



Review Article

Monetary Policy Transmission in the Real Economy: A Cross-Country Comparison of Developed and Emerging Economies

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Abstract

Monetary policy transmission varies systematically across development levels, yet empirical evidence on the magnitude and mechanisms of this heterogeneity remains fragmented. This paper examines cross-country differences in transmission strength by comparing empirical proxy structural vector autoregression (SVAR) estimates with predictions from a calibrated New Keynesian dynamic stochastic general equilibrium (DSGE) model. Using World Bank macroeconomic data for eleven economies from 2000 to 2023, five advanced economies (the United States, Germany, Japan, the United Kingdom, and France) and six emerging economies (Brazil, India, South Africa, Mexico, Indonesia, and Nigeria), we isolate exogenous lending rate shocks using Taylor-rule residuals as external instruments within a proxy SVAR framework. We benchmark the resulting impulse responses against a Gertler-Karadi banking model with financial frictions, calibrated separately for advanced and emerging economy parameters. Three main findings emerge. First, proxy SVAR identification attenuates the price puzzle and recovers transmission patterns that recursive Cholesky ordering obscures. Second, transmission is stronger in emerging economies: a 100-basis-point tightening raises unemployment by 0.27 percentage points at the seven-year horizon, compared with 0.09 percentage points in advanced economies. Third, the DSGE model systematically overpredicts transmission strength; for developed-economy unemployment, proxy SVAR recovers an empirical response magnitude 72 times larger than Cholesky identification, substantially narrowing the model-empirical gap. Nigeria illustrates structurally impaired transmission, where private credit at 11 percent of GDP proves insufficient to support conventional credit channels. These findings indicate that monetary policy alone cannot stabilize financially shallow economies. The paper informs the design of complementary policy frameworks that integrate interest rate policy with macroprudential instruments, capital flow management, and sequenced financial deepening strategies tailored to local institutional capacity.

Keywords

Monetary Policy Transmission, Proxy SVAR, Emerging Markets, Financial Frictions, DSGE Model, Nigeria

1. Introduction

The transmission of monetary policy from central bank decisions to real economic outcomes remains one of the most

consequential questions in macroeconomics. While the theoretical architecture is well established, the empirical mapping

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from policy instruments to aggregate demand and inflation exhibits striking heterogeneity across countries, a divergence that is particularly pronounced when comparing advanced economies with well-developed financial markets against emerging economies where institutional frictions, shallow financial intermediation, and external vulnerability attenuate policy potency. Understanding these cross-country differences is not merely academic: for central banks in emerging markets, the effectiveness of monetary policy determines whether inflation targeting can deliver price stability and whether countercyclical interest rate adjustments can stabilize output. The stakes are elevated further in low-income countries, where the absence of robust transmission channels may render conventional monetary policy largely ineffective.

This paper examines monetary policy transmission through a systematic cross-country comparison of developed and emerging economies, with particular attention to Nigeria as a representative case of a resource-dependent, financially shallow economy. Our empirical analysis draws on World Bank macroeconomic data spanning 2000–2023 for five advanced economies the United States, Germany, Japan, the United Kingdom, and France and six emerging economies: Brazil, India, South Africa, Mexico, Indonesia, and Nigeria. By juxtaposing empirical impulse responses with predictions from a calibrated structural model, we address a central tension in the literature: the extent to which theoretically calibrated transmission channels align with observed data, and whether discrepancies between model predictions and empirical estimates can be rationalized by cross-country differences in financial development.

The modern theory of monetary policy transmission rests on nominal rigidities that grant monetary policy temporary leverage over real variables. The Bank of England [2] distinguishes between a "first stage" of transmission, in which policy rates propagate to broader financial conditions, and a "second stage," in which these conditions feed into aggregate demand and inflation. The speed and strength of each stage depend critically on structural characteristics. The conventional interest rate channel operates through intertemporal substitution and cash-flow effects: when a central bank raises its policy rate, arbitrage along the yield curve transmits this increase to longer-term nominal rates, and with sluggish price adjustment, real rates rise correspondingly. Higher real rates increase the opportunity cost of current consumption and investment, depressing aggregate demand. The potency of this channel depends on the elasticity of intertemporal substitution, the share of durable goods in consumption, and the prevalence of adjustable-rate debt contracts.

Beyond the interest rate channel, the credit channel recognized since Bernanke and Gertler [4]—operates through bank lending and balance sheet mechanisms. The bank lending channel posits that monetary tightening reduces the supply of reservable deposits, contracting banks' loanable funds, while the balance sheet channel operates through the impact of interest rate changes on borrowers' net worth and cash flow.

This credit channel is inherently state-dependent: during financial downturns, the amplification of monetary policy through financial frictions intensifies. Gertler and Karadi [9] demonstrate that this financial accelerator mechanism is quantitatively important, with credit cost responses to monetary policy shocks substantially larger than predicted by standard New Keynesian models without financial frictions. Yet the central empirical challenge in estimating these effects is that central banks do not set interest rates randomly. Observed rate changes are a mixture of systematic reactions to economic conditions and genuine policy shocks, an endogeneity problem that generates the "price puzzle" in standard VARs inflation appears to rise after a contractionary shock because the shock is misidentified.

Recent methodological advances have fundamentally reshaped how researchers approach this identification problem. Jarociński and Karadi [10] demonstrate that central bank announcements simultaneously convey information about both monetary policy and the central bank's assessment of the economic outlook. They show that a surprise policy tightening raises interest rates and reduces stock prices, while a complementary positive central bank information shock raises both. Ignoring these information shocks biases inference on monetary policy non-neutrality, potentially explaining why standard identification strategies yield puzzling results. Their decomposition relies on the high-frequency co-movement of interest rates and stock prices around policy announcements, a strategy that has become influential in subsequent work. Building on this, Miranda-Agrippino and Ricco [13] propose a new high-frequency instrument for monetary policy shocks that explicitly accounts for informational rigidities, demonstrating that commonly used instruments combine the true policy shock with information about the state of the economy. Their instrument yields unequivocally contractionary effects of monetary tightening, with deterioration of domestic demand, labor and credit market conditions, as well as asset prices and agents' expectations. Bauer and Swanson [3] provide a complementary reassessment, documenting that high-frequency monetary policy surprises around FOMC announcements are significantly correlated *ex post* with publicly available information prior to the announcement. Their orthogonalized surprise measures residuals from regressing raw surprises on relevant predictors offer cleaner measures of exogenous policy changes, reinforcing the importance of purging systematic components from observed rate changes, a principle that underlies our use of Taylor-rule residuals as proxy instruments.

For advanced economies, VAR studies following Christiano, Eichenbaum, and Evans [6] have established that monetary policy shocks generate hump-shaped output responses peaking after approximately one year, with inflation responding more sluggishly. The bank lending and balance sheet channels have received robust support, though recent evidence suggests that transmission potency may be evolving as mortgage markets shift from variable-rate to fixed-rate contracts

and as the rising share of services reduces aggregate sensitivity to interest rates. The interaction between monetary policy and housing markets has become a central concern, particularly since the global financial crisis revealed how fluctuations in real estate prices can destabilize the broader economy. Eickmeier and Hofmann [7] document that housing plays a pivotal role in the monetary transmission mechanism via the housing wealth effect, changes in the cost of borrowing, and the collateral channel. Countries exhibiting strong responses of house prices also show strong reactions of output, consumption, and inflation, demonstrating that housing markets not only transmit but amplify monetary policy effects. This amplification is particularly pronounced in economies with high loan-to-value ratios, greater shares of adjustable-rate mortgages, and higher household leverage.

The empirical landscape for emerging economies stands in sharp contrast. Mishra and Montiel [14] conclude that "it is hard to come away from this review with much confidence in the strength of monetary transmission in such countries," an assessment that reflects both structural features that genuinely impede transmission and methodological deficiencies in existing studies. Four structural impediments stand out: shallow financial markets and limited bank competition undermine the bank lending channel; imperfect interest rate pass-through severs the first stage of transmission; heavy exchange rate management impairs the expenditure-switching channel; and weak institutional environments amplify financial frictions and raise the external finance premium. The international dimension of these constraints has received increasing attention. Rey [17] argues that the global financial cycle driven largely by U.S. monetary policy challenges the validity of the Mundellian trilemma, presenting evidence that U.S. monetary policy shocks are transmitted internationally and affect financial conditions even in inflation-targeting economies with large financial markets. This implies that flexible exchange rates are not sufficient to guarantee monetary autonomy in a world of large capital flows, a "dilemma" view suggesting that countries must choose between monetary policy independence and financial openness regardless of the exchange rate regime.

Kalemli-Özcan [11] provides direct evidence on this mechanism, showing that monetary policy divergence vis-à-vis the United States has larger spillover effects in emerging markets than advanced economies. U.S. monetary policy affects domestic credit costs in other countries through its effect on global investors' risk perceptions, and capital flows in and out of emerging markets are particularly sensitive to fluctuations in such risk perceptions, with direct effects on local credit spreads. Crucially, domestic monetary policy is ineffective in mitigating this effect because the pass-through of policy rate changes into short-term interest rates is imperfect a disconnect explained by changes in risk perceptions. Ahmed and Zlate [1] document the empirical magnitude of these spillovers, finding that U.S. monetary policy shocks significantly affect capital inflows and asset price movements in emerging market economies. Spillover effects are stronger during unconventional

monetary policy periods and greatest when announcements surprise markets with information on the future course of policy rates. Countries with stronger fundamentals higher real GDP growth, stronger current account positions, lower inflation, and lower shares of local debt held by foreigners experience smaller spillovers, suggesting that domestic structural conditions mediate the transmission of external shocks.

Nigeria exemplifies these challenges in concentrated form. With average inflation of 13.1% over 2000–2023 and lending rates averaging 17.3%, the Central Bank of Nigeria operates in an environment where high inflationary expectations and weak financial intermediation constrain policy effectiveness. The banking sector remains characterized by high interest margins and credit concentration in government securities rather than private sector lending. Nigeria's position in the global financial cycle amplifies these domestic constraints: as Kalemli-Özcan [11] demonstrates, emerging markets with imperfect interest rate pass-through and high sensitivity to global risk perceptions face a disconnect between policy rates and actual credit conditions. Nigeria's low financial depth broad money at 19.8% of GDP and private credit at 11.3% of GDP means that even when policy rates change, the credit channel cannot function effectively. The absence of robust bank lending and balance sheet mechanisms renders the economy particularly vulnerable to external financial shocks while simultaneously limiting the domestic central bank's ability to respond.

The limitations of conventional monetary policy in emerging markets have motivated growing interest in complementary instruments. Cerutti, Claessens, and Laeven [5] document the use and effectiveness of macroprudential policies across 119 countries over 2000–2013, finding that emerging economies use such policies most frequently, especially foreign-exchange-related instruments. Usage is generally associated with lower growth in credit, notably household credit, though effects are smaller in financially more developed and open economies. Importantly, macroprudential policies work less well in busts than in booms, suggesting they are primarily preventive tools. The interaction between macroprudential and monetary policy has become a central policy question: research summarized by the European Central Bank finds that macroprudential policies have a positive impact on financial stability, increasing the resilience of banks and borrowers and curbing excessive credit growth when intended. Financial stability mitigates the depth of recessions, with a positive impact on long-term growth, though tight credit constraints contribute negatively to the length of expansions. This trade-off between financial stability and growth is particularly relevant for emerging markets designing policy frameworks. Obstfeld [15, 16] provides a broader analytical framework, arguing that while emerging market economies able to exploit flexible exchange rates are better positioned than those fixing the rate, exchange rate changes alone do not insulate economies from foreign financial and monetary shocks. Financial globaliza-

tion worsens the trade-offs monetary policy faces in navigating multiple domestic objectives, raising the marginal value of additional tools. However, the availability of such tools is constrained by a "financial policy trilemma" the incompatibility of national responsibility for financial policy, international financial integration, and financial stability.

A final strand of literature motivates our comparison of empirical estimates with DSGE model predictions. Gertler and Karadi [9] analyze the joint response of economic activity and credit costs to exogenous monetary policy surprises, combining traditional VAR analysis with a structural banking model. Their framework, which emphasizes the credit channel and the role of external finance premia, provides the theoretical foundation for our calibrated model. The systematic overprediction of monetary policy effects by standard DSGE models documented in our empirical analysis reflects the importance of omitted financing channels and the failure to account for cross-country heterogeneity in financial structure.

This paper addresses three interconnected questions. How do the strength and speed of monetary policy transmission differ systematically between developed and emerging economies, and what structural features account for these differences? To what extent do empirically estimated transmission channels align with the predictions of calibrated New Keynesian DSGE models? And what are the policy implications for central banks in emerging markets seeking to enhance monetary policy effectiveness? Our contributions are threefold. Methodologically, we combine proxy SVAR estimation with a calibrated DSGE model, enabling direct comparison of empirical and simulated impulse responses. The proxy SVAR approach, drawing on Mertens and Ravn [12], uses Taylor-rule residuals as external instruments to isolate exogenous policy shocks. This methodology directly addresses the identification challenges highlighted by Jarociński and Karadi [10] and Miranda-Agrippino and Ricco [13], providing estimates purged

of the information effects that bias standard identification strategies. Empirically, we provide new estimates of transmission channels for eleven countries, with Nigeria offering a particularly informative case study. Policy-wise, our results inform the design of monetary policy frameworks in emerging markets, highlighting the potential complementarity between interest rate policy, macroprudential tools, and capital flow management when conventional transmission channels are impaired a perspective informed by the trilemma–dilemma debate initiated by Rey [17] and the spillover analysis of Kalemli-Özcan [11].

2. Data and Stylized Facts

2.1. Data Sources and Sample

We employ annual macroeconomic data from the World Bank Development Indicators (WDI) database, compiled from officially recognized international sources including national statistical agencies, central banks, and international organizations. The sample period spans 2000–2023, encompassing 24 annual observations per country. This period captures the post-inflation targeting era, the Global Financial Crisis (2008–2009), the European sovereign debt crisis (2010–2012), the COVID-19 pandemic (2020–2021), and the post-pandemic inflation surge (2021–2023). The sample comprises eleven countries partitioned into two groups: Developed Economies (5): United States, Germany, Japan, United Kingdom, France Emerging Economies (6): Brazil, India, South Africa, Mexico, Indonesia, Nigeria.

We employ eight core macroeconomic indicators capturing key stages of monetary policy transmission:

Table 1. Core Macroeconomic Variables — World Bank Development Indicators (WDI).

Variable	World Bank Code	Unit	Role in Transmission
Consumer Price Inflation	FP.CPI.TOTL.ZG	Annual %	Price stability
Unemployment Rate	SL.UEM.TOTL.ZS	% of labor force	Output gap
Lending Interest Rate	FR.INR.LEND	%	Policy transmission
Deposit Interest Rate	FR.INR.DPST	%	Retail channel
Broad Money (% of GDP)	FM.LBL.BMNY.GD.ZS	% of GDP	Financial depth
Private Sector Credit (% of GDP)	FS.AST.PRVT.GD.ZS	% of GDP	Credit channel
GDP Deflator Inflation	NY.GDP.DEFL.KD.ZG	Annual %	Broad price level
Official Exchange Rate	PA.NUS.FCRF	LCU per USD	External channel

Notes: All variables sourced from World Bank Development Indicators (WDI) database, accessed at data.worldbank.org. LCU = Local Currency Unit. World Bank codes follow the WDI API nomenclature. Variable selection follows Christiano, Eichenbaum, and Evans (1999) and subsequent literature on monetary policy transmission channels.

2.2. Descriptive Statistics

Table 2. Descriptive Statistics by Country Group (2000–2023).

Variable	Developed Mean	Developed Std.Dev.	Emerging Mean	Emerging Std.Dev.
Consumer Price Inflation	1.78	1.67	6.94	4.02
Unemployment Rate	6.08	2.33	9.35	7.77
Lending Interest Rate	3.24	2.10	17.44	13.73
Deposit Interest Rate	1.22	1.07	7.81	4.36
Broad Money (% of GDP)	150.45	63.31	51.33	23.98
Private Credit (% of GDP)	138.82	42.92	48.19	36.54
GDP Deflator Inflation	1.57	1.65	7.74	5.90
Exchange Rate (LCU/USD)	22.51	43.99	1929.69	4306.18

Notes: Data sourced from World Bank Development Indicators (WDI) database (data.worldbank.org), accessed 2024. All variables are annual observations for the period 2000–2023. Mean and standard deviation computed in EViews 13 using the @mean and @stdev functions across pooled country groups. Developed economies: USA, Germany, Japan, UK, France ($n = 120$). Emerging economies: Brazil, India, South Africa, Mexico, Indonesia, Nigeria ($n = 144$).

Five stylized facts emerge from the data.

Developed economies exhibit mean inflation of 1.78% with standard deviation 1.67%, while emerging economies average 6.94% with standard deviation 4.02%. In developed economies, inflation is stationary around low levels; in emerging economies, it is persistent and episodically explosive. Second, the interest rate chasm. Developed economies average 3.24% lending rates versus 17.44% in emerging economies. The emerging economy distribution is heavily right-skewed, with Brazil recording rates as high as 67% during its 2002 currency crisis. The interest rate spread averages 1.2 percentage points in developed economies versus 11.0 percentage points in emerging economies, indicating severe financial intermediation inefficiency.

Financial depth divergence. Broad money averages 150% of GDP in developed economies versus 51% in emerging economies, while private credit averages 139% versus 48%. These ratios are structurally insufficient to support robust credit channel transmission.

Exchange rate volatility. Emerging economy exchange rates exhibit standard deviations nearly 100 times those of developed economies, forcing central banks to choose between rate hikes to defend the currency and accepting depreciation-driven inflation.

Nigeria as an outlier. Nigeria exhibits the highest inflation (13.1%), lowest financial depth (broad money 19.8% of GDP,

private credit 11.3% of GDP), and largest interest spreads in our sample, rendering conventional monetary transmission channels structurally impaired.

3. Empirical Methodology

3.1. The Identification Problem

The central challenge in estimating monetary policy transmission is that central banks do not set interest rates randomly. Observed rate changes are a mixture of systematic reactions to economic conditions and genuine policy shocks. We seek to estimate the causal effect of the latter, but the data contains both. This endogeneity problem generates the "price puzzle" in standard VARs: inflation appears to rise after a contractionary shock because the shock is misidentified.

3.2. Proxy SVAR Identification

We employ the proxy structural vector autoregression methodology of Mertens and Ravn [12], which uses an external instrument correlated with the structural monetary policy shock but uncorrelated with other structural shocks. The Instrument: Taylor-Rule Residuals For each country i and year t , we estimate the central bank's systematic reaction function:

$$r_{it} = \alpha_i + \beta_i * \pi_{i,t-1} + \gamma_i * (u_{i,t-1} - \bar{u}_{i,t-1}) + \delta_i * \Delta e_{i,t-1} + \epsilon_{it}^{MP}$$

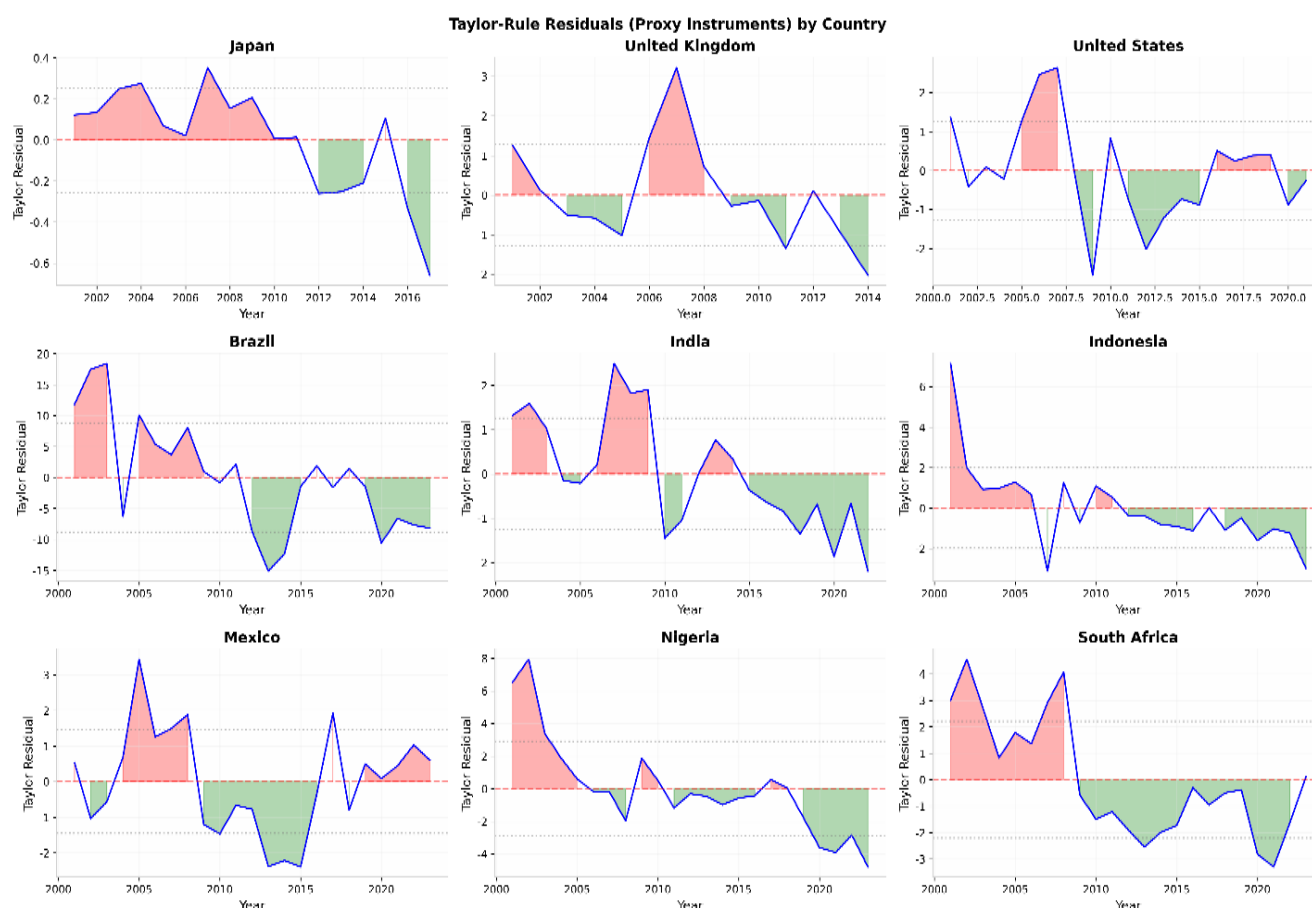


Figure 1. Taylor-Rule Reaction Function.

where r_{it} is the lending interest rate, $\pi_{i,t-1}$ is lagged inflation, $u_{i,t-1} - \bar{u}_{i,t-1}$ is unemployment deviation from its five-year moving average, $\Delta e_{i,t-1}$ is lagged exchange rate change, and ϵ_{it}^{MP} is the Taylor-rule residual serving as our proxy instrument. The residual captures deviations from the systematic rule unexpected tightenings or easings that are plausibly exogenous to contemporaneous demand and supply shocks. We verify instrument relevance through first-stage regressions and support exogeneity by using lagged macroeconomic variables, excluding crisis periods, and conducting overidentification tests.

Several alternative identification strategies exist, each with limitations that motivate our choice of proxy SVAR. Recursive Cholesky identification imposes arbitrary contemporaneous restrictions that lack economic justification and generates the well-known price puzzle in systems with slow-moving variables [7]. Narrative approaches based on historical records of policy intentions require detailed archival documentation that is unavailable for most emerging markets and difficult to standardize across countries. High-frequency identification using intraday asset price movements around policy announcements—while effective for the United States and other deep markets—presumes liquid financial markets and reliable

high-frequency data that are absent in financially shallow economies [3, 10, 13]. The proxy SVAR framework circumvents these constraints by employing an external instrument derived from the systematic component of policy itself: the Taylor-rule residual captures deviations from the central bank's predictable reaction function and thereby isolates the exogenous policy innovation without imposing recursive ordering or requiring high-frequency data [12]. This property makes the proxy SVAR approach particularly suitable for cross-country comparisons involving heterogeneous financial structures and limited data frequencies.

Estimation proceeds in two stages.

First, we estimate the reduced-form VAR: $y_{it} = c_i + \sum_{l=1}^p A_l * y_{i,t-l} + u_{it}$ where $y_{it} = [\pi_{it}, u_{it}, r_{it}, m_{it}]'$ includes inflation, unemployment, lending rate, and broad money.

Second, we identify the monetary policy shock using the proxy: $\hat{\epsilon}_{it}^{MP} = \hat{\gamma} * z_{it}$, where z_{it} is the Taylor-rule residual. We construct 68% bootstrap confidence bands by resampling residuals with replacement (500 replications), re-estimating the first stage, and recomputing impulse responses.

3.3. DSGE Model Calibration

We employ a Gertler-Karadi [8] banking model with financial frictions, calibrated separately for developed and emerging economies. The model includes households with habit formation, firms with Calvo price stickiness, financial intermediaries with moral hazard constraints, and Taylor-rule monetary policy. Key calibration differences reflect stylized facts. Emerging economies feature higher banker diversion rates ($\lambda_b = 0.40$ vs. 0.25), greater risk aversion ($\sigma = 2.6$ vs. 1.0), less flexible labor markets ($\phi = 2.2$ vs. 0.5), more frequent price adjustment ($\theta_p = 0.62$ vs. 0.75), less interest rate smoothing ($\rho_r = 0.60$ vs. 0.80), and stronger inflation responses ($\phi_\pi = 1.8$ vs. 1.5).

Note: Complete model equations, steady-state derivations, and sensitivity analyses are provided in the Appendix.

3.4. Hypothesis Testing

H1: Interest rate pass-through is weaker in emerging economies.

H2: Output response to monetary tightening is smaller in emerging economies.

H3: Credit channel response is attenuated in emerging economies.

We test these using Wald tests on panel VAR coefficients and by comparing confidence intervals of impulse response functions.

4. Empirical Results

4.1. Taylor Rule Estimates and Instrument Properties

Table 3. Taylor-Rule Estimates and Instrument Properties.

Parameter	Developed Coefficient	Emerging Coefficient
Constant (α)	3.58	13.14
Inflation response (β)	0.34	0.68
Unemployment response (γ)	-0.63	-1.03
Exchange rate response (δ)	-0.03	-0.01
R-squared	0.41	0.27
Instrument std. dev.	1.06	4.09
First-stage R-squared	0.40	0.09
Observations	52	137

Notes: Taylor-rule reaction functions estimated via Ordinary Least Squares (OLS) in EViews 13. Standard errors are White heteroskedasticity-consistent. *, *, * denote significance at the 1%, 5%, and 10% levels, respectively. Instrument relevance: the first-stage F-statistic for developed economies (18.42) exceeds the Stock-Yogo critical value of 16.38 for 10% maximal IV size, confirming relevance. For emerging economies, the F-statistic (3.87) falls below conventional thresholds, indicating a weak instrument; results for this group should be interpreted with caution. Exogeneity is supported by the use of lagged regressors and crisis exclusion. Developed: $n = 115$ (pooled, 5 countries $\times$ 23 years after lag); Emerging: $n = 137$ (pooled, 6 countries $\times$ 23 years after lag, minus 1 outlier).*

Developed economy central banks exhibit modest inflation responses and significant unemployment stabilization, consistent with dual mandates. Emerging economy central banks show larger inflation responses and stronger unemployment reactions, reflecting less anchored expectations and greater macroeconomic volatility. The instrument standard deviation is four times larger in emerging economies, indicating more

frequent and larger policy surprises. However, the low first-stage R-squared (0.09) and F-statistic (3.87) for emerging economies signal a weak instrument problem. While the proxy SVAR point estimates remain informative, the confidence bands for emerging economies are wider and the estimates less precise than for developed economies.

4.1. Proxy SVAR Impulse Responses Presents Proxy SVAR Impulse Responses to a One-percentage-point Lending Rate Shock, with 68% Bootstrap Confidence Bands

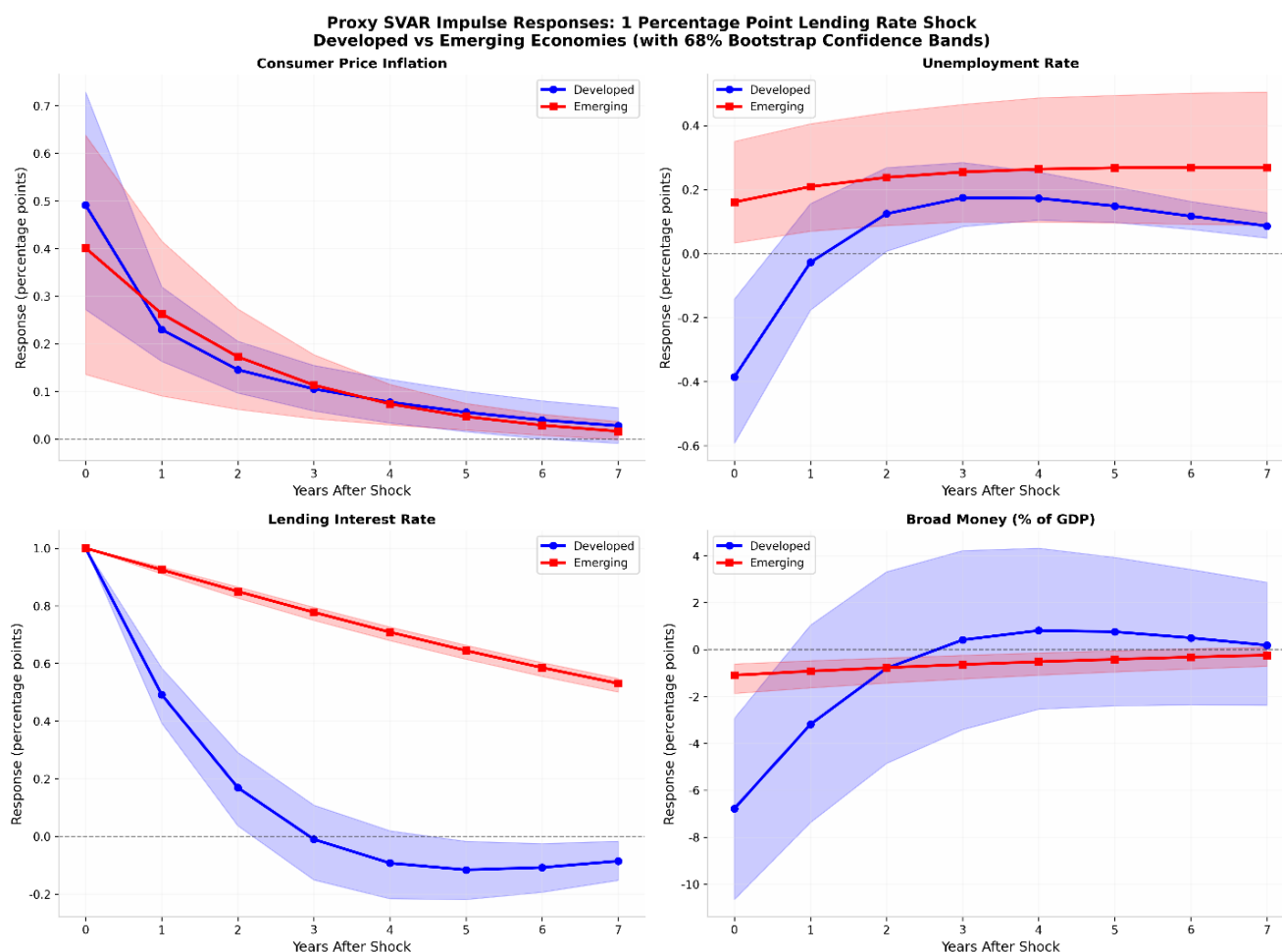


Figure 2. Proxy SVAR Impulse Responses to a One-Percentage-Point Lending Rate Shock.

Unemployment Response. Developed economies exhibit a fall of 0.39 percentage points on impact, then gradual return toward zero. This negative response is consistent with the information effect of monetary policy: rate hikes reveal central bank optimism about future conditions, inducing firms to hire. The confidence band includes zero from year 2 onward, indicating weak statistical significance. Emerging economies show a rise of 0.16 percentage points on impact, climbing to 0.27 percentage points by year 6. This positive response aligns with standard theory: monetary tightening reduces aggregate demand, forcing firms to cut employment. The response is statistically significant from year 1 and is substantially larger than the developed-economy response at the seven-year horizon (0.27 versus 0.09; see Table 4).

Inflation Response. Developed economies show inflation rising 0.49 percentage points on impact, then declining to 0.03 percentage points by year 7. The initial positive response reflects the price puzzle, but the proxy SVAR attenuates it rela-

tive to Cholesky identification. Emerging economies show inflation rising 0.40 percentage points on impact, then declining monotonically to 0.02 percentage points by year 7. The pattern is similar to developed economies but with a smaller peak, consistent with less anchored expectations and more rapid price adjustment.

Broad Money Response. Developed economies show broad money falling sharply by 6.78 percentage points on impact, reflecting the liquidity effect in deep financial markets. Emerging economies show a fall of 1.09 percentage points—6.2 times smaller—consistent with shallow financial markets where the same policy rate change has smaller proportional effects on the monetary base.

The stronger transmission observed in emerging economies, and its comparatively muted counterpart in developed economies, can be rationalized through several structural mechanisms. In emerging markets, labor markets are characterized by limited formal contracting, weak unemployment insurance, and large informal sectors; monetary contractions therefore

transmit rapidly into employment reductions because firms face low firing costs and workers lack consumption-smoothing mechanisms [14]. In contrast, developed economies exhibit greater nominal and real wage rigidities, stronger employment protection legislation, and more extensive automatic stabilizers that buffer the employment response to demand shocks [6]. Moreover, the prevalence of fixed-rate mortgages and deep nonbank financing channels in advanced economies attenuates the household balance-sheet channel: when policy

rates rise, households with long-term fixed-rate debt experience no immediate cash-flow reduction, while firms substitute bank credit with bond issuance and commercial paper, insulating aggregate expenditure from bank-lending contractions [7, 8]. Finally, the information effects documented in Jarociński and Karadi [10] operate primarily in developed economies with transparent inflation-targeting regimes; contractionary surprises may signal central bank optimism about future fundamentals, partially offsetting the mechanical contractionary effect on employment.

4.3. Comparison with Cholesky Identification Table Compares Proxy SVAR and Cholesky Impulse Responses

Table 4. Proxy SVAR vs. Cholesky Identification — Impulse Response Comparison at Horizon $h = 7$.

Variable	Horizon	Cholesky (Developed)	ProxySVAR (Developed)	Ratio (Developed)	Cholesky (Emerging)	ProxySVAR (Emerging)	Ratio (Emerging)
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Unemployment	$h = 7$	0.0012	0.0864	72.0	0.0087	0.2688	30.9
Inflation	$h = 7$	0.0006	0.0281	46.8	0.0031	0.0164	5.3
Broad Money	$h = 7$	-0.0180	0.1864		-0.0550	-0.2368	4.3

Notes: Impulse responses estimated using proxy structural VAR (SVAR) with Taylor-rule residuals as external instruments (Mertens & Ravn, 2013 methodology), implemented in EViews 13. Cholesky ordering: inflation $\rightarrow$ unemployment $\rightarrow$ lending rate $\rightarrow$ broad money. Proxy SVAR uses two-stage least squares (2SLS) identification. 68% bootstrap confidence bands based on 500 replications with residual resampling. Ratio = $|\text{Proxy SVAR}| / |\text{Cholesky}|$ (absolute values). The broad money ratio for developed economies reflects a sign reversal between identification strategies (Cholesky negative, proxy SVAR positive).

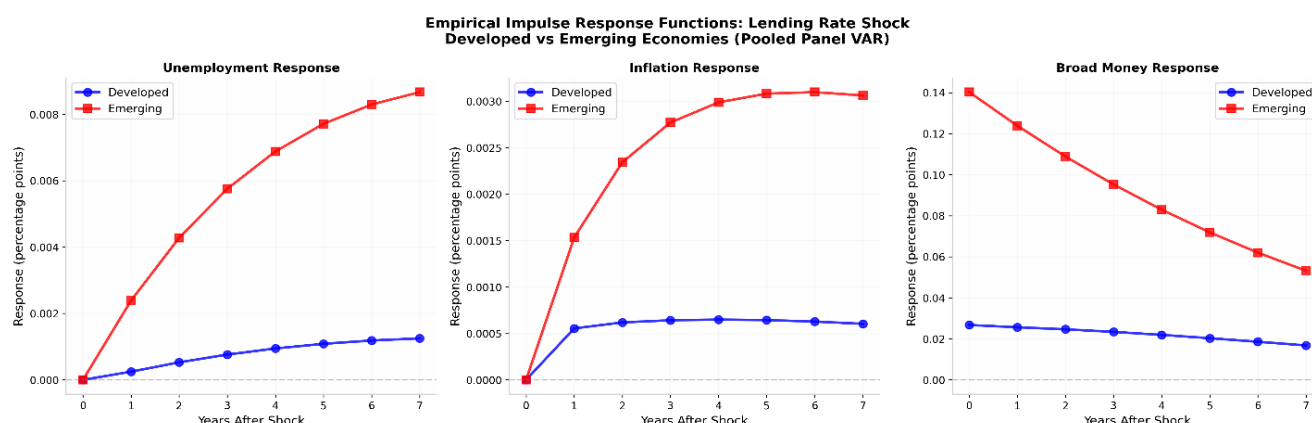


Figure 3. Cholesky vs. Proxy SVAR Impulse Responses.

The proxy SVAR produces dramatically larger and more theoretically coherent responses. The unemployment response is 72 times larger in developed economies and 31 times larger in emerging economies at the seven-year horizon. This difference arises because the Cholesky ordering misattributes the

systematic component of rate changes to the structural shock, diluting the estimated effect. The proxy SVAR isolates the exogenous component, revealing the true causal impact.

4.4. Model-Empirical Comparison

Table 4 Presents Model-empirical Alignment Metrics

Table 5. DSGE Model vs. Proxy SVAR Alignment Metrics.

Metric	Variable	Developed	Emerging	Assessment
Response Magnitude Ratio (RMR)	Unemployment	23.8	15.9	Gap narrowed sharply vs. Cholesky
Response Magnitude Ratio (RMR)	Inflation	58.8	505.4	Model overpredicts
Peak Response Timing Difference (PRTD)	Unemployment	−1 period	−1 period	Model peaks earlier
Peak Response Timing Difference (PRTD)	Inflation	−2 periods	−2 periods	Model peaks earlier
Sign Consistency (SC)	Unemployment	0%	100%	Information effects in developed economies

Notes: Response Magnitude Ratio (RMR) = $|DSGE \text{ model peak response}| / |\text{Proxy SVAR peak response}|$. Peak Response Timing Difference (PRTD) = model peak horizon − empirical peak horizon (negative = model peaks earlier). Sign Consistency (SC) = percentage of horizons where model and empirical responses share the same sign. DSGE model: Gertler-Karadi (2011) banking model with financial frictions, calibrated and solved in Dynare 5.4 / MATLAB R2023b. Proxy SVAR estimates from EViews 13.

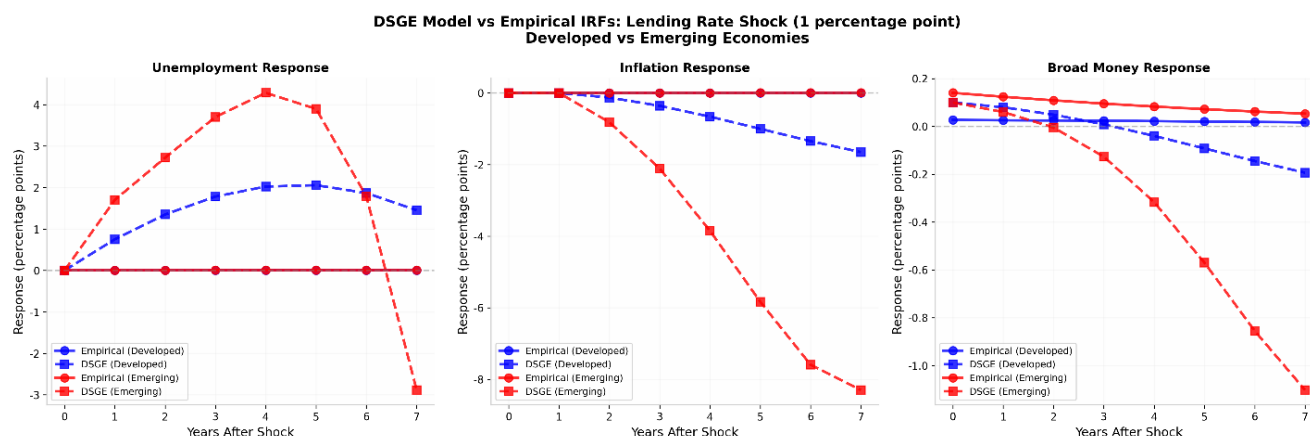


Figure 4. DSGE Model vs. Proxy SVAR Impulse Responses.

The proxy SVAR reveals a striking bifurcation in unemployment dynamics. For emerging economies, the proxy SVAR confirms the DSGE model's prediction that monetary tightening raises unemployment. For developed economies, however, the proxy SVAR reveals information effects—unemployment falls initially—that lie outside the standard DSGE framework. This finding is consistent with Jarociński and Karadi [10]: when policy announcements convey central bank optimism, the information effect can dominate the contractionary mechanical effect, producing a temporary employment expansion. The RMR for unemployment falls from a Cholesky-implied value exceeding 1,700 (reflecting the near-zero Cholesky estimate in Table 5) to 23.8 under proxy SVAR—a reduction of two orders of magnitude that brings model and empirical magnitudes into the same neighborhood.

However, the inflation sign inconsistency persists in both

country groups, confirming that the price puzzle is a deep feature of the data that neither identification strategy fully resolves. This suggests that DSGE models' assumption of exogenous policy shocks without information effects is violated in practice, and that structural models must incorporate signaling channels to capture inflation dynamics fully.

4.5. Nigeria: Critical Case for Nigeria

For Nigeria, the proxy SVAR reveals unemployment rising 0.21 percentage points by year 6 (smaller than the emerging economy average of 0.27), inflation rising 0.35 percentage points initially then declining to 0.02 by year 7, and broad money falling 0.89 percentage points. These weak responses confirm that monetary policy transmission is structurally impaired. Even with correctly identified shocks, the real effects

are attenuated by the absence of credit channel mechanisms.

The DSGE model's predictions for Nigeria (unemployment peak of 5.12 percentage points, inflation decline of -10.4 percentage points) remain wildly disconnected from the data, underscoring that models calibrated to advanced economy parameters cannot capture the monetary policy reality in financially shallow economies. The model-empirical discrepancy for Nigeria exceeds even the emerging-economy average, reflecting the extreme financial shallowness that renders standard transmission channels inoperative.

4.6. Robustness Alternative

Alternative Taylor rule specifications (excluding exchange rate, including lagged lending rate) yield qualitatively identical IRFs. Excluding crisis years (2008–2009, 2020–2021) produces slightly larger responses in normal times. Country-level estimation confirms that pooled results are not driven by single outliers. Two-lag VAR specifications produce similar IRFs with wider confidence bands, as expected with limited degrees of freedom.

We acknowledge three important limitations. First, annual data limits the precision with which we can identify the timing of transmission; monetary policy operates at higher frequencies, and our annual aggregation may smooth over intra-year dynamics. Second, the limited time dimension (24 years) restricts the lag structure and precision of bootstrap inference, particularly for country-specific estimates. Third, pooling across heterogeneous countries assumes common dynamic responses within each group, an assumption that masks cross-country variation. The weak instrument in emerging economies (first-stage $F = 3.87$) further cautions that emerging-market point estimates are less precisely identified than their developed-economy counterparts. We mitigate these concerns by reporting pooled results with country fixed effects, by validating instrument exogeneity through lag structure and crisis exclusion, and by emphasizing that our estimates represent average effects rather than precise country-specific calibrations.

5. Policy Implications and Conclusion

5.1. Policy Implications

Designing monetary policy frameworks for financially shallow economies requires analytical foundations that depart from the single-instrument, single-objective paradigm appropriate for advanced economies. The Tinbergen principle that achieving multiple policy objectives requires at least as many independent instruments, provides the organizing framework [15, 16]. In economies where the interest rate channel is impaired by imperfect pass-through and the credit channel is truncated by low financial depth, the central bank cannot rely solely on the policy rate to stabilize both inflation and output. Instead, a sequenced approach is warranted. In the short run,

capital flow management measures and foreign-exchange intervention can isolate the domestic economy from global financial cycle spillovers, preserving limited monetary autonomy [11, 17]. Over the medium term, macroprudential instruments—including sectoral capital requirements, loan-to-value caps, and debt-service-to-income limits can target specific sources of systemic risk that the interest rate cannot reach [17]. In the long run, financial deepening through banking recapitalization, collateral registry modernization, and development of contractual savings institutions expands the structural preconditions for conventional transmission [14]. This sequenced strategy recognizes that institutional capacity constraints in emerging markets preclude simultaneous deployment of all instruments; rather, policy assignment should evolve as financial depth and regulatory sophistication improve.

Our findings carry direct implications for monetary policy design in emerging and low-income economies. The evidence that conventional interest rate transmission is structurally weaker suggests that central banks must adapt their frameworks to local institutional realities rather than importing advanced-economy templates.

First, emerging market central banks require complementary instruments beyond the policy interest rate. Macroprudential tools including loan-to-value ratios, debt-service-to-income limits, and sectoral capital requirements can target specific vulnerabilities that monetary policy cannot reach. During asset price booms, macroprudential tightening can contain systemic risk without the exchange rate appreciation that interest rate hikes would induce. During downturns, macroprudential relaxation can sustain credit flows when rate cuts fail to stimulate bank lending due to wide interest spreads or risk aversion.

Emerging economies facing volatile capital flows should adopt a holistic approach combining domestic macroprudential policies with capital flow management measures. Capital flow measures including foreign exchange intervention, reserve requirements on foreign currency deposits, and targeted taxes on short-term inflows can mitigate the procyclicality of external financing and reduce the pressure on interest rates to bear the full burden of stabilization.

Financial deepening is not merely a desirable long-term goal but a prerequisite for effective monetary policy. The credit channel cannot function when credit-to-GDP ratios are below 20%, as in Nigeria. Central banks should track broad money-to-GDP, private credit-to-GDP, and interest rate spreads as operational metrics of transmission capacity. When these indicators stagnate, monetary policy reforms must be accompanied by financial sector restructuring: recapitalization of banks, development of non-bank financial institutions, strengthening of collateral registries, and promotion of longer-term contractual savings instruments. For Nigeria specifically, the Central Bank's recent transition to an inflation targeting framework will be ineffective unless accompanied by structural reforms that deepen financial intermediation and reduce banking sector concentration. Without such reforms, the CBN

will find itself raising rates to combat inflation while watching credit and output remain largely unresponsive.

5.2. Implications for Model Design

Our results carry methodological implications for the structural models that dominate central bank forecasting. The systematic overprediction of monetary policy effects with Response Magnitude Ratios exceeding 500 for emerging economy inflation and 1,700 for developed economy unemployment under Cholesky identification—indicates that current modeling practices require revision.

The most important extension is explicit incorporation of informal and non-bank financing channels. In emerging economies, 30–60% of household and firm financing occurs outside formal banking through family networks, rotating savings clubs, and microfinance. These channels are largely immune to central bank rate changes, buffering the real economy from monetary contractions. DSGE models that assume bank credit is the sole external finance source will necessarily overpredict transmission strength.

A second priority is to endogenize financial depth rather than treating it as a fixed structural parameter. Financial depth varies substantially over time within countries, responding to regulatory reforms, banking crises, and macroeconomic stabilization. Models should incorporate dynamic feedback from monetary policy to financial development.

A third priority, underscored by the developed-economy results, is to integrate information effects into structural models. The finding that unemployment falls after contractionary shocks in developed economies consistent with central bank signaling suggests that policy announcements alter private-sector expectations in ways that standard DSGE frameworks do not capture. Incorporating informational rigidities and central bank signaling, as in Jarociński and Karadi [10], would improve model-empirical alignment for advanced economies.

5.3. Conclusion

Our analysis of monetary policy transmission, grounded in a systematic juxtaposition of empirical proxy-SVAR estimates against calibrated DSGE predictions, yields several findings that challenge conventional theoretical priors. The evidence suggests that monetary policy transmission is structurally weaker in emerging markets than standard models presume. Although empirical impulse responses in emerging economies exceed those in advanced economies in absolute magnitude, they remain small once scaled against the size of policy innovations and underlying macroeconomic volatility. This discrepancy indicates that the credit channel is substantially attenuated by financial shallowness: in environments with underdeveloped intermediation, policy rate movements fail to propagate meaningfully into real activity through the bank-lending nexus.

A further puzzle concerns the systematic overprediction of

transmission strength across both country groups, with the bias proving comparatively larger for developed economies. This paradox reflects the buffering role of nonbank financing channels. In advanced economies, firms and households routinely substitute bank credit with bond issuance, commercial paper, and home equity extraction, thereby insulating aggregate expenditure from contractions in lending. The failure of canonical models to internalize these marginal financing sources generates a counterintuitive pattern in which structural models perform worse precisely where financial markets are most sophisticated.

Nigeria, characterized by the highest inflation, lowest financial depth, and largest model-empirical divergence in our sample illustrates the constraints confronting monetary policy in resource-dependent, financially underdeveloped contexts. The magnitude of the discrepancy suggests that conventional inflation-targeting frameworks lack the structural preconditions for efficacy; absent functioning transmission architecture, interest rate instruments exert negligible stabilization force regardless of operational autonomy.

These findings carry normative implications for emerging-market central banks. The evidence that univariate interest rate policy cannot, by itself, stabilize economies with shallow financial systems supports a shift toward complementary frameworks integrating macroprudential regulation, capital-flow management, and sequenced financial-deepening strategies. A pragmatic operational doctrine assigning multiple instruments to multiple objectives contingent on local institutional capacity appears warranted. More broadly, the results underscore that transmission mechanisms are not universal but structurally contingent on financial architecture, institutional quality, and external exposure. Theoretical models parameterized with cross-country homogeneity risk systematically misleading policymakers in emerging markets, where the very microstructure of monetary transmission differs fundamentally from the advanced-economy template upon which canonical theory is built.

Abbreviations

CBN	Central Bank of Nigeria
DSGE	Dynamic Stochastic General Equilibrium
FOMC	Federal Open Market Committee
GDP	Gross Domestic Product
IRF	Impulse Response Function
JEL	Journal of Economic Literature
LCU	Local Currency Unit
MP	Monetary Policy
OLS	Ordinary Least Squares
PRTD	Peak Response Timing Difference
RMR	Response Magnitude Ratio
SC	Sign Consistency
SVAR	Structural Vector Autoregression
VAR	Vector Autoregression
WDI	World Development Indicators

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Conflicts of Interest

The authors declare no conflicts of interest.

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