

# Monetary Policy Transmission, Interest Rate Pass-Through, and Bank Lending in Sub-Saharan Africa

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## Abstract

The effectiveness of monetary policy in stabilizing inflation and supporting economic growth depends critically on the strength and speed of monetary transmission — specifically, the degree to which changes in central bank policy rates are passed through to commercial bank lending and deposit rates, which in turn affect private sector borrowing, investment, and consumption decisions. This study examines interest rate pass-through (IRPT) dynamics across 22 Sub-Saharan African economies over 2005–2023, employing the Autoregressive Distributed Lag (ARDL) bounds testing approach for country-level estimation, pooled mean group (PMG) panel estimation for cross-country synthesis, and Asymmetric ARDL (NARDL) analysis to test for directional asymmetry in pass-through. Results document systematically incomplete and slow interest rate pass-through in the region, with long-run pass-through coefficients averaging 0.43 — meaning that only 43% of a policy rate change ultimately transmits to commercial

lending rates, compared to near-complete pass-through in advanced economies. Substantial cross-country heterogeneity exists, ranging from 0.21 in fragile states with bank-dominated but poorly competitive financial systems to 0.67 in more financially developed economies including South Africa, Mauritius, and Kenya. Financial sector development, market concentration, and bank capitalization are the primary structural determinants of pass-through completeness. Significant downward rigidity is documented: banks pass through policy rate increases to lending rates significantly faster (6.2 months mean adjustment) than they pass through policy rate cuts (11.4 months), creating an asymmetric transmission that has important implications for the conduct of accommodative monetary policy.

**Keywords:** interest rate pass-through, monetary transmission, ARDL, PMG, Sub-Saharan Africa, banking sector, asymmetric adjustment

## 1. Introduction

For monetary policy to fulfill its macroeconomic stabilization mandate, the transmission from central bank policy instruments to the financial conditions faced by households and enterprises must be both reliable and timely. Central banks in Sub-Saharan Africa have increasingly adopted inflation targeting or inflation targeting-lite frameworks, raising the importance of understanding how policy rate changes propagate through the financial system. However, the structural characteristics of Sub-Saharan African financial markets — high banking concentration, shallow capital markets, large informal sectors, significant information asymmetries between lenders and borrowers, and widespread use of floating-rate loan structures — may significantly attenuate or delay monetary transmission relative to the more complete pass-through documented in advanced economies.

Incomplete interest rate pass-through (IRPT) — the failure of commercial bank lending and deposit rates to fully reflect changes in the central bank policy rate — creates several problems for monetary management. First, it reduces the potency of monetary policy: if lending rates respond only partially to policy rate changes, the investment and consumption responses to monetary policy are correspondingly attenuated. Second, asymmetric pass-through — where policy rate increases transmit more completely or quickly than cuts — creates an asymmetry in monetary policy effectiveness that complicates the calibration of accommodative policy responses to economic downturns. Third, sluggish pass-through reduces the credibility of inflation-targeting frameworks, as market participants cannot rely on policy rate signals to guide their inflation expectations.

The Sub-Saharan African context exhibits structural features that theory predicts will systematically reduce IRPT completeness. High banking market concentration — with three to five banks controlling more than 70% of assets in most countries — reduces competitive pressure on deposit and lending rate setting, enabling banks to maintain wide margins and slow rate adjustment (Borio & Fritz, 1995). Shallow interbank money markets reduce the speed with which policy rate changes propagate to market interest rates. Widespread use of relationship lending rather than arms-length credit markets introduces clientelist considerations that override pure interest rate optimization. Weak credit information infrastructure and limited collateral registries raise credit risk premiums that are not responsive to monetary policy signals.

The ARDL bounds testing approach (Pesaran et al., 2001) is particularly well-suited for IRPT estimation because it accommodates variables of mixed integration orders ( $I(0)$  and  $I(1)$ ), which is important given the mixed unit root properties of interest rate series, and it enables both short-run dynamics and long-run equilibrium estimation within a single consistent framework. The nonlinear ARDL (NARDL) extension (Shin et al., 2014) enables formal testing of directional asymmetry in pass-through, decomposing policy rate changes into positive and negative partial sum series and estimating their separate dynamic effects on lending rates.

This study's contributions include: (1) the first systematic ARDL-NARDL analysis of IRPT across 22 SSA economies using country-specific models; (2) pooled mean group synthesis identifying regional

structural determinants of IRPT completeness; (3) quantification of upward-downward pass-through asymmetry and its monetary policy implications; and (4) identification of financial sector development, concentration, and capitalization as the primary structural barriers to IRPT completeness.

## **2. Literature Review**

### **2.1 Interest Rate Pass-Through: Theory**

The theoretical framework for IRPT analysis draws on the cost-of-funds approach (Cottarelli & Kourelis, 1994; Heffernan, 1997) and the margin approach (Stiglitz & Weiss, 1981; Borio & Fritz, 1995). The cost-of-funds approach models the lending rate as a markup over the policy rate (or interbank rate), with the markup determined by operational costs, credit risk, and competitive conditions. Pass-through is incomplete when the markup changes with the level of the policy rate (countercyclical margins) or when adjustment is delayed by switching costs or menu costs.

The margin approach emphasizes bank market power as the primary determinant of IRPT incompleteness. In concentrated banking markets, banks with pricing power need not fully transmit policy rate reductions to deposit rates, enabling them to maintain wider net interest margins. Similarly, banks facing loan demand that is inelastic with respect to interest rates need not fully compete on lending rates, reducing upward pass-through. The theory predicts that greater banking market competition — through lower concentration, lower entry

barriers, and greater financial development — increases IRPT completeness.

Asymmetric IRPT was formalized by Hannan and Berger (1991) and Neumark and Sharpe (1992), who documented that U.S. deposit rates adjusted more slowly to policy rate cuts than to increases — the "rockets and feathers" pattern. The theoretical explanation combines customer inertia (depositors are slow to switch banks when rates are cut), collusive behavior (banks tacitly coordinate to maintain margins during easing cycles), and adverse selection (aggressive deposit rate competition during easing may attract riskier depositors). Asymmetric lending rate adjustment has also been documented, with banks typically faster to raise than to lower lending rates (Mojon, 2000).

### **2.2 Empirical IRPT Literature**

The European IRPT literature, stimulated by monetary union, has generated extensive evidence. Kleimeier and Sander (2006) found significant heterogeneity in IRPT completeness across euro area members, with faster and more complete adjustment in countries with more competitive banking systems. de Bondt (2005) found average euro area long-run pass-through of approximately 0.70–0.90 for lending rates, confirming substantial but incomplete transmission. Égert et al. (2007) documented asymmetric IRPT in New EU member states, with upward adjustment significantly faster than downward.

For Sub-Saharan Africa, the IRPT literature is less developed. Ndungú and Ngugi (2000) found incomplete pass-through in Kenya, attributing it to high reserve requirements and bank concentration. Aziakpono and

Wilson (2010) found highly incomplete and asymmetric IRPT in South Africa. Simpasa et al. (2015) analyzed pass-through in Zambia, Rwanda, and Uganda, documenting pass-through ratios between 0.18 and 0.52. Osei-Assibey and Bockarie (2013) found long-run pass-through of approximately 0.31 for Ghana. The present study provides the most comprehensive cross-country synthesis to date.

### 3. Research Gap

Three gaps motivate this study. First, no study has applied NARDL analysis to SSA IRPT, leaving the asymmetry dimension unquantified. Second, the structural banking market determinants of IRPT heterogeneity across SSA have not been systematically identified in a pooled panel framework. Third, the implications of incomplete and asymmetric IRPT for the effectiveness of accommodative monetary policy during economic downturns have not been assessed.

### 4. Objectives and Hypotheses

**Objective 1:** Estimate long-run and short-run IRPT for 22 SSA economies using ARDL bounds testing.

**Objective 2:** Test for directional asymmetry in IRPT using NARDL specification.

**Objective 3:** Identify structural banking market determinants of IRPT completeness using PMG estimation.

**Objective 4:** Quantify the monetary policy effectiveness implications of documented IRPT incompleteness and asymmetry.

**H1:** Long-run IRPT in SSA is significantly incomplete (mean long-run pass-through < 1.0).

**H2:** IRPT exhibits significant upward-downward asymmetry, with policy rate increases passing through faster and more completely than cuts.

**H3:** Banking market concentration is negatively associated with IRPT completeness across SSA economies.

**H4:** Financial sector development (measured by credit-to-GDP ratio) is positively associated with IRPT completeness.

### 5. Methodology

Monthly commercial bank lending rate and central bank policy rate data were obtained from IMF IFS and national central banks for 22 SSA economies (2005:M1–2023:M12). ARDL bounds tests confirmed long-run cointegration between lending and policy rates in 19 of 22 countries. Country-specific ARDL(p,q) models were estimated, with optimal lag lengths selected by AIC. NARDL models decomposed the policy rate into positive and negative partial sums, enabling Wald tests of symmetric adjustment. PMG estimation pooled cross-country results, using structural variables (banking concentration, credit-to-GDP, bank capitalization, interbank market development) as determinants of pass-through heterogeneity.

## 6. Data Analysis and Findings

**Table 1: Country-Level IRPT Estimates (Long-Run, Selected Countries)**

Country	Long-Run IRPT	95% CI	Pass-Through Adj. Speed (months)
South Africa	0.67	[0.54, 0.80]	3.4
Kenya	0.61	[0.48, 0.74]	4.1
Mauritius	0.64	[0.51, 0.77]	3.8
Ghana	0.41	[0.29, 0.53]	7.2
Nigeria	0.38	[0.27, 0.49]	8.4
Tanzania	0.34	[0.22, 0.46]	9.1
Uganda	0.31	[0.18, 0.44]	9.8
Democratic Republic of Congo	0.22	[0.11, 0.33]	14.3
<b>Regional Mean</b>	<b>0.43</b>	—	<b>8.7</b>

*Note: H1 confirmed — mean long-run pass-through of 0.43 confirms systematic incompleteness.*

**Table 2: NARDL Asymmetry Tests**

Country Group	Upward IRPT	Downward IRPT	Asymmetry (Wald Test)
High FD (South Africa, Kenya, Mauritius)	0.71	0.59	F = 4.23**
Medium FD (Ghana, Nigeria, Zambia)	0.45	0.32	F = 6.87***
Low FD (DRC, Zimbabwe, Malawi)	0.26	0.15	F = 8.34***
<b>Regional Mean</b>	<b>0.48</b>	<b>0.37</b>	<b>F = 9.21*</b>

*Note: Upward and downward IRPT refer to pass-through from positive and negative policy rate changes respectively. Wald test p-values: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ . H2 confirmed — significant upward-downward asymmetry in all country groups.*

Mean upward adjustment speed: 6.2 months. Mean downward adjustment speed: 11.4 months. The asymmetry is significantly larger in low-financial-development countries.

**Table 3: PMG Determinants of IRPT Heterogeneity**

Variable	PMG Coefficient	SE	p-value
Banking Concentration (HHI)	-0.187***	0.054	< 0.001
Credit-to-GDP Ratio	0.243***	0.067	<

Variable	PMG Coefficient	SE	p-value
			0.001
Bank Capitalization	0.134**	0.058	0.021
Interbank Market Depth	0.198***	0.061	0.001
NPL Ratio	-0.087*	0.049	0.076

Note: H3 and H4 confirmed — concentration reduces, financial development increases IRPT completeness.

## 7–11. Discussion Through Conclusion

The systematically incomplete and asymmetric IRPT documented in this study has profound implications for monetary policy design in Sub-Saharan Africa. The finding that only 43% of a policy rate change ultimately transmits to commercial lending rates implies that central banks must make policy rate changes approximately 2.3 times larger than in advanced economies to achieve equivalent financial conditions effects. The asymmetry finding — that cuts pass through significantly more slowly and incompletely than increases — suggests that accommodative monetary policy is substantially less effective than restrictive policy in SSA, creating a structural impediment to growth-supportive monetary easing during recessions. The structural determinants analysis points to banking market development and competition policy as the long-run solutions: reducing banking concentration, developing interbank money

markets, and promoting financial deepening can gradually improve IRPT completeness and symmetry. Future research should examine how unconventional monetary policy instruments (reserve requirement changes, directed credit facilities) can substitute for incomplete interest rate transmission in SSA economies.

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