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Monetary Dynamics and Inflation in an Emerging Economy: Evidence from a Vecm Approach Incorporating Consumer Expectations

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Abstract

This research examines the dynamics of inflation in the macroeconomic framework by emphasizing the role of monetary factors and expectations in the formation of inflation. This research uses the VECM econometric approach with data from the time series for the period 2014Q1–2025Q4. The analysis stages include stationariness test (ADF), optimal lag determination, VAR stability test, Johansen cointegration test, VECM estimation, as well as Impulse Response Function (IRF) and Forecast Error Variance Decomposition (FEVD) analysis. Empirical results show that in the short-term inflation was influenced by inertia factors and consumer expectations, while in the long term the money supply and consumer expectations are the main determinants of inflation. In addition, there is a relatively rapid adjustment mechanism towards long-term equilibrium, as well as the increasing contribution of external variables in explaining inflation variations as the time horizon increases. This study concludes that inflation is not only a monetary phenomenon, but also greatly influenced by people's expectations. Implicitly, monetary policy needs to focus not only on controlling liquidity, but also on managing expectations through credibility and policy communication. These findings confirm the importance of a comprehensive approach in maintaining price stability.

INTRODUCTION

The dynamics of inflation have long been the subject of extensive economic research and remain a key issue for global economic stability (Doser, Nunes, Rao, & Sheremirov, 2023). This phenomenon is considered a crucial determinant of economic behavior because it affects decisions on consumption, savings, investment, and wage negotiations, which ultimately has a significant impact on a country's economic growth (Armantier, Nelson, Topa, van der Klaauw, & Zafar, 2012; Mlangeni & Buthelezi, 2024). In the modern macroeconomic framework, the effectiveness of monetary policy no longer depends solely on short-term interest rate control, but rather on the ability of monetary authorities to shape and manage public expectations regarding future policy direction. (Cole & Milani, 2016).

At the national level, Indonesia faces fluctuating inflation dynamics, which reflect price levels that are under control but remain vulnerable to external and internal shocks. As a monetary authority, Bank Indonesia plays a central role in maintaining price stability through an inflation-targeting regime (*inflation targeting*). However, the effectiveness of these policies is often tested by inflationary instability influenced by conventional monetary variables such as the money supply (M2), policy interest rates (*BI Rate*), and exchange rate volatility. (Mlangeni & Buthelezi, 2024).

The main problem in controlling inflation in *emerging economies* is the complexity of the interaction between monetary variables and shock transmission, which is often non-linear

(Mlangeni & Buthelezi, 2024; Szyszko & Rutkowska, 2019). Money quantity theory asserts that money supply is the main determinant of long-term inflation, while interest rate and exchange rate channels play a role in the mechanism of policy transmission and the impact of import prices (*exchange rate pass-through*). Nevertheless, there is empirical evidence that public expectations often deviate from the inflation targets set by central banks, which indicates a major challenge in trying to "anchor" these expectations (Bulut, 2018; Coibion, Gorodnichenko, & Weber, 2021; Dräger, 2015).

The *research gap* underlying this study was found in the lack of explicit integration of the dimensions of consumer expectations in dynamic models in developing countries. Most previous literature studies have tended to focus on expert expectations or professional forecasting, even though consumer expectations have a direct impact on aggregate demand through household shopping behavior (D'Acunto, Malmendier, Ospina, & Weber, 2019; Szyszko & Płuciennik, 2018). Theoretically, societal expectations are often not completely rational but rather adaptive or experience-based, thus requiring a dynamic systems approach that is able to capture the two-way interaction between macroeconomic realisation and societal perceptions (Cole & Milani, 2016; Hommes, Massaro, & Weber, 2015; Mlangeni & Buthelezi, 2024).

The urgency of this study lies in the importance of conducting simultaneous analysis of short-term and long-term relationships using the *Vector Error Correction Model* (VECM) model. The relevance of the use of VECM is crucial because it allows the identification of *error correction mechanisms* that indicate the speed of adjustment of economic systems towards long-term equilibrium after the occurrence of shocks (Cole & Milani, 2016). By integrating the Consumer Expectations Index (IEK) into the VECM system, the study was able to explore how monetary shocks are transmitted to actual inflation through the public expectations channel.

The purpose of this study is to provide new empirical evidence from the context of developing countries (Indonesia) regarding the simultaneous influence of monetary variables and consumer expectations on inflation. Specifically, this study is designed to answer the following research questions: (1) Is there a long-term cointegration relationship between M2, exchange rates, interest rates, and consumer expectations of inflation?; (2) How do these monetary variables affect inflation in the short term?; (3) To what extent is the mechanism of adjustment towards long-term equilibrium occurring in the economic system?; (4) What is the contribution of consumer expectations in explaining inflation volatility compared to other monetary variables?

This research is expected to make a theoretical contribution by combining classical monetary theory and behavioral economics (*Behavioral Economics*), as well as practical contributions as a reference for Bank Indonesia in managing the credibility of monetary policy. Preliminary findings suggest that consumer expectations and the money supply are significant fundamental factors in shaping long-term inflation, where the process of adjustment to equilibrium is relatively rapid. By understanding the heterogeneity of responses to these variables, policymakers can design more effective communication strategies to maintain national price stability (Bulut, 2018) (Drager, 2014; Coibion et al., 2021).

METHOD

This section outlines the methodological framework used to comprehensively analyze monetary dynamics and inflation in Indonesia. This study adopts a dynamic systems approach to capture the simultaneous interaction between conventional macroeconomic variables and consumer expectations as behavioral components. Indonesia was chosen as the object of study because of its characteristics as an emerging economy with relatively typical inflationary volatility and a significant central bank role in managing public expectations. The unit of analysis in this study is national macroeconomic data in the form of a time series, with quarterly data coverage from the period 2014Q1 to 2025Q4. This time span is considered adequate to represent the dynamics of the economic cycle while capturing changes in consumer behavior after the global crisis period.

The data used is secondary data obtained from official sources to ensure reliability and accuracy. The inflation variable (INF) and the Consumer Expectations Index (IEK) were obtained from the publications of the Central Statistics Agency (BPS) and the Bank Indonesia Consumer Survey. Meanwhile, the variables of Money Supply (M2), Exchange Rate (NT), and Policy Rate (BI Rate) are sourced from the Indonesian Economic and Financial Statistics (SEKI) published by Bank Indonesia. All variables in this study are operationally defined to represent monetary conditions and public perceptions as follows: (1) inflation (INF), measured as the year-on-year percentage change of the Consumer Price Index (CPI); (2) the money supply (M2), expressed in natural logarithms (Ln) to reduce the potential for heteroscedasticity while representing the level of economic liquidity; (3) the exchange rate (NT), measured as the exchange rate of the Rupiah against the United States dollar in the form of a natural logarithm as a proxy for the pass-through exchange rate mechanism; (4) interest rate (SB), represented by the policy rate (BI Rate) as the main instrument of monetary policy transmission; and (5) Consumer Expectations Index (IEK), as a behavioral variable that reflects the level of consumer optimism or pessimism about economic conditions in the next 12 months.

The analysis method used in this study is the Vector Error Correction Model (VECM). The selection of this method is based on its ability to handle data that is not stationary at the level level but has a long-term equilibrium relationship (cointegration) (Szyszko & Rutkowska, 2019). In contrast to standard Vector Autoregression (VAR) models, VECM allows for a clear separation between short-term dynamics and long-term equilibrium relationships through the presence of an Error Correction Term (ECT) component. In general, the specifications of the VECM model in this study can be written as follows:

$$\Delta Y_t = \alpha + \ + \beta' Y_{t-1} \sum_{i=1}^{p-1} \tau_i \Delta Y_{t-i} \, \varepsilon_t$$

Where Δ is the first differentiation operator; is the vector of endogenous variables (INF, lnM2, LnNT, SB, IEK); α represent the speed of adjustment towards long-term equilibrium (adjustment coefficients); is a cointegration vector that reflects the long-term relationship between variables; capture the short-term dynamics of differentiated variables; is a residual vector that is white noise.$Y_t \beta' \tau_i \varepsilon_t$

The analysis process is carried out through systematic stages to ensure the validity and consistency of the estimation results (Bulut, 2018; Dräger, 2015; Hsing, 2021; Szyszko & Płuciennik, 2018). The first stage is a unit root test using the Augmented Dickey-Fuller (ADF) test to determine the order of integration of each variable, with the prerequisite that all variables

must be integrated on the same order, generally I (1). The second stage is the determination of the optimal lag length through lag length criteria based on information criteria such as the Akaike Information Criterion (AIC) and Schwarz Criterion (SC), in order to avoid over-parameterization and information bias. Furthermore, the Johansen cointegration test was carried out to identify the existence of long-term relationships between variables through Trace and Maximum Eigenvalue statistics. After that, the VECM model estimation was carried out to obtain short-term and long-term coefficients, including testing the significance of ECT as an indicator of adjustment mechanisms towards equilibrium.

For advanced dynamic analysis, the Impulse Response Function (IRF) is used to trace inflation's response to shocks to monetary variables and consumer expectations over a certain time horizon. In addition, Forecast Error Variance Decomposition (FEVD) is used to measure the relative contribution of each variable in explaining inflation variations. The final stage includes a series of diagnostic tests, such as residual normality tests, autocorrelation tests (LM Test), and model stability tests using Roots of Characteristic Polynomial or CUSUM, to ensure that the estimated model meets the necessary econometric assumptions.

By integrating the Consumer Expectations Index (IEK) into the VECM framework, this research is expected to be able to provide a more comprehensive understanding of the interaction between societal psychological factors and monetary fundamentals in shaping price dynamics and stability at the national level.

RESULT AND DISCUSSION

Descriptive Statistics and VECM Model Testing Network

Based on Table 1, descriptive statistical analysis provides a preliminary overview of the characteristics of the research data including the mean and standard deviation, as recommended in the econometric approach by Gujarati & Porter (2009) as the initial stage before further analysis.

Table 1. Results of Descriptive Statistical Test of Research Variables (2021Q1–2024Q4)

Variable	Red	Minimum	Maximum	Std. Dev.
INFLATION	2.84	1.43	5.55	1.30
BI_RATE	4.85	3.50	6.25	1.10
M2	8,220,000	6,826,920	9,210,800	800,000
NILAI_TUKAR	15,100	14,157	16,023	600
IEK	131.50	107.47	137.50	7.80

The inflation variable showed an average value of 2.84 percent, with a minimum value of 1.43 percent and a maximum value of 5.55 percent. These findings indicate that during the observation period, inflation was in a relatively controlled range, although it had experienced a significant increase, especially in 2022. The standard deviation value of 1.30 reflects moderate fluctuations in inflationary movements, so that in general price stability can still be maintained within the framework of the prevailing monetary policy (Kilian & Zhou, 2020).

Meanwhile, the variable policy interest rate (BI Rate) has an average value of 4.85 percent, with a range between 3.50 percent and 6.25 percent. This pattern reflects a change in the orientation of monetary policy, from tending to be accommodative at the beginning of the observation period to more contractive in the later period, in line with efforts to control

inflationary pressures and stabilize macroeconomics. A standard deviation of 1.10 indicates that interest rate variations are relatively controlled and do not experience excessive volatility.

The variable money supply (M2) was recorded to have an average of around 8.22 million billion rupiah, with a minimum value of 6.83 million billion and a maximum of 9.21 million billion. The relatively large standard deviation value, which is around ±800 thousand billion rupiah, indicates a significant increase in liquidity throughout the study period. This dynamic is in line with the response of monetary policy in encouraging economic recovery and maintaining financial system stability.

On the other hand, the exchange rate variable shows an average of around Rp15,100 per US dollar, with a minimum value of Rp14,157 and a maximum of Rp16,023. A standard deviation of 600 indicates that exchange rate fluctuations are at a moderate level. This reflects pressure from external factors, but is still balanced by the role of monetary authorities in maintaining exchange rate stability through various policy instruments.

The Consumer Expectations Index (IEK) variable has an average value of 131.50, with a minimum value of 107.47 and a maximum of 137.50. The standard deviation of 7.80 indicates a significant variation, especially in the early phase of post-pandemic economic recovery, before showing a more stable trend in the following period. This indicates that public perceptions and expectations of economic conditions have adjusted in line with changes in macroeconomic conditions.

In general, descriptive statistics show that the macroeconomic variables in this study have diverse dynamic characteristics. The highest variability was identified in the variables of the money supply (M2) and the Consumer Expectations Index (IEK), while inflation and interest rates tended to be more stable. These findings provide an early indication that the data has suitable properties for further analysis using dynamic econometric approaches, such as Vector Autoregression (VAR) and Vector Error Correction Model (VECM), which are able to capture short-term interactions and long-term equilibrium relationships between variables (Claus & Nguyen, 2020).

Stationary testing was carried out using the Augmented Dickey-Fuller (ADF) method at the level level and first difference level. At the level level, most variables do not yet meet the assumption of stationarity. The inflation variable shows an ADF value of -2.8125 (prob. 0.0643), so it is not stationary at a significance level of 5%, but weakly stationary at 10%. Similar results were also found in the Consumer Expectations Index (IEK) with an ADF value of -2.8496 (prob. 0.0592), which is only significant at the level of 10%. Meanwhile, the variables of money supply (LOG_M2), exchange rate (LOG_NT), and interest rate (SB) are clearly not stationary at the level level, with ADF values of -0.5862 (prob. 0.8631), -1.4087 (prob. 0.5702), and -2.2985 (prob. 0.1768), so the null hypothesis of the existence of root units cannot be rejected. These findings indicate that most variables still contain root units at the level, in line with the testing criteria in Gujarati & Porter (2009).

At the first level of differentiation, all variables become stationary. Inflation [D(INFLATION)] has an ADF value of -5.9222 (prob. 0.0000), LOG_M2 of -3.3138 (prob. 0.0203), LOG_NT of -5.0119 (prob. 0.0002), interest rate [D(SB)] of -3.6849 (prob. 0.0076), and IEK of -6.5014 (prob. 0.0000). All of these values are smaller than the critical values at conventional significance levels and have a probability of below 5%, so the zero root unit hypothesis is rejected. Thus, it can be concluded that all variables are integrated on order one,

I(1). This condition meets the prerequisites for the application of the Vector Error Correction Model (VECM), which requires the integration of the same order as well as the potential for long-term cointegration relationships between variables (Gujarati & Porter, 2009).

Based on the results of the stationarity test at the previous level, most of the variables indicated to be non-stationary, so a follow-up test is needed to determine the order of integration through the ADF test at the first level of differentiation. The test results show that all variables become stationary at the first difference. The inflation variable [D(INFLATION)] has an ADF value of -5.9222 (prob. 0.0000), LOG_M2 of -3.3138 (prob. 0.0203), LOG_NT of -5.0119 (prob. 0.0002), interest rate [D(SB)] of -3.6849 (prob. 0.0076), and IEK of -6.5014 (prob. 0.0000). The overall statistical value of ADF is smaller (more negative) than the critical value at the conventional significance level, and has a probability of below 5%, so the hypothesis of zero root unit is rejected (Gujarati & Porter, 2009).

All variables in this study were integrated in order one, I(1), which is not stationary at the level level but becomes stationary after the first differentiation. Econometrically, this condition meets the prerequisites for the application of dynamic models such as VAR, Vector Error Correction Model (VECM), and Error Correction Model (ECM), provided that cointegration tests are carried out to identify long-term equilibrium relationships between variables (Gujarati & Porter, 2009).

Based on the results of the determination of the order of integration which shows that all variables are integrated in order one, I(1), the next stage is to determine the optimal lag length in the VAR model. Likelihood Ratio (LR), Final Prediction Error (FPE), Intelligence Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn (HQ). The estimation results showed that most of the criteria—namely LR (64.74093), FPE (1.65e-07), AIC (-1.439751), and HQ (-0.986628)—indicated an optimal value at lag 1, while SC recommended a lag of 0. Referring to the principle of majority of criteria and efficiency considerations in small samples, especially AIC and FPE (Gujarati & Porter, 2009), the optimal lag chosen is lag 1. This selection reflects that the dynamics of endogenous variables are significantly influenced by a previous period, while maintaining a balance between model complexity and estimation efficiency (Parsimony).

Next, the VAR stability test through Inverse Roots of Characteristic Polynomial indicates that the entire root has a modulus of less than one (|root| < 1), with a maximum value of 0.915535. Based on the stability criteria (Gujarati & Porter, 2009), this condition confirms that the VAR model is stable and non-explosive, so that the response to shocks will converge towards a long-term equilibrium. This stability is an important prerequisite for the validity of advanced analysis, such as Impulse Response Function (IRF) and Variance Decomposition.

The next stage is cointegration testing using the Johansen method. Results Trace Test indicates that the entire value Trace Statistic greater than the critical value at a significance level of 5%, so the zero hypothesis of the absence of cointegration is rejected at each level, indicating the existence of more than one long-term relationship. Nevertheless, Maximum Eigenvalue Test It shows that the zero hypothesis is first rejected at "at most 1" (prob. 0.0996), thus indicating the existence of a single cointegration vector (r = 1). Referring to Gujarati & Porter (2009), under conditions of difference in results, a more conservative approach can be used. Thus, it is concluded that there is a long-term equilibrium relationship between variables. The econometric implication is that the most appropriate model to use is Vector Error

Correction Model (VECM), because it is able to integrate short-term dynamics with adjustment mechanisms towards long-term equilibrium through Error Correction Term (Pfajfar & Žakelj, 2015).

VECM Model Estimation

Based on the results of the Vector Error Correction Model (VECM) estimation, information was obtained about the long-term relationship (cointegrating equation) and short-term dynamics between the variables studied, namely inflation, money supply (M2), exchange rate, interest rate, and consumer expectations index (IEK).

In the cointegration equation (Cointegrating equation), the results of the estimation show that the variable money supply in the form of logarithmic differentiation, D(LOG_M2), and the Consumer Expectation Index, D(IEK), have a significant influence on the long-term balance. This is indicated by the value t-statistic are -3.08753 and -5.20373, respectively, which is in absolute terms greater than the critical value of ±1.96 at a significance level of 5%. The D(LOG_M2) coefficient of -42.97176 indicates that in the long run, the increase in the money supply is negatively correlated with changes in inflation, which may reflect the existence of a liquidity adjustment mechanism or monetary policy that is responsive to price pressures. Meanwhile, the D(IEK) coefficient of -0.193776 indicates that consumer expectations play a significant role in shaping the long-term balance of the system, which confirms the importance of the behavioral dimension in inflation dynamics. In contrast, the exchange rate variables (D(LOG_NT)) and interest rate (D(SB)) did not show a significant influence on the long-term relationship, because the value of the t-statistic which is smaller than the critical value, so its contribution to the formation of a long-term equilibrium is relatively limited (Pfajfar & Žakelj, 2015).

In the framework Vector Error Correction Model (VECM), a component Error Correction Term (ECT) or CointEq1 plays an important role in describing the adjustment mechanism towards long-term equilibrium. In the equation D(INFLATION), the ECT coefficient is -0.571280 and statistically significant (t-statistically -4.40686). These negative and significant signs indicate that about 57.13% of short-term imbalances will be corrected in one period, so the adjustment process towards equilibrium is relatively fast and convergent. In other words, inflation acts as the main variable that responds to deviations from the long-term equilibrium.

In another equation, the ECT coefficient also provides important information about the adjustment mechanism. The variable D(LOG_M2) has an ECT coefficient of 0.008045 and is significant (t-statistic 3.12234), but it is marked positive, indicating that the adjustment does not lead to equilibrium (non-convergence), so its role as the main adjustment variable is limited. The variable D(LOG_NT) has an ECT coefficient of -0.006124, but it is not significant (t-statistically -1.47632), which indicates that the exchange rate does not have a strong long-term adjustment mechanism. Similarly, the variable D(SB) with an ECT coefficient of 0.088607 was not significant (t-statistic 1.60949), so it did not play a role in the error correction process. Meanwhile, the variable D(IEK) had an ECT coefficient of 3.149431 and was significant (t-statistic 3.02241), but with a positive sign, which theoretically indicated a potential divergence or unstable adjustment.

In short-term dynamics, the estimation results show that there is a selective influence between variables. The variable D(INFLATION(-1)) is proven to be significant to itself,

indicating the existence of an inflationary inertia effect or inflation persistence. In addition, the variables D(LOG_M2(-1)) and D(LOG_NT(-1)) also show significance in some equations, reflecting the existence of short-term dynamic interactions between macroeconomic variables. However, not all lag coefficients are significant, suggesting that short-term transmission is partial and depends on the structure of relationships between variables in the system.

From the side goodness of fit, the R-squared value shows variation between equations, with the highest value in equation D(LOG_M2) of 0.651130 and lowest in equation D(LOG_NT) of 0.285809. This indicates that the model's ability to explain data variations differs for each endogenous variable. Nonetheless, the F-statistic value on most equations is significant, which indicates that the model as a whole has sufficient clarity power (Siami-Namini & Hudson, 2019).

Overall, the results of the VECM estimation confirm the existence of a significant long-term equilibrium relationship between variables, accompanied by a short-term adjustment mechanism towards this equilibrium. These findings are consistent with the theoretical framework in econometrics which states that when variables are integrated, VECM is the right approach because it is able to integrate short-term dynamics with long-term relationships simultaneously (Gujarati & Porter, 2009). Furthermore, only the inflation variable has a negative and significant ECT coefficient, so it can be identified as the main variable in the adjustment process towards long-term equilibrium. This reinforces the validity of existence Error Correction Mechanism in the model, as well as showing that the system has a tendency towards a stable equilibrium, although not all variables play an active role in the adjustment process (Gujarati & Porter, 2009).

VAR Model:

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D(INFLATION,2) = A(1,1)*(B(1,1)*D(INFLATION(-1)) + B(1,2)*D(LOG_M2(-1)) + B(1,3)*D(LOG_NT(-1)) + B(1,4)*D(SB(-1)) + B(1,5)*D(IEK(-1)) + B(1,6)) + C(1,1)*D(INFLATION(-1),2) + C(1,2)*D(LOG_M2(-1),2) + C(1,3)*D(LOG_NT(-1),2) + C(1,4)*D(SB(-1), 2) + C(1,5)*D(IEK(-1),2) + C(1,6)

D(LOG_M2,2) = A(2,1)*(B(1,1)*D(INFLATION(-1)) + B(1,2)*D(LOG_M2(-1)) + B(1,3)*D(LOG_NT(-1)) + B(1,4)*D(SB(-1)) + B(1,5)*D(IEK(-1)) + B(1,6)) + C(2,1)*D(INFLATION(-1),2) + C(2,2)*D(LOG_M2(-1),2) + C(2,3)*D(LOG_NT(-1),2) + C(2,4)*D(SB(-1), 2) + C(2.5)*D(IEK(-1),2) + C(2.6)

D(LOG_NT,2) = A(3,1)*(B(1,1)*D(INFLATION(-1)) + B(1,2)*D(LOG_M2(-1)) + B(1,3)*D(LOG_NT(-1)) + B(1,4)*D(SB(-1)) + B(1,5)*D(IEK(-1)) + B(1,6)) + C(3,1)*D(INFLATION(-1),2) + C(3,2)*D(LOG_M2(-1),2) + C(3,3)*D(LOG_NT(-1),2) + C(3,4)*D(SB(-1), 2) + C(3.5)*D(IEK(-1),2) + C(3.6)

D(SB,2) = A(4,1)*(B(1,1)*D(INFLATION(-1)) + B(1,2)*D(LOG_M2(-1)) + B(1,3)*D(LOG_NT(-1)) + B(1,4)*D(SB(-1)) + B(1,5)*D(IEK(-1)) + B(1,6)) + C(4,1)*D(INFLATION(-1),2) + C(4,2)*D(LOG_M2(-1),2) + C(4,3)*D(LOG_NT(-1),2) + C(4,4)*D(SB(-1), 2) + C(4,5)*D(IEK(-1),2) + C(4,6)

D(IEK,2) = A(5,1)*(B(1,1)*D(INFLATION(-1)) + B(1,2)*D(LOG_M2(-1)) + B(1,3)*D(LOG_NT(-1)) + B(1,4)*D(SB(-1)) + B(1,5)*D(IEK(-1)) + B(1,6)) + C(5,1)*D(INFLATION(-1),2) + C(5,2)*D(LOG_M2(-1),2) + C(5,3)*D(LOG_NT(-1),2) + C(5,4)*D(SB(-1), 2) + C(5.5)*D(IEK(-1),2) + C(5.6)

VAR Model - Substituted Coefficients:
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D(INFLATION,2) = - 0.571279663505*(D(INFLATION(-1)) - 42.9717636496*D(LOG_M2(-1)) - 4.4.84074610941*D(LOG_NT(-1)) - 0.22646326399*D(SB(-1)) - 0.193775615819*D(IEK(-1)) + 1.0577412441) - 0.252219317869*D(INFLATION(-1),2) - 6.23610302993*D(LOG_M2(-1),2) - 3.1546058569*D(LOG_NT(-1),2) - 0.253038194975*D(SB(-1),2) - 0.0676123572862*D(IEK(-1),2) + 0.0740268825679

D(LOG_M2,2) = 0.00804538009998*(D(INFLATION(-1)) - 42.9717636496*D(LOG_M2(-1)) - 4.84074610941*D(LOG_NT(-1)) - 0.22646326399*D(SB(-1)) - 0.193775615819*D(IEK(-1)) + 1.0577412441) - 0.00428161588546*D(INFLATION(-1),2) - 0.502350442038*D(LOG_M2(-1),2) + 0.201393495466*D(LOG_NT(-1),2) - 0.0128112096286*D(SB(-1),2) + 0.000481734489811*D(IEK(-1),2) - 0.000447293813031

D(LOG_NT,2) = - 0.00612386098049*(D(INFLATION(-1)) - 42.9717636496*D(LOG_M2(-1)) - 4.84074610941*D(LOG_NT(-1)) - 0.22646326399*D(SB(-1)) - 0.193775615819*D(IEK(-1)) + 1.0577412441) + 0.00765305325009*D(INFLATION(-1),2) - 0.453541526434*D(LOG_M2(-1),2) - 0.264475192097*D(LOG_NT(-1),2) - 0.00286791589883*D(SB(-1),2) - 0.000597307129887*D(IEK(-1),2) - 0.000327450639135

D(SB,2) = 0.088607483383*(D(INFLATION(-1)) - 42.9717636496*D(LOG_M2(-1)) - 4.84074610941*D(LOG_NT(-1)) - 0.22646326399*D(SB(-1)) - 0.193775615819*D(IEK(-1)) + 1.0577412441) - 0.0201303264578*D(INFLATION(-1),2) - 6.74686084991*D(LOG_M2(-1),2) + 5.37038568268*D(LOG_NT(-1),2) - 0.036887338321*D(SB(-1),2) + 0.0256513892828*D(IEK(-1),2) - 0.0111423834933

D(IEK,2) = 3.14943061271*(D(INFLATION(-1)) - 42.9717636496*D(LOG_M2(-1)) - 4.84074610941*D(LOG_NT(-1)) - 0.22646326399*D(SB(-1)) - 0.193775615819*D(IEK(-1)) + 1.0577412441) - 1.15291870428*D(INFLATION(-1),2) + 150.710289888*D(LOG_M2(-1),2) - 97.7676995403*D(LOG_NT(-1),2) - 1.14106752586*D(SB(-1),2) - 0.140998693734*D(IEK(-1),2) + 0.14524372085

Based on the results of the Vector Error Correction Model (VECM) estimation, the number of equations in the model is determined by the number of endogenous variables used in the system. In this study, there are five endogenous variables, namely inflation (INF), money supply (LOG_M2), exchange rate (LOG_NT), interest rate (SB), and Consumer Expectations Index (IEK). Therefore, the estimated VECM model specification consists of five simultaneous

equations, where each endogenous variable is treated as a dependent variable in a separate equation.

Econometrically, each equation in the VECM system represents the dynamics of one variable against another, both in short-term and long-term dimensions. The short-term dimension is captured through variables in the form of their differentiation and lag, while the long-term relationships are represented through the Error Correction Term (ECT) component derived from the cointegration equation. Thus, the five equations do not stand alone, but interact with each other and form a simultaneous system of equations that are integrated in explaining the dynamic relationship between macroeconomic variables.

Referring to the theoretical framework put forward by Gujarati and Porter (2009), in system models such as Vector Autoregression (VAR) and VECM, the number of equations is identical to the number of endogenous variables in the model. This is due to the basic assumption that each endogenous variable can be influenced by its own lags as well as by the past values of other endogenous variables in the system. Thus, this approach allows all variables to be treated endogenously without any a priori distinction between dependent and independent variables as in conventional regression models.

Based on these principles, the model in this study consists of five VECM equations, each of which describes the dynamic behavior of: (1) inflation, (2) money supply, (3) exchange rate, (4) interest rate, and (5) Consumer Expectations Index. The structure of this system allows for a more comprehensive analysis of the simultaneous interactions between economic variables, both in capturing short-term transmissions and in identifying adjustment mechanisms towards long-term equilibrium through the error correction component. Thus, the VECM model used is not only able to describe dynamic causal relationships, but also provides an analytical framework consistent with the characteristics of the integrated time series data (Gujarati & Porter, 2009).

As a continuation of the results of previous estimates that show the relationship of cointegration and error correction mechanisms, the interpretation in the framework of the Vector Error Correction Model (VECM) is further focused on short-term dynamics. In this context, the variable coefficient in the form of the first differentiation (Δ) represents the effect of the change of the variables in the previous period on the change of the variable in the current period, thus providing an idea of the short-term transmission between variables in the system.

In the ΔINFLATION equation, the variable ΔINFLATION (-1) has a coefficient of -0.252219 and is statistically significant (t-statistically -2.06421). These results show the phenomenon of inflation inertia, where changes in inflation in the previous period have a corrective effect on current inflation. Econometrically, a negative sign indicates that an increase in inflation in the previous period is likely to be followed by a decrease in inflation in the current period as a form of adjustment towards equilibrium. In addition, the variable ΔIEK(-1) also had a significant effect with a coefficient of -0.067612 (t-statistic -2.69447), which shows that the increase in consumer expectations in the previous period contributed to suppressing inflation in the short term. These findings confirm the importance of the role of expectations in the inflation transmission mechanism. Meanwhile, the variables Δ LOG_M2, Δ LOG_NT, and ΔSB did not show a significant influence on inflation in the short term (Nasir, Balsalobre-Lorente, & Huynh, 2020).

In the equation Δ LOG_M2, the variable Δ LOG_M2(-1) has a coefficient of -0.502350 and is significant (t-statistically -4.08210), which reflects the existence of an internal adjustment mechanism in the money supply. This indicates that changes in the money supply in the previous period will be partially corrected in the current period. In addition, the variable Δ LOG_NT (-1) is also significant with a positive coefficient of 0.201393 (t-statistic 2.00751), which indicates that changes in the exchange rate have an influence on the dynamics of the money supply in the short term, possibly through external channels and monetary policy responses.

In the equation Δ LOG_NT, the variable Δ LOG_M2(-1) showed a negative and significant influence with a coefficient of -0.453542 (t-statistic -2.28936). These results indicate that the increase in the money supply in the previous period tends to put pressure on the exchange rate in the short term. The other variables do not show statistical significance, so their effect on exchange rates in the short-term horizon is relatively limited.

In the ΔSB equation, the variables Δ LOG_M2(-1) and Δ LOG_NT(-1) were proven to be significant with coefficients of -6.746861 (t-statistic -2.56605) and 5.370386 (t-statistic 2.50555), respectively. This shows that the dynamics of interest rates in the short term are influenced by changes in the money supply and exchange rates. In addition, the variable ΔIEK(-1) is also significant with a positive coefficient of 0.025651 (t-statistic 2.40712), which indicates that consumer expectations also play a role in determining the direction of interest rate movements in the short term.

In the ΔIEK equation, the variable Δ LOG_M2(-1) had a positive and significant influence with a coefficient of 150.7103 (t-statistic 3.02836), while Δ LOG_NT (-1) had a negative and significant effect with a coefficient of -97.76770 (t-statistic -2.40988). These findings suggest that consumer expectations are highly responsive to the dynamics of the money supply and exchange rates in the short term, reflecting the correlation between monetary conditions and public perceptions of the economy.

Overall, the results of these short-term estimates show a complex dynamic interaction between variables, especially between the money supply, exchange rates, and consumer expectations. However, not all variables show significant influence in every equation, so short-term relationships are selective and depend on the interaction structure in the system. These findings are consistent with econometric theory which states that in the VECM model, short-term dynamics are determined by changes in previous variables as well as adjustment mechanisms towards long-term equilibrium (Gujarati & Porter, 2009).

In line with the results of these short-term dynamics, the cointegrating equation confirms the existence of a long-term equilibrium relationship between variables in the system. In this equation, inflation is normalized (coefficient = 1), so that other variables are interpreted as long-term determinants of inflation. The estimation results show that the variable D(LOG_M2) has a coefficient of -42.97176 and is significant (t-statistically -3.08753), which indicates that the money supply has a significant influence on inflation in the long run. A negative sign in the form of differentiation reflects the existence of an adjustment mechanism in the monetary system (Siami-Namini & Hudson, 2019).

Furthermore, the variable D(IEK) also showed a significant influence with a coefficient of -0.193776 (t-statistic -5.20373), which confirms that consumer expectations are an important determinant in the formation of long-term inflation. This is in line with the theory of

expectations in macroeconomics which emphasizes that people's perception of future economic conditions can affect actual price dynamics. In contrast, the variables D(LOG_NT) and D(SB) were not significant in the long-term relationship, with t-statistical values of -0.50284 and -0.61732, respectively, so they did not have a strong contribution to shaping the long-term balance of inflation in this model. The constant of 1.057741 indicates that there are other factors outside the model that also affect the long-term equilibrium.

The overall results of the VECM estimate show that inflation in the long term is significantly influenced by the money supply and consumer expectations, while in the short term there is a dynamic interaction that is selective between variables. These findings are consistent with the theoretical framework of econometrics which states that the cointegration relationship reflects the long-term equilibrium between variables, although in the short term these variables can fluctuate dynamically (Gujarati & Porter, 2009).

Impulse Response Function (IRF)

As a continuation of dynamic analysis within the framework of the Vector Error Correction Model (VECM), the Impulse Response Function (IRF) interpretation is used to evaluate how each variable responds to shocks from other variables in the system over the next several periods. The IRF provides a comprehensive overview of short- to medium-term dynamics, while also showing the direction of convergence towards long-term equilibrium. Thus, the IRF analysis complements the results of the VECM estimation by illustrating the temporal shock transmission pattern in multivariate systems.

In the context of this study, the IRF horizon represents the time span of observation of a variable response after the occurrence of a shock, which is generally set in the next few periods, for example up to 10 periods (quarterly). The selection of this horizon aims to fully capture the evolution of the impact of shocks, starting from the initial phase (short-term) to the convergence phase (medium term). Based on the results of the IRF chart, it can be seen that the response of all variables—namely inflation (INF), money supply (LOG_M2), exchange rate (LOG_NT), interest rate (SB), and Consumer Expectations Index (IEK)—tends to be strongest in the early period, especially in periods 1 to 3. After that, the response rate gradually decreases to near zero in the following period, generally in the range of 6 to 10 periods.

Econometrically, the pattern indicates that the shock that occurs in the system is transient (*Transient*) and does not have a permanent impact on the variables analyzed. As the time horizon increases, all variables show a tendency to return to long-term equilibrium points. It also reflects that the estimated model meets the stability conditions, so that the IRF results can be validly interpreted. Thus, the horizon used in this study can be said to be adequate to comprehensively capture the dynamics of variable responses, both in the short and medium term, as recommended in the econometric literature (Gujarati & Porter, 2009).

In more detail, the response of each variable shows different characteristics. In the inflation variable (INF), the response to shocks is generally characterized by fluctuations in the initial period, which then subsides gradually until they return to equilibrium. This pattern indicates that the disruption to inflation is temporary and that the system has a good ability to adjust to return to stable conditions.

On the money supply (LOG_M2) variable, the response to shocks of other variables shows a relatively rapid adjustment pattern. After experiencing initial fluctuations, the response LOG_M2 decreased and approached zero in the following periods. This shows that the impact

of shocks on economic liquidity is not long-lasting, as well as the existence of efficient adjustment mechanisms in the monetary system. For the exchange rate variable (LOG_NT), the response to shocks showed relatively high volatility in the initial period. This condition reflects the sensitivity of the exchange rate to shocks, especially those derived from external and internal factors. Nevertheless, in the medium term, the response shows a pattern of convergence towards equilibrium, which signals a stabilization in the exchange rate system.

In the interest rate variable (SB), the response to shocks is relatively smaller than in other variables. Nevertheless, the pattern formed remained consistent, namely fluctuations in the initial period followed by adjustments towards equilibrium. This suggests that interest rates tend to have a more controlled response to dynamics in the system, which is in line with their role as an actively managed monetary policy instrument by the authorities. Meanwhile, the Consumer Expectations Index (IEK) showed a fairly significant response to shocks, especially in the early period. This indicates that consumer expectations are highly responsive to changes in macroeconomic conditions. However, like other variables, the response gradually declined and returned to stability in the medium to long term, reflecting the process of adjusting public perception of economic conditions.

Overall, the results of the IRF analysis show that the modeled economic system has stable dynamic characteristics, where any shocks that occur are only temporary and not permanent. All variables tend to return to long-term equilibrium after experiencing initial fluctuations. These findings are consistent with econometric theory which states that in a stable VAR/VECM system, the response to shocks will be convergent and non-divergent over time (Gujarati & Porter, 2009). Thus, the results of the IRF strengthen the validity of the model used and provide a deeper understanding of the mechanism of shock transmission in the economy.

Forecast Error Variance Decomposition (FEVD)

As a continuation of the Impulse Response Function (IRF) analysis which has shown that the shock is transient and the system tends to return to equilibrium, the Forecast Error Variance Decomposition (FEVD) analysis is used to identify the source of the contribution of the variance of the forecast error of each variable in the system. The FEVD provides more detailed information on the relative proportion of the influence of each variable on the fluctuations of a particular variable over various time horizons, thus complementing the interpretation of the short- and medium-term dynamics discussed earlier.

Based on the results of the FEVD on the inflation variable (INF), it can be seen that in the initial period (period 1), the inflation variation is fully explained by the shock itself by 100%, which indicates that in the very short term the inflation dynamics are self-driven and have not been influenced by other variables in the system. However, entering period 2 to period 5, the contribution decreased significantly from 83.29% to around 70.67%. In this phase, external variables began to play a more noticeable role, where the money supply (LOG_M2) increased its contribution from 8.14% to around 10.23%, while the consumer expectations index (IEK) experienced a more significant increase from 6.07% to around 12.37%. The exchange rate (LOG_NT) also began to make a moderate contribution in the range of 2–6%, while the interest rate (SB) remained very small (less than 1%). In the medium to long term (periods 6–20), the contribution of inflation to itself continued to decline until it reached around 65.49% in the 20th period. In contrast, the contribution of other variables increased and tended to be stable, with IEK being the largest external factor (around 13.69%), followed by LOG_M2

(11.94%) and LOG_NT (7.56%), while SB remained the smallest (around 1.31%). These findings suggest that although inflation is still dominated by internal factors, the role of consumer expectations and money supply is increasingly important in the medium and long term, which indicates the importance of monetary policy and psychological factors in controlling inflation, in line with the econometric literature (Gujarati & Porter, 2009).

In the money supply variable (LOG_M2), the FEVD results show that in the initial period, the variation was dominated by internal shocks of 70.18%, with a considerable contribution to inflation (29.82%). This indicates a direct link between inflation and the dynamics of the money supply even in the very short term. In periods 2 to 5, the internal contribution declined to around 49–50%, while inflation remained high in the range of 22–25%. In addition, the exchange rate (LOG_NT) and IEK began to play a significant role of around 9–12% and 9–10%, respectively, while SB contributed around 4–6%. In the medium to long term (periods 6–20), the LOG_M2's contribution to itself was stable at around 47.26%, while inflation remained the second largest external factor (24.21%). The exchange rate increased to 12.44%, followed by IEK by 10.92%, and SB by around 5.16%. Overall, the dynamics of M2 are not only determined by internal factors, but are also strongly influenced by other macroeconomic conditions, especially inflation and exchange rates, which reflect the close interconnectedness between monetary policy and economic stability, consistent with the theories of Gujarati and Porter (2009).

For the exchange rate variable (LOG_NT), the FEVD showed a dominance of internal shocks in the initial period of 85.13%, with the contribution of inflation (6.46%) and LOG_M2 (8.42%) being relatively small. Entering periods 2 to 5, internal dominance declined to the range of 72–84%, while LOG_M2 contribution increased to 14–15%, IEK around 5–6%, and inflation was relatively stable. In the long term (periods 6–20), the internal contribution fell to around 69.33%, while LOG_M2 was the largest external factor (16.06%), followed by IEK (7.21%) and inflation (7.27%), while SB remained very small (0.12%). These findings show that exchange rates have relatively autonomous characteristics, but are still influenced by monetary factors and long-term expectations.

In the interest rate variable (SB), the FEVD results showed a strong dominance of internal shocks from the beginning (85.90%), with an inflation contribution of 11.91% and other relatively small variables. In periods 2 to 5, the internal contribution decreased to around 77–78%, while the influence of the exchange rate increased to 5–7% and inflation stabilized in the range of 12–13%. In the long term, internal contributions remain dominant (78.66%), followed by inflation (13.74%) and exchange rates (5.75%), while LOG_M2 and IEK are only around 1.25% and 0.60%, respectively. This shows that interest rates tend to be independent but remain responsive to inflation and exchange rates as the main indicators of macroeconomic conditions.

Meanwhile, in the consumer expectations index (IEK) variable, FEVD shows that in the initial period the variation was dominated by internal shocks of 71.77%, with a considerable contribution of the exchange rate (22.53%). In periods 2 to 5, the internal contribution decreased to 48–55%, while the exchange rate increased to 37–40% and became the dominant factor. In the long term (periods 6–20), the contribution of the exchange rate continued to increase to 46.48%, while the internal contribution decreased to 38.91%. Inflation also increased to 10.67%, while LOG_M2 and SB remained relatively small. These findings suggest

that in the long run, consumer expectations are more influenced by external factors, particularly exchange rates and inflation, which reflect the sensitivity of public expectations to macroeconomic conditions.

Overall, the FEVD results confirm that the contribution of other variables to the variation of a variable increases as the time horizon increases. Although some variables remain dominated by internal shocks, the role of external factors becomes increasingly significant in the medium and long term. This reinforces the previous findings of the IRF and VECM that the analyzed economic systems have complex dynamic interrelationships, where the interaction between macroeconomic variables is becoming increasingly important in explaining long-term fluctuations.

Inflation Dynamics: Short-Term, Long-Term, and Theoretical-Empirical Perspectives

Based on the overall results of the Vector Error Correction Model (VECM) estimation discussed earlier, economic interpretation can be analyzed comprehensively by integrating short-term dynamics, long-term relationships, and consistency between theory and empirical findings. This approach is important to provide a complete understanding of the mechanism of inflation formation in a dynamic economic system.

In the short term, the dynamics of inflation in Indonesia show a pattern influenced by internal and external factors that are volatile. The results of the VECM estimate show that inflation is significantly influenced by the inflation value in the previous period, which reflects the phenomenon of inflation persistence. This condition is in line with the adaptive expectations theory which states that the current inflation behavior is greatly influenced by past inflation experiences. Thus, when inflation increased in the previous period, economic actors tended to adjust their expectations, thus pushing inflation to remain high in the short term.

On the other hand, the money supply (M2) in the short term does not necessarily show a significant influence on inflation. This indicates that the transmission of monetary policy through the money quantity channel is not instantaneous, but rather takes time before affecting the real sector. In other words, increased liquidity in the economy does not directly drive price increases, but first through intermediary mechanisms such as consumption and investment. These findings are consistent with the concept of long and variable lags in monetary policy put forward by Friedman.

Exchange rate variables show a partial influence in the short term. Exchange rate depreciation has the potential to increase inflation through the pass-through exchange rate mechanism, where the weakening of the domestic currency causes an increase in the price of imported goods and drives domestic inflation. However, this influence is not always stable because it is influenced by various factors such as government stabilization policies and import structures in the economy. Meanwhile, the interest rate (BI Rate) does not show a significant direct effect on inflation in the short term. This suggests that interest rate policy works through indirect transmission channels, such as influencing consumption and investment decisions, the impact of which is only felt after a certain period. Therefore, the effectiveness of interest rates in controlling inflation tends to be gradual.

In contrast, the Consumer Expectations Index (IEK) has a relatively important role in influencing short-term inflation. Public expectations of future economic conditions may encourage more aggressive consumption behavior, thereby increasing aggregate demand and triggering inflationary pressures. This is in line with the expectations-augmented Phillips curve

theory which emphasizes the importance of expectations in the process of forming inflation. Overall, in the short term, inflation is more influenced by dynamic factors such as expectations, economic shocks, and historical conditions themselves, so its movements are not likely to reflect the fundamental balance.

In contrast to short-term dynamics, in the long term, the results of the VECM estimate show a strong equilibrium relationship between variables characterized by the existence of cointegration. Long-term inflation has been shown to be significantly influenced by the money supply (M2) and the consumer expectations index (IEK), while exchange rates and interest rates do not show significant influences. This indicates that in the long term, monetary factors and public expectations are the main determinants in the formation of inflation.

The significant money supply coefficient (M2) in the cointegration equation suggests that liquidity has an important role in determining price levels in the long run. This finding is in line with the Quantity Theory of Money which states that inflation is basically a monetary phenomenon. Although the direction of the coefficient obtained is negative, it can be interpreted as the effectiveness of monetary policy in managing liquidity, so that an increase in the money supply does not directly translate into an increase in inflation. This condition also reflects the role of monetary authorities in maintaining price stability through credible policies.

In addition, the consumer expectations index (IEK) has also been shown to have a significant effect in the long term, which shows that expectations not only play a role in the short term, but also become a structural factor in the formation of inflation. Maintained expectations will support price stability, while uncontrolled expectations can lead to persistent inflation. This supports the theory of rational expectations which states that economic actors use all available information to form expectations about future economic conditions.

In contrast, exchange rates do not show significant long-term effects, indicating that the impact of exchange rate fluctuations on inflation is temporary. After a shock, the economy tends to adjust and return to equilibrium without permanent changes in price levels. Similarly, interest rates have no significant influence over the long term, suggesting that their role is more dominant as a short-term policy instrument than as a key determinant of long-term inflation.

Furthermore, the existence of a negative and significant Error Correction Term (ECT) in the inflation equation indicates the existence of an adjustment mechanism towards a long-term equilibrium. A coefficient value of -0.571280 indicates that about 57.13% of the imbalance will be corrected in a single period. This shows that the economic system has a relatively quick ability to return to equilibrium after experiencing deviation, thus reflecting a fairly strong long-term stability.

When associated with theoretical frameworks and empirical evidence, the results of this study show a high level of consistency between macroeconomic theory and empirical findings. In the short term, the findings on inflation persistence are in line with the theory of adaptive expectations put forward by Friedman (1968), and supported by studies by Clarida et al. (1999) and Mishkin (2016) which emphasize the existence of price rigidity and the role of expectations in shaping inflation.

Furthermore, the insignificance of M2's influence in the short term supports the theory of long and variable lags, and is consistent with the findings of Bernanke and Blinder (1992) who show that the transmission of monetary policy takes place gradually through various channels. The partial influence of exchange rates is also in line with the exchange rate pass-

through theory and Taylor (2000) research which shows that pass-through in many developing countries is imperfect (incomplete pass-through). The insignificance of interest rates in the short term is also consistent with the theory of monetary policy transmission (Mishkin, 2016), which states that interest rates work through indirect channels. Meanwhile, the significance of IEK supports the expectation-augmented Phillips curve theory and the findings of Blanchard (2017) regarding the importance of policy credibility in controlling inflation expectations.

In the long run, the significance of M2 and IEK to inflation is in line with the theory of money quantity and is supported by the empirical findings of McCandless and Weber (1995) which show a strong relationship between money growth and inflation. Although the direction of the M2 coefficient differs from the predictions of classical theory, it reflects the role of monetary policy in moderating the relationship, rather than a contradiction to the theory. In addition, the presence of negative and significant ECT is consistent with the cointegration theory of Engle and Granger (1987), which states that variables that have a long-term relationship will make adjustments to short-term deviations. The relatively large value of the ECT coefficient indicates that the adjustment process is fast, thus strengthening the validity of the VECM model used.

Overall, the results of this study show that the dynamics of inflation in Indonesia reflect the complex interaction between short-term and long-term factors. In the short term, inflation is more influenced by economic expectations and shocks, while in the long term it is determined by fundamental factors such as the money supply and public expectations. Thus, these findings not only strengthen existing macroeconomic theories, but also provide relevant empirical evidence for effective and credible monetary policy formulation.

CONCLUSION

Based on the results of estimation and empirical analysis using the Vector Error Correction Model (VECM) approach, this study concludes that the dynamics of inflation in Indonesia are determined by the complex interaction between monetary factors and public expectations, both in the short and long term. In the short term, inflation shows the characteristics of inflation persistence, where the inflation value of the previous period has a significant effect on current inflation, indicating that the formation of inflation is still influenced by adaptive expectation mechanisms and rigidity in price adjustments. Consumer expectations variables have proven to play an important role in driving short-term inflation dynamics, while the influence of money supply, exchange rates, and interest rates tends to be limited and not always significant, reflecting a time lag in monetary policy transmission. In the long term, the cointegration test results show a stable equilibrium relationship between variables, where the money supply and consumer expectations index are the main determinants of inflation, while exchange rates and interest rates have no significant influence on the long-term balance. The existence of a negative and significant Error Correction Term (ECT) confirms an adjustment mechanism towards long-term equilibrium at a relatively high speed, so the economic system is stable and convergent. Empirically, this study contributes by showing that consumer expectations are not only a short-term factor but also a structural determinant of long-term inflation, while the negative coefficient of the money supply indicates more complex monetary policy dynamics where authorities can manage liquidity effectively, enriching the empirical literature on monetary policy transmission in developing countries,

especially Indonesia. In terms of theoretical benefits, this study supports and expands the framework of modern econometric analysis, particularly in using VECM to integrate short-term dynamics and long-term equilibrium simultaneously. For economic benefits, the results provide important implications that inflation control depends not only on money supply management but also on the ability of authorities to maintain public expectations through policy credibility and effective communication. However, this study has limitations, including a relatively small sample size affecting estimation stability, model specifications limited to only five main variables with potential omitted variable bias (such as fiscal policy, global commodity prices, and external shocks), and the use of aggregate data that may hide sectoral heterogeneity. Therefore, further research is recommended to expand variable scope by including external factors and using longer data periods for more robust estimates, as well as considering other methodological approaches such as Structural VAR (SVAR) or micro-expectations-based models. For policymakers, these findings emphasize the importance of maintaining inflation expectation stability through credible policy communication and ensuring good coordination between monetary policy and other economic policies to achieve sustainable price stability.

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