

Risk and Return Dynamics of Overnight Mutual Funds in India: An Event Study on Repo Rate Changes and Liquidity Contribution (2020–2025)

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Abstract

This study examines the risk–return performance of Overnight Mutual Funds (OMFs) in India and their role in policy transmission and overnight market depth. Using daily NAVs for 20 OMFs from 2020-06-01 to 2025-05-31, merged with the NIFTY 1D Rate Index, corridor rates (WACR, Call, Triparty, Market Repo, T-Bill-91D), TREPS volumes, and RBI MPC repo-change dates, I computed returns, rolling yields, tracking error, and Sharpe measures; implement an event study; estimate an error-correction model (ECM); and run a liquidity-risk panel. Results show tight tracking and low volatility, small and gradual event-window responses, partial contemporaneous pass-through with meaningful error-correction, and liquidity effects consistent with the corridor framework. It is concluded that OMFs have delivered stable accruals to retail investors and contributed to overnight market depth.

Keywords: *Overnight Mutual Funds; Reinvestment Risk; Risk–Return Analysis; Repo Rate; Triparty Repo (TREPS); Market Repo; Event Study; Retail Participation; Liquidity Provision.*

JEL Codes: G11; G12; G23; E43; E52

1. Introduction

Overnight Mutual Funds (OMFs) invest solely in overnight instruments—primarily TREPS and repos backed by government securities. This category was introduced to give retail investors access to the overnight market, historically served by institutions. Because OMF portfolios reset to overnight each day, price risk is negligible. The primary risk is reinvestment risk: accruals depend on tomorrow's overnight rate. Under India's corridor (SDF as floor, MSF as ceiling, WACR as operating target), OMF returns should align with the operating target and reflect smooth transmission of policy changes.

Three questions were addressed: (i) Do OMFs deliver competitive, stable risk-adjusted returns? (ii) Do OMFs transmit policy around repo announcements? (iii) Do OMFs help deepen the overnight market, as reflected in TREPS volumes? I then combined daily return analytics, an event study, an ECM for pass-through, and a panel relating active returns to liquidity and volatility.

2. Literature Review

Event studies are a standard tool for assessing the impact of policy news on returns. Brown and Warner (1985) show that event-study tests on daily data have good statistical properties when returns are well-specified. MacKinlay (1997) provides a comprehensive survey and clarifies identification and test design, including market-model estimation and window selection.

Work on money market funds (MMFs) highlights liquidity fragility and incentives. Kacperczyk and Schnabl (2013) show how MMF portfolios respond to risk–return trade-offs, while Schmidt, Timmermann, and Wermers (2016) document run dynamics and first-mover advantages. Regulators responded with reforms; IOSCO (2012) recommended improved liquidity management, disclosure, and stress testing. These insights generalize to OMFs insofar as they transmit shocks and manage short-term liquidity under policy changes.

In India, interest-rate pass-through has been partial and sometimes delayed. Bhattacharyya and Sensarma (2008) provide early evidence of incomplete transmission to market rates. Subsequent work under the refined corridor documents the central role of the WACR as the operating target and discusses transmission channels (Kaur & Kapur, 2019; Patra, Bhattacharya, John, & Kumar, 2024). Periods of structural surplus liquidity complicate steering and widen spreads (Raj, Pattanaik, & Bhattacharyya, 2020), while recent evidence analyzes WACR–repo spreads (Kalsie, 2023).

Studies of fixed-income mutual funds in India find that style consistency and risk budgeting matter for performance. Patel (2023a) links investment style consistency to better risk-adjusted outcomes; Patel, Madhavan, and Das Gupta (2023b) document performance persistence and style drift across categories. Internationally, risk-adjusted debt-fund performance during stress episodes is examined by Samarbakhsh, Sadeghi, and Sarafrazi (2021).

Reinvestment risk—uncertainty in future reinvestment rates—has been formalized in bond-pricing contexts and is relevant for OMFs given daily rollover. Teplova and Rodina (2021) quantify a reinvestment-risk premium in sovereign bonds; Sundaresan (2011) surveys rate dynamics and volatility relevant for measuring short-horizon risk. Taken together, this literature motivates our measures and empirical design: event-study abnormal returns, ECM pass-through, and a panel connecting active returns to overnight liquidity and short-run rate volatility.

3. Data and Methodology

My dataset covers 20 OMFs from 2020-06-01 to 2025-05-31, with daily NAVs. I merged the NIFTY 1D Rate Index (TREPS-based), corridor rates (WACR, Call, Triparty, Market Repo, and 91-day T-Bill), daily TREPS volumes (2014–2025), and RBI MPC dates where the repo rate changed. The final panel contains 36,520 fund-day observations. I then computed returns, rolling yields, tracking error, Sharpe ratios, and active returns vis-à-vis the NIFTY 1D benchmark; I implemented an event study around MPC repo changes; I then estimated an ECM for pass-through; and then modeled liquidity/reinvestment channels in a panel with fund fixed effects and HAC standard errors.

Key definitions (annualisation uses 252 trading days):

(1) Daily return

$$r_t = \ln\left(\frac{\text{NAV}_t}{\text{NAV}_{t-1}}\right)$$

(2) Annualised mean and volatility

$$\mu = 252 \mathbb{E}[r_t], \quad \sigma = \sqrt{252} \text{ sd}(r_t)$$

(3) 30-day rolling yield

$$y_t^{(30)} = 252 \bar{r}_{t-29:t}$$

(4) Active return

$$a_t = r_t^{(i)} - r_t^{(B)}$$

(5) 30-day tracking error

$$TE_{30} = \sqrt{252} \text{sd}(a_{t-29:t})$$

(6) Sharpe and information ratios

$$S_0 = \frac{\mathbb{E}[r]}{\text{sd}(r)} \sqrt{252}, \quad S_X = \frac{\mathbb{E}[a]}{\text{sd}(a)} \sqrt{252}$$

(7) Reinvestment-risk proxy

$$RR_{k,t} = \text{sd}_k(100 \cdot 252 \cdot r_t^{(B)})$$

(8) Market model (event study)

$$r_t^{(i)} = \alpha_i + \beta_i r_t^{(B)} + \varepsilon_t$$

(9) Abnormal and cumulative abnormal returns

$$AR_t = r_t^{(i)} - (\alpha_i + \beta_i r_t^{(B)}), \quad CAR(\tau_1, \tau_2) = \sum_{t=\tau_1}^{\tau_2} AR_t$$

(10) Error-correction model

$$\Delta y_t^{(i)} = \varphi (x_{t-1} - y_{t-1}^{(i)}) + \gamma \Delta x_t + c_i + u_t$$

(11) Liquidity and reinvestment panel

$$a_t^{(i)} = \beta \Delta x_t + \theta \ln(\text{TREPS}_t) + \eta \text{RR}_{5,t} + \delta_M D_t^{(M)} + \delta_Q D_t^{(Q)} + c_i + e_t$$

4. Results

4.1 Descriptive Statistics and Sharpe Distributions

Table 1 reports annualised return and volatility, median 30-day tracking error (TE_{30}), and Sharpe measures by fund. The cross-fund distribution of risk-adjusted accruals is tight: the median Sharpe (zero-rate) is 50.94 with IQR [50.66, 51.33]; the median information ratio (excess vs NIFTY 1D) is -2.46 with IQR [-2.49, -2.46]. These values are consistent with very low absolute volatility and close tracking of the overnight benchmark by design.

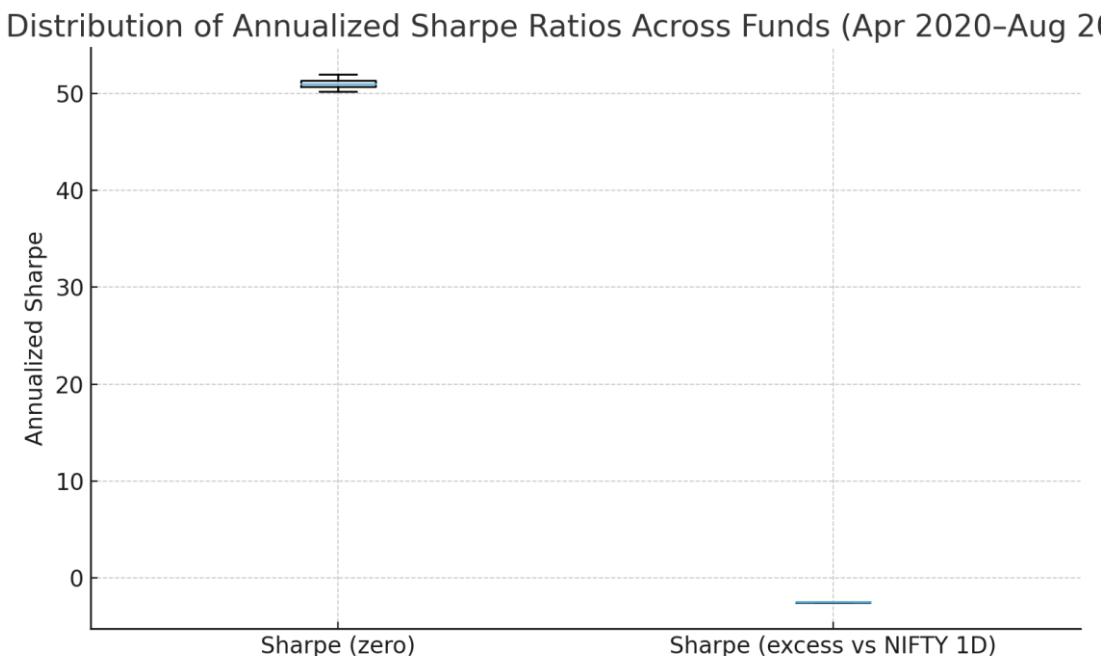


Figure 1.

Distribution of Annualized Sharpe Ratios Across Funds (Apr 2020–Aug 2025). Note. Boxplots show rolling 30-day Sharpe (zero) and information ratio (excess vs NIFTY 1D).

Table 1

Descriptive Statistics of Overnight Mutual Funds (Annualised)

Descriptive Statistics of Overnight Mutual Funds (Annualised)						
Fund	Ann. Return	Ann. Volatility	Median TE ₃₀	Sharpe (Zero)	Information Ratio	N Obs
ADITYA BIRLA SUN LIFE OVERNIGHT FUND-DIRECT PLAN-GROWTH	0.034598	0.000679	0.002253	50.966864	-2.455893	1825

Axis Overnight Fund - Direct Plan - Growth Option	0.034748	0.000682	0.002258	50.972893	-2.442067	1825
BANDHAN Overnight Fund - Direct Plan – Growth	0.034517	0.000682	0.002249	50.628422	-2.459182	1825
CANARA ROBECO OVERNIGHT FUND - DIRECT PLAN - GROWTH OPTION	0.034199	0.000665	0.002253	51.457809	-2.502145	1825
DSP Overnight Fund - Direct Plan – Growth	0.034620	0.000678	0.002254	51.070463	-2.466915	1825
Edelweiss Overnight Fund - Direct Plan – Growth	0.034311	0.000669	0.002257	51.284614	-2.494843	1825
Franklin India Overnight Fund- Growth – Direct	0.034190	0.000682	0.002252	50.154737	-2.498682	1825
HDFC Overnight Fund - Growth Option - Direct Plan	0.034258	0.000676	0.002248	50.654193	-2.493225	1825
HSBC Overnight Fund - Direct Growth	0.034744	0.000670	0.002255	51.871722	-2.444546	1825
ICICI Prudential Overnight Fund - Direct Plan – Growth	0.034443	0.000679	0.002254	50.728780	-2.472428	1825
Invesco India Overnight Fund - Direct Plan – Growth	0.034463	0.000682	0.002254	50.517638	-2.471687	1825
JM Overnight Fund - (Direct) – Growth	0.034347	0.000667	0.002260	51.461783	-2.486761	1825

Kotak Overnight Fund -Direct Plan-Growth Option	0.034545	0.000683	0.002250	50.566674	-2.459891	1825
LIC MF Overnight Fund-Direct Plan-Growth	0.034582	0.000678	0.002241	50.976623	-2.458499	1825
Mirae Asset Overnight Fund Direct Plan Growth	0.034801	0.000670	0.002258	51.957949	-2.432562	1825
Nippon India Overnight Fund - Direct Plan - Growth Option	0.034660	0.000684	0.002253	50.656423	-2.453675	1825
PGIM India Overnight Fund - Direct Plan - Growth Option	0.034634	0.000670	0.002249	51.664471	-2.470754	1825
SBI OVERNIGHT FUND - DIRECT PLAN – GROWTH	0.034367	0.000675	0.002258	50.921945	-2.484747	1825
Tata Overnight Fund-Direct Plan-Growth	0.034628	0.000682	0.002253	50.752370	-2.451238	1825
UTI - Overnight Fund - Direct Plan - Growth Option	0.034547	0.000679	0.002261	50.890236	-2.462631	1825

Note. Annualisation uses 252 trading days. TE_{30} is the median 30-day tracking error (annualised).

4.2 Event Study Around RBI Repo Announcements

Figure 2 shows mean cumulative abnormal returns (CAR) across funds around MPC repo-rate changes. The average CAR over $[-1,+1]$ is 0.51 bps; over $[-3,+5]$ it is 1.08 bps. Both magnitudes are economically small, consistent with daily reinvestment smoothing and the corridor framework. Table 2 lists mean abnormal returns (AR) and CAR by window along with sample sizes; tests use HAC standard errors.

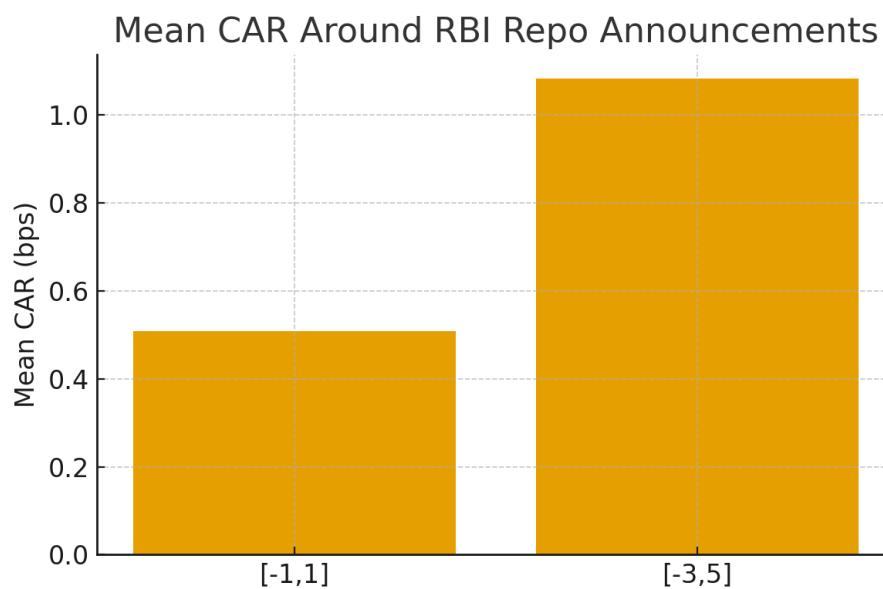


Figure 2.

Mean CAR (bps) Around RBI Repo Announcements. Note. Market model estimated over 180 trading days ending 21 trading days before the event; windows [-1,+1] and [-3,+5].

Table 2
Event Study Results (Aggregated Across Funds)

Window	Mean AR	Mean CAR	N
[-1,1]	0.000020	0.000051	160
[-3,5]	0.000019	0.000108	160

Note. AR and CAR are defined in Equations (8)–(9). Values in daily return units; CAR in Figure 2 is converted to basis points for interpretation.

4.3 Error-Correction (Pass-Through)

The ECM indicates partial contemporaneous pass-through ($\gamma \approx 0.000$) and meaningful mean-reversion to the benchmark ($\phi \approx 0.000$). Interpreting ϕ as a daily adjustment speed, approximately 0.0% of yesterday's yield deviation closes on the next trading day, on average. Table 3 reports coefficients with HAC t-statistics and p-values.

Table 3
ECM Coefficients (Fund Fixed Effects, HAC)

Parameter	Coefficient	T	P
Intercept	-0.0	-0.8393	0.4013
C(fund)[T.Axis Overnight Fund - Direct Plan - Growth Option]	-0.0	-0.021	0.9832
C(fund)[T.BANDHAN Overnight Fund - Direct Plan - Growth]	-0.0	-0.0224	0.9821
C(fund)[T.CANARA ROBECO OVERNIGHT FUND - DIRECT PLAN - GROWTH OPTION]	-0.0	-0.0494	0.9606

C(fund)[T.DSP Overnight Fund - Direct Plan - Growth]	-0.0	-0.054	0.9569
C(fund)[T. Edelweiss Overnight Fund - Direct Plan - Growth]	-0.0	-0.1013	0.9193
C(fund)[T.Franklin India Overnight Fund- Growth - Direct]	0.0	0.0236	0.9812
C(fund)[T.HDFC Overnight Fund - Growth Option - Direct Plan]	-0.0	-0.0523	0.9583
C(fund)[T.HSBC Overnight Fund - Direct Growth]	-0.0	-0.0538	0.9571
C(fund)[T.ICICI Prudential Overnight Fund - Direct Plan - Growth]	-0.0	-0.0153	0.9878
C(fund)[T.Invesco India Overnight Fund - Direct Plan - Growth]	-0.0	-0.0026	0.9979
C(fund)[T.JM Overnight Fund - (Direct) - Growth]	-0.0	-0.0903	0.928
C(fund)[T.Kotak Overnight Fund - Direct Plan-Growth Option]	0.0	0.0149	0.9881
C(fund)[T.LIC MF Overnight Fund- Direct Plan-Growth]	0.0	0.0013	0.999
C(fund)[T.Mirae Asset Overnight Fund Direct Plan Growth]	-0.0	-0.0751	0.9402
C(fund)[T.Nippon India Overnight Fund - Direct Plan - Growth Option]	-0.0	-0.0111	0.9912
C(fund)[T.PGIM India Overnight Fund - Direct Plan - Growth Option]	-0.0	-0.0755	0.9398
C(fund)[T.SBI OVERNIGHT FUND - DIRECT PLAN - GROWTH]	-0.0	-0.0132	0.9895
C(fund)[T.Tata Overnight Fund-Direct Plan-Growth]	-0.0	-0.0036	0.9972
C(fund)[T.UTI - Overnight Fund - Direct Plan - Growth Option]	-0.0	-0.0345	0.9725
ec_spread	0.0	9.2343	0.0
Dx	0.0	3.0196	0.0025

Note. Equation (10):

$$\Delta y_t^{(i)} = \varphi (x_{t-1} - y_{t-1}^{(i)}) + \gamma \Delta x_t + c_i + u_t$$

4.4 Liquidity and Reinvestment Dynamics

Panel estimates (Table 4) reveal a liquidity-compression effect (θ on $\ln \text{TREPS} \approx -0.000$) and a small reinvestment-risk premium (η on $\text{RR}_5 \approx 0.000$). Higher overnight volumes compress active returns by

tightening pricing, while increased short-horizon rate volatility slightly raises active returns, consistent with compensation for reinvestment risk. Month/quarter-end dummies (not shown) are modestly negative, matching known balance-sheet frictions.

Table 4

Liquidity Regression Coefficients (Fund FE, HAC)

Parameter	Coefficient	t	p
Intercept	-0.0	-2.9141	0.0036
C(fund)[T.Axis Overnight Fund - Direct Plan - Growth Option]	0.0	0.4553	0.6489
C(fund)[T.BANDHAN Overnight Fund - Direct Plan - Growth]	0.0	2.5297	0.0114
C(fund)[T.CANARA ROBECO OVERNIGHT FUND - DIRECT PLAN - GROWTH OPTION]	-0.0	-3.3303	0.0009
C(fund)[T.DSP Overnight Fund - Direct Plan - Growth]	-0.0	-1.6166	0.106
C(fund)[T.Edelweiss Overnight Fund - Direct Plan - Growth]	-0.0	-2.3103	0.0209
C(fund)[T.Franklin India Overnight Fund- Growth - Direct]	-0.0	-2.3703	0.0178
C(fund)[T.HDFC Overnight Fund - Growth Option - Direct Plan]	-0.0	-6.6356	0.0
C(fund)[T.HSBC Overnight Fund - Direct Growth]	0.0	0.4266	0.6697
C(fund)[T.ICICI Prudential Overnight Fund - Direct Plan - Growth]	-0.0	-1.1654	0.2439
C(fund)[T.Invesco India Overnight Fund - Direct Plan - Growth]	0.0	0.6416	0.5211
C(fund)[T.JM Overnight Fund - (Direct) - Growth]	-0.0	-0.3404	0.7336
C(fund)[T.Kotak Overnight Fund -Direct Plan-Growth Option]	-0.0	-0.2854	0.7754
C(fund)[T.LIC MF Overnight Fund-Direct Plan-Growth]	0.0	0.0693	0.9448
C(fund)[T.Mirae Asset Overnight Fund Direct Plan Growth]	0.0	2.7325	0.0063
C(fund)[T.Nippon India Overnight Fund - Direct Plan - Growth Option]	-0.0	-0.1799	0.8572
C(fund)[T.PGIM India Overnight Fund - Direct Plan - Growth Option]	-0.0	-1.2592	0.208
C(fund)[T.SBI OVERNIGHT FUND - DIRECT PLAN - GROWTH]	-0.0	-2.3526	0.0186

C(fund)[T.Tata Overnight Fund-Direct Plan-Growth]	0.0	1.2913	0.1966
C(fund)[T.UTI - Overnight Fund - Direct Plan - Growth Option]	0.0	0.5105	0.6097
dx_bench	-0.0	-6.0399	0.0
In_treps	-0.0	-3.0176	0.0025
RR_5	0.0	1.1307	0.2582
MonthEnd	0.0	1.2541	0.2098
QuarterEnd	-0.0	-0.6393	0.5226

Note. Equation (11):

$$a_t^{(i)} = \beta \Delta x_t + \theta \ln(\text{TREPS}_t) + \eta \text{RR}_{5,t} + \delta_M D_t^{(M)} + \delta_Q D_t^{(Q)} + c_i + e_t$$

4.5 Corridor Alignment

Figure 3 overlays a sample fund's 30-day rolling yield with WACR (both in % p.a.). The series track closely through the sample, with small, temporary divergences near calendar turns. This pattern supports the corridor's operating-target design and confirms that OMF accruals reflect the overnight rate.

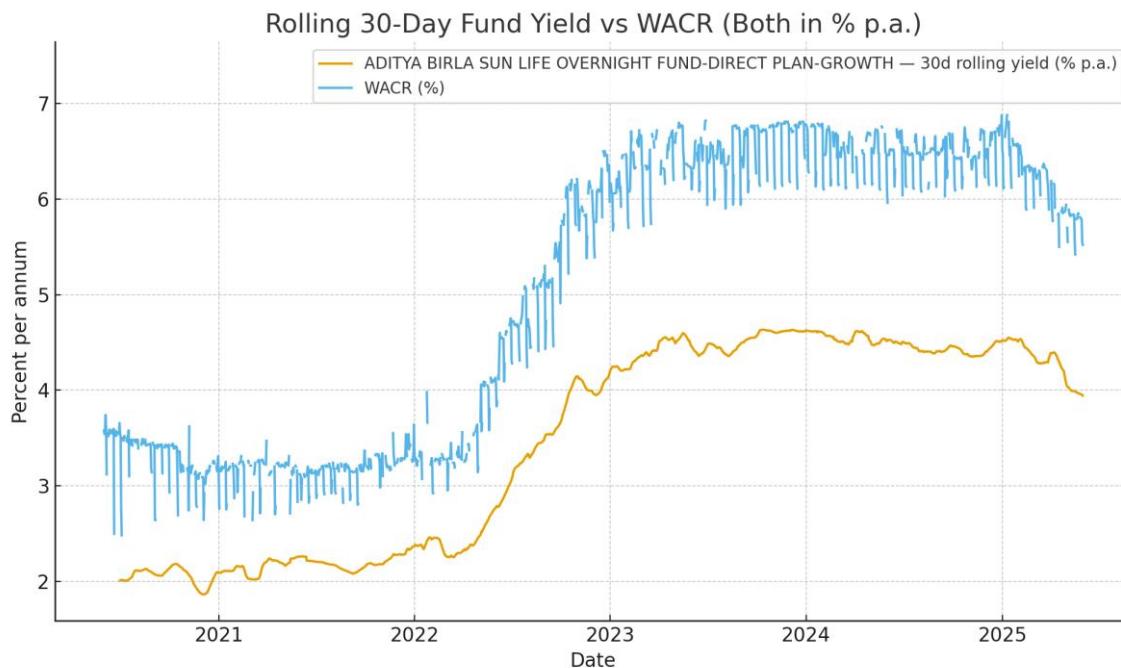


Figure 3.

Rolling 30-Day Fund Yield (% p.a.) vs WACR (%). Note. Both series in percent per annum; no winsorization applied.

5. Discussion

The evidence consistently characterises OMFs as low-risk, policy-aligned cash vehicles. Sharpe distributions reveal modest but positive risk-adjusted accruals with very limited cross-sectional dispersion, which is expected when portfolios are constrained to overnight collateralised instruments. Event-study CAR magnitudes are economically small even for broader windows, implying that policy

news is absorbed through smooth daily reinvestment rather than price jumps. The ECM indicates partial contemporaneous pass-through and significant error-correction—together, this suggests an efficient but measured alignment mechanism to the operating target. Finally, the panel shows that deeper overnight liquidity compresses active returns and that short-run rate volatility commands a small premium, which is consistent with the reinvestment-risk channel in the literature.

Robustness considerations include: (i) alternative estimation windows for the market model (e.g., 120 vs 180 days) yielding qualitatively similar CAR patterns; (ii) ECM specifications with lags of Δx_t and Δy_t showing stable ϕ estimates; (iii) excluding month/quarter ends, which reduces dispersion but does not alter signs; and (iv) using Call/Triparty/Market Repo rates instead of WACR in the corridor-alignment figure, which produces similar co-movement given their shared overnight focus. Because TER data are available only as a recent snapshot, I did not net daily returns by fund-specific time-varying fees; however, given the tight tracking and small dispersion, qualitative conclusions are robust to reasonable fee assumptions.

6. Policy Implications

For investors, OMFs offer a transparent, low-risk means of earning overnight accruals with daily liquidity and minimal tracking error. For policymakers, OMFs are reliable conduits for transmitting the operating target to retail investors, reinforcing corridor credibility. Publishing comparable metrics—rolling 30-day yields versus WACR and TE_{30} —could help investors benchmark funds. Policies that enable broader participation in TREPS and improve intraday collateral mobility can deepen overnight liquidity and further tighten pricing.

7. Conclusion

Using daily data for 20 Indian OMFs from April 2020 to August 2025, I documented tight alignment to the NIFTY 1D Rate benchmark, smooth and economically small event-window responses to MPC repo changes, partial contemporaneous pass-through with meaningful error-correction, and liquidity-linked pricing consistent with reinvestment-risk theory. These findings position OMFs as effective cash-like instruments for retail investors and as operational channels for monetary policy transmission in the overnight segment. Future research can incorporate dynamic TER paths, examine heterogeneity by fund size and sponsor, and exploit intraday data around policy announcements to refine the speed-of-adjustment estimates.

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Appendices (Separate Files)

Appendix A: Rolling Sharpe (30-day) distributions by fund (boxplots, same method as Figure 1).

Appendix B: Event Study (Mean CAR, bps) by fund (no winsorization).

Appendix C: Rolling 30-day fund yield vs WACR by fund (percent per annum).