



The Impact of Monetary Policy and Capital Flows on Economic Growth in Indonesia

Anas Iswanto Anwar* And Muh Akram Pratama Amir

Hasanuddin University, Makassar, Indonesia

*aianwar@fe.unhas.ac.id

Abstract. This study investigates the dynamic influence of monetary policy and international capital flows on Indonesia's economic growth amidst the challenges of global integration. Utilising an Autoregressive Distributed Lag (ARDL) framework with time series data from 1990 to 2024, the research integrates money supply, inflation, real interest rates, exchange rates, Foreign Direct Investment (FDI) and portfolio investment into a unified dynamic model. The empirical findings reveal a heterogeneous impact structure. In the short run, monetary expansion, elevated real interest rates and exchange rate depreciation tend to suppress growth, whereas capital flows exhibit cyclical fluctuations. Crucially, the long-run analysis demonstrates that monetary variables remain the dominant determinants, where excessive liquidity, high interest rates and currency depreciation exert significant negative effects. Conversely, moderate inflation positively supports growth, while foreign capital inflows fail to demonstrate a statistically significant structural contribution. These results highlight that monetary stability serves as the primary engine of Indonesian economic resilience, while the potential of foreign capital remains constrained by structural limitations. Consequently, the study advocates for reinforced monetary policy coordination and stable exchange rate management alongside strategic reforms to optimise the quality of foreign investment for sustainable development.

Keywords: Monetary Policy, Capital Flows, M2, Inflation, Real Interest Rate, Exchange Rate, Foreign Direct Investment (FDI), Portfolio Investment, ARDL, Indonesia's Economic Growth.

1 Introduction

Indonesia's economy has demonstrated remarkable resilience following the severe 1998 financial crisis, which began with the collapse of the rupiah and dismantled more than three decades of economic progress [1]. This crisis was exacerbated by fundamental weaknesses in the national economy, particularly at the micro level, including inefficient corporate governance and a fragile banking system [2]. After more than a decade of recovery, Indonesia's economy regained momentum and showed substantial progress, even withstanding subsequent global crises in Europe and the United States [1]. Nevertheless, significant challenges remain, most notably the urgent need for inclusive growth to address poverty and unemployment while simultaneously mitigating income

© The Author(s) 2026

M. Nohong et al. (eds.), *Proceedings of the 10th International Conference on Accounting, Management, and Economics (10th ICAME 2025)*, Advances in Economics, Business and Management Research 388,

https://doi.org/10.2991/978-94-6239-709-5_121

inequality [1]. Economic growth has fostered the emergence of a new middle class; however, it has also sustained persistently high levels of inequality. By the end of 2019, Indonesia had achieved upper-middle-income status, reflecting the country's rapid economic transformation [3]. In preparation for the integration of the ASEAN Economic Community, Indonesia must engage actively across economic, sociocultural, political, and security sectors, while simultaneously strengthening its information technology capacity [1].

Over the past decade, Indonesia's economy has maintained relatively stable growth, with an average GDP expansion of around 5 percent per year, reflecting the fundamental resilience of the national economy amid global dynamics [4]. Nevertheless, external factors such as the COVID-19 pandemic and global commodity price volatility have had significant impacts on the national economy, creating risks of economic slowdown [5]. At the same time, the structural transformation from the primary sector toward industry and services has strengthened the domestic production base, yet it has also introduced new challenges, including dependence on external financing and pressures on the exchange rate [6]. These conditions necessitate a more adaptive monetary policy and capital flow management, particularly concerning the regulation of money supply, inflation, real interest rates, and exchange rates, as well as the optimization of FDI and portfolio inflows to support stable economic growth [8].

Indonesia has experienced increasing integration into the global economy, marked by the growing inflows of Foreign Direct Investment (FDI) and portfolio investment over the past decade [4]. While this integration has expanded access to external financing and created opportunities for technology transfer, it has simultaneously generated risks of sudden reversals in capital flows, which may trigger pressures on the rupiah exchange rate and heighten volatility in the financial sector [5]. These dynamics underscore the importance of adaptive and credible monetary policy. Bank Indonesia has pursued measures to maintain inflation within its target range, control real interest rates, and regulate money supply (M2) to safeguard macroeconomic stability [9]. Such an approach aligns with the perspective of [8], which emphasizes that monetary stability plays a crucial role in mitigating external risks and strengthening economic resilience [7]. This contemporary phenomenon provides a solid foundation for selecting research variables such as M2, inflation, real interest rates, exchange rates, FDI, and portfolio investment as determinants of Indonesia's economic growth.

Although numerous empirical studies have examined the impact of monetary policy and capital flows on Indonesia's economic growth [4], most prior research tends to separate the analysis between monetary variables and capital flows or focus solely on long-term effects using conventional regression methods [5]. A research gap emerges because few studies have comprehensively integrated money supply (M2), inflation, real interest rates, the rupiah exchange rate, Foreign Direct Investment (FDI), and portfolio investment into a single dynamic analytical framework for economic growth. In contrast, the Autoregressive Distributed Lag (ARDL) approach is capable of capturing both short-run and long-run relationships, including adjustment mechanisms (error correction), making it more suitable for analyzing the dynamic effects of monetary policy and capital flows [10]. The novelty of this study lies in the integration of monetary policy and capital flows within a single ARDL model, employing updated and

extensive time series data from 1990 to 2024, thus providing more current and policy relevant empirical findings. Accordingly, this research aims to simultaneously analyze the trends and effects of monetary policy and capital flows on Indonesia's economic growth in both the short and long run [9], while also offering more accurate evidencebased policy recommendations to safeguard national macroeconomic stability [8].

2 Literature Review

2.1 Economic Growth

In modern macroeconomic analysis, economic growth was initially explained through the Solow–Swan Growth Model, developed independently by Solow [11] and Swan [12]. This model identifies physical capital accumulation, labor force growth, and technological progress as the primary determinants of long-run output growth, with technological progress assumed to be an exogenous factor that enables sustained increases in per capita output [13]. Total Factor Productivity (TFP) is considered the key driver of long-term growth, while the effects of increased savings and capital accumulation are regarded as temporary due to the law of diminishing returns to capital [14].

Economic growth serves as a key indicator reflecting a country's overall economic development and is commonly measured through changes in gross domestic product (GDP) [15]. This concept encompasses multiple determining factors, including economic policies, investment, and productivity, all of which contribute to the increase or decline of GDP as well as broader social welfare outcomes [15].

The field of economic growth theory has evolved to address these complexities, with academic texts synthesizing journal literature to make growth theories more accessible to students and practitioners [16]. Understanding these dynamics enables policymakers to design effective strategies aimed at achieving sustainable and inclusive economic development [15].

2.2 Monetary Policy

Monetary policy is one of the primary instruments employed by governments to influence macroeconomic activity, alongside fiscal policy [18]. It encompasses the rules and actions adopted by central banks to achieve specific objectives, with price stability being the main goal in most countries, although the mandate often extends to full employment, financial stability, and balance of payments sustainability [20]. Central banks implement monetary policy through their monopoly position as providers of bank reserves, using instruments such as short-term interest rates or the monetary base to influence overall economic activity, including output, employment, and inflation [18]. This field has developed significantly, with ongoing research focusing on transmission mechanisms, the trade-offs between inflation and real economic activity, and the design of optimal policy frameworks [18]. Modern monetary policy aims to regulate money supply, strengthen the purchasing power of the national currency, prevent inflation, and maintain exchange rate stability [22]. These policy instruments have evolved over centuries in line with the development of monetary economies [21].

2.3 Money Supply (M2)

The Quantity Theory of Money represents one of the fundamental pillars of classical monetary economics, explaining the relationship between money supply and the price level through Fisher's identity, $MV = PY$ [23]. Within the classical framework, it is assumed that the velocity of money (V) remains relatively constant and that real output (Y) is exogenously determined by full production capacity. Consequently, any change in the money supply (M) directly affects the price level (P) [25]. This theory underscores the principle of the long-run neutrality of money, suggesting that monetary expansion does not influence real variables such as output or employment, but instead only impacts the general price level [24].

2.4 Inflation

Endogenous Growth Theory, developed by Lucas [26], Romer [27], and Rebelo [28], extends the neoclassical growth model by assuming that long-term growth can be explained endogenously through human capital accumulation, innovation, and productivity enhancement. Romer [27] emphasizes that knowledge is non-rival and generates spill over effects that strengthen aggregate productivity in the long run, while Lucas

[26] highlights human capital accumulation as the primary engine of growth. Consequently, high and unstable inflation can undermine investment incentives in productive activities such as R&D and education, thereby hindering improvements in Total Factor Productivity (TFP) [13]. This theory underscores the importance of macroeconomic stability, particularly price stability, as a prerequisite for fostering an environment conducive to sustainable long-term economic growth [29].

2.5 Real Interest Rate

The real interest rate is a fundamental variable in macroeconomic theory as it determines the allocation of resources across sectors and over time. According to the Loanable Funds Theory, rooted in the classical economic tradition and further developed by Wicksell [30], the interest rate is determined by the equilibrium between the supply of savings and the demand for investment. An interest rate set below the natural rate of interest encourages credit expansion and inflation, whereas a rate above the natural level suppresses investment and may trigger economic contraction [25]. Within the framework of Endogenous Growth Theory, the real interest rate plays a critical role in shaping economic agents' incentives for long-term investment, particularly in education, technology, and innovation, which positively contribute to improvements in Total Factor Productivity (TFP) [26]. Romer [26] emphasizes that knowledge is non-rival and generates spill over effects that foster cumulative and sustained growth. Through its influence on the cost of capital and intertemporal preferences, a conducive real interest rate policy becomes essential for creating an environment that supports stable and productive long-term economic growth [29].

2.6 Exchange Rate against USD

The exchange rate is a key variable in the framework of an open economy, serving as a balancing mechanism between the external and domestic sectors. The Mundell–Fleming Model, developed by Fleming [31] and Mundell [32], explains that under a floating exchange rate system, expansionary monetary policy tends to induce currency depreciation, thereby boosting net exports and output through relative price effects across countries. In contrast, under a fixed exchange rate regime, the effectiveness of monetary policy becomes limited, as it requires continuous market intervention. In the long run, the Purchasing Power Parity (PPP) theory introduced by Cassel [33] posits that exchange rates adjust to equalize purchasing power across countries, while its relative version emphasizes that exchange rate movements are determined by inflation differentials between countries [33]. Exchange rate instability generates exchange rate risk, which affects corporate revenues, import costs, and investment decisions. As highlighted by [34], exchange rate volatility increases economic uncertainty, undermines resource allocation efficiency, and disrupts long-term financial planning. Within the framework of foreign exchange risk theory, firms engaged in international trade face exposure to currency fluctuations that may result in losses if not managed through hedging instruments or multi-currency financing strategies.

2.7 Capital Flow

International capital flows represent the movement of financial resources between countries, occurring when residents of one nation extend loans or purchase assets from residents of another nation [35]. These flows are fundamentally linked to current account balances through balance of payments accounting, where capital exporters typically provide corresponding flows of goods and services [35]. From a theoretical perspective, capital flows serve as mechanisms to remove domestic excess demand for money, with key determinants including changes in domestic income, current account balances, monetary instruments, and foreign interest rates [36]. In recent years, capital flows have increased significantly and become a crucial aspect of the global monetary system, offering potential benefits while also creating policy challenges due to their size and volatility [36]. For empirical analysis and policy decisions, researchers and policymakers rely on various capital flow datasets, with high-frequency proxies showing significant predictive content for portfolio flows [38].

2.8 Foreign Direct Investment (FDI)

Foreign Direct Investment (FDI) plays a strategic role in promoting economic growth through capital accumulation, productivity enhancement, and technology transfer. Within the Neoclassical Growth Model [39], FDI is viewed as an additional source of capital accumulation that contributes to higher per capita output, although its impact remains limited due to diminishing returns. This perspective was later extended by the Endogenous Growth Theory, which highlights the importance of innovation, human capital, and knowledge diffusion as internal drivers of growth [27]. Accordingly, FDI

functions not only as a source of financing but also as a channel for technological spillovers and the strengthening of human resource capacity, thereby facilitating sustainable economic growth.

2.9 Portfolio Investment

Portfolio investment represents a form of international capital flow that reflects crossborder ownership of financial assets, such as stocks and bonds, and is primarily influenced by differences in returns and exchange rate expectations [40]. Within the framework of Interest Rate Parity (IRP), particularly the uncovered IRP, interest rate differentials across countries are offset by expectations of currency appreciation or depreciation, thereby eliminating arbitrage opportunities in an efficient financial market [41]. This implies that portfolio investment flows are highly responsive to changes in monetary policy and the dynamics of exchange rate expectations in an open economy.

2.10 Previous Research

Previous research provides an important foundation for understanding the interrelationship between foreign investment, domestic investment, infrastructure, and economic growth. Several prior studies, such as that conducted by Setyaningsih et al. [42], examined the effects of Foreign Direct Investment (FDI) and Domestic Investment (PMDN) on Indonesia's economic growth by incorporating infrastructure as an intervening variable. Using time series data from 2006 to 2022 and applying the ARDL method combined with Path Analysis, the study found that FDI had a significantly positive effect on economic growth, PMDN had a negative but insignificant effect, while infrastructure had a positive yet insignificant effect and was unable to mediate the influence of the two investment variables on economic growth. These findings provide an initial insight into the importance of simultaneous analysis among variables within the framework of investment policy and infrastructure development in Indonesia.

Safiullah et al. [43], in their study entitled "An Empirical Study on Monetary Policy and Economic Growth: The Case of Indonesia Using an ARDL–ECM Approach", analyzed the role of monetary policy instruments, particularly money supply and inflation, in influencing Indonesia's economic growth. Using time series data from 1970 to 2019 and employing the Autoregressive Distributed Lag (ARDL) and Error Correction Model (ECM) approaches along with the Augmented Dickey-Fuller (ADF) unit root test, the study found that inflation had a significant but negative effect on economic growth, while money supply was negatively related but statistically insignificant. These findings highlight the importance of price stability and liquidity management in supporting Indonesia's long-term economic growth.

Marzuki et al. [44], in their study entitled "Foreign Direct Investment, Portfolio Investment, and Economic Growth in Indonesia: Vector Auto Regression Approach", aimed to analyze the interrelationship between Foreign Direct Investment (FDI), Portfolio Investment (PI), and Economic Growth (EG) in Indonesia. Using secondary data from 2010 to 2016 obtained from BPS, BKPM, and Bank Indonesia, and applying the Vector Auto Regression (VAR) method, the study revealed a two-way relationship be-

tween FDI and economic growth. Meanwhile, the relationship between PI and economic growth was also reciprocal but statistically insignificant, suggesting that foreign investors' decisions are more strongly influenced by Indonesia's macroeconomic policies and the latest capital market information rather than by PI itself.

Mukelabai and Haabazoka [45], in their study entitled "A Study of the Effect of Monetary Policy and International Reserves on Zambia's Economic Growth", analyzed the impact of monetary policy and international reserves on Zambia's economic growth during the period 1980–2022 using the ARDL, Bound Test, and ECM approaches. The findings revealed a long-run cointegration relationship, where exchange rates and inflation had a significantly negative effect, while interest rates and international reserves exerted a significantly positive effect on economic growth. Based on these results, the study recommended policies focusing on the diversification of international reserves, effective exchange rate management, interest rate adjustments, and inflation targeting. Benkhaira and El Hassani [46], in their study entitled "Long and Short-Run Relationship Analysis of Monetary Policy on Economic Growth in Morocco: An ARDL Model Approach", examined the effect of monetary policy on Morocco's economic growth during the period 1991–2022 using the ARDL model and Granger causality tests. The findings revealed that monetary policy had a significant impact on economic growth in both the short and long run, with a bidirectional relationship between money supply and GDP. The study also highlighted the vulnerability of Morocco's economy during the COVID-19 pandemic.

3 Methodology

3.1 Data

This study employs a quantitative approach by utilizing secondary time series data covering the period 1990–2024, obtained from the World Bank database. The variables analyzed include monetary policy indicators namely money supply (M2), inflation, real interest rates, and the exchange rate against the USD as well as international capital flow variables, namely Foreign Direct Investment (FDI) and Portfolio Investment. The selection of these variables is grounded in the empirical literature, which emphasizes the role of monetary policy and capital flows in influencing economic growth in developing countries.

The analysis is conducted using a time series econometric model to capture both the short-run and long-run dynamics among the variables, as well as to test the stability of their structural relationships. This approach is consistent with [47], who argue that econometric methods with time series data enable researchers to detect dynamic interaction patterns, test for stationarity and cointegration, and estimate both short-run and long-run models more reliably. Accordingly, this model is employed to obtain more robust estimations and to detect causal effects between monetary policy variables, capital flows, and Indonesia's economic growth.

Table 1. Research Variables Dataset

Variables	Operational Definition of Variable	Source
Money Supply (M2)	Total economic liquidity (currency, demand deposits, and savings) as an indicator of monetary policy (Rp).	World Bank
Inflation	Percentage increase in general annual prices of goods and services (%).	World Bank
Real Interest Rate	Inflation-adjusted nominal interest rate, reflecting real borrowing costs (%).	World Bank
Exchange Rate against USD	The Rupiah exchange rate against the US Dollar shows external competitiveness (Rp).	World Bank
Foreign Direct Investment (FDI)	Foreign direct investment flows into Indonesia (USD).	World Bank
Portfolio Investment	Foreign portfolio investment flows to Indonesia (USD).	World Bank

Source: Processed by the author

3.2 Autoregressive Distributed Lag (ARDL)

The Autoregressive Distributed Lag (ARDL) model is an econometric approach employed to analyzed both short-run and long-run relationships among variables in time series data. Originally developed by Pesaran and Shin [48], the ARDL model has become a widely applied method due to its flexibility, as it can be used even when the variables under study are integrated at different orders, namely $I(0)$ or $I(1)$. According to [49], the ARDL framework is particularly useful in distinguishing short-run effects from long-run effects, thereby providing a more comprehensive understanding of the dynamic interactions among economic variables. Furthermore, the ARDL approach enables cointegration testing through the Bound Testing procedure and allows the estimation of an Error Correction Model (ECM) to measure the speed of adjustment toward long-run equilibrium. Owing to these advantages, the ARDL methodology has been extensively applied in economics and finance research to examine the impacts of monetary policy and capital flows on a country's economic growth.

Where:

$$Y_t = \text{GDP_GROWTH}_t \text{ (GDP growth, \%)}$$

$$\ln M2_t = \text{log Money Supply (M2)}$$

$$INF_t = \text{Inflation (\% per year)}$$

$$INT_t = \text{Real Interest Rate (\% per year)}$$

$$\ln EXC_t = \text{log Exchange rate (Rp per USD)}$$

$$\ln FDI_t = \text{log Foreign Direct Investment (USD)}$$

$$\ln PI_t = \text{log Portfolio Investment (USD)}$$

Δ = first difference operator

u_t = error term

Functionally, the influence of monetary policy and capital flows on growth can be written as follows:

$$Y_t = f(\ln M2_t, INF_t, INT_t, \ln EXC_t, \ln FDI_t, \ln PI_t) \tag{1}$$

The basic linear equations commonly used as starting points are:

$$Y_t = \beta_0 + \beta_1 \ln M2_t + \beta_2 INF_t + \beta_3 INT_t + \beta_4 \ln EXC_t + \beta_5 \ln FDI_t + \beta_6 \ln PI_t + u_t \tag{2}$$

The ARDL model allows each variable to have a different lag. The general form of ARDL ($p, q_1, q_2, q_3, q_4, q_5, q_6$):

$$Y_t = \alpha_0 + \sum_{i=1}^p \alpha_i Y_{t-i} + \sum_{j=0}^{q_1} \gamma_{1j} \ln M2_{t-j} + \sum_{j=0}^{q_2} \gamma_{2j} INF_{t-j} + \sum_{j=0}^{q_3} \gamma_{3j} INT_{t-j} + \sum_{j=0}^{q_4} \gamma_{4j} \ln EXC_{t-j} + \sum_{j=0}^{q_5} \gamma_{5j} \ln FDI_{t-j} + \sum_{j=0}^{q_6} \gamma_{6j} \ln PI_{t-j} + \varepsilon_t \tag{3}$$

Choose p, q_k based on information criteria (AIC/BIC) before estimation. If there is cointegration, the Error Correction Model forms:

$$\Delta Y_t = \phi_0 + \sum_{i=1}^{p-1} \phi_i \Delta Y_{t-i} + \sum_{j=0}^{q_1-1} \psi_{1j} \Delta(\ln M2_{t-j}) + \sum_{j=0}^{q_2-1} \psi_{2j} \Delta INF_{t-j} + \sum_{j=0}^{q_3-1} \psi_{3j} \Delta INT_{t-j} + \sum_{j=0}^{q_4-1} \psi_{4j} \Delta(\ln EXC_{t-j}) + \sum_{j=0}^{q_5-1} \psi_{5j} \Delta(\ln FDI_{t-j}) + \sum_{j=0}^{q_6-1} \psi_{6j} \Delta(\ln PI_{t-j}) + \lambda ECT_{t-1} + \varepsilon_t \tag{4}$$

with

$$ECT_{t-1} = Y_{t-1} - \beta_0^{LR} - \beta_1^{LR} \ln M2_{t-1} - \dots - \beta_6^{LR} \ln PI_{t-1} \tag{5}$$

and λ (If < 0) shows the speed of adjustment to long-run equilibrium.

3.3 Augmented Dickey-Fuller (ADF) Test

This study employs the Augmented Dickey-Fuller (ADF) test to examine the stationarity of the time series data prior to estimating the ARDL model. As noted by Gujarati [49], stationarity is crucial to avoid spurious regression results, thereby ensuring that the estimations are valid and reliable. The ADF test detects the presence of a unit root by assessing whether the mean and variance of a variable remain constant over time. If the data are found to be non-stationary at level, differencing is applied until stationarity is achieved.

Use Augmented Dickey Fuller (ADF) for each variable (select the model with/without constant or trend according to the graph).

Augmented Dickey Fuller (ADF) (with constants):

$$\Delta z_t = \alpha + \phi z_{t-1} + \sum_{i=1}^p \psi_i \Delta z_{t-i} + e_t \tag{6}$$

Hypothesis: $H_0: \phi = 0$ (unit root / non-stationary) vs $H_1: \phi < 0$ (stationary).
 Short interpretation: if p-value ADF < significant (0.05) → Reject H_0 → stationary variables at the tested level.

3.4 Bound Test Cointegration Test

The Bound Test for cointegration was employed to identify the existence of long-run relationships among the variables within the ARDL framework. According to Pesaran, Shin, and Smith [48], the Bound Test evaluates the null hypothesis of no cointegration by comparing the calculated F-statistic with the critical value bounds (upper and lower). If the F-statistic exceeds the upper bound, cointegration is confirmed; if it falls below the lower bound, no cointegration exists. This test is particularly important to ensure that monetary policy variables and capital flows exhibit a long-run equilibrium relationship with economic growth, thereby enhancing the validity of the ARDL estimation results.

To test whether there is a level relationship (cointegration) use the following ECM formulation:

$$\Delta Y_t = \alpha_0 + \sum_{i=1}^{p-1} \alpha_i X_{it} + \sum_{k=1}^6 \sum_{j=0}^{qk-1} \psi_{kj} \Delta X_{k,t-j} + \phi_1 Y_{t-1} + \sum_{k=1}^6 \phi_{k+1} X_{k,t-1} + \varepsilon_t \tag{7}$$

With:

$$X_1 = \ln M2, X_2 = INF, X_3 = INT, X_4 = \ln EXC, X_5 = \ln FDI, X_6 = \ln PI. \tag{8}$$

Perform an F-test on the null hypothesis:

$$H_0: \phi_1 = \phi_2 = \dots = \phi_7 = 0 \text{ (no relationship level)}$$

Compare F-statistic with critical values bounds (lower = $I(0)$, upper = $I(1)$) :

If $F >$ upper bound → there is cointegration

If $F < \text{lower bound}$ → no cointegration

If between → inconclusive

Practical note: make sure there are no I(2) variables ARDL/Bounds is only valid if the variables are I(0) or I(1).

3.5 Classical Assumption Test

Prior to estimating the ARDL model, this study conducted classical assumption tests to ensure the validity of the model. As Gujarati [49] emphasizes, satisfying the classical assumptions of normality, no autocorrelation, and homoskedasticity is essential for the estimators to be BLUE (Best Linear Unbiased Estimators). The normality test was applied to examine the distribution of residuals, the Breusch–Godfrey test was employed to detect autocorrelation, and the Glejser test was used to assess heteroskedasticity. Meeting these assumptions ensures that the estimation results are more reliable and efficient.

Normality Test. The Jarque-Bera normality test was applied to ensure that the residuals of the model are approximately normally distributed. Normally distributed residuals are essential to guarantee the validity of statistical inferences, particularly when employing hypothesis testing tools such as the t-test and F-test [49].

Autocorrelation Test. The Breusch–Godfrey Serial Correlation LM Test was employed to detect the presence of autocorrelation among residuals across different time periods. Autocorrelation in the residuals violates the classical assumption of independently distributed errors; if present, it may lead to biased variance estimates and result in misleading statistical inferences. Ensuring that the residuals are free from autocorrelation is therefore essential for the reliability of the ARDL estimation results.

Heteroscedasticity Test. The Glejser test was applied to examine whether the residuals exhibit constant variance (homoskedasticity) or non-constant variance (heteroskedasticity). High levels of heteroskedasticity can lead to inefficient parameter estimates, thereby reducing the reliability of the model. Detecting and addressing heteroskedasticity at an early stage is therefore crucial to ensure the robustness of the ARDL estimation results [49].

4 Result and Discussion

4.1 Descriptive Statistics

Descriptive statistical analysis was employed to provide a general overview of the characteristics of the research data. Descriptive statistics present measures of central tendency such as mean, median, and mode, as well as measures of dispersion including standard deviation, minimum, and maximum values. By examining these statistics,

researchers can gain insights into the tendencies, variations, and distribution patterns of the variables under study, thereby establishing a solid foundation for further econometric analysis. Thus, descriptive statistics play an important role in assessing the quality and consistency of the data before conducting advanced empirical testing.

Table 2. Descriptive Statistics

Variables	Mean	Variance	Std. Deviation	Minimum	Maximum
GDP_Growth	4.72	13.05	3.61	-13.13	8.22
Ln_M2	34.86	2.04	1.43	32.08	36.76
Inflation	8.29	90.99	9.54	1.13	58.45
Interest_Rate	7.30	25.48	5.05	-0.96	24.60
Ln_Exchange_Rate	8.94	0.52	0.72	7.52	9.67
Ln_FDI	22.47	1.90	1.38	18.79	23.95
Ln_Portfolio_Investment	21.90	2.78	1.67	16.30	23.98

Source: Processed data, Eviews 12

Based on the descriptive statistics, the GDP_Growth variable shows an average economic growth rate of 4.72 percent, with relatively high fluctuations (standard deviation of 3.61) and a wide range from -13.13 to 8.22 percent. The Ln_M2 variable has an average value of 34.86, reflecting a steady upward trend in money supply with low variation (standard deviation of 1.43). Meanwhile, Inflation records an average of 8.29 percent with substantial dispersion (standard deviation of 9.54) and a notably high maximum value of 58.45 percent, indicating significant price volatility over the study period. The Interest Rate variable has an average of 7.30 percent, with wide fluctuations (standard deviation of 5.05) and even negative minimum values, suggesting periods of extreme monetary policy conditions. Furthermore, Ln_Exchange Rate averages 8.94 with low variation (standard deviation of 0.72), indicating relative stability of the exchange rate. The Ln_FDI variable has an average of 22.47 with limited dispersion (standard deviation of 1.38), while Ln_Portfolio Investment averages 21.90 with greater variability (standard deviation of 1.67), highlighting that portfolio flows tend to be more volatile than FDI inflows. Overall, these descriptive statistics suggest that the variables employed in this study exhibit diverse levels and volatilities, thereby reinforcing the importance of advanced econometric analysis to capture the short-run and longrun relationships among them.

4.2 Augmented Dickey-Fuller (ADF) Test

Table 3. Unit Root Test

Variables	Level		1st Difference		Stationarity
	t-Statistic	p-value	t-Statistic	p-value	
GDP_Growth	-4.29229	0.0018	-5.99803	0.0000	I(0)
Ln_M2	-3.07408	0.0403	-3.31118	0.0224	I(0)

Inflation	-0.90144	0.7721	-4.37803	0.0022	I(1)
Interest_Rate	-4.96880	0.0005	-6.77222	0.0000	I(0)
Ln_Exchange_Rate	-3.88102	0.0063	-2.51725	0.1219	I(0)
Ln_FDI	-0.81027	0.8022	-6.55069	0.0000	I(1)
Ln_Portfolio_Investment	-4.33918	0.0017	-4.82989	0.0005	I(0)

Source: Processed data, Eviews 12

Based on the results of the Augmented Dickey-Fuller (ADF) test presented in Table 2, the variables used in this study exhibit different levels of stationarity. The variables GDP_Growth, Ln_M2, Interest Rate, Ln_Exchange Rate, and Ln_Portfolio Investment are significant at level (I(0)), indicating stationarity at their level form. In contrast, Inflation and Ln_FDI are not significant at level but become significant at the first difference, thus stationary at order one (I(1)). This pattern demonstrates that the dataset comprises a mixture of I(0) and I(1) variables, making the ARDL approach appropriate, as it accommodates variables with mixed integration orders without requiring all variables to be I(1). The results further suggest that some variables remain relatively stable in the short run, while others display trends or fluctuations that only stabilize after differencing. Accordingly, further estimation using the ARDL model can be conducted to capture both the short-run and long-run relationships among the variables with greater accuracy.

4.3 Classical Assumption Test

Table 4. Classic Assumption Test

Classic assumption test	Coefficient	p-value
Normality Test: Jarque-Bera	11.1822	0.0037
Serial Correlation LM Test: Breusch-Godfrey	1.9881	0.3701
Heteroscedasticity Test Breusch-Pagan-Godfrey	23.5129	0.4312

Source: Processed data, Eviews 12

The results of the Jarque–Bera test show a test statistic of 11.1822 with a p-value of 0.0037, indicating that the residuals are not normally distributed at a conventional significance level. Nevertheless, the non-normality of residuals does not pose a serious concern in the context of the ARDL model. This is because the ARDL methodology places greater emphasis on the stationarity of variables and the stability of the model rather than on the strict fulfillment of normality assumptions. As long as the model parameters remain consistent and unbiased, the interpretation of coefficients remains valid, thereby allowing the ARDL analysis to proceed even in the absence of perfectly normal residuals.

The results of the Breusch–Godfrey test indicate a test statistic of 1.9881 with a p-value of 0.3701. Since the p-value is greater than the 0.05 significance level, the null hypothesis of no autocorrelation cannot be rejected. This implies that the residuals of the model do not exhibit recurring correlation patterns across periods, suggesting that

the ARDL model employed is relatively free from autocorrelation. This finding is important to ensure the reliability of both short-run and long-run estimations, as well as to maintain the consistency and efficiency of the estimators.

The results of the Breusch–Pagan–Godfrey test show a test statistic of 23.5129 with a p-value of 0.4312. Since the p-value is well above the 0.05 significance level, the null hypothesis of homoskedasticity cannot be rejected. This indicates that the residuals of the model do not exhibit non-constant variance (heteroskedasticity) and can thus be considered homogeneous. Such a condition supports the reliability of the ARDL model, as the stability of error variances ensures that the efficiency of parameter estimation is not compromised.

4.4 Bound Test Cointegration Test

Table 5. Cointegration Bound Test Results

Test Statistic	Value	Sig.	I(0)	I(1)
F-statistic	10.24469	10%	2.12	3.23
K	6	5%	2.45	3.61
		2.50%	2.75	3.99
		1%	3.15	4.43

Source: Processed data, Eviews 12

Based on the results of the cointegration test using the Bound Testing approach presented in Table 4, the F-statistic is 10.24469. This value is significantly higher than the upper bound critical values (I(1)) at all significance levels, including 10% (3.23), 5% (3.61), 2.5% (3.99), and 1% (4.43). These results indicate the rejection of the null hypothesis of no cointegration and the acceptance of the alternative hypothesis that a longrun relationship exists among the variables in the model. In other words, the analyzed variables move together in the long run and are not individually nonstationary. This finding supports the appropriateness of applying the ARDL model to estimate both short-run and long-run parameters, as the existence of cointegration validates the interpretation of long-run relationships among the variables.

4.5 Autoregressive Distributed Lag (ARDL) Estimation Test

Table 6. Short-term ARDL Error Correction

Variables	Coefficient	t-Statistic	Prob.
C	70.21366	11.02084	0.0000
D(LN_M2)	-63.8336	-12.49571	0.0000
D(LN_M2(-1))	-59.5833	-8.008357	0.0000
D(LN_M2(-2))	34.62881	8.386945	0.0000
D(INFLATION)	0.584846	11.49119	0.0000

D(INTEREST_RATE)	-0.68772	-14.0628	0.0000
D(INTEREST_RATE(-1))	0.085331	2.195285	0.0594
D(INTEREST_RATE(-2))	0.280347	7.521217	0.0001
D(LN_EXCHANGE_RATE)	-17.1074	-12.66954	0.0000
D(LN_EXCHANGE_RATE(-1))	-11.7613	-6.718639	0.0001
D(LN_EXCHANGE_RATE(-2))	-19.3074	-9.475216	0.0000
D(LN_FDI)	0.374051	2.242675	0.0552
D(LN_FDI(-1))	-2.53333	-11.11272	0.0000
D(LN_PORTFOLIO_INV)	0.009522	0.09028	0.9303
D(LN_PORTFOLIO_INV(-1))	-1.64527	-11.67435	0.0000
D(LN_PORTFOLIO_INV(-2))	0.753685	5.98814	0.0003
CointEq(-1) (ECT)	-1.55243	-11.20256	0.0000
R-squared	0.995344	Mean dependent var	-0.04594
Adjusted R-squared	0.98969	S.D. dependent var	4.52664
S.E. of regression	0.459633	Akaike info criterion	1.58155
Sum squared resid	2.957679	Schwarz criterion	2.40602
Log likelihood	-7.30474	Hannan-Quinn criter.	1.85484
F-statistic	176.0413	Durbin-Watson stat	2.08691
Prob(F-statistic)	0.00000		

Source: Processed data, Eviews 12

The short-run ARDL estimation results indicate that changes in money supply (Ln_M2) have a significant impact on economic growth. The coefficient of D(LN_M2) is -63.83 (p-value = 0.0000), and D(LN_M2(-1)) is -59.58 (p-value = 0.0000), suggesting that an increase in money supply in the current period and the previous period exerts a contractionary effect on economic growth. However, at the second lag, D(LN_M2(-2)) has a positive coefficient of 34.62 (p-value = 0.0000), indicating a reversal of the effect. This implies the presence of an adjustment mechanism, whereby a liquidity surge initially dampens growth but subsequently contributes positively to economic expansion in the following period. By employing the ARDL model with a maximum lag length of three periods (lag 3), this study captures the dynamic and lagged effects of monetary variables on economic growth. The inclusion of lag 3 reflects a longer transmission period of monetary policy, ensuring that the estimation results account not only for immediate responses and effects from the previous period but also for impacts that materialize after several periods. This approach is crucial for understanding the adjustment patterns in the economy, which often do not occur instantaneously but rather unfold gradually through stepwise mechanisms.

In the short-run ARDL estimation, the current-period inflation variable, D(INFLATION), shows a positive coefficient of 0.5848 (p-value = 0.0000), indicating that an increase in inflation is positively correlated with economic growth in the short run. This finding can be interpreted as the effect of rising prices being accompanied by

an increase in economic activity in the very short term. However, this trend is generally unsustainable and requires confirmation through the long-run results. By incorporating a one-period lag (lag 1) in the ARDL model, the impact of inflation can be traced not only in the current period but also in subsequent periods, thereby capturing potential lagged effects. The presence of lag 1 is important, as it demonstrates that the response of economic growth to inflationary pressures is not merely instantaneous but may persist into the following period, reflecting a more realistic process of price adjustment and aggregate demand dynamics.

The real interest rate exhibits a complex dynamic in the short run. The coefficient of $D(\text{INTEREST_RATE})$ is -0.6877 ($p\text{-value} = 0.0000$), indicating that higher interest rates immediately suppress economic growth. However, at the first lag, $D(\text{INTEREST_RATE}(-1))$ has a coefficient of 0.0853 ($p\text{-value} = 0.0594$, marginally significant at the 10% level), and at the second lag, $D(\text{INTEREST_RATE}(-2))$ increases to 0.2803 ($p\text{-value} = 0.0001$). These results suggest that the effect of interest rates may turn positive in subsequent periods, likely due to financial market adjustments and shifts in monetary policy expectations. By employing the ARDL model with up to three lags (lag 3), the analysis captures the more comprehensive dynamics of interest rate transmission, rather than limiting the estimation to immediate or one-period effects. The inclusion of lag 3 reflects the longer time horizon required for monetary policy changes to fully influence economic activity. Thus, the model provides a more realistic depiction of the gradual adjustment process and lagged effects of interest rates on economic growth.

The exchange rate against the USD (Ln_Exchange Rate) exerts a consistently negative effect on economic growth across all three lags: $D(\text{LN_EXCHANGE_RATE}) - 17.10$ ($p\text{-value} = 0.0000$), $D(\text{LN_EXCHANGE_RATE}(-1)) - 11.76$ ($p\text{-value} = 0.0001$), and $D(\text{LN_EXCHANGE_RATE}(-2)) - 19.30$ ($p\text{-value} = 0.0000$). These results indicate that currency depreciation persistently suppresses economic growth in the short run, highlighting the vulnerability of the real sector to exchange rate fluctuations. By employing the ARDL model with up to three lags, the exchange rate effects can be traced more comprehensively, not only in the current period but also across subsequent periods. The inclusion of lag 3 reflects the delayed transmission of exchange rate shocks to the broader economy, where the impact unfolds gradually through channels such as import costs, domestic prices, and export competitiveness. Thus, the findings confirm that exchange rate depreciation imposes sustained downward pressure on economic growth, even beyond the immediate period, underscoring the importance of exchange rate stability in safeguarding sustainable economic performance.

Foreign Direct Investment (FDI) inflows show a positive effect in the current period, with $D(\text{LN_FDI}) = 0.3740$ ($p\text{-value} = 0.0552$), but this effect turns negative in the first lag, $D(\text{LN_FDI}(-1)) = -2.5333$ ($p\text{-value} = 0.0000$). This implies that while FDI initially stimulates economic growth, in the following period adjustment effects such as capital outflows, divestment, or profit repatriation diminish its positive impact. By including the second lag (lag 2), the dynamics of FDI can be examined more comprehensively: its short-run influence extends beyond the initial period, reflecting continuing patterns in subsequent periods. The second lag captures an additional adjustment horizon, indicating that the effects of FDI may further transform through mechanisms such as

ongoing expansion, structural adjustments like technology transfer, corporate restructuring, or fiscal policy adaptation. These findings confirm that the contribution of FDI to economic growth is dynamic and varies across periods, underscoring the importance of longer-lag analysis to fully understand the cyclical impact of FDI on Indonesia's economic growth.

Portfolio investment flows exhibit short-term dynamics that are inherently more volatile. In the current period, $D(LN_PORTFOLIO_INV)$ (0.0095; p-value = 0.9303) is not statistically significant, while in the first lag $D(LN_PORTFOLIO_INV(-1))$ (-1.6453; p-value = 0.0000) is significantly negative, and in the second lag $D(LN_PORTFOLIO_INV(-2))$ (0.7536; p-value = 0.0003) is significantly positive. These findings indicate that portfolio investment exerts a lagged and opposite effect on economic growth: initially non-significant, then exerting downward pressure in the subsequent period, and reverting to a positive impact after two periods. Incorporating a third lag (Lag 3) allows for a more complete observation of this cyclical behavior of capital flows. Lag 3 potentially captures the extended effects of portfolio rebalancing, capital reversals, or the stabilization of market sentiment, which may only materialize after three periods. The inclusion of this third time lag is therefore crucial for testing whether the observed fluctuations culminate in a convergent positive, neutral, or renewed negative effect, thereby providing a more comprehensive understanding of the full cycle of economic growth responses to portfolio investment.

The estimated error correction term $CointEq(-1)$ of -1.5524 ($p = 0.0000$) is negative and highly significant, indicating a strong and rapid speed of adjustment toward longrun equilibrium whenever short-run deviations occur. This finding confirms that the ARDL short-run model effectively captures the dynamic adjustment process, where shocks to economic growth are swiftly corrected back to the long-term path. The very high R-squared (0.9953) and Adjusted R-squared (0.9897) values further demonstrate the model's strong explanatory power, implying that the selected combination of monetary policy and international capital flow variables accounts for more than 98% of the variations in GDP growth during the study period.

Table 7. Long-Term ARDL Estimation Results

Variables	Coefficient	t-Statistic	Prob.
LN_M2	-63.8336	-7.570094	0.0001
INFLATION	0.58484	5.674658	0.0005
INTEREST_RATE	-0.68772	-6.866242	0.0001
LN_EXCHANGE_RATE	-17.1074	-5.137529	0.0009
LN_FDI	0.374051	1.215416	0.2589
LN_PORTFOLIO_INVESTMENT	0.009522	0.035042	0.9729
C (Konstanta)	70.21366	2.815523	0.0226
R-squared	0.993091	Mean dependent var	4.520938
Adjusted R-squared	0.973229	S.D. dependent var	3.716164
S.E. of regression	0.608038	Akaike info criterion	1.956546

Sum squared resid	2.957679	Schwarz criterion	3.055848
Log likelihood	-7.30474	Hannan-Quinn criter.	2.320933
F-statistic	49.99789	Durbin-Watson stat	2.086912
Prob(F-statistic)	0.0000		

Source: Processed data, Eviews 12

In the long run, the money supply (Ln_M2) exhibits a negative coefficient of -63.83 with a highly significant p-value (0.0001). This result indicates that an expansion of M2 tends to suppress economic growth over the long horizon, consistent with the hypothesis that excessive monetary expansion can generate inflationary pressures or structural distortions in the real economy. Incorporating a third lag (lag 3) suggests the presence of a gradual adjustment mechanism; the initially adverse effect of money supply may weaken or even reverse after several periods as the real sector absorbs excess liquidity and moves toward a more stable growth trajectory.

In the long run, inflation displays a positive coefficient of 0.5848 with a highly significant p-value (0.0005), indicating that higher inflation remains positively correlated with economic growth. This finding reflects a phenomenon of moderate or demandpull inflation, which can stimulate output at the initial stage of expansion. Incorporating the first lag (lag 1) captures the immediate, short-run effects of inflation, showing that the economy reacts quickly to price pressures, although such effects typically diminish or reverse over a longer horizon.

In the long run, the real interest rate exhibits a negative coefficient of -0.6877 with a highly significant p-value (0.0001), indicating that higher interest rates exert a persistent dampening effect on economic growth. Elevated interest rates weaken investment and household consumption, thereby suppressing output over time. By incorporating the third lag (lag 3), the analysis captures delayed monetary transmission effects, as financial markets and economic agents require several periods to adjust their expectations regarding interest rates; thus, the impact only stabilizes after three periods.

In the long run, the exchange rate against the U.S. dollar displays a negative coefficient of -17.10 with a significant p-value (0.0009), indicating that rupiah depreciation exerts a contractionary effect on economic growth. This outcome reflects the vulnerability of the real sector to higher import costs, heavier external debt burdens, and inflationary pressures. By incorporating the third lag (lag 3), the analysis reveals that repeated episodes of depreciation prolong the drag on growth, and that the adverse impact of exchange rate weakening only begins to ease after several periods, once underlying economic fundamentals adjust.

In the long run, Foreign Direct Investment (FDI) shows a positive coefficient of 0.3740 with a non-significant p-value (0.2589), suggesting that inflows of FDI have not yet consistently enhanced economic growth or that their effects are constrained by structural factors such as profit repatriation and slow technology transfer. By introducing the second lag (lag 2), the analysis captures the delayed effects of foreign investment, where positive impacts may only materialize after infrastructure and production capacity adjust, thus making the growth-enhancing influence of FDI more apparent in subsequent periods.

In the long run, portfolio investment exhibits a coefficient of 0.0095 with a nonsignificant p-value (0.9729), indicating that capital inflows from portfolio investment are largely neutral to economic growth. This finding is consistent with the speculative and short-term nature of portfolio flows. By introducing the third lag (lag 3), the analysis can capture the full cycle of capital movements such as rebalancing, foreign fund inflows and outflows, or market sentiment stabilization thereby offering a clearer picture of whether the long-run effect of portfolio investment tends to become positive, remain neutral, or turn negative.

The R-squared value of 0.9930 and the Adjusted R-squared value of 0.9732 indicate an exceptionally high explanatory power of the ARDL model; almost the entire variation in economic growth can be accounted for by the independent variables included. This strong fit reinforces the model's validity as a robust basis for interpreting long-run relationships between monetary policy, international capital flows, and economic growth.

5 Conclusion

5.1 Summary

Based on the short and long-run Autoregressive Distributed Lag (ARDL) estimations, the analysis reveals heterogeneous effects of monetary and capital flow variables on economic growth. In the short run, broad money supply (\ln_M2) exerts a significantly negative impact at the current and first lag periods but turns positive at the second lag, indicating a liquidity adjustment mechanism. Inflation shows a significant positive effect in the current period, reflecting short-term demand-pull dynamics. Real interest rates initially depress growth but reverse to positive effects in subsequent lags as financial markets adjust their expectations. The depreciation of the exchange rate against the USD consistently suppresses growth across all three lags, underscoring structural vulnerability to exchange rate volatility. FDI exhibits an initial positive impact followed by a negative effect, suggesting profit repatriation or adjustment costs, while portfolio investment displays fluctuating effects neutral at first, negative at the first lag, and positive at the second consistent with its speculative and short-term nature.

In the long run, the pattern of relationships becomes more pronounced. Broad money supply ($M2$), real interest rates, and the exchange rate exert significant negative effects on economic growth, while inflation remains significantly positive. Conversely, both FDI and portfolio investment appear statistically insignificant, indicating that traditional monetary factors continue to play a dominant role in shaping long-term growth, whereas capital inflows have yet to establish a strong structural impact. The inclusion of additional lags (lag 1, 2, or 3, depending on the variable) reinforces the interpretation that the transmission of monetary policy and capital flows does not occur instantaneously but rather unfolds gradually through lagged effects.

Overall, these findings imply that excessively expansionary monetary policy and exchange rate volatility tend to undermine economic growth, whereas moderate inflation and more productive management of capital inflows can serve as supportive instruments for long-term growth. Thus, the transmission of monetary policy and capital

flows to economic growth is complex, requires adjustment over time (time lags), and yields differing outcomes in the short and long run.

5.2 Policy Recommendations

Several policy suggestions and recommendations based on this study's findings are as follows:

- The government and monetary authorities need to strengthen policy coordination to ensure that the expansion of the money supply does not become excessive and trigger structural inflationary pressures. Short and long-run findings indicate that an overly expansive M2 tends to dampen economic growth. Therefore, Bank Indonesia can employ more targeted liquidity-tightening instruments or macroprudential policies to safeguard monetary stability while maintaining growth momentum.
- The research findings indicate that repeated currency depreciation consistently suppresses economic growth in both the short and long run. Therefore, a more credible and medium-term-oriented exchange rate stabilization policy is essential to shield the real sector from external volatility. The government can enhance foreign exchange reserves, expand hedging instruments, and promote value-added exports to reduce import dependence.
- The findings on foreign capital inflows, both FDI and portfolio investment, indicate that their positive effects have not yet been fully accumulated in long-term economic growth. Therefore, policies should be directed toward improving the quality of FDI through more selective incentives for productive sectors, accelerating technology transfer, and strengthening portfolio investment regulations to ensure greater stability and limit speculative behavior. In this way, foreign capital inflows can make a more sustainable contribution to national economic development.

References.

1. Putra, M.U.M., Parimin: Perekonomian Indonesia dalam Era Globalisasi ASEAN. *Jurnal Wira Ekonomi Mikroskil* 8(1), 1–12 (2018). <https://doi.org/10.55601/jwem.v8i1.466>
2. Machmud, A.: Perekonomian Indonesia: Pasca Reformasi. Erlangga (2016)
3. Asnah, A., Sari, D.: Perekonomian Indonesia (Indonesian Economy). SSRN (2020). <https://doi.org/10.2139/ssrn.3551583>
4. World Bank: Indonesia Economic Prospects: World Bank Report. World Bank (2023). <https://www.worldbank.org/en/news/press-release/2023/06/26/indonesia-growth-seen-moderating-in-2023-as-pandemic-rebound-fades>
5. International Monetary Fund: Indonesia: 2023 Article IV Consultation-Press Release; Staff Report; and Statement by the Executive Director for Indonesia. IMF Staff Country Report No. 2023/221 (2023). <https://doi.org/10.5089/9798400244988.002>
6. Suyitno, S.L.P.: Transformasi Ekonomi Indonesia: Keluar Dari Middle Income Trap (MIT) Menuju Indonesia Emas 2045 (Refleksi 2005-2025 dan Visi 2025-2045). Bappenas Working Papers 6(3), 392–419 (2023). <https://doi.org/10.47266/bwp.v6i3.237>

7. OECD: OECD Economic Surveys: Indonesia 2024. OECD Publishing (2024). <https://doi.org/10.1787/de87555a-en>
8. Mishkin, F.S.: Monetary Policy Strategy. MIT Press (2022). <https://doi.org/10.7551/mitpress/11816.001.0001>
9. Bank Indonesia: Bank Indonesia Policy Mix: January 2023. Bank Indonesia (2023)
10. Pesaran, M.H., Shin, Y., Smith, R.J.: Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics* 16(3), 289–326 (2001). <https://doi.org/10.1002/jae.616>
11. Solow, R.M.: A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics* 70(1), 65–94 (1956). <https://doi.org/10.2307/1884513>
12. Swan, T.W.: Economic Growth and Capital Accumulation. *Economic Record* 32(2), 334–361 (1956). <https://doi.org/10.1111/j.1475-4932.1956.tb00434.x>
13. Barro, R.J., Sala-i-Martin, X.: Economic Growth. McGraw-Hill (2004)
14. Mankiw, N.G.: Principles of Economics. Cengage Learning (2019)
15. Marcal, I.A.F., Oentoro, Y.P., Yasin, M.: Pertumbuhan Ekonomi Sebagai Cerminan Perkembangan Perekonomian Suatu Negara. *Jurnal Manajemen Dan Bisnis Ekonomi* 2(3), 40–47 (2024). <https://doi.org/10.54066/Jmbelbt.V2i3.1898>
16. Jones, C.I.: Introduction to Economic Growth. W. W. Norton & Company (1997)
17. Valdés, B.: Economic Growth: Theory, Empirics, and Policy. Edward Elgar Publishing (1999)
18. Friedman, M.: Monetary Policy. Edward Elgar Publishing (2000)
19. Friedman, M.: The Role of Monetary Policy. *American Economic Review* 58(1), 1–17 (1968). <https://doi.org/10.3386/w0208>
20. Loayza, N., Schmidt-Hebbel, K.: Monetary Policy: Rules and Transmission Mechanisms. Central Bank of Chile (2002)
21. Bordo, M.D.: The Great Depression and the Friedman–Schwartz Hypothesis. *Federal Reserve Bank of St. Louis Review* 92(2), 99–116 (2010). <https://doi.org/10.20955/r.92.99-116>
22. Koliadka, M., Feier, O.: Monetary Policy: Current State Review and Development Prospects. *Innovation and Sustainability* 3(53), 60 (2024). <https://doi.org/10.31649/ins.2024.3.53.60>
23. Fisher, I.: The Purchasing Power of Money: Its Determination and Relation to Credit, Interest, and Crises. Macmillan (1911). <https://doi.org/10.2307/1885152>
24. Friedman, M.: The Role of Monetary Policy. *American Economic Review* 58(1), 1–17 (1968)
25. Laidler, D.: The Golden Age of the Quantity Theory: The Development of Neoclassical Monetary Economics, 1870–1914. Princeton University Press (1991). <https://doi.org/10.1515/9781400859458>
26. Lucas, R.E.: On the Mechanics of Economic Development. *Journal of Monetary Economics* 22(1), 3–42 (1988). [https://doi.org/10.1016/0304-3932\(88\)90168-7](https://doi.org/10.1016/0304-3932(88)90168-7)
27. Romer, P.M.: Endogenous Technological Change. *Journal of Political Economy* 98(5), S71–S102 (1990). <https://doi.org/10.1086/261725>
28. Rebelo, S.: Long-Run Policy Analysis and Long-Run Growth. *Journal of Political Economy* 99(3), 500–521 (1991). <https://doi.org/10.1086/261764>
29. Aghion, P., Howitt, P.: A Model of Growth Through Creative Destruction. *Econometrica* 60(2), 323–351 (1992)
30. Wicksell, K.: Interest and Prices: A Study of the Causes Regulating the Value of Money. Macmillan (1898)
31. Fleming, J.M.: Domestic Financial Policies Under Fixed and Under Flexible Exchange Rates. *Staff Papers (International Monetary Fund)* 9(3), 369–380 (1962). <https://doi.org/10.2307/3866091>

32. Mundell, R.A.: Capital Mobility and Stabilization Policy Under Fixed and Flexible Exchange Rates. *Canadian Journal of Economics and Political Science* 29(4), 475–485 (1963). <https://doi.org/10.2307/139336>
33. Cassel, G.: *Theoretische Sozialökonomie*. C. F. Winter (1920)
34. Bartram, S.M., Bodnar, G.M.: No Place to Hide: The Global Crisis in Equity Markets in 2008/2009. *Journal of International Money and Finance* 31(1), 71–94 (2012). <https://doi.org/10.1016/j.jimonfin.2011.10.006>
35. Canton, E., Minne, B., Verweij, G.: *Human Capital, R&D and Competition in Macro-Economic Analysis*. Netherlands Bureau for Economic Policy Analysis (CPB) (2003)
36. Porter, M.G.: *Capital Flows as an Adjustment Mechanism in the Monetary Sector*. Princeton University Press (1974)
37. International Monetary Fund: *The Liberalization and Management of Capital Flows: An Institutional View*. IMF Policy Paper 2012(23) (2012). <https://doi.org/10.5089/9781498339612.007>
38. Koepke, R., Paetzold, S.: *Capital Flow Data – A Guide for Empirical Analysis and Real-time Tracking*. IMF Working Paper No. 2020/171 (2020). <https://doi.org/10.5089/9781513554495.001>
39. Solow, R.M.: A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics* 70(1), 65–94 (1956). <https://doi.org/10.2307/1884513>
40. Obstfeld, M., Rogoff, K.: *Foundations of International Macroeconomics*. MIT Press (1996)
41. Dornbusch, R.: Expectations and Exchange Rate Dynamics. *Journal of Political Economy* 84(6), 1161–1176 (1976). <https://doi.org/10.1086/260506>
42. Setyaningsih, A.R., Nasikh, Wulandari, D.: The Effect of Foreign Investment (FDI) and Domestic Investment (PMDN) on Economic Growth in Indonesia Through Infrastructure as an Intervening Variable in 2017–2023. *Formosa Journal of Social Sciences* 4(1), 25–44 (2025). <https://doi.org/10.55927/fjss.v4i1.83>
43. Safiullah, S., Rahmatullah, P., Naqibullah, H., Abdul Ahad, Z., Zmarai, M.: An Empirical Study on Monetary Policy and Economic Growth: The Case of Indonesia Using an ARDL–ECM Approach. *Psychology and Education* 58(1), 5908–5922 (2021)
44. Marzuki, M., Albra, W., Nazir, N., Azhari, F., Abdurrahman, A., Syamni, G.: Foreign Direct Investment, Portfolio Investment, and Economic Growth in Indonesia: Vector Auto Regression Approach. *Proceedings of the WMA-1 2018* (2019). <https://doi.org/10.4108/eai.20-12018.2282084>
45. Mukelabai, R., Haabazoka, L.: A Study of the Effect of Monetary Policy and International Reserves on Zambia’s Economic Growth. *International Journal of Engineering and Management Research* 14(2) (2024). <https://doi.org/10.5281/zenodo.10958143>
46. Benkhaira, J., El Hassani, H.: Long and Short-run Relationship Analysis of Monetary Policy on Economic Growth in Morocco: An ARDL Model Approach. *Salud, Ciencia y Tecnología – Serie de Conferencias* 4, 1313 (2025). <https://doi.org/10.56294/sctconf20251313>
47. Gujarati, D.N., Porter, D.C.: *Basic Econometrics*. McGraw-Hill (2009)
48. Pesaran, M.H.: The Role of Economic Theory in Modelling the Long Run. *Economic Journal* 107(440), 178–191 (1997)
49. Gujarati, D.N., Porter, D.C.: *Basic Econometrics*. McGraw-Hill Education (2013)

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

