Analysis of the Reciprocal Effect of Inflation and Investment and the Impact of E-money Transactions on inflation and Investment in Indonesia

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Abstract
The development of technology and information has also spurred developments in the world of finance and banking, one of these innovations is the shift in the use of cash to non-cash money. Central Bank of Indonesia in 2009 launched the National Non-Cash Movement or more commonly referred to as the Less Cash Society (LCS), particularly in conducting transactions on economic activities using non-cash instruments. CBI's motive for launching the LCS was due to the rampant cases of counterfeiting money, as well as the high operational costs incurred by CBIeach year for printing, distributing, storing and destroying money. Then came what is known as electronic money (electronic money). Some of the e-money operators and other companies that have helped build e-money supporting infrastructure are fintech, and digital technology-based forms of financial services from fintech.

The research method used in this study is explanatory research with quantitative solutions. Meanwhile, the variables analyzed are e-money, inflation and investment. The relationship between e-money and inflation and investment is a linear and direct relationship. Meanwhile, the relationship between inflation and investment is a reciprocal relationship. Therefore, the analysis model in this study used a simultaneous regression model which was estimated by the 2SLS method (two stage least squares) with the help of E-views software. This application is widely used for statistical and econometric analysis of time series data types.

Broadly speaking, high e-money transactions affect the velocity of money circulation and the large amount of money circulating in society, and in theory (monetary quantity) e-money transactions can affect the inflation rate in Indonesia. So that with the growth of e-money users and transactions, the risk of inflation will increase.

Keywords: e-money, inflation, investment, financial technology

1. Introduction

1.1 Introduced the Problems
Developments in technology and information have spurred developments in the world of finance and banking, one of the innovations is the shift in the use of cash to non-cash money. Bank

Indonesia in 2009 launched the National Non-Cash Movement, which is more commonly referred to as the Less Cash Society (LCS), particularly in conducting transactions on economic activities using non-cash instruments. The background behind which Central Bank of Indonesia (CBI) launched the LCS was because of the rampant cases of counterfeiting money, as well as the high operational costs incurred by CBI each year for printing, distributing, storing and destroying money. Then came electronic money (e-money). Central Bank of Indonesia Regulation (CBIR) Number 11/12/PBI/2009 concerning Electronic Money, in the provisions of Article 1 Paragraph 3, explains that electronic money is a means of payment issued on the basis of the value of money deposited in advance by the holder to the issuer.

In line with that, the development of non-cash transactions in Indonesia began in 2009, after the publication of the CBIR above. Since then, several companies have registered with Bank Indonesia to become e-money operators. According to CBI's report, initially there were 9 companies that registered in 2009, namely; Central Asia Bank, Co., DKI Bank, Co., Mandiri Bank, Co., Mega Bank, Co., BNI 46 Bank, Co., Indo-sat, Co., Sky Sab Indonesia, Co., Indonesia Telecommunication, Co., and Telecom-Sel., Co. Until the end of May 2020, there were 50 e-money companies registered and licensed by CBI.

Figure 1. Growth of E-money Operators in Indonesia, 2009-2020
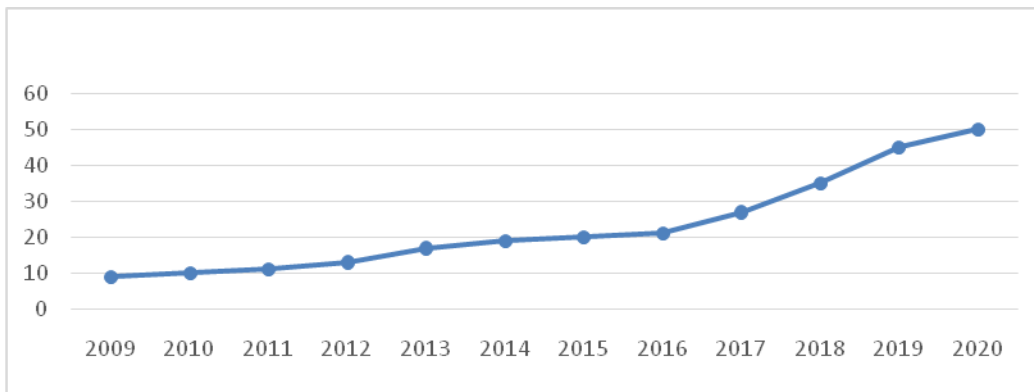
Source: CBI (bi.go.id)

Research conducted by the CBI initiative team in 2006 stated that basically e-money products are categorized into two according to the media, namely card-based products, namely a card that contains a chip that functions as an electronic store of value and a tool for processing transaction data. affect the balance in e-money. The software-based product is a type of e-money that is based on a server where information about balances and how to transact using electronic devices connected to the internet network. Several e-money organizing companies have even issued two e-money products, both of which have their own advantages and disadvantages. Looking at the data owned by CBI, e-money operators, starting in 2013, have issued more software-based products compared to card-based products. If you look at the two of them, card-based products appear to have higher costs than software-based products because these products must procure physical goods. Moreover, the lack of access to micro transaction activities, only a small number of entrepreneurs have electronic data capture (EDC) devices, which are required to make transactions using card-based products. So that the use of card-based products is widely used as a

means of mass transportation and as a means of payment at large retail companies such as Indo-mart, Hyper-mart and so on. Meanwhile, software-based products can be used by small businesses that have limitations and can also be used by individuals for transactions.

The innovations that are developing in the financial and banking sector are not only e-money but also Financial Technology (Fin tech), some e-money operators and other companies have also helped build one of the supporting infrastructure for e-money, namely fin tech, according to CBI's Letter, Number 18/41/DKSP, fin tech is a technology-based financial system that produces new products, services, technologies and/or business models that have an impact on monetary stability, stability of the payment system. According to the results of an analysis conducted by the Financial Stability Board (FBS) in 2017, Fintech, which is a digital technology-based financial service, has activities classified into 5 categories namely; (1). Payment, transfer, clearing and settlement; (2). Deposits, loans, and additional capital; (3). Risk management; (4). Market support; and (5). Investment management.

E-money as a payment instrument for digital technology while fin tech as a digital financial service, several e-money organizers or issuers build their own fin tech which will later use payment instruments in it, such as Go Pay, OVO, Dana, Link Aja and many more. Again. They are the organizers as well as the platform where their e-money is used. Fintech as a financial service is connected to many sectors such as transportation services, micro businesses, telecommunications services, marketplaces, to investment services. According to AFTECH data, the association of digital financial innovation organizers officially appointed by the Financial Services Authority (FSA) has 359 fin tech companies, 24 financial companies and 13 research partners as members, while only 161 companies have been registered and have permits at FSA on May 27 2020.

Nowadays, it is very easy for the public to use this non-cash payment system, unlike before, non-cash users could only be enjoyed by a handful of classes in society, the increasing number of e-money providers and the rapid growth of fin tech which makes it easier to register and use for its users. Now almost all levels of society can use a cashless payment system, although not comprehensive, but people who have electronic devices and are connected to an internet connection can use a cashless payment system. To register and use e-money software-based products by simply downloading the application from the fin tech and registering using a telephone number or even using e-mail users can use e-money software-based products, while with card-based products users can buy and top up cards at retail stores such as Indo mart and Alfa mart which have many stores spread throughout Indonesia.

Central Bank of Indonesia's report for May 2020, shows data regarding the value of e-money transactions from the beginning of January to May 2020, which was recorded at 78.6 trillion Rupiah. This is very much different from the emergence of e-money in 2009, Bank Indonesia noted that the total transaction value in 2009 was 519 billion Rupiah. There is a very visible difference at the beginning of the emergence of e-money and now, developments are not only from the organizers or other companies around them but there are also developments in e-money users in the community, looking at the data presented above from the increase in the number of e-money providers, the large number of existing fin tech and added to the transaction value of users who are also experiencing growth every year, people in Indonesia are starting to switch to

using the non-cash system, not only from the community side, from the business actors also starting to add and some even changing the payment system to payment non-cash, can be seen in big cities in Indonesia such as in large shopping centre, places to eat to grocery stores have added a non-cash payment system for transactions, there are also toll roads which now require paying by e-money and payments in several places parking which is now also starting to use non-cash payments.

Table 1. Value of E-money Transactions, 2009-2019

Years	*E-money Transaction* (IDR Million)
2009	519.213
2010	693.467
2011	934.795
2012	1.971.550
2013	2.907.432
2014	3.319.554
2015	5.283.017
2016	7.063.688
2017	12.375.468
2018	47.198.618
2019	145.165.468

Source: Central Bank of Indonesia (bi.go.id)

The condition is that the increasing number of public transactions using e-money can cause inflation due to the high amount of money in circulation. Having another impact, namely on the investment sector, according to Ahmad Kamarudin (2004) investment is placing money or funds owned by someone with the hope of obtaining additional or profit on this money or funds in the future. High and irregular e-money transactions can affect the investment sector. According to Samsul (2006) says that one of the seven macroeconomic factors that can directly affect the performance of a company's stock so that it can have an impact on the level of investment in a country is the amount circulating money. This becomes the basis for making decisions for an investor, whether to invest or not by looking at and estimating the economic situation in the country. moreover, high transactions on e-money are only focused on buying goods and services, the ease of shopping is currently being felt by the people of Indonesia, even though several fin tech have issued investment products such as mutual funds, gold and others, but the majority of Indonesian people use e-money to transact goods and services to meet their daily needs, so the decline in investment levels can be influenced by the consumptive behavior of people who use the funds they have to meet several sectors of needs and have the satisfaction of such consumption.

Broadly speaking, the high e-money transactions affect the speed of circulation of money and the large amount of money circulating in society. In theory, the quantity of money can affect the inflation rate in Indonesia, with the condition that the growth of users and e-money transactions is getting higher and there are still many business actors who do not yet have permits and are

registered, increase the risk of inflation due to uncontrolled transaction activities in society, this can affect the level of investment, where the investor's decision to invest is by looking at the inflation rate in a country and what are the possibilities that will affect the country's economic stability.

1.2 Explore Importance of the Problems

Based on the background above, the formulation of the problem in this study is as follows: (i) Do E-money Transactions have a significant effect on the Inflation Rate? (ii) Do E-money Transactions have a significant effect on the Investment Level? (iii) Does the Inflation Rate have a reciprocal relationship with the Investment Rate?

1.3 Described Literature Review

1.3.1 Investment

Ahmad Kamarudin (2004), investment is placing money or funds owned by someone with the hope of obtaining additional or profit on the money or funds in the future. According to this understanding, it can be concluded that investment is an activity of chanelling existing sources of funds with the expectation of future profits by placing money or funds in investment sectors such as stocks, bonds and so on.

Meanwhile, Tandelilin (2001) the notion of investment is a commitment to the amount of funds or other resources that are carried out at this time, with the aim of obtaining a number of benefits in the future. Meanwhile, Jogiyanto (2008) defines investment as delaying current consumption to be used in efficient production for a certain period of time. Consumption and investment are two activities that are closely related, delaying consumption now can be interpreted as an investment that aims to meet consumption in the future. However, not only delaying consumption, consumption sacrifices at this time must be placed in an efficient sector so that the allocated funds can produce other things with a greater value than now. The purpose of someone to make an investment is to increase the total utility value of a product.

Mishkin (2010) classified investment activities into two types of financial assets: First, direct investment can be made by buying financial assets that can be traded on the money market, capital market or in derivative markets. Financial assets that can be traded on the money market have a small level of risk and have a short maturity with a high level of liquidity. Financial assets traded on the capital market have long-term investment properties in the form of equity securities and fixed income securities. Options and futures contracts are securities traded on the derivative market. Direct investment is not only made by buying tradable financial assets, but can also be done by buying non-tradable financial assets such as savings accounts, current accounts and certificates of deposit. Second, indirect investment, namely by buying securities in investment companies. An investment company is a company that provides financial services by selling its shares to the public. Investing through investment companies also offers its own advantages for potential investors. Only with a small enough capital can investors take advantage of the formation of their investment portfolio. Besides that, by buying shares of investment companies, investors do not need high knowledge and experience. In this way investors can form an optimal portfolio.

1.3.2 Inflation

Manurung and Rahardja (2004) stated that inflation is an increase in the price of goods that are general in nature and experience a continuous increase so that the value of the currency decreases. A predictable increase in the price of goods can have a positive sign for economic growth. While low levels of inflation can add to productivity or real output, high inflation can cause serious losses to productivity and to individuals through the redistribution of income and wealth. Meanwhile, Rosyidi (2009) explained that inflation is a symptom of continuous price increases. Inflation does experience increases or decreases depending on the conditions and conditions in a country. It is normal for a country to experience price increases that take place once or twice, then subside, but this is not inflation. If the price increase occurs continuously, then this is called inflation or the occurrence of continuous price increases throughout the year.

In line with the above, economists define inflation differently but have the same core, namely an increase in the price of goods that tends to rise continuously. Price increases in certain goods sectors alone cannot be called inflation, unless the increase in goods extends to other goods sectors so that an increase in the price of goods in general can only be called inflation. Kalalo (2016) increases in prices can be caused by seasonal factors, for example, before big holidays or other things that happen only once and have no further effect are not referred to as inflation. Sukirno (2006) said that if the price increase is not immediately followed by an increase in workers' wages, then more serious inflation will result in the economy not developing as desired. Experience in several countries that have experienced hyperinflation shows that bad inflation will cause social and political instability, and economic growth will not be realized.

Adwin S (2009) states that inflation can be differentiated based on the causes of inflation. In this regard, inflation can be divided into two types, namely: First, Demand Pull Inflation or often referred to as a demand shock, namely inflation caused by the attraction of public demand for various goods that are too strong. This type of inflation is also known as the Philips Curve Inflation. In the macroeconomic context, this condition is described by real output that exceeds its potential output or total demand (aggregate demand) that is greater than the capacity of the economy. Second, Cost Push Inflation or commonly referred to as supply shocks, namely inflation caused by shocks or encouragement of continuous increases in production costs within a certain period of time. Factors that cause Cost Push Inflation can be caused by exchange rate depression, the impact of foreign inflation, especially in countries that have trade cooperation relations. Factors such as the increase in commodity prices regulated by the government (administered prices) and the occurrence of Negative Supply Shock which occurred as a result of natural disasters disrupted the goods distribution process.

1.4 Relations Between Variables

1.4.1 E-money and Inflation
Boediono (1998), explained the view of Keynesian theory which stated that inflation occurs because a society wants to live beyond the limits of its economic capacity. Meanwhile, theory of structuralist explains that inflation is associated with structural factors of a country's economy. One of the factors explained in this theory is the money supply, this theory explains that if the money supply increases and passively follows and accommodates these price increases, then the

inflation process can continue only if the money supply also continues to increase. Without an increase in the money supply, this process will stop by itself.

According to the classic quantity theory put forward by Irving Fisher which begins with an explanation of the equation of exchange, namely: $M\,V = PT$ where M is Money or the amount of money in circulation then V is Velocity or velocity of money, then P is Price or price level and T is a transaction or trade transaction. Irving Fisher explained that in the short run the general price level (inflation) changes proportionally to changes in the money supply. In other words, if the general price increases continuously (inflation) can occur if the increase in the amount of money in circulation exceeds actual needs. As for another explanation in terms of the effect that occurs on changes in V or the velocity of money circulation, the effect that will occur is changes in P or prices (inflation). on trading volume, naturally this will increase P or prices (inflation) in a country's trade or economy. According to Irving Fisher, the factors that can affect the velocity of money circulation are the characteristics of an institution and technological developments.

In line with the previous description, one of the factors causing inflation is an increase in the money supply and the velocity of money circulation. Meanwhile, e-money is one of the components in the money supply and one of the factors of the speed of velocity of money. Another opinion, namely Zunaitin Eliyaet et.al (2017) explains that non-cash payments are measured by the transaction value of debit cards, credit cards and e-money. The increase in the volume of non-cash transactions can affect inflation in Indonesia. Yuhasril (2008) said technology-based non-cash payments similar to cash resulted in a faster velocity of money that affected a country's monetary stability. This is supported by the explanation that with advances in technology that make transactions easier and more practical, people will indirectly increase their consumption of goods and services. What's more, with the existence of e-money, it is increasingly easier for people to make payment transactions. This convenience causes the level of public consumption to increase, which in turn will encourage an increase in the circulation of money which can cause inflation.

Several studies regarding the correlation of e-money and the speed of velocity of money prove a positive relationship. This is in accordance with the research of Priyatama and Apriansah (2010) that increased use of e-money in Indonesia has an impact on increasing the velocity of money circulation. Another study conducted by Popovska N. Kammar (2014) in various European countries also states that by using e-money, transactions are relatively more efficient and allow an increase in the number of transactions and an increase in the speed of money.

1.4.2 E-money and Investment
The link between e-money transactions and investments can be seen from the individual's motives for holding. Keynes in his book The General Theory of Employment, Interest and Money, gives the view that a person has three motives for holding money, namely: a transaction motive in which an individual uses his money for the purposes of transacting goods or services, then there is a precautionary motive in which an individual keeps his money. For unexpected needs that occur in the future, then the third is the speculation motive where someone will choose to put their money in the form of an investment with the hope and thought that their money will increase in the future.

Adam Smith in Jhingan (2003) states that investments made by capital owners expect profit and hope in the future. Profits depend to a large extent on the current investment climate and on actual profits. According to the classical theory in Boediono (1998) explains that interest rates can determine the amount of savings and investment that will be made in the economy which will cause the amount of savings created. The classical theory explains that the stock of capital goods is mixed with money and the two are considered to have a substitutional relationship, the scarcer the capital, the higher the interest rate. Conversely, the more capital, the lower the interest rate.

Furthermore, Keynes in Boediono (1998) suggests that investment is a person's decision by comparing the Marginal Efficiency of Capital (MEC) with the real interest rate. It was explained that MEC is the expected profit from an investment, when the MEC value is greater than the real interest rate then an investment can be made, conversely when the MEC value is comparable or smaller than the real interest rate then there is no investment in these assets.

In line with Keynes, that the money supply (including e-money) will determine the amount of investment (securities) through speculative motives. Meanwhile, Samsul (2006), said that one of the seven macroeconomic factors that can directly affect the performance of a company's stock so that it can have an impact on the level of investment in a country is the amount of money in circulation. This then becomes a reference for investors on what conditions will occur in the future, so that it becomes the basis for making decisions to buy or sell the shares they own. Based on the explanation above, there is a negative correlation between e-money transactions and the level of investment, which means that the more e-money transactions that are carried out can cause a decrease in the level of investment.

1.4.3 Inflation and Investment

Mishkin (2008) says that inflation is a continuous increase in prices that can affect individuals and entrepreneurs as well as the government. Inflation is the link between interest rates and exchange rates. Because inflation is an important variable to determine a growth in the production sector. Mc Kinnon (1973) explains that inflation tends to lower real interest rates, this causes supply and investment to decrease. Therefore, as long as inflation leads to low real interest rates and there is an imbalance in the capital market, inflation will reduce investment and economic growth.

Keynes discussed investment and can be seen in Boediono (1998) and he said that a person's decision to invest, by meeting the expectations of investors by comparing the Marginal Efficiency of Capital or MEC with the real interest rate. It was explained that MEC is the expected profit from an investment, when the MEC value is greater than the real interest rate then an investment can be made, conversely when the MEC value is comparable or smaller than the real interest rate then there is no investment in these assets. Monetary policy carried out by the central bank through interest rates can control the inflation rate, according to the classic view explained by Zunaitin Eliyaet et.al (2017) regarding high interest rates will encourage people to reduce consumption levels. Classics explained that interest rates are a determinant of savings, the higher the interest rate, the desire to save will be higher. If the desire to save is higher, it will reduce the level of consumption in society, so that in the end the inflation rate will also decrease.

Prolonged inflation can cause a greater level of risk of business failure. The high rate of inflation reduced public consumption due to the declining ability of the public to buy goods due to soaring prices. Pohan Aulia (2011) explains that if inflation is prolonged, many producers will go bankrupt because their products will be relatively more expensive so that no one can afford to buy them. In line with the Fisher Effect theory, the phenomenon as described above shows that there is a link between inflation and investment.

1.5 Research Framework and Hypotheses

Electronic money is related and has a positive effect on the inflation variable, while the link with e-money transaction investments has a negative effect on investment. Not only that, both of them have a negative reciprocal relationship and are interrelated with each other. Based on that description, the framework and formulation of the research hypothesis are shown below.
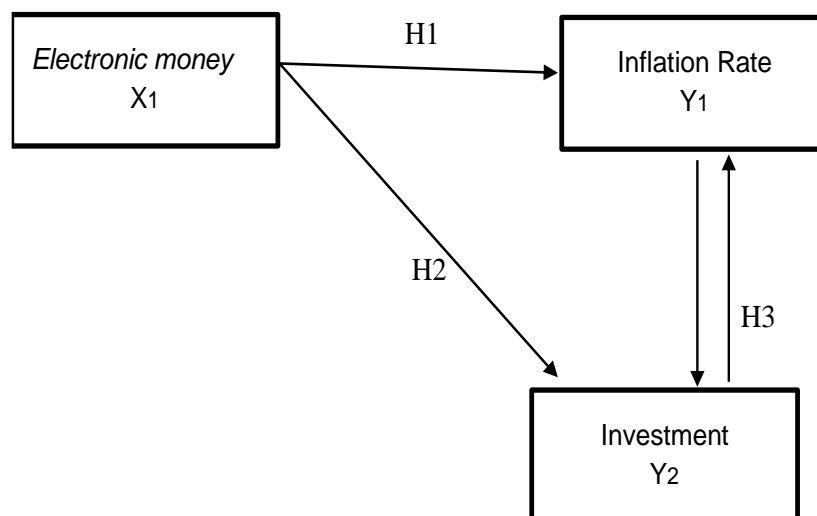
Based on the hypothesis model above, the formulation of the hypothesis model is as follows:

    H1: There is a positive effect between e-money transactions and the inflation

    H2: There is a negative effect between e-money transactions and investment

    H3: There is a negative reciprocal effect between the inflation and investment

2 Method

2.1 Types of Research

This research is a quantitative, and quantitative research is research that emphasizes numerical data or numbers that are processed using statistical methods (Azwar, 2007). According to M. Subana and Sudrajat (2005) quantitative research in terms of objectives, this research is used to test a theory, present a fact or describe statistics, and to show relationships between variables and there are also those that develop concepts, develop understanding or describe many things.

2.2 Data Types and Data Sources

The data used in this study is secondary data, namely information or data originating from financial data related to research in the period from January to December in 2017-2019. Sources of research data were obtained from central data and Indonesian report data that have been published on the official website financial institutions such as Bank Indonesia (bi.go.id), the official website of the Indonesia Stock Exchange (idx.co.id).

2.3 Operational Definition and Measurement of Research Variables

The research variable is defined operationally in the form of a conceptual definition to facilitate the data collection process. It is important to define operational variables so that the measurement of the variables is appropriate according to research needs. The variables used and operational definitions in this study are as follows.

Table2.Operational Definition of Variable

Variables	Operational Definition	Measurement	Scale
E-money	E-money transactions are the many transactions using e-money that are used by the people of Indonesia and are recorded at each E-money issuer and then reported to Central Bank of Indonesia every month.	Judging from the total number of transactions made from each e-money issuer accumulated and issued by Central Bank of Indonesia	Ratio
Inflation	The inflation rate is the percentage change in the weighted average price level for goods and services in the Indonesian economy	Inflation rate $= \left\{ \dfrac{IHK_n - IHK_{n-1}}{IHK_{n-1}} \right\} \times 100$ IHKn= Consumer Price Index current period IHKn-1= Consumer Price Index backward period	Ratio
Investment	The level of investment is the total value of all forms of investment made in Indonesia.	Judging from the total investment value each month from stocks, mutual funds, corporate bonds, government bonds and foreign investment, accumulated and published by the Indonesia Stock Exchange in the annual report.	Ratio

2.4 Data Analysis Methods

Data analysis in this study used a simultaneous regression model and was estimated by the Two Stage Least Square (TSLS) method. Analysis of the data obtained in this study will use computer technology assistance, namely the Econometric Views (E-views) application program, and this application is widely used for statistical and econometric analysis of time series data types.

2.4.1 Simultaneous Test

The simultaneous equation model is different from the single equation model. A single equation model is a model with one endogenous variable and one or more exogenous variables and has a one-way causal relationship. While the simultaneous equation model, endogenous variables in one equation are possible appears in other equations in the system or it can be said that each equation is mutually or jointly dependent, so that it can be used to analyze two-way or reciprocal relationships between variables, and parameter estimates for an equation must also consider the information provided by other equations in the system (Ghozali, 2009).

Furthermore, before executing the simultaneous model, various tests must be carried out, including an identification test. To find out whether an equation in the simultaneous equation can be identified or not, it can be tested using the order condition method which is a necessary condition and rank condition which is a sufficient condition. The implementation of the test as mentioned last, can be followed by the description as below.

$K-k = $ or $> m-1$ can perform simultaneous test

K = number of independent variables in the model

K = number of independent variables in each structural equation

m = number of dependent variables in each structural equation

Provisions in the identification of an equation model if:

$K - k > m-1$ then it is called over identified

$K - k = m-1$ then it is called exact identified

$K - k < m-1$ then it is called under identified

2.4.2 Data Analysis Model

The data analysis model is the simultaneous regression model because there is a reciprocal relationship between inflation and investment variables. If inflation and investment are related to each other, then the inflation rate must be a function of the investment level after controlling for other variables. Similarly, investment must be a function of inflation after controlling with the same variable. For this reason, the following equation model formulation is made.

$INFLATION = a_0 + a_1 \, EMONEY + a_2 \, IR + a_3 \, ER + e$ ………………….... (1)

$INVESTMENT = b_0 + b_1 \, EMONEY + b_2 \, IR + b_3 \, ER + e$ …………………. (2)

$INVESTMENT = c_0 + c_1 \, INFLATION + e$ ……………………………………. (3)

$INFLATION = d_0 + d_1 \, INVESTMENT + e$ …………………………………... (4)

Notes:IR = Interest Rates; ER = Exchange Rates

3 Results

3.1 Results of Data Analysis

Based on the results of the order condition test showing that it is exact identified, the simultaneous model can be executed using the TSLS method. The results of the TSLS estimation estimates can be followed in Table 2 below:

Table 2 Estimation Results

INFLASI = 2.434+2.72E-09*EMONEY-1.885*IR +3.05E-05*ER			
Observations: 36			
R-squared	0.672710	Mean dependent var	3.324167
Adjusted Rsquared	0.642026	S.D. dependent var	0.502112
S.E. of regression	0.300418	Sum squared resid	2.888035
Durbin-Watson stat	1.726096		
INVESTASI= 2.46E+0.8 -0.069*EMONEY+2.80E+08*IR +1247.183*IR			
Observations: 36			
R-squared	0.647502	Mean dependent var	1.70E+08
Adjusted Rsquared	0.602018	S.D. dependent var	30207030
S.E. of regression	19056354	Sum squared resid	1.13E+16
Durbin-Watson stat	1.777793		

Equation: INFLASI = 5.495013+-1.27E-08*INVESTASI			
Observations: 36			
R-squared	0.588229	Mean dependent var	3.324167
Adjusted Rsquared	0.576118	S.D. dependent var	0.502112
S.E. of regression	0.326906	Sum squared resid	3.633503
Durbin-Watson stat	1.034722		

Source: Printout E-views, 2023

Based on Table 2 above, it can be conveyed here regarding the interpretation of the estimation results and statistical tests, for example, t-tests, coefficient of determination and F-tests. The initial step is the interpretation of the statistical estimation results and for that follow the following explanation.

3.1.1 Effect of E-money Transactions on Inflation Rates

The t-statistic test is used to determine whether the independent variable E-money Transactions has an effect on the dependent variable Inflation Rate. Based on the results above, the e-money transaction variable has a positive influence on the inflation rate variable at $\alpha = 0.0000$. The value of the e-money transaction coefficient is 2.72E-09. This shows that every time there is an increase in e-money transactions by 1% in units, it will cause an increase in the Inflation Rate of 2.72E-09 in units. So that the first hypothesis (H1), namely that there is a positive effect between e-money transactions and the inflation rate, can be proven statistically. Meanwhile, the interest rate and exchange rate variables have no significant influence on inflation, and this is in line with the results of the Granger causality test as shown in Table 3 below.

Table 3 Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
IR does not Granger Cause INFLATION	35	0.37706	0.5435
INFLATION does not Granger Cause IR		0.25622	0.6162
ER does not Granger Cause INFLATION	35	1.87708	0.1802
INFLATION does not Granger Cause ER		2.73258	0.1081

3.1.2. Influence of E-money on Investment

The t-statistic test is used to test whether the independent variables of e-money transactions affect the dependent variable Investment? Based on the results of the TSLs estimation above, the e-money transaction variable has a significant effect on the level of investment at $\alpha = 0.077$ and this shows that statistically e-money transactions have proven to have a significant effect at a significance level of 7.7 percent. The value of the e-money transaction coefficient is -0.069, meaning that when there is a one percent change in e-money transactions, the investment decreases by 6.9 percent. Meanwhile, interest rates and exchange rates have no significant effect. The results are not in line with the results of the Granger causality test, especially for the exchange rate. Based on the results of this test it should be significant so that there is an inconsistency between TSLSs and Granger.

Table 4 Results of Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
IR does not Granger Cause INVESTMENT	35	0.49002	0.4890
INVESTMENT does not Granger Cause IR		0.49669	0.4861
ER does not Granger Cause INESTMENT	35	1.38736	0.2475
INVESTMENT does not Granger Cause ER		4.88025	0.0344

3.1.3. Influence of Return on Investment and Investment

The t-statistic test is used to test whether there is a reciprocal relationship between the inflation variable and the investment variable? Based on the results of the TSLs estimation above, it gives the result that the inflation variable and the investment variable have a reciprocal and significant effect at $\alpha = 0.0000$ and this shows that statistically the hypothesis of a reciprocal influence between the two is proven. Furthermore, the value of the coefficient of mutual influence is -1.27E-09 and this means that when there is a change in investment, inflation is by one percent, so both investment and inflation have decreased by 1.27E-09 percent. This result is in line with the results of the Granger causality test as shown below.

Table 5 Result of Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
INFLATION does not Granger Cause INVESTMENT	35	5.43738	0.0262
INVESTMENT does not Granger Cause INFLATION		6.24000	0.0178

4. Discussion

4.1 Effect of E-money Transactions on Inflation Rates

Based on the results of the analysis tests conducted by researchers, it can be seen that the relationship between the e-money transaction variable and the inflation rate variable is significant in a positive direction. This illustrates that the movement of e-money transactions affects the inflation rate positively or moves in the same direction. Looking at the results of the test above, if there is a change of 1 unit in e-money transactions, this will affect the inflation rate which results in an increase of 1.72 units in the inflation rate.

Referring to the results of previous research by Priyatma and Apriansah (2010) found that the level of use of e-money in Indonesia has an impact on increasing the velocity of money circulation. Strengthened by the theory put forward by Keynes in Sinungan (1995) the unstable movement of the speed of money and the addition of money circulating in the community will cause the number of transactions in the community to increase resulting in an increase in output demand in the community. The inability of the output supply to meet the demand triggers inflation.

In the research period, namely from the beginning of 2017 to the end of 2019, the use of e-money in Indonesia is the initial stage of effective use of e-money itself, as can be seen from the data presented in this study from the level of organizers and the level of transactions using e-money experienced a very significant increase from early 2017 to 2019, the emergence of e-money as an option in transactions greatly facilitated the public in transacting goods and services. During the research period, platforms for using digital-based e-money have also emerged, such as e-commerce, fin tech, and several service provider applications whose payment systems use e-money itself.

The phenomenon of using e-money for transactions in society has turned consumption levels higher because it is easy for people to transact goods and services. This was also explained in research conducted by Popovska N. Kamnar (2014) that the use of e-money makes transactions easier and more efficient so that cause an increase in transactions in society and cause circulation and the money supply to increase. In the book The Purchasing Power of Money by Irving Fisher explains that if the speed of velocity of money (V) or the money supply (M) experiences rapid movement without being matched by the supply side of goods, then the price of goods (P) will increase in society will raise the inflation rate.

In line with research conducted by Kalalo et.al (2016) which states that the use of e-money in transactions has a significant influence on the inflation rate in Indonesia. In his research, he explained that the increase in the use of e-money and the increase in the number of e-commerce made the circulation of money and transactions that were there move quickly and were not

monitored by the government, this would increase the existing inflation rate. The results of research conducted in the previous year by ZunaitinEliyaet.al (2017) stated in the results of his research that the use of e-money in society has a positive effect on the inflation rate but not significant. This can happen because payment transactions using e-money are not widely known by the people in Indonesia, besides that the use of e-money does not have a direct effect because its use is not optimal, so the use of e-money has an effect through instability in the speed of money or the amount money circulating in the community so that it can affect the inflation rate.

4.2 Effect of E-money Transactions on Investment Levels

Based on the results of the analysis tests conducted by researchers, it can be seen that the relationship between the e-money transaction variable and the investment level variable is significant in a negative direction. This illustrates that the movement of e-money transactions negatively affects the level of investment or movement which is upside down. Looking at the results of the test above, if there is a change of 1 unit in e-money transactions, this will affect the investment level which has a decrease of 0.7143 units at the investment level.

Based on Keynes' theoretical point of view in his book The General Theory of Employment, Interest and Money. Every individual has 3 motives for holding and using money, namely: transaction motives, precautionary motives, and speculative motives. In the development of financial transaction systems, namely e-money and the development of innovations in digital-based goods and services providers, this has an impact on increasing transactions in society, seeing this based on Keynes' theory that people prefer to use their money for transactions, this is due to technological advances and developments in the financial sector so that it makes it easier for every individual to make transactions on various platforms without being limited by space or time in transacting goods or services, thereby reducing the part in the mind of every individual in holding and using money for precautions or speculation.

As for the views of other theories, namely Adam Smith in Jhingan (2003) investments made by owners of capital because they expect profits and hopes in the future, profits are very dependent on the current investment climate and on real profits. Looking at several sectors that can affect a country's economy, such as the circulation of money and the amount of money in circulation, which increases continuously due to e-money transactions in society, this can have a negative impact on the economy in Indonesia. Based on Samsul's statement (2006) said the money supply is one of the factors that can directly affect the performance of a company's stock which has an impact on a country's level of investment. This then becomes a reference for investors, what conditions will occur in the future, so that it becomes the basis for making investment decisions on an individual or large scale.

According to Ozbay N (2009) excess money supply can lead to higher inflation. If the money supply is greater than the output, the government will adjust interest rates. In the period from 2017 to 2019 e-money transactions experienced a very drastic increase, with the interest rate adjustments made by the government it should be able to restrain the rate of circulation of money in e-money transactions so that money in circulation and circulation of money in society are allocated in terms of consumption not in the investment sector, it can be seen from this that it resulted in a significant negative result on e-money transactions on the level of investment. In line with research conducted by Jati (2015) which revealed that technology plays a very

important role in encouraging consumption, especially among middle-class people to be more consumptive. The presence of e-money is one way to encourage people to be more consumptive.

4.3 The Reciprocal Effect of Inflation Rates on Investment Levels
Based on the results of the analysis tests conducted by researchers, it can be seen that the relationship between the inflation rate and the level of investment is significant in a negative direction. This illustrates that if the inflation rate increases, the investment level will decrease and vice versa. This can be seen from the results of the t test conducted when the inflation rate experienced an increase of 1 unit then decreased by 5.93 units at the investment level. Meanwhile, if the investment level increases by 1 unit, then the inflation rate decreases by 2.71 units

Based on the theoretical point of view put forward by Mc Kinnon (1973) explaining that inflation tends to lower real interest rates, this causes supply and investment to decrease. Therefore, as long as inflation leads to low real interest rates and there is an imbalance in the capital market, inflation will reduce investment and economic growth. This explains that if the inflation rate rises, the investment level will decrease, while the theoretical approach from the investment side through an investment decision. Nanga (2005) states that an investor must collect data and analyze available information before making an investment transaction. Mishkin (2010) through investment theory states that the more a person has financial knowledge, the more rational he is in making investment decisions. The economic condition of a country can be seen from its inflation rate, if a country's inflation rate is high, investors will be very careful in making investments, due to uncertainty in investing, and resulting in speculation that is not in line with expectations. in these conditions the risk in investing becomes even greater which can cause losses from the investor's side.

This is in line with research conducted by Adwin S Atmaja (2009), namely the inflation rate has a significant negative effect on the level of investment in Indonesia seen from 2006 to 2014. According to Samsul (2006) one of the factors that can affect the performance of a company's stock, this is has a broad impact so that it can affect the level of investment in a country. This is also a reference for investors before making an investment, seeing the stability of a country's economy is an obligation for an investor, to reduce the risks that will occur, one of which can be seen from the inflation rate of a country. Putong (2003) explains that prolonged inflation makes producers lose money and ends up bankrupt, this is an event that is highly avoided for investors because they can lose their funds.

5. Conclusion and Implication
5.1 Conclusion

Based on the results of the analysis and discussion regarding the effect of e-money transactions on inflation rates and investment levels in Indonesia, the following conclusions are obtained:

E-money transactions accelerate the circulation of money and the amount of money circulating in society, resulting in an increase in inflation due to the imbalance between the circulation of money and the supply of goods available. This illustrates that e-money transactions that are not properly controlled can have a serious impact on inflation which results in economic instability.

The higher the e-money transactions in the community, the lower the level of investment. This was caused by two factors, namely investors' expectations and speculation regarding economic conditions; as well as ease of transactions due to technological advances. People prefer to use e-money to carry out consumption activities of goods and services compared to being allocated for investment.

There is a negative reciprocal effect between inflation and investment. This means that if there is an increase in inflation there will be a decrease in investment, and vice versa. This happens because inflation is a factor that concerns investors before making an investment. When inflation is higher, investors choose to reduce risk by reducing investment.

5.2 Implications

Based on the research results obtained, the suggestions that can be given are as follows:

From the results obtained by this research, it is hoped that the government and related institutions or institutions will sharpen existing regulations as well as in terms of government policies that regulate and supervise the use of e-money. Given the impact that will occur if the use and circulation of money in it is not controlled, there will be economic instability.

The results of this research are expected to assist the financial industry in determining internal rules and controls in implementing e-money and creating financial innovations that are safe to use for the people of Indonesia.

For future researchers, it is expected to develop more deeply regarding the variables that might influence it so that the results of further research obtain more accurate results regarding e-money transactions, inflation rates and investment levels.

Acknowledgments

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