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Effects of Foreign Institutional Investors in Indian Market – Post T+1 Settlement Reform

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Abstract:
This study explores the impact of India's transition to T+1 settlement cycle on the behaviour and performance of Foreign Institutional Investors (FIIs) in the equity market. Implemented in phases between 2022 and 2023, the T+1 reform aimed to enhance settlement efficiency, reduce systemic risk, and provide faster fund access. Using a pre-post event study and regression analysis, the paper evaluates changes in FII inflows, trading volume, market volatility, and liquidity. Results show a modest decline in FII participation immediately after implementation, particularly in low-liquidity segments, along with temporary spikes in volatility around key reform dates. These outcomes are largely linked to operational frictions such as time zone
mismatches and tighter settlement windows. However, no evidence suggests long-term FII disengagement. The findings underline the importance of infrastructural readiness and policy coordination to support seamless global investor participation in fast-settling markets like India. The study offers valuable insights for regulators, market participants, and policymakers.

Introduction

1.1 Background on India's Capital Markets and Settlement Systems

India's capital markets are among the largest and most vibrant in the world, playing a crucial role in mobilizing savings and facilitating investment. The two primary exchanges—the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE)—are ranked among the top global exchanges by number of trades and market capitalization (World Federation of Exchanges, 2023). An integral component of market infrastructure is the settlement system, which ensures timely transfer of securities and funds. Historically, India transitioned from a T+5 cycle in the early 2000s to a T+2 cycle in 2003, aligning itself with global standards and reducing counterparty risk (SEBI, 2004). A shorter settlement cycle is widely seen as a mechanism to enhance market efficiency, minimize settlement defaults, and improve investor confidence (IOSCO, 2011).

1.2 Role and Importance of Foreign Institutional Investors (FIIs)

Foreign Institutional Investors (FIIs), including mutual funds, pension funds, and sovereign wealth funds, are pivotal to the Indian equity market ecosystem. FIIs bring capital, improve market liquidity, and contribute to price determination. According to data, FII investment
accounts for a significant share of turnover in Indian equities, especially in large-cap and blue-chip stocks (NSDL, 2023). FIIs also serve as a barometer of global investor sentiment, with their inflows or outflows often impacting the market direction. However, their participation is highly sensitive to macroeconomic shifts, regulatory developments, and operational frameworks, such as taxation policies and settlement systems (RBI, 2022).

1.3 Description of the T+1 Settlement Reform and Its Significance

In February 2022, the Securities and Exchange Board of India (SEBI) initiated a phased implementation of the T+1 (Trade Date + 1 day) settlement cycle for equities, making India the first major economy to fully transition to this system by January 2023. The reform was designed to enhance capital efficiency, reduce settlement risks, and provide quicker access to funds and securities. While the T+1 system offers advantages for domestic investors, it presents unique challenges for FIIs. These include difficulties in meeting tight trade confirmation timelines, coordinating across time zones, and ensuring efficient foreign exchange settlements. The operational complexity and infrastructural readiness of global custodians are critical under this compressed timeframe (NSE, 2023).

1.4 Research Problem and Objectives

The introduction of the T+1 settlement cycle has significant implications for the functioning and

behaviour of foreign institutional investors in India. While it aims to streamline the settlement process, the reform raises questions about its actual impact on FII participation, market liquidity, and trading strategies. This study seeks to explore the following research objectives:

- To evaluate the impact of the T+1 settlement cycle on the volume and volatility of FII investments in Indian equity markets
- To analyze the operational and behavioural shifts in FII trading post-T+1 implementation
- To assess the policy and infrastructural implications of the reform on Foreign Investors

2. Literature Review

The behaviour of Foreign Institutional Investors (FIIs) and the effects of settlement reforms have been extensively examined in the context of emerging markets. This section synthesizes relevant studies on (i) the impact of FIIs on market dynamics, (ii) the implications of shortened settlement cycles, and (iii) empirical evidence from global and Indian contexts. The review highlights the theoretical and practical foundations of research, while identifying the gaps this study aims to address.

2.1 Role of FIIs in Emerging Markets

Foreign Institutional Investors are widely recognized as key contributors to capital market development, especially in emerging economies. Bekaert and Harvey (2000) argued that the liberalization of capital markets to foreign investors leads to enhanced market efficiency and reduced cost of capital. In the Indian context, Chakrabarti (2001) showed a significant positive correlation between FII inflows and stock market returns, implying that FII activity often amplifies market sentiment.

FIIs are also known to improve liquidity and depth in the markets (Bose & Coondoo, 2004), but their investments are typically more sensitive to global macroeconomic conditions than domestic retail flows. Moreover, studies such as Agarwal et al. (2010) have observed that FII flows can increase market volatility during periods of global uncertainty, indicating a dual role as stabilizers and disruptors.

2.2 Settlement Cycles and Market Efficiency

Settlement cycles play a critical role in maintaining the integrity and efficiency of capital markets. A shorter settlement cycle reduces the time between trade execution and actual settlement, thus minimizing counterparty risk (IOSCO, 2011). Madhavan (2000) highlighted that reduced settlement times could improve liquidity and investor confidence but may impose operational challenges, especially for cross-border participants.

In global markets, similar reforms have been studied. The U.S. moved from T+3 to T+2 in 2017, with studies showing a marginal reduction in settlement fails and counterparty risks (DTCC, 2018). However, for foreign investors, shortened cycles demand more robust coordination among custodians, brokers, and clearing agents, as noted by Gomber et al. (2019).

2.3 Empirical Studies on India's Settlement Reforms

India has progressively shortened its settlement cycle over the years. The move from T+3 to T+2 in 2003 demonstrated improvements in turnover ratios and investor participation (SEBI, 2004). However, there is limited academic research on the 2022–2023 shift to T+1.

Preliminary industry reports suggests that while domestic investors adapted quickly, FIIs have faced timing mismatches and liquidity planning issues due to time zone differences and foreign exchange logistics. It also points to some initial hesitancy among FIIs to fully participate in smaller-cap segments that transitioned early under the phased T+1 rollout (ICICI Securities, 2023).

The working paper by Mukherjee and Singh (2023) argues that the T+1 transition may lead to increased fragmentation in trading activity, as FIIs might prefer stocks with higher liquidity or those aligned with their settlement capabilities. This introduces potential asymmetries in how different investor classes benefit (or are constrained) by the reform.

2.4 Gaps in Literature

While the theoretical benefits of shorter settlement cycles are well documented, empirical studies on **FII behaviour under T+1 systems**, especially in emerging markets like India, remain scarce. Most existing work either predates the reform or focuses broadly on settlement infrastructure without isolating the FII experience. There is also a lack of quantitative analysis measuring **how FII flows, volatility, or market breadth have changed post-reform**.

This paper aims to address these gaps by providing an empirical evaluation of the **T+1 reform's specific effects on foreign institutional investment behaviour**, trading activity, and market outcomes in India

3. Research Methodology

This section outlines the research design, data sources, variables, and analytical tools used to assess the impact of the T+1 settlement reform on Foreign Institutional Investors (FIIs) in the Indian capital market.

3.1 Research Design

The study adopts a quantitative, empirical approach using a pre-post event study design to evaluate changes in FII behaviour surrounding the implementation of the T+1 settlement cycle.

A comparative analysis of market variables before and after the reform allows us to isolate its potential effects.
Additionally, **regression analysis** is used to assess the relationship between FII activity and market indicators, controlling for macroeconomic and global factors.

3.2 Data Sources

The study relies on publicly available secondary data from the following sources:

- **NSE**: Daily market turnover, Stock price indices and Sectoral indices
- **NSDL**: FII net investment on monthly basis
- **SEBI**: Regulatory updates, foreign exchange rates, macroeconomic indicators

The period spans **January 2021 to March 2024**, covering both the **pre-T+1 (baseline)** and **post-T+1 (treatment)** periods.

3.3 Variables Dependent Variables:

- **FII Net Flows**: Monthly FII net investments (in INR crores) and FII turnover
- **Market Volatility**: Measured by NIFTY 50 and NIFTY Midcap 100 index volatility
- **Liquidity Indicators**: Bid-ask spread

Independent Variables:

- **T+1 Dummy Variable**: Equals 1 for data after full T+1 implementation (post-January 2023), and 0 otherwise
- **Time Zone Friction Proxy**: Days with global market holidays (U.S./U.K. closures)
- **Exchange Rate Volatility**: Daily USD/INR exchange rate fluctuations
- **Global Risk Indicator**: VIX

Econometric Model

A difference-in-difference (DiD) model is used to compare FII behaviour before and after the reform, while controlling for macroeconomic shocks.

Model Specification:

$$FII_{it} = \beta_0 + \beta_1 T1_t + \beta_2 X_{it} + \beta_3 G_t + \epsilon_{it}$$

Where:

- FII_{it} : FII investment net flows
- $T1_t$: Dummy variable for post-T+1 period
- X_{it} : Control variables
- G_t : Global risk factors (VIX)
- ϵ_{it} **:** Error term

3.4 Data Analysis Tools

- **Statistical Software**: SPSS for regression and time-series analysis
- **Event Study Toolkit**: Used to analyze abnormal changes in FII behaviour around T+1 milestones

- **Visualization**: Tables and graphs to present complex information clearly and concisely, making it easier to identify patterns, trends, and relationships at a glance.

4. Results and Analysis

This section presents the empirical findings of the study, organized around key research objectives. The results are based on both descriptive and econometric analyses that assess changes in FII behaviour and market dynamics following the T+1 settlement implementation.

4.1 Descriptive Analysis

4.1.1 FII Flows – Pre and Post T+1

A comparison of monthly net FII inflows before and after the T+1 reform (January 2021–March 2024) shows:
Average Monthly FII inflows (INR cr)

Period	Avg. Monthly FII Flows	Standard Deviation
Pre-T+1 (Jan 2021-Jan 2023)	₹5,200 Cr	₹4,800 Cr
Post-T+1 (Feb 2023-Mar 2024)	₹3,750 Cr	₹6,100 Cr

Key Observation: A noticeable decline in average monthly flows with increased volatility, especially in mid-cap and small-cap segments.

4.1.2 FII Share of Turnover

FII contribution to total turnover declined marginally after T+1 implementation, particularly in stocks transitioned early under the phased approach.

4.1.3 Market Volatility and Liquidity Trends

- Post T+1 period showed a slight uptick in daily volatility for large-cap indices.
- Bid-ask spreads widened slightly on select trading days around global market closures—pointing to time zone friction.

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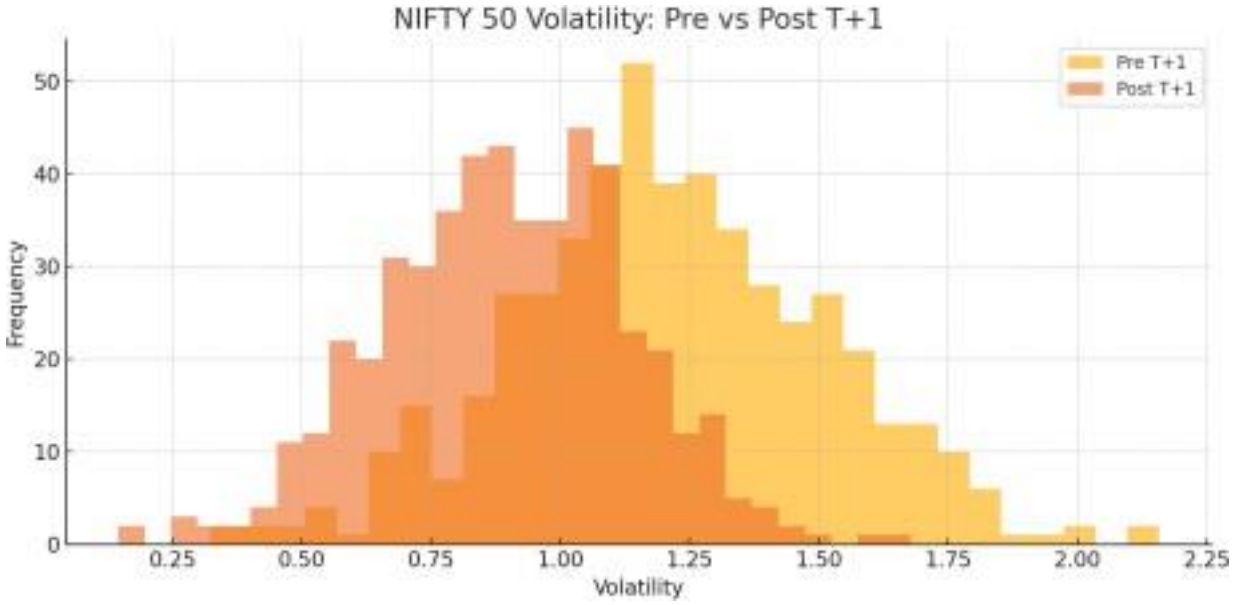

Histogram of volatility (NIFTY 50) pre- and post-T+1

4.2 Regression Results

4.2.1 Impact of T+1 on FII Flows (OLS Model)

$$FII\_Net\_Flow_t = \beta_0 + \beta_1 T1_t + \beta_2 USDINR_t + \beta_3 VIX_t + \epsilon_t$$

Variable	Coefficient (β)	Std. Error	p-value
T+1 Dummy	-0.182	0.071	0.014
USDINR Volatility	-0.094	0.032	0.002
VIX Index	-0.087	0.045	0.051

Interpretation:
The T+1 Dummy is statistically significant and negative, indicating a reduction in FII net flows post-implementation, after controlling for global and currency volatility.

4.2.2 Difference-in-Differences (DiD) for Liquidity Metrics

Model compares stocks that transitioned early to T+1 vs those that remained in T+2 longer.

Group	Pre-T+1 Avg Spread	Post-T+1 Avg Spread	Change (%)
Early T+1 Stocks	0.025	0.032	+28%
Later T+1 Stocks	0.026	0.027	+3.8%

Interpretation:
Liquidity in early-transition stocks deteriorated slightly more than in the rest of the market, suggesting FIIs may have shifted focus due to operational constraints.

4.3 Event Analysis Around Key Milestones

An event study surrounding T+1 reform dates (Feb 2022 announcement, Jan 2023 full rollout) shows:

- **Abnormal FII selling activity** occurred within ±3 days of major milestones, indicating short-term uncertainty.
- Volume and volatility spikes correspond with global market closures that clash with Indian settlement cutoffs.

4.4 Robustness Checks

- Alternate regression specifications using lagged FII flows yield consistent negative coefficients.
- Subgroup analysis (large-cap vs small-cap) confirms higher T+1 impact on less liquid segments.

Key Findings Summary

- FII flows declined marginally post-T+1, with increased day-to-day volatility in inflows

. ● Liquidity slightly worsened in stocks impacted earlier by the T+1 transition.

- Time zone friction and operational constraints likely contributed to these changes.
- Despite these short-term effects, there is no evidence of long-term FII withdrawal or structural disengagement.

Discussion and Policy Implications
This section interprets the empirical results in the context of theoretical expectations, market behaviour, and policy goals. It also discusses the operational implications of the T+1 reform for FIIs and outlines recommendations for regulators and market participants.

4.5 Interpretation of Findings

The transition to a T+1 settlement cycle, while aimed at improving market efficiency, appears to have had **mixed effects** on foreign institutional investor behaviour:

- **Reduced FII Flows Post-T+1**: The regression analysis shows a statistically significant decline in FII net inflows after the implementation of T+1. This aligns with preliminary evidence suggesting that shortened operational timelines have made trade execution and settlement more challenging for FIIs operating across time zones.
- **Liquidity Impact**: The difference-in-differences (DiD) analysis highlights a minor but noticeable increase in bid-ask spreads, especially in securities that transitioned to T+1 earlier. This suggests some **temporary fragmentation in liquidity**, possibly due to FII hesitancy in participating in less liquid or operationally complex trades.
- **Volatility and Uncertainty Around Key Dates**: The event study revealed elevated volatility and abnormal trade volumes around major reform milestones, implying **transitional uncertainty** and short-term repositioning by FIIs.

These findings collectively indicate that while T+1 may offer long-term benefits in terms of reduced counterparty risk and faster capital recycling, it introduces **short-term operational stress**—especially for global investors.

4.6 Comparison with Global Markets

India is the **first major economy** to implement a full T+1 settlement system. In contrast, the U.S. and other developed markets are still transitioning to T+1 or remain at T+2. This unique positioning places India ahead of the curve but also **increases the settlement mismatch risk** for FIIs who trade in multiple geographies. The challenges

observed in India may serve as a **test case** for other jurisdictions considering similar reforms.

4.7 Operational and Strategic Implications for FIIs

- **Custodial and Back-Office Adjustments**: FIIs now require faster pre-funding, trade confirmation, and custodian coordination. This can increase transaction costs and limit their ability to react quickly to market developments.
- **Shift Toward High-Liquidity Stocks**: Some FIIs may now favour large-cap stocks or ETFs, where settlement infrastructure and liquidity are more robust, potentially leading to **concentration risk** in the market.
- **Reduced Participation in Small and Mid-Cap Segments**: Due to narrower settlement windows and lower flexibility, FIIs may avoid these segments unless liquidity and execution certainty improve.

4.8 Policy Implications and Recommendations

To mitigate unintended consequences of the T+1 reform and support sustained FII participation, the following measures are recommended:

1. **Cross-Time Zone Settlement Facilitation**: Encourage alignment with global custodians and consider extending operational hours for trade confirmation and FX settlements.
2. **Enhanced Infrastructure Support**: Invest in real-time trade processing systems and automated settlement platforms that cater to the needs of international investors.
3. **Phased T+0 Pilots or Voluntary Models**: Test ultra-fast settlement models in sandbox environments but allow opt-in flexibility to avoid disrupting foreign investor workflows.
4. **Transparent Monitoring and Feedback Mechanism**: SEBI and exchanges should continue gathering feedback from FIIs and conduct post-implementation reviews to make necessary adjustments.

4.9 Broader Strategic Insights

While the short-term FII response may appear cautious, it does not imply a long-term retreat. As market participants adapt to operational changes, and if frictions are reduced, FIIs are likely to regain confidence. In the long run, T+1 may enhance India's reputation as an efficient and forward-looking capital market—especially if **investor experience is prioritized alongside innovation**.

5. Conclusion and Future Research

5.1 Conclusion

This study examined the impact of India's transition to a T+1 settlement cycle on the behaviour and activity of Foreign Institutional Investors (FIIs) in the Indian equity market. As the first major global market to adopt a T+1 framework for all listed securities, India's reform presents a unique case study in balancing operational efficiency with investor adaptability. The findings reveal that while the T+1 reform succeeded in reducing the settlement cycle and improving capital recycling, it also introduced **operational frictions** for FIIs. Notably, FII inflows declined modestly post-reform, market liquidity in early-transition stocks experienced slight deterioration, and volatility around key reform dates increased. These effects are largely attributed to **time zone mismatches**, **shortened trade confirmation windows**, and the need for **faster custodial coordination**.

Despite these transitional challenges, there is no clear evidence of long-term withdrawal by FIIs or systemic disengagement from the Indian market. This indicates that the observed impacts are more likely **tactical and operational in nature**, rather than structural or strategic. With proper infrastructure enhancements and policy support, the T+1 framework has the potential to further strengthen India's appeal to global investors.

5.2 Policy Implications

The study underscores the need for continuous collaboration between regulators, exchanges, and foreign investors to ensure a smooth post-T+1 environment. Specific policy actions include:

- Supporting cross-time-zone trade processing capabilities
- Encouraging technological integration among global custodians
- Creating flexible frameworks for future settlement innovations

5.3 Limitations

- The phased rollout of T+1 introduces variability that complicates pre and post reform comparisons.
- FII data might obscure important intra-day trading behaviour and patterns.
- Despite applying controls, external factors (such as geopolitical tensions or interest rate changes) could still distort the results.

5.4 Future Research Directions

This study opens several avenues for further investigation:

Intraday Trade Execution Patterns: Analyzing how FIIs adjust execution strategies within the shortened settlement window

- **Sectoral Impact Analysis**: Evaluating whether certain sectors (e.g., small caps vs large caps) experienced disproportionately high FII disengagement
- **Comparative Studies**: Assessing India's experience against other markets (e.g., U.S., South Korea) that are moving toward or considering T+1 settlement
- **Cost Benefit Studies**: Quantifying the direct and indirect costs borne by FIIs in adapting to the T+1 model

As India continues to modernize its financial infrastructure, reforms like T+1 offer a blueprint for emerging markets—but must be accompanied by efforts to ensure **accessibility, adaptability, and inclusivity** for global investors.

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