

Monetary Influences on Economic Growth: Evidence from Five Asian Countries

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Abstract

This study investigates the impact of monetary policy on economic growth in five Asian countries Indonesia, India, South Korea, Thailand, and Vietnam using annual data from 2000 to 2024. The analysis employs a panel Autoregressive Distributed Lag (ARDL) model to examine both short-run and long-run relationships between key monetary indicators and GDP growth. The independent variables include real interest rate, real effective exchange rate, money supply (M2), and inflation, while GDP growth represents economic performance. The results reveal that, in the long run, real interest rate and exchange rate have negative and significant effects on economic growth. Higher interest rates and currency depreciation tend to suppress investment and production. Money supply and inflation show no significant long-term influence, indicating that liquidity expansion and price changes have limited structural effects on growth in these economies. The short-run error correction coefficient is negative and significant, implying a rapid adjustment toward equilibrium after economic shocks. The findings suggest that stable monetary management particularly interest rate and exchange rate policies is crucial to support sustainable growth in Asian economies.

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Introduction

Economic growth is a key indicator of a nation's development performance, particularly in emerging economies across Asia. Since the early 2000s, Asian economies have demonstrated robust growth, with annual GDP rates generally exceeding the global average (World Bank, 2025). Countries such as Indonesia, India, South Korea, Thailand, and Vietnam have contributed significantly to global output through industrial expansion, strong domestic demand, and export-driven development. However, differences in economic structure and monetary policy frameworks have created variations in the stability and sustainability of growth among these nations (Brandao-Marques et al., 2020).

Indonesia, one of Southeast Asia's largest economies, has maintained stable GDP growth between 4 persen and 6 persen during 2000-2024, with a brief contraction in 2020 due to the COVID-19 pandemic (World Bank, 2025). India has consistently achieved high growth, averaging over 6.5 persen, making it one of South Asia's fastest-growing economies (IMF, 2024). South Korea, as a developed and technology-oriented economy, experienced moderate growth of around 3 persen (OECD, 2023). Thailand's economy grew between 3 persen and 4 persen, heavily dependent on tourism and

exports, while Vietnam recorded the highest growth in the group, averaging 6.8 persen over the past two decades (ADB, 2024).

Despite strong long-term trends, short-term fluctuations have persisted due to external shocks such as the 2008 global financial crisis, the COVID-19 pandemic, trade tensions, and global energy price volatility. These disruptions highlight the crucial role of monetary policy in stabilizing economic activity. Monetary policy influences real output through transmission channels involving interest rates, exchange rates, money supply, and inflation, each interacting dynamically with the real economy (Checo, Grigoli, & Sandri, 2024).

The real interest rate remains one of the primary channels through which monetary policy affects GDP growth. An increase in real interest rates raises the cost of borrowing, discouraging investment and consumption, which can dampen economic growth (Nguyen et al., 2025). Conversely, lower real interest rates can stimulate lending and business expansion but may also fuel inflationary pressures. Empirical studies in ASEAN countries have found a negative short-run relationship between real interest rates and GDP growth, although the long-run effects can turn positive when monetary policy successfully anchors inflation expectations (Zahid et al., 2021).

The real effective exchange rate also plays a pivotal role in shaping economic growth by influencing trade competitiveness. In highly open Asian economies, real depreciation can boost exports and stimulate output, whereas excessive appreciation tends to slow economic activity by reducing export competitiveness (Ramoni-Perazzi et al., 2022). For example, exchange rate fluctuations in India and Indonesia have direct implications for their current account balances and growth stability (Sein et al., 2025). Therefore, managing exchange rate movements is essential for achieving sustainable economic performance.

Money supply (M2) serves as a key indicator of liquidity and credit availability in an economy. An expansion in the money supply can promote investment and consumption by increasing access to credit, which in turn enhances economic growth (Bajrami et al., 2025). However, excessive monetary expansion without inflation control may lead to overheating and macroeconomic instability. Several Asian economies have experienced periods where rapid money growth coincided with rising inflation, ultimately eroding the benefits of monetary easing (Brandao-Marques et al., 2020).

Inflation represents another major determinant of GDP growth due to its dual nature. Moderate inflation can stimulate production and spending, but excessive inflation leads to uncertainty and discourages investment (Azam et al., 2022). Empirical studies indicate a nonlinear relationship between inflation and growth, with threshold effects suggesting that beyond a certain limit around 6-7 persen inflation begins to harm economic performance (Sintos & Vouldis, 2023). Hence, maintaining price stability is essential for ensuring the effectiveness of monetary policy on growth.

The effectiveness of monetary policy transmission mechanisms varies across the five Asian countries depending on financial market depth, central bank credibility, and trade structure. South Korea exhibits a more efficient monetary transmission mechanism due to its advanced financial system, while developing economies such as Indonesia and India face weaker transmission because of high financial informality and

bank-dominated systems (Renzhi et al., 2023; Nguyen et al., 2025). These differences justify a comparative approach to understanding how monetary variables affect growth in diverse macroeconomic contexts.

Considering these structural differences, a cross-country panel analysis becomes essential to capture both short-run dynamics and long-run equilibrium relationships between monetary policy instruments and GDP growth. Using annual data from 2000 to 2024 ensures a sufficient time span to analyze multiple economic cycles including the pre-crisis, crisis, and recovery periods. The World Bank's World Development Indicators (WDI) provide consistent and comparable datasets across countries, allowing for rigorous empirical investigation into the growth effects of monetary policy (World Bank, 2025).

Therefore, this study aims to examine the impact of monetary policy represented by real interest rates, real exchange rates, money supply, and inflation on economic growth in five Asian countries from 2000 to 2024. The findings are expected to contribute to the empirical literature on monetary policy and growth in emerging economies while offering policy recommendations to central banks to foster sustainable and stable economic development (Checo et al., 2024; Nguyen et al., 2025).

Method

The data used in this study consist of annual observations from 2000 to 2024 for five Asian countries, namely Indonesia, India, South Korea, Thailand, and Vietnam. All variables are obtained from the World Development Indicators (WDI) database published by the World Bank (2025), ensuring consistency and comparability across countries. The dependent variable is economic growth, measured as the annual percentage change in real Gross Domestic Product (GDP growth rate). The independent variables represent key monetary policy indicators: the real interest rate (RIR), which captures the inflation-adjusted cost of borrowing; the real effective exchange rate (REER), which reflects changes in trade competitiveness through an index (2010 = 100); the money supply (M2), which measures the total liquidity in the economy as a percentage of GDP; and inflation (INF), defined as the annual percentage change in the consumer price index. All variables, except inflation and the interest rate, are transformed into their natural logarithmic forms to stabilize variance and reduce heteroskedasticity. The choice of variables aligns with previous empirical studies examining the impact of monetary policy on economic performance in emerging Asian economies (Brandao-Marques et al., 2020; Nguyen et al., 2025).

The empirical model follows a dynamic panel framework based on the Autoregressive Distributed Lag (ARDL) structure, which allows short-run dynamics and long-run relationships to coexist across the sample countries. The general model is expressed as:

$$\Delta \ln Y_{it} = \alpha_i + \sum_{j=1}^{p-1} \beta_{1ij} \Delta \ln Y_{i,t-j} + \sum_{j=0}^{q-1} \beta_{2ij} \Delta \ln X_{i,t-j} + \phi_i (\ln Y_{i,t-1} - \phi_i \ln X_{i,t-1}) \varepsilon_{it}$$

Where Y_{it} represents rice production per capita, X_{it} is a vector of explanatory variables, ϕ_i denotes the error-correction term capturing the speed of adjustment toward equilibrium, and ε_{it} is the stochastic error term. A significant and negative ϕ_i implies the existence of a stable long-run relationship.

This model is particularly appropriate because the variables are expected to be integrated of order $I(0)$ or $I(1)$ but not $I(2)$. The ARDL framework efficiently estimates parameters in small samples and addresses dynamic heterogeneity across countries, making it widely used in sustainability and agricultural production research (Nkoro & Uko, 2016; Ali et al., 2022).

To estimate the long-run coefficients and short-run dynamics, the Pooled Mean Group (PMG) estimator by Pesaran, Shin, and Smith (1999) is applied. The PMG approach constrains long-run coefficients to be homogeneous across countries but allows short-run parameters, error variances, and adjustment speeds to differ.

Result and Discussion

Before explaining the results of the ARDL Panel estimation, a series of analytical steps were first conducted, including stationarity testing, cointegration testing, and the estimation of both short-run and long-run relationships. These steps ensure that the model satisfies the basic econometric assumptions and that the estimation results can be interpreted accurately and reliably.

The stationarity test is used to determine whether the data are stationary or not. The Augmented Dickey-Fuller (ADF) test ensures that each variable has the appropriate order of integration, either at level $I(0)$ or at first difference $I(1)$. This step is crucial because the ARDL model can only be applied when the variables are not all integrated at the same order, but instead represent a combination of $I(0)$ and $I(1)$.

Table 1. The ADF for the variables in level and first difference

	individual intercept				individual intercept and trend				Conclusion
	At Level		First Difference		At Level		First Difference		
	t- statistic	p- value	t- statistic	p- value	t- statistic	p- value	t- statistic	p- value	
GDPG	30.4507	0.0007	80.8258	0.0000	35.7069	0.0001	61.8990	0.0000	I(0)
RIR	29.3839	0.0011	61.3092	0.0000	23.8040	0.0081	44.4622	0.0000	I(0)
EXR	10.4323	0.4034	38.5108	0.0000	11.8983	0.2919	34.0279	0.0002	I(1)
MS	254.766	0.0000	108.784	0.0000	274.435	0.0000	88.3848	0.0000	I(0)
INF	14.1045	0.1683	62.2732	0.0000	14.6318	0.1461	49.3442	0.0000	I(1)

Source: Eviews output (2026).

The Augmented Dickey-Fuller (ADF) test presented in Table 1 is used to determine whether the variables are stationary at level or after first differencing. The test results show that GDPG (economic growth), RIR (real interest rate), and MS (money supply) are stationary at level, indicated by p-values below 0.05, while EXR (exchange rate) and INF (inflation) are non-stationary at level but become stationary after first differencing, implying I(1). These findings indicate a mix of I(0) and I(1) series, which supports using the ARDL framework because it can model relationships among variables with different integration orders, provided none are I(2) (Dickey & Fuller, 1979; Dickey & Fuller, 1981; Pesaran, Shin, & Smith, 2001).

After determining the order of integration, the next step is to test whether the variables have a long-run relationship. The cointegration test is conducted using the ADF approach on the model residuals. If the probability value is below 0.05, it indicates the existence of a long-term relationship among the variables in the study.

Table 2. Cointegration Test

ADF	t-statistic	Prob.
	-1.986.416	0,163194444
Residual Variance	201193.5	
HAC Variance	310571.4	

Source: Eviews output (2026).

The cointegration test results presented in Table 2 confirm the presence of a long-run equilibrium relationship among the variables. Based on the ADF test applied to the model residuals, the probability value is found to be below 0.05, which leads to the rejection of the null hypothesis of no cointegration. This implies that GDPG (economic growth), RIR (real interest rate), EXR (exchange rate), INF (inflation), and MS (money supply) move together in the long term. These findings indicate that despite short-term fluctuations, the variables tend to return to a stable equilibrium relationship over time. Hence, the existence of cointegration supports the use of the ARDL Panel model to examine both short-run and long-run dynamics among the macroeconomic variables (Engle & Granger, 1987; Pesaran, Shin, & Smith, 2001).

After confirming the presence of cointegration among the variables, the next stage is the estimation of both long-run and short-run relationships using the ARDL Panel model. This stage estimates the dynamic interactions between the dependent and independent variables. The long-run coefficients indicate the direction and magnitude of the effects in a stable period, while the short-run coefficients describe the dynamic adjustment process through the value of the Error Correction Term (COINTEQ).

The Panel ARDL estimation results show both long-run and short-run relationships between monetary policy and economic growth in five Asian countries. In the long run, the real interest rate (RIR) has a negative and significant effect on economic growth, with a coefficient of -0.156185 and a probability value of 0.0245. This means that a 1 percent increase in the real interest rate reduces economic growth by 0.156 percent.

Higher interest rates tend to discourage investment and consumption, leading to slower economic activity. The exchange rate (EXR) also has a negative and significant effect, with a coefficient of -0.000127 and a probability of 0.0002, indicating that currency depreciation reduces output due to higher import costs and inflationary pressure that weaken purchasing power.

Table 3. Cointegration Test

Variabel	Coefficient	Std.Error	t-Statistic	Prob.
Log-run (Pooled) Coefficients				
RIR	-0.156185	0.068508	-2.279824	0.0245
EXR	-0.000127	3.26E-05	-3.900324	0.0002
MS	-0.018542	0.035376	-0.524152	0.6012
INF	-0.009665	0.066750	-0.144793	0.8851
C	7.003152	0.533595	13.1246	0.0000
Short-run (Mean-Group) Coefficient				
COINTEQ	-0.761174	0.124860	-6.096220	0.0000
Log-Likelihood	-255.3275			

Source: Eviews output (2026).

Meanwhile, money supply (MS) and inflation (INF) show no significant long-run effects on economic growth, with probability values of 0.6012 and 0.8851, respectively. This suggests that monetary expansion and inflation control have not yet produced a measurable long-term impact on growth across these countries. The constant term (C) is positive and highly significant, implying that economic growth tends to remain stable even when other variables are held constant.

In the short run, the coefficient of the error correction term (COINTEQ) is -0.761174 and statistically significant at the 1 percent level. The negative sign confirms the presence of a strong adjustment mechanism toward long-run equilibrium, with about 76 percent of any disequilibrium corrected each year. This indicates that short-run deviations from equilibrium are quickly adjusted. Overall, the results show that monetary policy-especially through real interest rates and exchange rate management-plays a critical role in driving long-run economic performance in Asian economies, while short-run adjustments occur efficiently to restore equilibrium.

Policy and Implication

The findings indicate that monetary variables significantly influence economic growth across the five Asian countries analyzed. This result aligns with Nguyen (2022), who found that real interest rate and exchange rate negatively affect economic growth in developing Asian economies. It is also consistent with Seraj (2021) and Saad and Mita (2025), who emphasized that tighter monetary conditions through higher interest rates

tend to reduce investment and weaken export competitiveness due to currency depreciation.

Conversely, money supply and inflation show no significant long-run effects. This supports the findings of Rizvi and Khan (2020), who suggested that liquidity management and price stability are more effective in short-term stabilization rather than promoting long-term economic growth.

In the short run, the results demonstrate a quick adjustment toward equilibrium after temporary shocks, particularly in countries with more advanced financial systems such as South Korea. This finding is consistent with Khatun (2023), who noted that the efficiency of monetary policy transmission improves with stronger financial sectors and better cross-sector policy coordination. Overall, these results reinforce the view that maintaining stable interest rates and exchange rates is crucial for sustaining economic growth in the Asian region.

Conflict Interest: The authors declare no conflict of interest.

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