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ANALYSIS OF FACTORS AFFECTING THE DEMAND FOR MONEY IN INDONESIA

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ABSTRACT

Demand for money is defined as people's tendency to save money for various purposes, such as transactions, anticipation, and speculation. Many factors related to economic, social, political and psychological conditions influence the demand for liquidity. This research is intended to evaluate how various variables influence the demand for liquidity in Indonesia from 2018 to 2023.This research uses an Error Correction Model (ECM), which can measure short-term and long-term correlations between the variables studied. The money supply (M2) is the dependent variable of this research, and the independent variables are interest rates, inflation and the US dollar exchange rate against the rupiah. The results show that except for inflation, all independent variables influence liquidity demand significantly in the long run. In the near term, only the rupiah exchange rate has a notable impact on liquidity demand.

Keywords : Inflation; Exchange Rate; Interest Rate; Money Supply

ABSTRAK

Permintaan uang diartikan sebagai kecenderungan masyarakat menyimpan uang untuk berbagai keperluan, seperti transaksi, antisipasi, dan spekulasi. Banyak faktor yang berkaitan dengan kondisi ekonomi, sosial, politik dan psikologis mempengaruhi permintaan likuiditas. Penelitian ini bertujuan untuk mengevaluasi bagaimana berbagai variabel mempengaruhi permintaan likuiditas di Indonesia pada tahun 2018 hingga 2023. Penelitian ini menggunakan Error Correction Model (ECM) yang dapat mengukur korelasi jangka pendek dan jangka panjang antar variabel yang diteliti. Jumlah uang beredar (M2) merupakan variabel dependen penelitian ini, dan variabel independennya adalah suku bunga, inflasi dan nilai tukar dollar Amerika terhadap rupiah. Hasil penelitian menunjukkan bahwa kecuali inflasi, seluruh variabel independen mempengaruhi permintaan likuiditas secara signifikan dalam jangka panjang. Dalam jangka pendek, hanya nilai tukar rupiah yang mempunyai pengaruh besar terhadap permintaan likuiditas.

Kata kunci : Inflasi; Nilai Tukar; Tingkat Bunga; Uang Beredar

INTRODUCTION

Money supply as an important medium of exchange in society. It enables transactions for goods, services, and credit, with its value, acceptance, and circulation being trust-worthy. Money also acts as an asset, allowing direct payment of debts (Duca & VanHoose, 2004; Kerdpitak, 2020). John Maynard Keynes famously defined money as anything that can be used to pay for goods and services or pay off debts, while Irving

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Fisher defines money as anything that functions as a medium of exchange, a unit of account, and a store of value.(Doan Van, 2020).

The concept of money demand plays an important role in macroeconomics because it is related to monetary policy, economic growth and inflation rates (Gandhi et al., 2022). The demand for money reflects how much money individuals want to save for transaction purposes, savings as reserves, or investments (Bahmani-Oskooee & Nayeri, 2020; Dou, 2018).The determinants of money demand can be categorized as structural, such as national income, interest rates, and inflation, or behavioral, such as transaction patterns, liquidity preferences and societal expectations (Twinoburyo & Odhiambo, 2018).

The demand for money is a fundamental aspect of the economy, reflecting the behavior of economic actors, the effectiveness of monetary policy, and overall financial stability (Ivanovski & Churchill, 2019). Several experts and researchers have contributed valuable insights regarding The determinants of money demand. According to Irving Fisher, a prominent economist, interest rates and anticipated changes in interest rates are important factors in determining the demand for money.Fisher expressed his views n his work titled "The Theory of Interest" in 1930. The inflation rate also influences how much money people want to save. In his book entitled "The Demand for Index Bonds", Stanley Fischer explains how inflation expectations impact people's preferences for monetary assets (Behera, 2014).

Indonesia, the country with the largest economy in Southeast Asia, has undergone substantial economic growth and transformation over the past few decades. From 2018 to 2023, Indonesia will face several economic challenges and opportunities. Hence, it is essential to conduct a comprehensive study on the factors influencing money demand during this period. Understanding the economic context is crucial for contextualizing the determinants of money demand in Indonesia. (Wijaya et al., 2022).

From Graph 1, it can be seen that the M2 money supply in Indonesia has increased every year. This shows that the Indonesian economy is growing and developing along with increasing community economic activity. From the table above, it can be seen that the M2 money supply in Indonesia has increased every year in the 2018-2023 period. The highest growth occurred in 2020 in March at 5.27%. The lowest

growth occurred in 2020 in April at -3.1%. Interest rates, inflation and exchange rates can influence this.

Therefore, this study aims to elucidate the factors that affect money demand, thereby contributing to policymakers, central banks, financial institutions, the business world, and academic researchers who operate or study the Indonesian economy.

LITERATURE REVIEW AND HYPOTHESIS

Money and Demand for money

Money is a crucial tool for conducting economic transactions. Money serves as a medium of exchange, unit of measurement, store of value, and standard for deferred payment in the economy. In addition, money also has varying levels of liquidity, which describes how easily it can be exchanged for goods and services (Lebre DE Freitas, 2022).

Based on its liquidity, money can be divided into M1, which is the most liquid money, namely currency (banknotes and coins) and demand deposits (bank deposits that can be cashed out by check or giro). M2 is money that is less liquid than M1, namely M1 plus term savings (deposits) and savings. M3 is the most illiquid money, namely M2 plus short-term securities (such as Indonesian bank certificates and government bonds) .

Another function of money is as a medium of exchange.. For this reason, people need money to carry out transactions, invest and anticipate emergencies. The amount of money needed by society is called money demand. Factors that influence the demand for money include people's income levels, prevailing interest rates, inflation rates, individual preferences for cash wealth compared to other assets, and the availability of credit facilities. (Prasetyo, 2018). Several theories try to explain why people hold money and how much money they want.

1. The Classical Theory was proposed by David Hume and Irving Fisher. This theory suggests that the demand for money is solely influenced by the price level and transaction volume. Individuals hold money solely for transactional purposes, namely to purchase goods and services. The quantity of money demanded by society is directly proportional to the price level and transaction volume (Minella, 2003; Skinner, 2007)

2. The Keynesian theory of money demand was proposed by John Maynard Keynes. According to this concept, individuals save money for three purposes: transaction, speculation, and prudence. Transactional reasons, which are one of these goals, are similar to classical theory which states that money is saved to make payments for goods and services. The second reason is to profit from fluctuations in interest rates and the third reason is to maintain a reserve fund for unexpected or emergencies. Society's demand for liquidity is influenced by income levels and interest rates. (Kavaliou, 2021; Meyer & Neri, 1975)
3. Modern Monetary Theory is a theory that was introduced by Milton Friedman and Anna Schwartz. This theory suggests that four variables influence the demand for liquidity . These variables are permanent income, real interest rates, relative price levels between monetary and non-monetary goods, and other variables related to people's preferences. People hold money for various reasons such as transactions, speculation, precautionary purposes, and also as a wealth asset (Hall et al., 2012)

Inflation

Inflation is a phenomenon of general increases in prices over a certain period. Inflation adversely affects money demand. In simpler terms, inflation leads to a decrease in money demand, whereas a reduction in inflation results in an increase in money demand. This occurs due to the fact that inflation diminishes the purchasing power of money. If inflation is high, people will tend to hold less money because money will lose its purchasing power due to rising prices. On the other hand, if inflation is low, people will tend to hold more money because money will maintain or even increase its purchasing power (Sukirno, 2016).

To grasp the relationship between inflation and the demand for money, one can look at the concept introduced by Irving Fisher in his writings in 1911. According to this theory, the demand for money is influenced by real income and real interest rates (Pasaribu, 2021). This real income is the actual income that money can buy, which takes into account the effect of inflation on the value of money (Auclert, 2019).Real interest rates are the result of reducing nominal interest rates with inflation. The equation used by Fisher is as follows:

$$M/P = kY/i$$

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In this context, M represents the quantity of money in circulation, P is the general price level, k is the proportion coefficient between the amount of money and real income, Y is real income, and i is the real interest rate.From this equation, it can be seen that if inflation rises (P rises), then real money demand (M/P) will fall because real income (Y) will fall and real interest rates (i) will rise.

According to research conducted by Setiadi (2013) In a research analyzing the factors affecting money demand in Indonesia from the first quarter of 1999 to the fourth quarter of 2010 using the Error Correction Model (ECM), it was discovered that inflation had a notable effect on money demand in Indonesia. This finding is by other studies (Ahmad Ridha et al., 2021; MASITHO, 2019; Mukhtar, 2018; Nurmetri & Adnan, 2022; Polontalo et al., 2018)

H1: Inflation significantly affects liquidity requirements in Indonesia**.**

Interest rate

he interest rate represents the expense of borrowing money for a specific duration.The interest rate is inversely proportional to the amount of money demanded. This means that if interest rates rise, people will reduce their demand for money, and vice versa. This is because interest rates indicate the rate of return from alternative investments that can be made with money. If interest rates are high, people will tend to save money in banks or invest capital in other instruments that provide greater profits than holding cash. Conversely, if interest rates are low, people will tend to hold cash because there is no incentive to save or invest (Gandhi et al., 2022).

Keynes (1936) put forward a theory that explains the link between interest and the desire to have money. He said there were three reasons why people ask for money, namely transactional reasons, cautious reasons and speculative reasons. The reason for the transaction is related to the need to pay routine expenses. The precautionary motive is the need to hold money in anticipation of an emergency or unexpected situation. The motive for speculation is the desire to hold money to take advantage of changes in the price of financial assets. Of the third motives, the speculation motive is the most responsive to changes in borrowing rate. Transaction motives and precautionary motives tend to be less responsive to changes in borrowing rate. When borrowing rate rise, the liquidity demand for speculative motives tends to decrease because people tend to sell bonds at lower prices and buy new bonds that provide higher borrowing rate.

Conversely, when borrowing rate decrease, the liquidity demand for speculative motives tends to increase because people tend to hold onto bonds whose prices increase and will not buy new bonds that provide lower interest rates

In research conducted by (Mukhtar, 2018) which tested money demand factors using the Error Correction Term (ECM) method, it was found that ethnicity significantly influences the demand for liquidity in Indonesia as well as other research such as (Ahmad Ridha et al., 2021; Arwin et al., 2019; Folarin & Asongu, 2023; Hayati, 2015; Nurmetri & Adnan, 2022; Nursiba, 2015; Polontalo et al., 2018; Setiadi, 2013; Wang et al., 2014; Widodo A, 2015; Yulimar, 2015) who found that interest rates influence the liquidity demand.

H2: Interest rates exert a notable impact on liquidity demand in Indonesia.

Exchange rate

Monetary policy, especially interest rate policy, is one of the factors that influences the demand for money. The exchange rate is the comparison between domestic currency and foreign currency. A high exchange rate means the domestic currency is stronger than the foreign currency, so more money is needed to buy goods and services from abroad. This will increase the demand for money in the country. Conversely, a low exchange rate means the domestic currency is weaker than the foreign currency, so less money is needed to buy goods and services from abroad. This will reduce the demand for money in the country. Exchange rates are also related to the competitiveness of a country's goods and services in the global market (Pasaribu et al., 2020).

According to Mundell-Fleming's theory (1963), there is a connection between the exchange rate and the need for liquidity. This principle suggests that the need for money is impacted by two primary factors, specifically the national income level and domestic interest rates. the national income level denotes the total worth of goods and services produced by a country during a particular period, while the domestic interest rate signifies the cost of borrowing money within the country over a certain period. Mundell-Fleming presented the following formula:

$$L = f(Y,i)$$

Where L is money demand, Y is national income, and i is the domestic interest rate. From this equation, it can be seen that if the exchange rate rises (domestic currency

strengthens), then the demand for liquidity (L) will rise because national income (Y) will rise due to increased exports and reduced imports, and domestic interest rates (i) will fall due to the influx of foreign capital seeking to profit from a strengthening currency.

Research conducted by (Widodo A, 2015) with the title Macroeconomic Factors that influence cash demand in Indonesia using the ECM method. In his research, he discovered that in the short term, the exchange rate has a positive and significant impact on the demand for liquidity in Indonesia as well as other researchers such as (Ahmad Ridha et al., 2021; Folarin & Asongu, 2023) which found something similar to Widodo, 2015 that the value of exchange affects the need for liquidity.

H3: The exchange rate has a notable effect on liquidity requirements in Indonesia.

RESEARCH METHODS

Method is a method of work that can be used to obtain something. While the research method can be interpreted as a work procedure in the research process, both in searching for data or disclosing existing phenomena (Zulkarnaen, W., et al., 2020:229). In this paper, an examination of money demand in Indonesia is undertaken using the Error Correction Model (ECM).This research focuses on variables such as money supply (M2), inflation, interest rates, and the rupiah exchange rate against the US dollar. The ECM method is used because it is suitable for testing the relationship between variables in the short term and long term. The data utilized in this study comprises monthly observations spanning from 2018 to 2023, sourced from both the BPS and BI, and subsequently analyzed using Eviews 12 software.

The study is conducted in four stages:

1. Data is checked to see whether it is stable or not using the Augmented Dickey-Fuller (ADF
2. Cointegration is tested using the Engle-Granger and Johansen tests.
3. The ECM model is estimated using the Ordinary Least Square (OLS) method.
4. The ECM model estimation results are analyzed by examining the coefficient value, sign and significance of each variable. Additionally, the R-squared, adjusted R-squared, Durbin-Watson, and F-statistic values are also looked at as measures of the goodness of the model.

The equation model formed for the long term is:

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LnM2it = α + β1 Inflationit + β2 Bugait Rate + β3 LN Exchange Rate + Ɛit

Meanwhile, for the short term, these are:

D(LnM2it)= α + β1 D(Inflationit) + β2 D(interest Rate)+ β3 D(LN Exchange Rate)+ ECT (-1)

RESEARCH RESULTS AND DISCUSSION

Research result

Stationary Test Results

The stationary test is a way to find out whether a data series remains in the same pattern over time.Stationary properties mean that the mean, variance, and correlation of the data do not change over time. Stationary tests are important to carry out before carrying out advanced analyses such as regression, forecasting, or time series modeling, because many of these methods assume that the data is stationary. Several types of stationary tests can be used, such as the Dickey-Fuller test, the Phillips-Perron test, the KPSS, etc.

This study utilizes the Augmented Dickey-Fuller (ADF) method to test whether the data is stationary. If the statistical value obtained from the Augmented Dickey-Fuller (ADF) test is smaller than the critical value listed in the ADF distribution table at a certain significance level, then it can be considered that the data is stationary. Conversely, if the statistical value is greater than the critical value, it can be concluded that the data is not stationary. The ADF t-statistic for all variables in this study is less than or equal to the MacKinnon critical value at the 1%, 5%, and 10% significance levels, as seen in Table 1. These results indicate that the data in this study can be considered stationary at the level first difference.

Cointegration Test Results

After carrying out the stationary test, we can continue with the cointegration test using the Engle-Granger method, we can estimate the cointegration between economic variables and find out the dynamics of short-term and long-term relationships between variables.

The cointegration results using the Engle-Granger method in Table 2 show that the Error Correction Model (ECM) model used in this research is valid. This validity is reflected in the existence of a coefficient that is negative and significant at the 1% significance level.

Error Correction Model (ECM) estimation results

After testing cointegration, one way to understand the relationship between variables in various periods is to use the Error Correction Model (ECM). This model is useful for determining whether variables have a long-term or short-term relationship. With ECM, we can see how variables influence each other and adapt over a certain period of time.

Long Term Estimates

This research examines how M2 money demand, as the dependent variable, is influenced by inflation, interest rates, and exchange rates. The results in Table 3 show that these three variables explain 50.66% of the variation in demand for money or R2 = 0.506633. The remainder, around 49.34%, is affected by other variables that are not included in this model. From the long-term equation, it is apparent that interest rates and exchange rates are the two primary factors impacting the demand for money in Indonesia. The long-run relationship between money demand and interest rates is negative, while that with exchange rates is positive.

Short Term Estimates

The findings of the short-term ECM model in Table 4 reveal that only one variable exerts a significant and positive impact on money demand in Indonesia in the short term.This variable is the exchange rate, indicating that a higher exchange rate corresponds to a higher demand for money.

Discussion

According to the research, it is evident that the exchange rate has a substantial and favorable impact on the demand for M2 money in Indonesia, both in the short and long run.These findings support the Mundell-Fleming international finance theory and previous research by Ahmad Ridha et al. (2021) and Folarin & Asongu (2023). Simply put, when a country's currency exchange rate strengthens, there is a tendency for the demand for money to increase. Moreover, a rise in the exchange rate can result in a reduction in domestic interest rates and a rise in national income, ultimately benefiting the demand for money.

The USD-IDR exchange rate is one of the variables that affects the demand for M2 money in IndonesiaThe amount of money expressed in M2 consists of time deposits,

cash and money in circulation. There are significant fluctuations in the dollar exchange rate against the rupiah between 2018 and 2023. In 2018, the value of one dollar was equivalent to IDR 14,409. As a result of the improvement in the global economic environment and Bank Indonesia's interest rate adjustment, the dollar exchange rate fell to IDR 13,900 per dollar in 2019. Due to economic difficulties and uncertainty caused by the COVID-19 epidemic, one dollar was worth 16,285 Indonesian Rupiah in March 2020. Dollars will be exchanged between IDR 14,000 and IDR 14,500 in 2021. in line with Indonesia's economic recovery and fiscal and monetary support from the government and Bank Indonesia.

The USD/IDR exchange rate has a positive impact on the demand for M2 money in Indonesia from 2018 to 2023, with several mechanisms as follows: First, a high dollar exchange rate will increase the demand for M2 money for transaction and speculation purposes. This is because people will tend to change some of their assets from foreign currency to domestic currency to avoid losses due to rupiah depreciation. Apart from that, people will also tend to hold M2 money to anticipate an increase in the price of imported goods which is influenced by the dollar exchange rate. Second, a high dollar exchange rate will increase the demand for M2 money for precautionary purposes. This is because people will tend to increase term savings as a form of protection against exchange rate and inflation risks. Time savings have higher interest rates than currency and demand deposits, so they can provide better returns for their owners. Third, a high dollar exchange rate will increase the demand for M2 money for portfolio purposes (portfolio motive). This is because people will tend to switch from real assets such as shares, bonds and property to monetary assets such as M2 money. Real assets have higher risks than monetary assets, especially in conditions of economic and political uncertainty. Monetary assets have higher liquidity than real assets, so they can be easily sold or exchanged into other currencies if needed. Hence, it can be concluded that the USD/IDR exchange rate has a positive impact on the demand for M2 money in Indonesia from 2018 to 2023.A high dollar exchange rate will encourage people to increase their M2 money holdings for various purposes, including transactions, speculation, precautions and portfolios.

Apart from the exchange rate, the interest rate variable also significantly influences the demand for M2 money in Indonesia in 2018-2023 in the long term, which

is in line with research conducted by (Ahmad Ridha et al., 2021; Arwin et al., 2019; Folarin & Asongu, 2023; Hayati, 2015; Nurmetri & Adnan, 2022; Nursiba, 2015; Polontalo et al., 2018; Setiadi, 2013; Wang et al., 2014; Widodo A, 2015; Yulimar, 2015)

One of the factors influencing M2 money demand is interest rates. Interest rates have a negative correlation with M2 money demand due to two effects: the substitution effect and the income effect. The substitution effect appears when interest rates increase so that people prefer to reduce the demand for M2 money and choose other more profitable financial instruments, such as deposits, bonds or shares. The income effect appears when interest rates increase, so that borrowing costs become higher, which reduces people's real income and purchasing power, which has the effect of reducing M2 money demand.

Various factors influence interest rate fluctuations in Indonesia during 2018-2023, including global economic conditions, inflation, budget deficit, rupiah exchange rate, and Bank Indonesia monetary policy. Interest rates tend to rise in 2018-2019 in line with the increase in Bank Indonesia's benchmark interest rate from 4.25% to 6% within 18 months. This step was taken to maintain macroeconomic stability and the rupiah exchange rate amidst external tensions caused by the Fed's increase in interest rates, trade wars and geopolitical uncertainty. As a result, demand for M2 money in Indonesia slowed from 11.3% (yoy) to 6.5% (yoy) in two years.

Interest rates will decrease in 2020-2021 in line with Bank Indonesia's reduction in the benchmark interest rate to 3.5% in two years. This step was taken to overcome the impact of the Covid-19 pandemic which has suppressed global and domestic economic growth. This reduction in interest rates is intended to encourage economic recovery through monetary and fiscal stimulus. As a result, the demand for M2 money in Indonesia increased from IDR 6905939.30 billion to IDR 7870452.85 billion in a year.

In 2022-2023, interest rates in Indonesia are expected to increase again in line with economic normalization and inflation starting to rise. Bank Indonesia will adjust its monetary policy on economic developments and inflation. It is anticipated that the rise in interest rates will adversely affect M2 money demand in Indonesia, resulting in slower growth compared to the previous year.

CONCLUSION

The results of this study suggest that the exchange rate impacts the demand for M2 money, both in the short and long run.Nevertheless, inflation did not exert a notable influence on M2 money demand during the studied period. Interest rates are the only variable that significantly affects M2 money demand in the long term.

Based on the findings of this study, it is advisable for the government and Bank Indonesia to take into account the determinants of money demand (M2) when formulating monetary and fiscal policies. An effective monetary policy can assist in maintaining the stability of the rupiah exchange rate, inflation, and economic growth Meanwhile, appropriate fiscal policy can increase national income and social welfare.

For future research, including the variables employed in the analysis of money demand (M2), such as expectations, liquidity preferences, and wealth is recommended. In addition, future research can also use other methods that are more suitable for time series data, such as cointegration and error correction.

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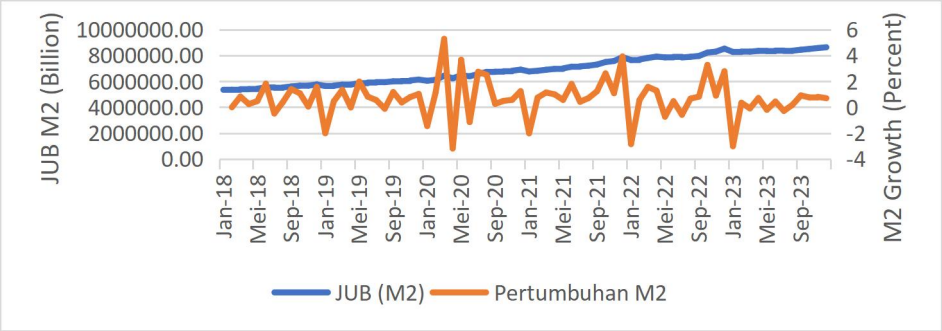
GRAPH AND TABLE



Graph 1 . Money Supply M2 (Billions of Rupiah) and M2 Growth in the 2018-2023 Period
Source: Processed data, 2024

Table 1. Unit Root Test Results at the First Difference Level

VARIABLES	ADF t-statistic	Prob	MacKinnon's Critical Values			Information
			1 %	5%	10%	
M2	-12.14726	0.0001	-4.094550	-3.475305	-3.165046	Stationary
INFLATION	-6.935296	0.0000	-4.094550	-3.75305	-3.165046	Stationary
INTEREST RATE	-4.020826	0.0123	-4.094550	-3.475305	-3.165046	Stationary
EXCHANGE RATE	-9.185586	0.0000	-4.094550	-3.475305	-3.165046	Stationary

Source: Processed data, 2024

Table 2. Engle-Granger Cointegration Estimation Results

VARIABLES	ADF t-statistic	Prob	MacKinnon's Critical Values			Information
			1 %	5%	10%	
ECt	-4.209977	0.0071	-4.092547	-3.474363	-3.164499	Cointegrated

Source: Processed data, 2024

Table 3. Long-Term Regression Results

Variable	Coefficient	Probability
C	-10.12631	0.0060
Inflation	0.023494	0.0830
Exchange rate	1.729558	0.0000
Interest rate	-0.063352	0.0001
R-square	0.506633	
Adjusted R-square	0.484867	
F-Statistics	2327615	
Prob (F-statistic)	0.000000	

Source: Processed data, 2024

Table 4. Short-Term Regression Results

Variable	Coefficient	Probability
C	0.006019	0.0002
D(Inflation)	-0.00293	0.5688
D(Exchange Rate)	0.290816	0.0000
D(Interest Rate)	0.002236	0.7954
ECT (-1)	-0.016116	0.0055
R-square	0.267583	
Adjusted R-square	0.223194	
F-Statistics	6.028144	
Prob (F-statistic)	0.000339	

Source: Processed data, 2024