear Regression. The econometrical and statistical tests done in this study are Classical Assumptions, t, and F test.

4. RESULTS AND DISCUSSION

a. Descriptive Statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money supply (MS)</td>
<td>505</td>
<td>3.72</td>
<td>11.50</td>
<td>10.195</td>
<td>13.25</td>
</tr>
<tr>
<td>Velocity of Money(V)</td>
<td>505</td>
<td>4.35</td>
<td>12.80</td>
<td>8.550</td>
<td>17.60</td>
</tr>
<tr>
<td>Interest Rate (IR)</td>
<td>505</td>
<td>0.50</td>
<td>0.65</td>
<td>0.25</td>
<td>.12</td>
</tr>
<tr>
<td>Inflation (IF)</td>
<td>505</td>
<td>0</td>
<td>2.00</td>
<td>0.14</td>
<td>.15</td>
</tr>
</tbody>
</table>

(Source: output SPSS)

Based on the results of statistical descriptive statistics on the Table 3 shows as research data of 505 data with independent variables according to the circulation of Bank Indonesia in units of trillions of rupiah. 1) the amount of money that proxies the amount of money in circulation \( \text{jub} = \text{jub}_t - \text{jub}_{t-1} / \text{jub}_t \) in other words, the money supply is calculated from the money supply in period \( t \) divided by the money supply in period \( t-1 \) and produces a minimum value of 3.72 and a maximum value of 11.50 with an average value of 10,195 with a standard deviation of 13.25 means that during the research period the data on the amount of money in circulation does not deviate far from the standard deviation so that the normal data, 2) money circulation is calculated by the formula V
\[ \text{PT} / \text{M} \text{ means P is the price of T the number of transactions during the study period and M is the amount of money circulation calculated The amount of money velocity in period t-1 is divided by the amount of money velocity in period t minus the total amount of p the turnover period t is less than 1 and produces a minimum value of 4.35 and a maximum value of 12.80 with an average value of 8.855 with a standard deviation of 17.60, meaning that during the study period the amount of money turnover does not deviate far from the standard deviation so that the data is normal or the distribution of the data is normal so that the results accurate research on the basis of making conclusions.} \]

3) the independent variable of the SBI interest rate is the value that must be paid by Indonesian banks to investors for short-term securities issued by Bank Indonesia (Jayanti, 2013). 4) inflation is an indicator that is often used is the Consumer Price Index (CPI) is the Consumer Price Index (CPI) is a Consumer Price Index that measures the average price of goods and services consumed by households (Jayanti, 2013) in this study inflation measured by changes in CPI every month during the period 2009-2017 using the Inflation formula

\[ \text{Hypothesis Testing} \]

\[ \text{Table 4. Results of Multiple Linear Regression Coefficients} \]

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>4.306</td>
<td>1.343</td>
</tr>
<tr>
<td>M</td>
<td>-.045</td>
<td>.018</td>
</tr>
<tr>
<td>V</td>
<td>-.115</td>
<td>.033</td>
</tr>
<tr>
<td>IR</td>
<td>-.822</td>
<td>.295</td>
</tr>
<tr>
<td>IF</td>
<td>1.057</td>
<td>.060</td>
</tr>
<tr>
<td>simultaneously</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MC, V, IR, IF</td>
<td>1.057</td>
<td>.080</td>
</tr>
</tbody>
</table>

Table 4 shows that the four independent variables used as the research model are simultaneously significant at \( \alpha = 0.05 \) or the 95% confidence level. The test results show that the variable money supply is significant at p-value 0.016 or p-value <0.05, so the results show that non-cash payments have an effect on money supply. The variable velocity of money shows a p-value of 0.001 or p-value <0.05, which means that the speed of non-cash payments in Indonesia has an effect on velocity of money. Furthermore, the Interest Rate variable shows a significant effect of non-cash payments, namely p-value = 0.006 or p-value <0.05 on the interest rate. Inflation also shows an effect on non-cash payments with a significance p-value = 0.000 or p-value <0.05. These results are supported by simultaneous testing of the research results show that non-cash payments have an effect on money supply, velocity of money, interest rate and inflation with a significance at a p-value of 0.000. This result means that the non-cash payments in Indonesia which consist of credit card and e-money payments have an important role in determining the money supply in Indonesia.

\[ \text{Discussion} \]

\[ \text{Effect the Non-Cash Payments on Money Supply} \]

The non-cash payments have effect to money supply in the narrow sense (M1) and in the broad sense (M2) over time. In this case the three main actors that drive an increase in the money supply in Indonesia are the government, companies and the public. The government as an economic actor needs money to carry out development programs. For the company money is needed to fund the process of production and distribution of goods and services produced by the company. Meanwhile, the community needs money to be used as a tool in carrying out economic transactions every day. Non-cash payments can have implications for the concept of calculating
the money supply (Pramono & Yanuarti, 2006). Transactions using non-cash payments have a positive effect on the amount of money circulating in the research put forward by (Syarifuddin, et al. 2017), (Priyatama & Apriansyah, 2010) and (Zhang & Ma, 2011). On the other hand, an increase in non-cash payments can stimulate various business activities. Economic actors will be encouraged to transact in line with the reduction in barriers to transactions, both in terms of costs, labor, and time. This of course will contribute to the increase in economic activity and GDP. How much it contributes in this case will greatly depend on its portion of the total cost, labor and time of an enterprise activity. If the reduction in costs, labor, and time from non-cash payment transactions is significant enough, of course this can stimulate business activities. However, if it is relatively small, of course the impact on increasing economic activity and GDP will also not be large. (Halpin & Moore, 2009; Ulina & Maryatmo, 2021)

Effect of Payment of Non-Cash on Velocity of Money

Velocity of money is a measure of the velocity of money in the economy. It is a way to measure national income compared to buying behavior by describing the relationship between money, purchasing goods and services. The central bank can control prices by targeting the money supply. Money rotation is measured by three types of variables, namely base money, total currency and currency outside the bank. The amount of money circulating in Indonesia is identified from two sides, narrow money-M1 and broad money-M2. M1 includes currency held by the public and demand deposits. M2 includes M1, quasi money and securities issued by a monetary system owned by the domestic private sector with a remaining tenure of up to one year (Fauzie & Istanto, 2014). Velocity of money shows the number of times a money revolves in a given period. Irving Fisher (2008) says that if people use electronic money, the less money needed to make purchases, the less money needed to make transactions generated by income will increase as a result of turnover. But the opposite effect is that if more purchases use cash, more money is used to make transactions generated by the same amount of income and the velocity of money will decrease (Kartika & Nugroho, 2015), (Al-laham, Al-tarawneh & Abdallat, 2009) and (Kartika & Nugroho, 2015) found that Velocity of money had a positive effect on Non-Cash Payments.

The payment of non-cash affects the velocity circumstance of money. This finding supported by Ferry et al (2009), Abednego and Apriansyah (2010), Lianying and qiujiie (2011) because money is needed by society as a tool for economic transactions according to the logic of Keynes theory. Velocity of money shows the number of times a money revolves in a given period. Irving Fisher (2008) says that if people use electronic money, the less money needed to make purchases, the less money needed to make transactions generated by income will increase as a result of turnover. But the opposite effect is that if more purchases use cash, more money is used to make transactions generated by the same amount of income and the circulation of money will decrease (Kartika & Nugroho, 2015), (Al-laham, Altarawneh & Abdallat, 2009) and (Kartika & Nugroho, 2015) found that Velocity of money had a positive effect on Non-Cash Payments. Velocity of money shows the number of times a money revolves in a given period. Irving Fisher (2008) says that if people use electronic money, the less money needed to make purchases, the less money needed to make transactions generated by income will increase as a result of turnover. But the opposite effect is that if more purchases use cash, more money is used to make transactions generated by the same amount of income and the circulation of money will decrease (Kartika & Nugroho, 2015), (Al-laham, Altarawneh & Abdallat, 2009) and (Kartika & Nugroho, 2015) found that Velocity of money had a positive effect on Non-Cash Payments. The demand for money by the community is determined by the interest rate of the type of deposit or other assets in this case the interest rate saving / time deposit and / or bond yield, and the value of the real non-cash payment transaction. The higher the level of income of the community and the interest rate of the type of service that has non-cash payment facilities, the more non-cash payment instruments
requested and needed for transactions. (Ferry et al, 2009). In the research of Ferry et al (2009), it was stated that the Interest Rate had a positive effect on Payment of Non-Cash.

**Effect of Non-Cash payments on Interest Rate**

The demand for money by the community is determined by the interest rate of the type of deposit or other assets in this case the interest rate saving / time deposit and / or bond yield, and the value of the real non-cash payment transaction. The higher the level of income of the community and the interest rate of the type of service that has non-cash payment facilities, the more non-cash payment instruments requested and needed for transactions. (Ferry et al, 2009). In the study of it was stated that Permatasari and Purwohandoko (2020) stated that the Interest Rate had a positive effect on Payment of Non-Cash in Indonesia. In another analysis by Pamudi and Mubin (2020) explained that the interest rate affects the payment of non-cash in Keynes’s theory explaining after one motive for people to hold money for speculation, when interest rates fall then bond process will go down in accordance with Keynes’s theory. Interest rate variable turns out to have influence on rotation velocity of money and value the coefficient is positive in the short run and it can be said that the tribal level variable interest has an effect in the short term. The assumption of the results of this study is supported by theory demand for money by a thoughtful Keynes statement that the relationship between levels interest rate at velocity of rotation money is positive.

**Effect of Non-Cash Payments on Inflation**

Inflation can occur due to several factors, according to Boediono (1982) the causal factors, namely from demand pull inflation, push push inflation and expediting, besides that there are also several factors that influence the amount of money in circulation and interest rates. High inflation is caused by low interest rates that make people more willing to hold money for transactions so that the money supply will increase. According to Carolina et al., (2018). Inflation has a negative effect on Non-Cash Payments. The results of this study are in line with the research results of Syarifuddin, et al. (2009), Azizah (2013), Sembiring (2014), and Jemadu (2016) stated that the volume of ATM or Debit card transactions is in line with inflation rate. ATM or Debit card as a substitute for currency. When using a card ATM or Debit increases, so the circulation of money also increases, causing economic activity or the price of goods and services also increases and will lead to inflation line with Yuwono (2017) explained that volume of electronic money transactions that represent non-cash payment instruments affect inflation in Indonesia both in the term and in the short term. Although. The presence of electronic money was intended to reduce currency, but its use remained will affect the money supply (M) because electronic money itself is included in M1.

5. **CONCLUSION**

This study aims to examine the effects of non-cash transaction payments in Indonesia, which are currently increasing rapidly by development of technology information. The non-cash payments studied were electronic money as a payment based on Bank Indonesia (BI), which has issued several types of electronic money, as well as credit cards and debit cards while credit and debit cards are single-purpose cards. Another non-cash payment the electronic money referred to by Bank Indonesia where using a multi proposes card. This research examines partially and simultaneously effects non-cash payments on money of supply, velocity of money, interest of rate and inflation. The findings reveal that all variables are affected by the existence of non-cash payments in Indonesia. The implementation of this study are focus on the policy of Indonesian government by paying attention to the monetary policy and regulations related with the non-cash payments. Limitation in this study which is need examined the others factors studied in the macroeconomic scope related the effect of non-cash payments in Indonesia. Further research can develop another factors, such as the rate of economic growth and GDP, as important factors to
be analyzed in the model for developing non-cash payments in Indonesia, so that people have more confidence and improve electronic money infrastructure.

REFERENCES


