The Infinite
An International Peer Reviewed / Refereed Journal of Multidisciplinary Research

An Online Peer Reviewed / Refereed Journal
Volume 3 | Issue 10 | October 2026
ISSN: 3048-9539 (Online)
Website: www.theinfinite.co.in

The Dynamics of Repo and Reverse Repo Rates in Market Regulation and Inflation Control

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ARTICLE DETAILS

Research Paper

Keywords :

Repo Rate, Reverse Repo Rate, Monetary Transmission Mechanism, Liquidity Adjustment Facility (LAF), Inflation Control, Central Banking, Standing Deposit Facility (SDF), Price Stability, Commercial Bank Pass-Through.

ABSTRACT

This research paper provides an exhaustive macroeconomic and institutional analysis of the policy rate corridor—specifically the Repurchase Agreement (Repo) rate and Reverse Repurchase Agreement (Reverse Repo) rate—as operative instruments of central bank monetary policy. Operating under the Liquidity Adjustment Facility (LAF), these policy instruments directly govern systemic liquidity, interbank money market equilibria, and aggregate demand. This study examines the transmission mechanics through which adjustments in repo and reverse repo rates propagate through commercial banking channels, credit spreads, exchange rates, and inflationary expectations to stabilize general price levels.

The paper scrutinizes the structural dynamics of Demand-Pull versus Cost-Push inflation, highlighting the efficacy and limitations of conventional interest rate tightening in addressing supply-side bottlenecks. Furthermore, using comparative institutional frameworks—with specific empirical focus on the Reserve Bank of India (RBI), the US Federal Reserve's overnight repo facilities (ON RRP), and the European Central Bank (ECB)—this research investigates modern structural innovations such as the Standing Deposit Facility (SDF), Marginal Standing Facility (MSF), and excess liquidity absorption

paradigms. Finally, the treatise evaluates contemporary structural bottlenecks, including asymmetric interest rate pass-through, Non-Banking Financial Company (NBFC) linkages, and fiscal-monetary coordination challenges in developing and emerging market economies.

1. Introduction and Theoretical Foundations

Monetary policy in contemporary market economies represents the primary macroeconomic toolkit employed by central banks to achieve the twin objectives of price stability and sustainable output growth. At the epicentre of this regulatory framework lies the control of the money supply and liquidity within the commercial banking architecture. In market-driven economies, where administrative price fixing is neither feasible nor economically efficient, central banks modulate market behaviour through indirect price-based mechanisms. Among these, the policy rates embedded within repurchase agreements—commonly designated as the Repo Rate and the Reverse Repo Rate—serve as the principal signaling and operational anchors.

The theoretical foundation of central bank rate manipulation is rooted in classical and modern monetary theory. Under the Quantity Theory of Money formalized by Irving Fisher ($MV = PY$), an expansion of money supply (M) beyond the real output absorptive capacity (Y) precipitates upward pressure on the price level (P). In modern New Keynesian dynamic stochastic general equilibrium (DSGE) models, nominal interest rate modulation by the monetary authority shifts real interest rates due to sticky prices in the short run. This alteration alters the intertemporal consumption-investment optimization of rational economic agents, directly dampening or stimulating aggregate demand.

When consumer price index (CPI) inflation breaches acceptable tolerance bands, central banks execute contractionary monetary policies by raising the benchmark repo rate. Conversely, during periods of economic stagnation, deflationary spirals, or liquidity crunches, expansionary stances are operationalized by lowering rates and encouraging credit dispersion. Thus, repurchase transactions are not merely technical sovereign lending operations; they are the fundamental throttle of modern macroeconomic management.

2. Conceptual Architecture: Demystifying Repo and Reverse Repo Operations

To understand the macro-financial impact of these rates, it is essential to disaggregate their operational mechanics within the domestic financial structure.

2.1 The Repurchase Agreement (Repo) Rate: Anatomy of Collateralized Borrowing

A Repurchase Agreement (Repo) is fundamentally a formal collateralized financial contract whereby a commercial bank or eligible financial institution borrows short-term funds (typically overnight or term) from the central bank by pledging approved sovereign securities—predominantly government bonds and treasury bills. Under this legal contract, the borrowing institution agrees to repurchase the identical securities on a predetermined future date at a predetermined repurchase price.

The Repo Rate represents the annualized implicit interest rate charged by the central bank for providing this liquidity. It is mathematically calculated based on the differential between the original cash received and the repurchase redemption cost:

> **Mathematical Formulation of Repurchase Operations**
>
> *Repo Rate Formula:*
>
> *Rate (%) = [(Repurchase Price - Initial Sale Price) / Initial Sale Price] * (365 / Tenor in Days) * 100*
>
> *When the central bank elevates this rate, it increases the marginal cost of funds for commercial banking entities seeking lender-of-last-resort liquidity. This immediate cost increase prompts commercial banks to elevate their lending benchmarks (such as the Marginal Cost of Funds Based Lending Rate [MCLR] or External Benchmark Lending Rates [EBLR]).*

2.2 The Reverse Repurchase Agreement (Reverse Repo) Rate: Liquidity Absorption

Conversely, the Reverse Repo operation represents the reciprocal leg of the liquidity corridor. Under a reverse repurchase transaction, commercial banks deposit surplus cash reserves with the central bank overnight or for specified tenors against the transfer of approved government securities as collateral. In economic effect, the central bank borrows short-term funds from commercial banks to absorb surplus systemic liquidity.

The Reverse Repo Rate is the annualized interest return that commercial banks earn on their surplus funds parked with the monetary authority. A higher reverse repo rate incentivizes risk-averse commercial lenders to lock surplus balances in guaranteed sovereign-backed central bank reserves rather than deploying credit into private market enterprises, real estate, or unsecured retail loans. Consequently, elevating the reverse repo rate exerts an immediate cooling effect on secondary credit creation.

3. The Liquidity Adjustment Facility (LAF) and the Policy Rate Corridor

In operational central banking—most visibly exemplified by the Reserve Bank of India (RBI) and echoed in the corridors of the European Central Bank (ECB) and Bank of England—short-term interest rates are managed within an explicit or implicit bounded corridor known as the Liquidity Adjustment Facility (LAF).

Corridor Component	Operational Facility	Economic Function & Direction of Funds	Typical Relative Rate Spread
Upper Ceiling	Marginal Standing Facility (MSF) / Discount Window	Emergency overnight borrowing for banks against approved SLR quota; penal lending ceiling.	Repo Rate + 25 bps
Policy Anchor	Repo Rate (Benchmark Policy Rate)	Standard collateralized liquidity injection rate; primary monetary policy benchmark.	Benchmark Rate (Base 0.0)
Lower Floor	Standing Deposit Facility (SDF) / Reverse Repo Rate	Overnight uncollateralized or collateralized surplus liquidity absorption facility.	Repo Rate - 25 bps (SDF) or -65 bps (Fixed Reverse Repo)

The Weighted Average Call Money Rate (WACMR)—the interest rate at which commercial banks borrow uncollateralized funds from each other overnight—fluctuates continuously inside this bounded corridor. When systemic liquidity is chronically deficient, the WACMR gravitates toward the upper ceiling

(MSF/Repo). When excess liquidity floods the banking system, interbank rates plunge toward the floor (SDF/Reverse Repo). Central bank open market operations calibrate these rates daily to keep the operating target aligned with the stated policy stance.

4. The Transmission Mechanism: From Central Bank Desk to General Price Levels

The economic impact of repo and reverse repo adjustments does not materialize instantaneously; it traverses a complex, multi-channel monetary transmission mechanism that takes between two to six quarters to fully impact real output and general prices.

4.1 The Interest Rate Channel (Cost of Credit Channel)

The interest rate channel is the most direct propagation pathway. When the central bank hikes the repo rate, commercial banks experience an immediate increase in their marginal borrowing costs. To protect net interest margins (NIM), banks sequentially adjust their external benchmark lending rates on retail mortgages, vehicle loans, and working capital lines.

- **1. Corporate Capital Expenditure:** Corporate Sector Impact: Elevated borrowing costs increase the cost of capital (WACC), rendering marginal capital expenditure (CAPEX) projects unviable. Corporate debt issuance contracts, reducing aggregate commercial investment.
- **2. Consumer Credit & Durables:** Household Sector Impact: Mortgage payments and consumer financing rates escalate. This elevates debt service ratios, curtailing discretionary disposable income and dampening household expenditure on durable goods.

4.2 The Credit Creation Channel (Bank Balance Sheet Channel)

The credit channel operates through the supply side of financial intermediation. Commercial banks operate under fractional reserve banking, generating broad money (M3) through the money multiplier: $m = (1 + c) / (r + c)$, where c is the currency-deposit ratio and r is the reserve ratio. When the central bank raises the reverse repo rate or conducts term reverse repos, banks find it risk-free and lucrative to park reserves at the central bank. This shrinks the pool of loanable funds available for market credit dispersion, reducing the velocity of money across the non-financial corporate sector.

4.3 The Exchange Rate Channel

In open macroeconomic environments characterized by cross-border capital mobility, interest rate variations alter international yield differentials. In accordance with Uncovered Interest Rate Parity (UIP), an upward revision in domestic repo rates—ceteris paribus—attracts foreign institutional portfolio flows (FPI/FII) into domestic debt securities. This net capital inflow strengthens the nominal exchange rate of

the domestic currency. A stronger domestic currency directly depresses the landed cost of imported commodities—particularly crude oil, industrial raw materials, and electronics—thereby curbing imported inflation.

4.4 The Asset Price Channel

Higher policy rates lower the present discounted value of future corporate earnings and dividend streams, as discounting discount rates increase. This triggers asset repricing across equity indices and real estate markets. The consequent deflation of asset bubbles induces an adverse 'wealth effect' among households, curbing consumer confidence and spending.

4.5 The Expectations Channel (The Credibility Anchor)

Perhaps the most critical channel in modern inflation targeting regimes is the expectations channel. Inflation exhibits significant persistence and self-fulfilling dynamics: if workers and businesses anticipate 8% inflation next year, workers demand 8% nominal wage increases, and firms raise output prices by 8% in anticipation, cementing inflation into the core economy. By preemptively raising the repo rate, the central bank signals its uncompromising commitment to its statutory inflation target, anchoring medium-term inflationary expectations and preventing wage-price spirals.

5. Dissecting Inflationary Dynamics: Demand-Pull vs. Cost-Push Inflation

A central inquiry in macroeconomic research is the efficacy of repo rate adjustments across distinct structural categories of inflation. Monetary policy instruments do not exhibit equal efficacy across all inflationary episodes.

Analytical Dimension	Demand-Pull Inflation	Cost-Push (Supply-Side) Inflation
Root Cause	Aggregate demand outstripping aggregate supply (AD > AS); loose monetary/fiscal stimulus; economic overheating.	Exogenous supply disruptions; energy price shocks (crude oil); agricultural crop failures; global supply chain snarls.
Repo Rate Efficacy	High and Direct. Hiking rates directly suppresses	Moderate to Low. Higher interest rates cannot generate

	consumption, credit expansion, and investment demand.	crude oil, produce semiconductor chips, or yield agricultural harvests.
Monetary Policy Trade-off	Minimal conflict. Cooling demand aligns with restoring long-term potential GDP growth.	Severe Dilemma. Hiking rates during a supply shock depresses already stagnant output, risking 'Stagflation'.
Policy Goal	Re-align aggregate demand back to the sustainable production possibilities frontier.	Prevent second-round passthrough into generalized wage demands and non-food, non-energy core inflation.

During cost-push episodes—such as geopolitical conflicts driving global energy price shocks—repo rate hikes cannot directly alleviate the physical supply deficit. However, central banks are compelled to tighten rates nonetheless to prevent 'second-round effects'. If high transportation and fuel costs seep into core manufacturing, retail distribution, and services, temporary supply shocks become structural, chronic inflation. Tightening repo rates restricts consumer liquidity, preventing retailers from passing on escalated production costs to end consumers.

6. Structural Innovations: Beyond Fixed Rates to Modern Operating Procedures

Over the past decade, global central banking has witnessed substantial structural refinements in how repo and reverse repo operations are deployed.

6.1 The Standing Deposit Facility (SDF): Resolving Collateral Constraints

Historically, reverse repo operations were structurally constrained by the central bank's internal inventory of sovereign securities. Under standard reverse repos, the central bank must transfer government bonds as collateral to commercial banks. During massive liquidity surges (such as post-demonetisation in India in 2016 or post-COVID quantitative easing globally), the volume of surplus banking liquidity threatened to exceed the total stock of government securities held on the central bank's balance sheet.

To eliminate this bottleneck, modern central banks instituted the Standing Deposit Facility (SDF) (introduced by the RBI in April 2022 following amendments to Section 17 of the RBI Act). The SDF empowers the central bank to absorb unlimited overnight liquidity without providing any collateral securities in return. Operating at a rate 25 basis points below the benchmark repo rate, the SDF has effectively superseded the fixed reverse repo rate as the operational floor of the monetary policy corridor.

6.2 Comparative Global Architectures

- **Federal Reserve (US):** United States (Federal Reserve): Operates the Overnight Reverse Repurchase Agreement (ON RRP) facility alongside the Interest on Reserve Balances (IORB) rate to establish a firm floor beneath the Federal Funds Effective Rate, absorbing hundreds of billions of dollars from money market mutual funds.
- **European Central Bank (ECB):** European Central Bank (ECB): Employs a three-rate structure comprising the Main Refinancing Operations (MRO) rate (Repo equivalent), Marginal Lending Facility (Ceiling), and the Deposit Facility Rate (DFR - Floor), which famously entered negative territory during the 2014-2022 euro-area stagnation.
- **• Reserve Bank of India (RBI):** Reserve Bank of India (RBI): Employs a flexible inflation targeting (FIT) framework under a statutory mandate of 4% CPI (+/- 2% tolerance band), actively utilizing variable rate repo (VRR) and variable rate reverse repo (VRRR) auctions for fine-tuning liquidity.

7. Empirical Bottlenecks and Transmission Lags in Emerging Markets

While the textbook mechanics of repo and reverse repo rate modulation are theoretically sound, practical implementation in developing and emerging market economies encounters acute structural bottlenecks:

- **1. Asymmetric Interest Rate Pass-Through:** Asymmetric Commercial Bank Pass-Through: Commercial banks routinely demonstrate asymmetric transmission speed. When the central bank hikes the repo rate, banks swiftly adjust lending rates upward to protect margins; however, when the repo rate is reduced, banks delay lowering borrowing costs, citing high fixed-rate term deposit commitments.
- **2. Non-Banking Intermediation Channels:** Shadow Banking and NBFC Intermediation: A substantial volume of credit dispersion in emerging economies occurs via Non-Banking Financial Companies (NBFCs) and microfinance institutions. Because NBFCs cannot access the central bank's primary repo window directly, monetary transmission reaches them through commercial bank wholesale borrowing channels with friction and dilution.
- **3. Macroeconomic Transmission Lags:** Structural Time Lags: Empirical studies demonstrate that the output lag of policy rate hikes is approximately 2 to 3 quarters, while the ultimate inflation-cooling impact takes 4 to

6 quarters. Central banks must therefore navigate monetary policy forward-looking projections rather than contemporary backward-looking data.

- **4. Global Financial Spillovers:** The Trilemma and Global Spillovers: Emerging central banks frequently face the classical Mundell-Fleming policy trilemma (impossible trinity). Vigorous domestic rate adjustments can be offset by sudden monetary policy shifts by the US Federal Reserve, forcing domestic central banks to adjust repo rates to defend currency stability rather than purely domestic inflation targets.

8. Conclusion and Strategic Policy Prescriptions

The Repo and Reverse Repo rates constitute the primary operational steering wheel of modern central banking. By modulating the cost and availability of overnight central bank liquidity, these instruments govern the interbank call money market, shape commercial bank retail and corporate lending yields, rebalance international capital and foreign exchange flows, and anchor macroeconomic inflation expectations.

However, monetary policy tightening via repo hikes cannot be viewed as a panacea for all economic distempers. While remarkably effective in curtailing demand-pull pressures and neutralizing asset bubbles, interest rate hikes impose real economic costs on capital formation, employment growth, and sovereign debt servicing. Furthermore, when inflation is predominantly driven by geopolitical supply ruptures, agricultural shortfalls, or logistical bottlenecks, monetary policy must be complemented by targeted fiscal policies, structural supply-side de-bottlenecking, and strategic reserve releases.

To enhance the efficacy of monetary governance in the future, central banks must continue refining their liquidity operating frameworks through market-determined variable rate auctions, ensure full transparency in benchmark lending rate transmission, and institutionalize uncollateralized absorption mechanisms like the SDF. Only through coordinated, transparent, and forward-looking central banking can price stability and robust economic prosperity be reconciled in an increasingly volatile global economic environment.

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