

Dynamic Interactions of Inflation, Policy Interest Rates, and Exchange Rates in Indonesia (2010–2024): Implications for Corporate Financial Management

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ABSTRACT

Objectives: This study evaluates the long-run equilibrium, equation-specific adjustment, short-run predictive links, and 10-month shock responses among Indonesian inflation, the Bank Indonesia policy rate, and the IDR/USD exchange rate during 2010–2024, with emphasis on corporate financial management.

Methodology: The analysis uses 180 monthly observations from January 2010 through December 2024: headline CPI inflation (year on year, percent), the prevailing policy rate at month-end (percent per annum), and the natural logarithm of the end-of-period IDR/USD rate. Augmented Dickey–Fuller tests, Johansen cointegration, a rank-one VECM corresponding to a level VAR(2), heteroskedasticity-consistent inference, residual diagnostics, and generalized impulse responses with 1,000 wild-bootstrap replications are applied.

Findings: All three variables are $I(1)$, providing an internally consistent basis for the Johansen/VECM analysis. The Johansen trace and maximum-eigenvalue tests identify one cointegrating relation. The error-correction term is significant in the inflation and policy-rate equations but not in the exchange-rate equation. No cross-variable short-run Granger-predictive effect is significant at 5 percent. Generalized responses show persistent own shocks and positive policy-rate responses to inflation and exchange-rate innovations, but several cross-responses have wide confidence intervals. Serial-correlation and stability checks are satisfactory; non-normality and inflation-equation ARCH motivate robust inference.

Conclusion: The evidence supports a shared long-run equilibrium with adjustment concentrated in inflation and the policy rate, while the rupiah is comparatively weakly endogenous to this three-variable domestic system. For firms, banks, and investors, the results support integrated inflation–interest-rate–currency scenarios, refinancing discipline, and explicit foreign-exchange hedging rather than single-indicator forecasts.

Keywords: Inflation; Policy Interest Rate; Exchange Rate; VECM; Corporate Financial Management.

Submitted: 24-02-2026

Revised: 19-08-2026

Accepted: 16-10-2026

Article Doi:

http://dx.doi.org/10.22441/jurnal_mix.2026.v16i3.003

INTRODUCTION

Indonesia experienced materially different macro-financial episodes between January 2010 and December 2024: post-global-financial-crisis normalization, repeated periods of rupiah pressure, the August 2016 shift from the BI Rate to the BI 7-Day Reverse Repo Rate, the COVID-19 shock, and the subsequent inflation and monetary-tightening cycle. Extending the sample through 2024 captures both the pandemic dislocation and the later return of inflation and the policy rate toward more conventional ranges, providing a broader basis for studying persistence and adjustment.

Inflation, the policy interest rate, and the exchange rate jointly shape business conditions. Inflation erodes purchasing power, raises nominal working-capital requirements, and can alter required returns. Policy tightening changes debt-service costs, loan repricing, hurdle rates, bank asset quality, and the timing of capital expenditure. Rupiah depreciation affects imported-input costs, foreign-currency liabilities, competitiveness, collateral values, and hedging demand. Their interaction is therefore simultaneously a monetary-policy question and a corporate-finance and risk-management question.

The central empirical issue is not simply whether the three variables are correlated. It is whether Bank Indonesia's policy-rate path responds predictively to inflation, exchange-rate movements, or both; whether inflation responds to changes in financing conditions and currency costs; and whether the rupiah is explained by the two domestic variables or instead reflects omitted external forces. The distinction between short-run prediction, long-run equilibrium correction, and dynamic shock responses is essential because each has a different managerial interpretation.

Open-economy theory suggests competing channels. A policy reaction to inflation implies a positive inflation-to-rate relationship, whereas monetary transmission predicts that tighter financial conditions eventually restrain inflation. Purchasing-power-parity reasoning links higher relative prices to currency depreciation in the long run. Yet interest-rate increases may either support the currency through yield and capital-flow channels or coincide with depreciation when the central bank reacts to adverse risk or currency shocks. Consequently, signs must be evaluated empirically rather than imposed as structural causal effects.

Prior evidence also points to conditional transmission. Exchange-rate pass-through differs across inflation environments and pricing regimes (Choudhri & Hakura, 2006; Gopinath et al., 2010). For ASEAN economies, Widarjono et al. (2023) document incomplete and asymmetric pass-through, with depreciation effects stronger than appreciation effects. Prabheesh and Rahman (2019) find that Indonesia's exchange-rate channel and global oil prices can be more influential than a conventional lending channel, while Beirne et al. (2024) show that external shocks matter for pass-through in emerging Asia. Evidence published in MIX also links the same macro-financial variables to capital-market outcomes: Subhan (2024) reports that inflation moderates the effects of interest rates and exchange rates on the Indonesian composite index, whereas Marjohan (2023) examines inflation and rupiah movements in relation to stock prices with dividends as a moderator. These results motivate a system approach while also cautioning against treating a parsimonious domestic model as complete.

This study contributes in two ways. Empirically, it re-estimates the full sequence from stationarity through cointegration, VECM adjustment, short-run restrictions, diagnostics, and generalized impulse responses using a verified 180-month dataset through December 2024. Managerially, it translates the findings into financing, hedging, liquidity, investment, and banking-risk decisions. The generalized response design avoids recursive ordering sensitivity, and heteroskedasticity-consistent inference plus wild-bootstrap intervals address distributional weaknesses detected in the residuals.

Accordingly, the study asks five measurable questions: (1) are inflation, the policy rate, and $\ln(\text{IDR/USD})$ integrated of the same order; (2) does the system contain a statistically supported long-run cointegrating relation; (3) which equations adjust significantly when the system departs from that relation; (4) do lagged changes in any variable Granger-predict changes in another in the short run; and (5) how do the three variables respond over 10 months to generalized one-standard-deviation innovations, and what do those responses imply for corporate financial management?.

LITERATURE REVIEW AND CONCEPTUAL DEVELOPMENT

Open-economy monetary mechanisms

The Mundell–Fleming framework links monetary conditions, international capital flows, and the exchange rate in a small open economy. With exchange-rate flexibility, tighter monetary conditions can attract interest-sensitive capital and support the currency, but the observed response can reverse when tightening is endogenous to risk, inflation, or depreciation shocks. Purchasing power parity provides a long-run price–currency benchmark: higher domestic prices relative to foreign prices tend to be associated with nominal depreciation, although adjustment can be slow and incomplete (Taylor & Taylor, 2004). The Fisher relation further connects nominal interest rates with expected inflation, while modern policy rules imply a reaction of the policy rate to inflation and broader macro-financial conditions.

Transmission to firms, banks, and investors

Macroeconomic transmission affects corporate decisions through cash flows and discount rates. Higher policy rates raise the marginal cost of debt and can reduce investment, especially where external-finance premia are material (Bernanke & Gertler, 1995; Gertler & Gilchrist, 1994). Exchange-rate changes affect operating margins and balance-sheet exposure; firms use derivatives and operational hedges to manage foreign-currency risk (Allayannis & Ofek, 2001; Bartram et al., 2010). For banks, simultaneous rate and currency movements influence funding costs, borrower repayment capacity, market risk, and the quality of foreign-currency credit. Consistent with this channel, Zulkifli and Eliza (2018) find that the exchange rate, together with bank-specific and monetary variables, helps explain the net interest margins of Indonesian listed banks. For investors, the three variables affect expected earnings, valuation discount rates, and country-risk premia.

Empirical evidence and research gap

Exchange-rate pass-through is incomplete and depends on the inflation environment, currency of invoicing, and price-setting behavior (Choudhri & Hakura, 2006; Gopinath et al.,

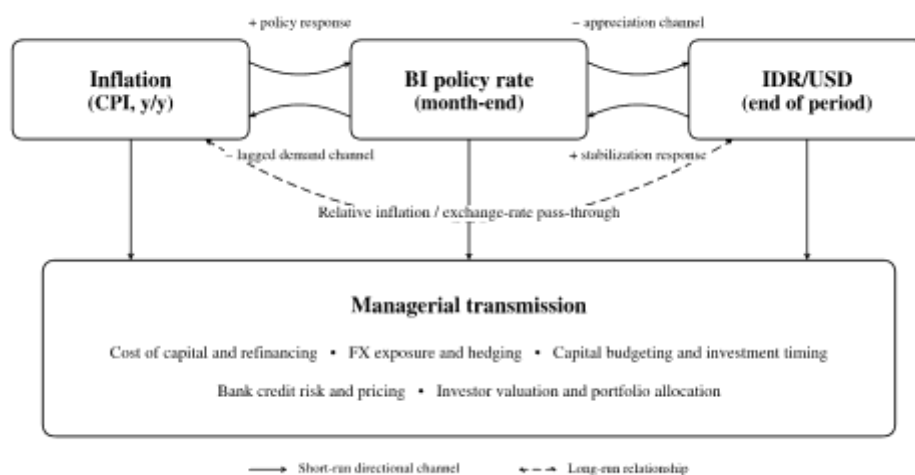
2010). Ito and Sato (2008) show heterogeneous pass-through across post-crisis Asian economies. Widarjono et al. (2023) find asymmetric pass-through in selected ASEAN economies, with Indonesia displaying comparatively strong depreciation pass-through. Beirne et al. (2024) report that pass-through in emerging Asia has declined since 2010 and remains exposed to global oil prices, output, U.S. interest rates, and risk sentiment. For Indonesia, Prabheesh and Rahman (2019) highlight a relatively weak lending channel alongside relevant exchange-rate and oil-price effects. At the market–real-economy interface, Hismendi et al. (2021) identify sector-dependent short- and long-run links between Indonesian stock markets and economic growth, supporting a differentiated rather than one-size-fits-all investor interpretation.

The literature therefore does not support a single mechanical direction at every horizon. Inflation may elicit policy tightening, yet the disinflationary response may be delayed; depreciation may raise prices through imported inputs, while policy may respond to both inflation and currency pressure; and the rupiah may react more strongly to global forces than to lagged domestic variables. The empirical gap is to separate these long-run, short-run, and shock-response dimensions in one current Indonesian sample while stating the limits of a three-variable system.

Testable expectations and conceptual framework

The conceptual model allows six directional short-run channels among inflation, the policy rate, and $\ln(\text{IDR/USD})$, while the cointegrating relation captures their shared long-run equilibrium. Expected signs are theory-guided but not imposed: inflation is expected to prompt a positive policy response; tighter policy is expected to restrain inflation only with a lag; rupiah depreciation is expected to raise inflation through pass-through; and the policy-rate–currency link is ambiguous because capital-flow and endogenous policy-reaction channels can offset each other. Equation-specific error-correction coefficients identify which variables bear the burden of restoring equilibrium.

Figure 1. Conceptual framework: short-run links, long-run equilibrium, and managerial channels



METHOD

Data and variable construction

The analysis uses 180 monthly observations from January 2010 through December 2024. Inflation is headline all-items Consumer Price Index inflation measured as the published year-on-year percentage change. The policy rate is the prevailing rate at month-end, in percent per annum: the BI Rate through July 2016, the BI 7-Day Reverse Repo Rate from August 2016, and the same instrument under the BI-Rate name from December 2023. The exchange rate is end-of-period rupiah per U.S. dollar; an increase denotes rupiah depreciation. Its natural logarithm, $\ln(\text{IDR/USD})$, enters the model to scale proportional exchange-rate movements.

The data file records, for every month, Bank Indonesia's historical inflation table, policy-rate history, and SEKI Table V.40 exchange-rate source URLs. The long historical series was compiled from IMF IFS/CPI re-dissemination and reconciled to Bank Indonesia and Statistics Indonesia releases. Published official year-on-year inflation observations were used around the 2013, 2020, and 2024 CPI-base changes to avoid spurious ratios across index splices. All 180 rows contain complete core values, and annual December checks reconcile to the official BI/BPS anchors. The analysis does not use monthly inflation or a JISDOR monthly-average exchange rate.

Econometric specification

The Augmented Dickey–Fuller (ADF) test is applied to each series in levels and first differences with an intercept. The lag is selected by the Akaike information criterion (AIC) from zero to 12 monthly lags. The VECM is admissible only if the variables share the $I(1)$ order. Level-VAR lag candidates from one to 12 are evaluated by AIC, Bayesian information criterion (BIC), and Hannan–Quinn information criterion (HQIC). AIC and HQIC select two level lags; accordingly, the VECM includes one lag of first differences.

Johansen trace and maximum-eigenvalue tests are conducted with one differenced lag and an intercept restricted to the cointegrating relation. The cointegration rank is chosen sequentially at the 5 percent level. With rank $r = 1$, the model is written as $\Delta y_t = \alpha \beta' y_{t-1} + \Gamma_1 \Delta y_{t-1} + u_t$, where $y_t = [\text{inflation}, \text{policy rate}, \ln(\text{IDR/USD})]'$. The error-correction term $\beta' y_{t-1}$ measures deviation from the long-run relation, and α reports equation-specific adjustment. Short-run Granger predictability is evaluated by Wald tests on the lagged differenced cross-variable coefficients. These tests indicate predictive content, not structural causality.

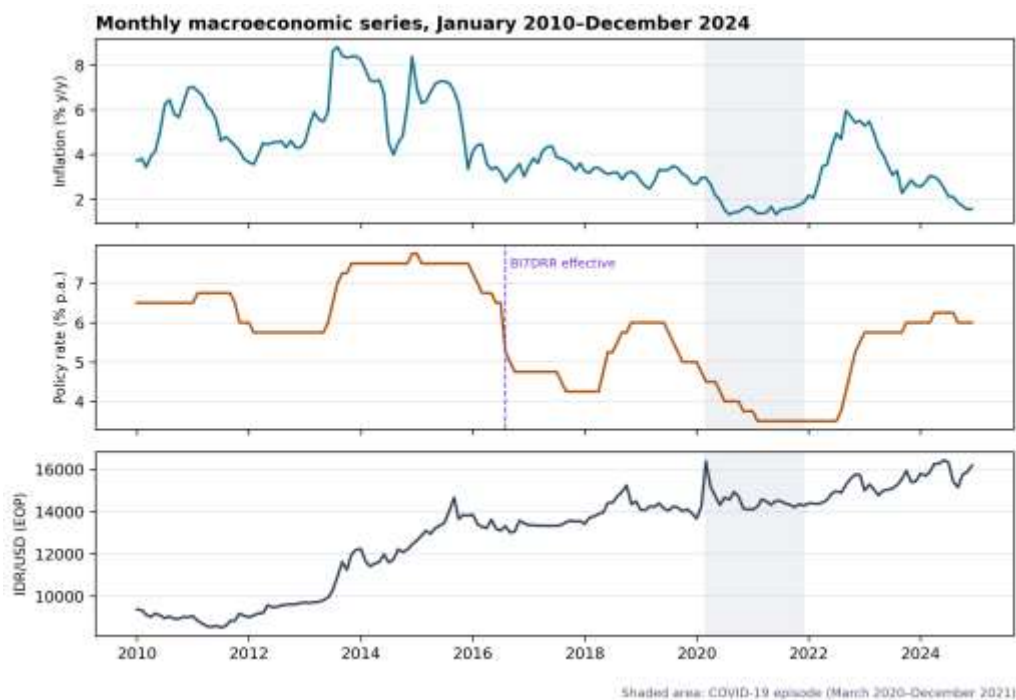
Coefficient inference uses HC1 heteroskedasticity-consistent standard errors. Dynamic effects are summarized with generalized impulse responses (Pesaran & Shin, 1998), which are invariant to recursive Cholesky ordering. Responses to one-standard-deviation innovations are traced for 10 months, and 95 percent intervals are obtained from 1,000 successful wild-bootstrap replications. Diagnostics comprise the adjusted Portmanteau Q test at lag 12, companion-matrix roots, an omnibus residual-normality test, and equation-level ARCH-LM tests at lag 12 (Lütkepohl, 2005).

RESULTS AND DISCUSSION

Descriptive evidence

Figure 2 displays the same complete monthly sample used in estimation. Inflation was elevated in 2013–2015, declined during the pandemic, rose again in 2022, and moderated through 2024. The policy rate shows extended plateaus interrupted by easing and tightening cycles, including the 2016 instrument transition. The IDR/USD rate exhibits a long-run upward level with pronounced stress episodes, including 2020 and 2024. These patterns suggest persistence and common macro-financial episodes, but they do not by themselves establish causality.

Figure 2. Monthly inflation, policy rate, and IDR/USD exchange rate, January 2010–December 2024



Stationarity and lag selection

Table 1. Augmented Dickey–Fuller unit-root tests

Variable	Level ADF	Lag	First-difference ADF	Lag	Order
Inflation (% y/y)	-1.155	12	-6.604	11	I(1)
Policy rate (% p.a.)	-1.883	2	-5.921	1	I(1)
ln(IDR/USD)	-1.062	0	-14.056	0	I(1)

Notes: Intercept included; lag selected by AIC, maximum 12. The approximate 5% critical value is -2.88 . Each level statistic fails to reject a unit root, whereas every first-difference statistic rejects it.

All three level statistics are less negative than the 5 percent critical value, whereas the first-difference statistics are substantially more negative. Inflation, the policy rate, and $\ln(\text{IDR/USD})$ are therefore consistently classified as $I(1)$. The maintained integration order now matches both the reported ADF evidence and the subsequent Johansen/VECM framework.

Table 2. Level-VAR lag selection

Lag	AIC	BIC	HQIC
1	-12.4339	-12.2202*	-12.3473
2	-12.5608*	-12.1854	-12.4085*
3	-12.5484	-12.0101	-12.3301
4	-12.4563	-11.7538	-12.1714
5	-12.3528	-11.4847	-12.0007
6	-12.3268	-11.2919	-11.9070

Note: * denotes the minimum among the displayed candidates. Searches through 12 lags also selected $p = 2$ by AIC/HQIC and $p = 1$ by BIC. The estimated VECM therefore uses one lag of first differences (level VAR $p = 2$).

Cointegration and long-run adjustment

Table 3. Johansen cointegration tests

Null	Eigenvalue	Trace	Trace 5%	Max-eigen	Max-eigen 5%
$r = 0$	0.1193	30.359	29.796	22.603	21.131
$r \leq 1$	0.0365	7.755	15.494	6.617	14.264
$r \leq 2$	0.0064	1.138	3.841	1.138	3.841

Note: Both tests reject $r = 0$ but do not reject $r \leq 1$ at 5%; the selected cointegration rank is one.

The trace statistic for no cointegration is 30.359, above its 5 percent critical value of 29.796; the maximum-eigenvalue statistic is 22.603, above 21.131. Neither test rejects the next null. Thus, the three $I(1)$ variables share one statistically supported long-run relation. With inflation normalized to one, the estimated cointegrating vector is $\text{ECT}_{t-1} = \text{inflation}_{t-1} - 0.7571 \text{ policy rate}_{t-1} + 3.7388 \ln(\text{IDR/USD})_{t-1} - 35.0715$. This normalization is a statistical equilibrium representation; its individual coefficients are not interpreted as structural elasticities.

Table 4. VECM estimates with HC1 robust inference

Dependent Δ variable	Regressor	Coefficient	HC1 SE	p-value
Inflation	ECT_{t-1}	-0.0917***	0.0298	0.002
Inflation	$\Delta \text{Inflation}_{t-1}$	0.3001**	0.1237	0.015
Inflation	$\Delta \text{Policy rate}_{t-1}$	0.1676	0.2080	0.420
Inflation	$\Delta \ln(\text{IDR/USD})_{t-1}$	0.0095	1.3961	0.995

Dependent Δ variable	Regressor	Coefficient	HC1 SE	p-value
Policy rate	ECT_{t-1}	0.0315***	0.0103	0.002
Policy rate	$\Delta Inflation_{t-1}$	0.0295	0.0224	0.188
Policy rate	$\Delta Policy\ rate_{t-1}$	0.3566***	0.0848	<0.001
Policy rate	$\Delta \ln(IDR/USD)_{t-1}$	0.4696	0.3587	0.190
$\ln(IDR/USD)$	ECT_{t-1}	0.0009	0.0017	0.614
$\ln(IDR/USD)$	$\Delta Inflation_{t-1}$	0.0042	0.0037	0.262
$\ln(IDR/USD)$	$\Delta Policy\ rate_{t-1}$	0.0105	0.0121	0.388
$\ln(IDR/USD)$	$\Delta \ln(IDR/USD)_{t-1}$	-0.0718	0.1325	0.588

Notes: ** $p < .05$; *** $p < .01$. The restricted constant is contained in the cointegrating relation. Coefficient scale for the exchange-rate equation is change in $\ln(IDR/USD)$.

The ECT is negative and significant in the inflation equation (-0.0917 , $p = 0.002$), implying that approximately 9.2 percent of a positive equilibrium deviation is removed through monthly inflation adjustment, conditional on the chosen normalization. The policy-rate loading is positive and significant (0.0315 , $p = 0.002$); because the policy coefficient in β is negative, this response also moves the system back toward equilibrium. The exchange-rate loading is small and insignificant (0.0009 , $p = 0.614$). Long-run adjustment is therefore equation specific: it is borne by inflation and the policy rate, not demonstrably by the rupiah.

Short-run Granger predictability

Table 5. Short-run cross-variable Wald tests

Direction	Lagged-change coefficient	Wald $\chi^2(1)$	p-value	Null at 5%
Policy rate $\rightarrow$ inflation	0.1676	0.649	0.420	Not rejected
$\ln(IDR/USD) \rightarrow$ inflation	0.0095	0.000	0.995	Not rejected
Inflation $\rightarrow$ policy rate	0.0295	1.733	0.188	Not rejected
$\ln(IDR/USD) \rightarrow$ policy rate	0.4696	1.714	0.190	Not rejected
Inflation $\rightarrow \ln(IDR/USD)$	0.0042	1.259	0.262	Not rejected
Policy rate $\rightarrow \ln(IDR/USD)$	0.0105	0.746	0.388	Not rejected

Note: The null is that the lagged change in the source variable does not enter the destination equation. HC1 robust one-restriction Wald tests; hence $\chi^2 = z^2$.

None of the six cross-variable restrictions is significant at 5 percent. The policy-rate change does not Granger-predict inflation ($p = 0.420$), inflation does not predict the policy-rate change ($p = 0.188$), and exchange-rate changes do not predict either inflation ($p = 0.995$) or the policy rate ($p = 0.190$) at the selected lag. Neither inflation nor the policy rate predicts exchange-rate changes ($p = 0.262$ and $p = 0.388$). The 2010–2024 results therefore do not

support a bidirectional short-run causal interpretation. Instead, the most reliable connection operates through long-run error correction in the inflation and policy-rate equations.

The absence of short-run exchange-rate predictability within the domestic system is consistent with the possibility that global rates, U.S. dollar conditions, commodity prices, capital flows, and risk sentiment dominate monthly rupiah innovations. It does not imply that exchange-rate risk is immaterial. Rather, it argues against using domestic inflation or the policy rate as stand-alone short-horizon currency forecasts.

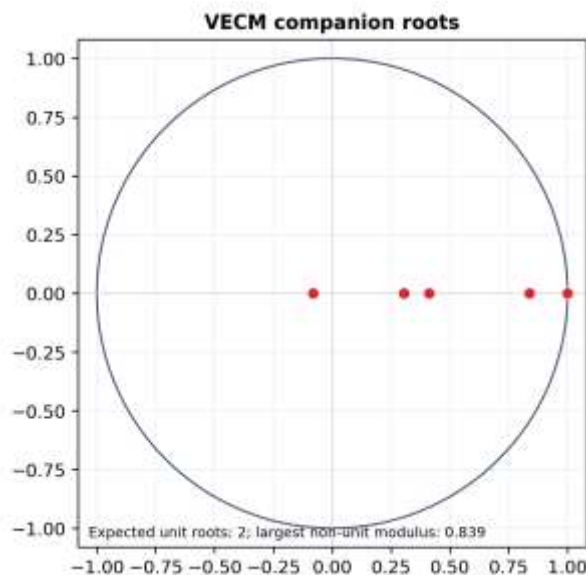
Diagnostics and robustness

Table 6. VECM diagnostic tests

Diagnostic	Statistic	df	p-value	Conclusion
Adjusted Portmanteau Q(12)	107.076	96	0.207	No residual serial correlation
Largest non-unit root modulus	0.839	—	—	Stable conditional dynamics
Omnibus normality	3758.058	6	<0.001	Normality rejected
ARCH-LM(12): inflation	29.609	12	0.003	ARCH detected
ARCH-LM(12): policy rate	1.104	12	1.000	No ARCH detected
ARCH-LM(12): ln(IDR/USD)	8.572	12	0.739	No ARCH detected

Notes: With $K = 3$ and $r = 1$, two unit roots are expected in the VECM level representation. The remaining roots lie inside the unit circle. HC1 standard errors and wild-bootstrap intervals are used because normality is rejected and the inflation equation exhibits ARCH.

Figure 3. Companion-matrix roots and VECM stability



The adjusted Portmanteau test does not reject residual serial independence ($p = 0.207$). The four non-unit roots have moduli below one, with the largest equal to 0.839, while the two unit roots are expected from $K - r = 2$ common stochastic trends. Conditional dynamics are therefore stable. However, residual normality is strongly rejected, and ARCH is detected in the inflation equation. These findings rule out a blanket claim of ideal Gaussian errors; they motivate the robust and bootstrap procedures used for inference.

Generalized impulse responses

Figure 4. Generalized impulse responses over 10 months with 95% wild-bootstrap intervals

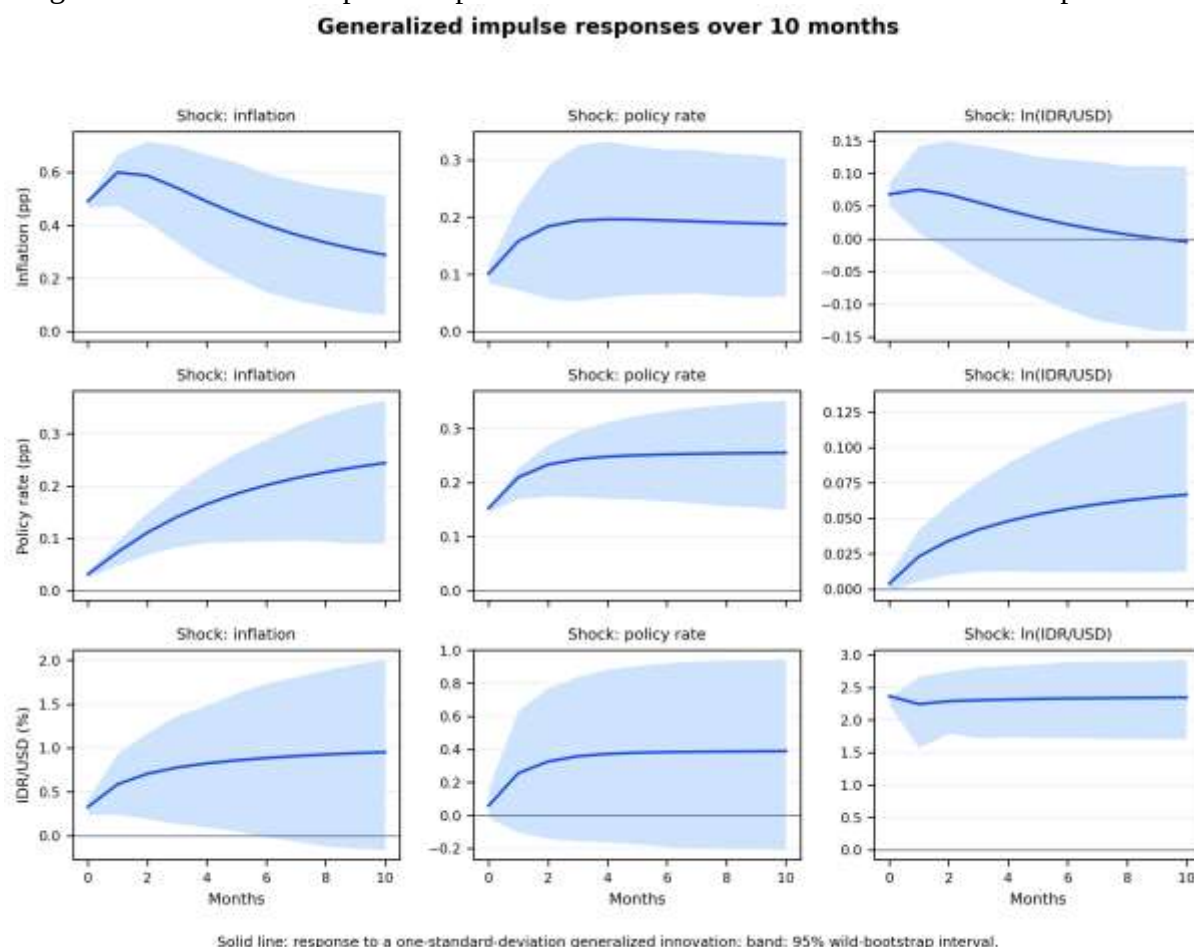


Figure 4 presents explicit variable names. Rows identify the responding variable and columns the generalized innovation. Inflation's own shock remains positive but declines gradually. A policy-rate innovation is followed by a positive inflation response with a wide interval; this 'price-puzzle' pattern is not evidence that tighter policy causes inflation, because generalized innovations are non-structural and policy can react contemporaneously to unobserved inflation news. The inflation response to an exchange-rate innovation fades toward zero and becomes imprecisely estimated.

The policy rate responds positively to inflation and exchange-rate innovations and also exhibits persistent own dynamics. These responses are directionally consistent with a monetary authority reacting to price and currency pressure, but the short-run Wald tests show that lagged cross-variable changes do not add statistically significant predictive content at the selected lag. The exchange rate responds positively to an inflation innovation, yet its interval widens and approaches zero; its response to a policy-rate innovation is particularly uncertain. The own exchange-rate shock is persistent, reinforcing the importance of direct currency-risk controls.

Discussion

Taken together, the findings show that long-run coordination can coexist with weak one-month predictive transmission. The single cointegrating relation means that the three series do not drift independently without bound, but the significant adjustment coefficients only in the inflation and policy-rate equations show that equilibrium restoration is asymmetric. Inflation and the policy rate absorb departures from the long-run relation, whereas the rupiah is weakly exogenous with respect to this adjustment mechanism. This pattern is consistent with an open-economy setting in which domestic prices and the monetary-policy instrument respond to disequilibrium while the exchange rate remains strongly exposed to external monetary conditions, commodity prices, capital flows, and risk sentiment (Prabheesh & Rahman, 2019; Beirne et al., 2024). Cointegration should therefore be read as evidence of a shared stochastic equilibrium, not as proof of a fixed structural causal chain.

The estimated speed of adjustment also indicates gradual rather than immediate correction. The inflation loading implies that about 9.2 percent of a positive equilibrium deviation is corrected through the inflation equation each month, while the policy-rate loading moves the system toward equilibrium under the reported normalization. These equation-specific responses are compatible with a policy authority that reacts to persistent price and currency pressure, but they do not imply that a higher policy rate mechanically raises inflation. The positive inflation response following a generalized policy-rate innovation is better interpreted as a price-puzzle pattern: policy innovations can contain contemporaneous information about expected inflation that is omitted from the three-variable model. The wide bootstrap interval and the insignificant lagged policy-rate coefficient in the inflation equation reinforce the need for this cautious interpretation.

The short-run Wald results further distinguish economic relevance from incremental forecastability. At the selected lag, none of the six lagged cross-variable changes adds statistically significant predictive content after the error-correction term and each variable's own dynamics are included. This result does not contradict evidence that inflation, interest rates, and the rupiah matter for financial outcomes. Subhan (2024) and Marjohan (2023), for example, examine how these variables are associated with Indonesian stock-market outcomes, while Zulkifli and Eliza (2018) relate monetary, exchange-rate, and bank-specific factors to net interest margins. Their dependent variables, horizons, and empirical designs differ from the present macroeconomic VECM. The comparison suggests that macro conditions can affect valuation and bank margins even when direct month-to-month Granger links among the three macro variables are not stable.

The exchange-rate findings likewise qualify a simple pass-through narrative. The insignificant exchange-rate adjustment coefficient, persistent own-shock response, and

imprecise responses to domestic inflation and policy-rate innovations indicate that the rupiah does not reliably close disequilibrium within this restricted system. At the same time, the near-zero one-lag coefficient from exchange-rate changes to inflation should not be interpreted as evidence that pass-through is absent. Prior studies show that pass-through is incomplete, delayed, state dependent, and asymmetric across inflation environments and Asian economies (Choudhri & Hakura, 2006; Gopinath et al., 2010; Widarjono et al., 2023). Year-on-year inflation, aggregate prices, a linear specification, and a single lag of first differences may therefore mask sectoral or nonlinear responses that emerge at other horizons.

Managerial interpretation

For corporate treasurers, the equation-specific results favor integrated scenario analysis over single-variable forecasts. Because inflation and the policy rate adjust to the long-run disequilibrium while the exchange rate does not, foreign-currency exposures should be hedged on their own merits rather than presumed to mean-revert through domestic policy. Firms with floating-rate debt should combine refinancing calendars and interest-rate sensitivity with inflation-driven working-capital stress. Importers and foreign-currency borrowers should test simultaneous depreciation and rate-tightening scenarios, while exporters should evaluate margin effects rather than treating depreciation as an unqualified gain.

For banks, positive generalized policy responses to inflation and currency shocks imply that credit-risk stress tests should allow macro shocks to affect both borrower cash flow and funding costs. For investors, the lack of significant monthly cross-Granger effects suggests caution in converting a single inflation or policy-rate release into a short-run rupiah trading signal. Macroeconomic signals should complement, rather than replace, firm-specific assessment because corporate governance quality and profitability are also associated with firm value in Indonesia (Mariana et al., 2020). The management contribution is thus a disciplined mapping from macroeconomic adjustment to financing, liquidity, hedging, and valuation decisions, not a claim of exploitable structural causality.

CONCLUSIONS

Using 180 monthly observations through December 2024, the revised analysis establishes a coherent empirical sequence. ADF tests classify inflation, the policy rate, and $\ln(\text{IDR/USD})$ as $I(1)$. Johansen trace and maximum-eigenvalue tests identify one cointegrating relation. The error-correction term is significant in the inflation and policy-rate equations, but not in the exchange-rate equation. Thus, long-run adjustment is present but equation specific.

No lagged cross-variable change is significant at 5 percent in the short-run VECM equations. The evidence therefore does not support bidirectional inflation–policy-rate causality or a short-run exchange-rate influence on policy. Generalized 10-month responses reveal persistent own innovations and policy-rate responses to inflation and currency shocks, but several cross-responses are imprecise and cannot be interpreted as structural causal effects. Serial-correlation and conditional-stability checks are satisfactory; non-normality and inflation ARCH are handled with HC1 inference and wild-bootstrap intervals.

Managerial and policy implications

Corporate financial managers should monitor inflation, funding rates, and currency exposure jointly, but should not rely on a deterministic monthly transmission chain. Recommended practices include debt-maturity and repricing maps, liquidity buffers for inflation-driven working-capital needs, layered hedging for contracted foreign-currency cash flows, and stress tests that combine depreciation with higher domestic rates. Bank risk managers should incorporate both borrower cash-flow and funding-cost channels. Policy interpretation should distinguish a statistically supported long-run equilibrium from weak short-run predictive links.

Limitations and directions for future research

The model contains only three domestic variables. It omits U.S. interest rates, broad-dollar conditions, oil and commodity prices, capital flows, reserves, trade balances, output, fiscal shocks, and risk sentiment. The sample also spans a policy-instrument change, COVID-19, subsequent tightening, and CPI-base revisions. Although the dataset reconciles official anchors and published inflation values are used around base changes, these regime features may generate structural breaks. Residual non-normality and inflation-equation ARCH remain even after robust inference. Finally, generalized impulse responses are ordering invariant but not structurally identified. Future work should compare VARX, structural VAR, nonlinear or threshold pass-through, time-varying-parameter models, and formal break-adjusted specifications.

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