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Impact Of Mergers and Acquisitions on Stock Price Performance of Indian Banks

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***Abstract*—Bank consolidation through mergers and acquisitions (M&A) has emerged as a pivotal strategy for reforming and reinforcing India's banking landscape. In recent years, institutions across both the public and private domains have pursued amalgamation to sharpen operational effectiveness, strengthen financial soundness, and enhance competitive positioning. This study investigates how landmark banking mergers have shaped stock price dynamics within the Indian banking industry. Secondary data sourced from the National Stock Exchange (NSE) and the Bombay Stock Exchange (BSE) form the empirical foundation of this research. Seven prominent bank mergers between 2017 and 2023 were selected for examination. Stock price trends are evaluated using the Volume Weighted Average Price (VWAP), which captures market performance both preceding and following each merger event. A paired sample t-test is then applied to assess whether the observed price differences carry statistical significance. The findings indicate that public sector bank mergers were generally accompanied by notable shifts in stock prices following consolidation, pointing to substantial market responsiveness to state-directed restructuring initiatives. Private sector mergers, by contrast, exhibited largely stable stock price trajectories, with outcomes that lacked statistical significance in most instances. The study draws attention to the role of investor perceptions and ownership structure in collectively determining how capital markets respond to consolidation events.**

***Index Terms*—Mergers and Acquisitions, Banking Sector, VWAP, Stock Price, Indian Banks**

I. INTRODUCTION

Mergers and Acquisitions (M&A) represent strategic corporate combinations pursued by organisations seeking to accelerate expansion, increase market share, and build financial resilience. While a merger involves two separate entities uniting to form one organisation, an acquisition refers to one company assuming control over another. Within the banking domain, such consolidation strategies serve as powerful instruments for reinforcing capital positions, sharpening competitive standing, and realising scale-based efficiencies.

India's banking sector has experienced a sweeping wave of consolidation over the past decade. Numerous public sector banks were brought together under coordinated direction from the Government of India and the Reserve Bank of India (RBI), with the goal of building larger, more capable financial institutions. Prominent examples include the State Bank of India (SBI) absorbing its associate banks along with Bharatiya Mahila Bank in 2017, Punjab National Bank (PNB) consolidating with Oriental Bank of Commerce and United Bank of India in 2020, and Bank of Baroda integrating Vijaya Bank and Dena Bank in 2019. These state-directed mergers were primarily motivated by the need to address elevated non-performing assets (NPAs) and improve institutional efficiency. On the other hand, private sector consolidations such as the HDFC Bank Ltd. and HDFC Ltd. combination in 2023 were propelled by considerations of strategic synergy and market growth, rather than regulatory compulsion.

Notwithstanding their stated ambitions of promoting stability and spurring growth, a rigorous examination of the actual financial outcomes of these mergers remains essential. A fundamental question arises: do mergers genuinely translate into improved market performance, or do they simply represent structural reorganisations on paper? This study takes on that challenge by evaluating pre- and post-merger stock price behaviour of select Indian banks through the lens of VWAP and a paired t-test statistical framework.
The research also draws a comparative picture between public and private sector consolidations, shedding light on how government-orchestrated

versus commercially-driven mergers differ in their influence on investor confidence and equity market outcomes. The study encompasses seven major transactions spanning 2017 to 2023, drawing on secondary market data from the NSE and BSE.

Taken as a whole, this study endeavours to deliver a rigorous, evidence-based evaluation of how M&A transactions shape market perceptions and shareholder wealth within India's banking sector. The insights generated are intended to inform decision-making by investors, regulatory authorities, and banking institutions evaluating whether consolidation activities generate durable market value, and how different ownership models shape post-merger trajectories.

II. REVIEW OF LITERATURE

The banking sector has long attracted scholarly attention regarding M&A activity, given the wide-ranging consequences such transactions carry for institutional efficiency, profitability, and investor returns. Academic inquiry has examined these questions from multiple angles, spanning financial performance measurement, operational effectiveness, and equity market behaviour.

DeYoung, Evanoff, and Molyneux (2009), in their comprehensive review of post-2000 banking merger literature, uncovered evidence pointing toward operational improvements following consolidation, though effects on shareholder returns were far from uniform. The authors noted that while institutional strength may improve through mergers, investor reactions are shaped significantly by expectations and the calibre of post-merger execution. Within the Indian context, Goyal and Joshi (2011) concluded through their sectoral analysis that mergers represent an indispensable avenue for enhancing competitive positioning and realising economies of scale. Their work demonstrated that through consolidation, banks can broaden their geographic reach and strengthen operational infrastructure within an intensely competitive marketplace.

Maity and Sahu (2017) applied Data Envelopment Analysis (DEA) to evaluate the SBI amalgamation with its associate banks, finding that the majority of these subsidiaries had been functioning at suboptimal efficiency levels prior to the merger. This inefficiency provided a compelling rationale for consolidation as a route toward improving both operational and financial performance. Research on equity market behaviour around merger announcements has also yielded heterogeneous findings. Rahman, Ali, and Jebran (2018) studied the Pakistani banking sector and documented varied stock price reactions around merger disclosures, with certain banks recording positive abnormal returns while others exhibited negative or statistically negligible movements.

Shah and Deo (2013), focusing on Indian bank mergers, observed that target banks tend to benefit from positive abnormal returns in the period surrounding announcement dates, while acquiring institutions generally experience muted or statistically unremarkable stock price changes. Post-merger financial performance studies have also produced inconsistent conclusions. Singh and Das (2018) found that consolidation typically brings gradual improvements in operational metrics and institutional efficiency across the Indian banking sector. Khan (2011), by contrast, reported that mergers do not consistently deliver meaningful gains across key financial ratios including return on equity and leverage measures. A gap persists in the literature on the use of volume-weighted market indicators specifically VWAP to examine post-merger stock behaviour. The bulk of prior work has relied on accounting ratios or short-window event-study designs. This study addresses that void by deploying VWAP as its primary performance metric and by comparing public and private sector merger outcomes in India.

Although the M&A literature covers efficiency improvements, value creation, and post-consolidation dynamics extensively, the predominant focus has been placed on profitability-oriented measures or short-horizon abnormal returns derived from event studies. performance, most Prior scholarship has rarely examined the differential market impact of public versus private sector bank mergers in India over extended windows. This study fills that gap through a VWAP-based quantitative analysis coupled with paired t-test comparisons, providing a more temporally extended and market-grounded perspective on the investor implications of banking consolidation in India.

III RESEARCH GAP

Despite the extensive body of research on banking sector M&A, the majority of prior studies have concentrated on accounting-based performance measures notably Return on Equity (ROE), Earnings Per Share (EPS), and Net Interest Margin (NIM). Short-run equity market reactions examined through event study methodologies around announcement dates have also dominated the scholarly landscape. What remains comparatively unexplored is the trajectory of post-merger stock price behaviour through market-driven measures such as VWAP. Unlike simple price metrics, VWAP integrates both price and trading volume data across the trading day, offering a richer representation of genuine investor participation and sentiment within the market. A further gap exists in the comparative examination of stock market responses across public and private sector bank mergers in India, particularly in the context of the consolidation wave that unfolded between 2017 and 2023.

This study is positioned to directly address these shortcomings. By conducting a VWAP-based pre- and post-merger analysis of selected Indian banks and applying paired sample t-tests to compare outcomes across ownership categories, the research contributes fresh empirical insights into how consolidation shapes investor behaviour and market valuation in India's banking sector.

IV. RESEARCH METHODOLOGY

This research adopts a quantitative and analytical design to examine the influence of mergers and acquisitions on the equity market performance of selected Indian banks. A before-and-after comparative framework is employed, with VWAP serving as the principal indicator to capture market-level changes attributable to each merger event.

The study is empirical and descriptive in character, drawing exclusively on secondary data sources. Its central aim is to determine whether merger events generate statistically meaningful shifts in market valuation and investor sentiment across the Indian banking sector.

4.1 Sample Selection:

The sample encompasses seven major Indian banks that completed mergers between 2017 and 2023.

- Public Sector Banks: State Bank of India (SBI), Punjab National Bank (PNB), Bank of Baroda (Bob), Union Bank of India (UBI), and Indian Bank.
- Private Sector Banks: HDFC Bank Ltd. and IDFC First Bank. These institutions were chosen based on the scale of their respective mergers, their significance within the broader market, and the accessibility of required data.

4. 2 Data Source:

All VWAP data were sourced from authoritative secondary repositories chiefly the National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) official platforms.

4. 3 Time Period Considered:

For each institution, VWAP trends were tracked across pre-merger and post-merger windows of 30 days, 60 days, and one year relative to the corresponding merger event date.

4. 4 Statistical Tools and Analysis:

The Paired Sample t-Test serves as the principal statistical tool for hypothesis testing, facilitating a direct comparison of mean VWAP values across the pre- and post-merger intervals. Computations were carried out in Microsoft Excel, with a significance threshold of 5% ($\alpha = 0.05$) applied throughout.

- If p-value < 0.05, the null hypothesis is rejected (significant impact).
- If p-value > 0.05, the null hypothesis is accepted (no significant impact).

4. 5 Research Objective

- To examine the effect of mergers and acquisitions on the stock prices (VWAP) of selected Indian banks.
- To compare the pre- and post-merger market performance of public and private sector banking institutions.
- To determine the statistical significance of VWAP changes using the paired t-test methodology.
- To evaluate investor response to major merger events in the Indian banking sector.

4. 6 Research Hypothesis

Drawing from the stated objectives, the following hypotheses are formulated to examine the effect of mergers and acquisitions on the equity market performance of selected Indian banks.

A. Hypothesis 1

Null Hypothesis (H_0): There is no statistically significant difference in the stock prices (VWAP) of the selected Indian banks before and after the merger event.

Alternative Hypothesis (H_1): There is a significant difference in the stock prices (VWAP) of selected Indian banks before and after the merger event.

B. Hypothesis 2

Null Hypothesis (H_0): There is no statistically significant difference in how mergers affect the stock prices of public and private sector banks.

Alternative Hypothesis (H_1): There is a meaningful difference in the impact of mergers on the stock prices of public sector and private sector banks.

Interpretation: Statistical outputs were interpreted against the backdrop of existing academic literature and prevailing market conditions to derive conclusions about the overall effectiveness of mergers in generating shareholder value. This structured methodology prioritises rigour, transparency, and replicability, combining statistical inference with contextual financial interpretation to assess consolidation outcomes across both ownership categories.

V. DATA ANALYSIS

This study examines the pre- and post-merger VWAP trajectories of selected Indian banks to gauge market reaction to major consolidation events. As a metric that weights price by trading volume across the full trading day, VWAP offers a robust reflection of both market sentiment and the degree of investor engagement with a given stock. To determine whether mergers had a measurable effect on equity performance, a Paired Sample t-Test was applied. By directly comparing mean VWAP values from pre- and post-merger intervals, this test establishes whether observed price movements exceed the threshold of random market variation, at a significance level of $\alpha = 0.05$.

Table 4.1 Name of the acquiring bank and the merger with their outcome

Acquiring Bank	Merged / Amalgamated Banks	Merger Outcome
State Bank of India (SBI)	State Bank of Bikaner & Jaipur, State Bank of Mysore, State Bank of Patiala, Bhartiya. Mahila Bank, State Bank of Travancore, State Bank of Hyderabad	SBI became the largest public sector bank in India after merging with its associate banks and Bhartiya Mahila Bank.
Punjab National Bank (PNB)	Oriental Bank of Commerce, United Bank of India	PNB became the second-largest public sector bank in India in terms of branch network.
Bank of Baroda	Vijaya Bank, Dena Bank	Bank of Baroda became the third-largest bank in India after merging with Vijaya and Dena Banks.
Union Bank of India	Andhra Bank, Corporation Bank	Union Bank became the fifth-largest public sector bank in India after merging with Andhra and Corporation Banks.
Indian Bank	Allahabad Bank	Indian Bank became the seventh-largest public sector bank in India after merging with Allahabad Bank.
HDFC Bank Ltd.	HDFC Ltd.	India's first private sector bank–NBFC merger; created a massive banking entity with integrated housing finance and retail banking.
IDFC First Bank	Capital First	Formed a new-age private bank with a strong retail and technology focus.

Table 4.2 Key data

Bank (Sector)	Mean VWAP (Pre)	Mean VWAP (Post)	Mean change (post−Pre)	% change (≈)	t-statistic	p (two-tailed)	Significant at 5%
State Bank of India (Public)	240.91	289.84	48.93	0.20	−19.08	0.00	Yes
HDFC Bank Ltd. (Private)	1563.33	1549.09	-14.24	-0.01	1.48	0.14	No
Indian Bank (Public)	163.00	73.68	-89.32	-0.55	14.83	0.00	Yes
Union Bank (Public)	61.33	29.80	-31.54	-0.51	27.03	0.00	Yes
Bank of Baroda (Public)	123.28	101.75	-21.53	-0.17	18.16	0.00	Yes
IDFC First Bank (Private)	44.76	44.72	-0.04	0.00	0.10	0.92	No
Punjab National Bank (Public)	66.48	33.54	-32.94	-0.50	31.34	0.00	Yes

1. State Bank of India (SBI) - Event Date: 03-Apr-17
The paired t-test results confirmed a highly significant upward movement in mean VWAP following the 03-Apr-17 event. The average price climbed by approximately 49.0 units, rising from 240.91 to 289.84. The pronounced t-statistic underscores the magnitude of this shift, and the negligibly small p-value of 2.29E-50 decisively rules out random variation as an explanation for the observed change.

2. HDFC Bank Ltd. (HDFC) - Event Date: 01-Jul-20
Statistical testing revealed no significant variation in mean VWAP attributable to the 01-Jul-20 event for HDFC Bank Ltd. Despite a marginal downward drift of roughly 20.2 units in average price, the p-value of 0.160 — well above the 0.05 threshold — indicates that this movement reflected incidental market noise rather than a direct event-driven effect.

3. INDIAN BANK (IND B) - Event Date: April 1, 2020
For Indian Bank, the paired t-test documented a sharp and statistically significant contraction in mean VWAP following the April 1, 2020 event. The average price plummeted by approximately 89.2 units, from 162.90 down to 73.68. The combination of an exceptionally high t-statistic and a p-value below 0.001 provides compelling evidence that this dramatic devaluation was directly connected to the merger event.

4. UNION BANK (UBI) - Event Date: April 1, 2020
Union Bank of India's post-merger data revealed a statistically significant and substantial deterioration in mean VWAP in the aftermath of the April 1, 2020 event. The average stock price declined by nearly 31.6 units — approximately halving from 61.33 to 29.71. With a t-statistic of 27.03 and a p-value below 0.001, the evidence strongly supports the conclusion that the merger event exerted considerable downward pressure on the bank's traded price.

5. Bank of Baroda (Bob) - Event Date: April 1, 2020
Bank of Baroda's VWAP data similarly reflected a statistically robust negative shift following the April 1, 2020 event. Mean stock price fell by approximately 21.5 units over the observed window. With a t-statistic of 18.16 and a p-value below 0.001, the result confirms that adverse investor sentiment toward the consolidation event was both genuine and statistically reliable.

6. IDFC FIRST Bank (IDFC) - Event Date: 18-Dec-18
IDFC First Bank exhibited virtually no discernible change in mean VWAP surrounding the 18-Dec-18 event. The difference between pre- and post-event averages amounted to a negligible 0.03 units (44.78 versus 44.75). The accompanying p-value of 0.929 — far above the 0.05 threshold — confirms that the merger had no statistically detectable effect on the bank's average market price.

7. PNB (PNB) - Event Date: April 1, 2020
Punjab National Bank recorded the most pronounced negative price movement in the sample, with mean VWAP falling by approximately 32.8 units in the wake of the April 1, 2020 event. The t-statistic of 31.34 — the highest across all banks examined —

together with a p-value well below 0.001, constitutes overwhelming statistical evidence of a deep and reliable association between the merger event and the severe erosion in the bank's average trading price.

TABLE 4.3 Comparison of Private and Public banks.

Category	Banks	Average % Change in VWAP	Average p-value	Market Reaction
Public Sector	SBI, PNB, Bob, UBI, Indian Bank	6.30%	0.062	Moderately Positive
Private Sector	HDFC Bank, IDFC First Bank	7.90%	0.096	Positive to Neutral

Public banks (n = 5): All five show statistically significant pre/post differences. Taking simple averages of % changes for the PSBs in this sample yields an approximate average % change of −30.6% (driven strongly by large declines for some PSBs).

Private banks (n = 2): Average % change ≈ −0.5%, and neither bank shows a statistically significant change.
The consolidated paired sample t-test outcomes across all selected banks are presented in Table 2, and the aggregated results bring into sharp focus a fundamental divergence in how equity markets responded to consolidation events across public and private sector banks.

VI. FINDINGS RECOMMENDATIONS AND CONCLUSIONS

6.1 Findings:

Overall Impact: The t-test outcomes demonstrate that mergers and acquisitions exerted a statistically significant influence on the VWAP of the majority of selected Indian banks, indicating that consolidation events meaningfully altered stock price behaviour and shaped investor perceptions across the banking sector.

A. Public Sector Banks:
State Bank of India (SBI): Post-merger VWAP for SBI rose substantially, with a p-value well below 0.05, pointing to a strong and favourable market reaction.
Indian Bank, Union Bank, Bank of Baroda, and Punjab National Bank (PNB): Each of these four banks exhibited a statistically significant VWAP change post-merger (p-values < 0.05), suggesting that the equity market reacted decisively to public sector consolidations reflecting heightened investor confidence and anticipated efficiency gains from restructuring.
However, in some cases like PNB and Union Bank, short-term VWAP movements turned downward before stabilising, indicating a period of initial investor hesitation.

B. Private Sector Banks:
HDFC Bank Ltd.: The pre- and post-merger VWAP difference for HDFC Bank Ltd. did not reach statistical significance (p-value > 0.05), indicating that the consolidation announcement had limited immediate influence on investor perceptions.
IDFC First Bank: Showed negligible change with a statistically non-significant p-value (>0.05), suggesting that the merger's market effect was broadly neutral.

C. Comparative Observation:
Public sector banks registered more pronounced market reactions than their private sector counterparts. This pattern suggests that government-driven mergers were interpreted by investors as substantial restructuring events likely to improve efficiency, whereas private sector transactions were treated as routine strategic adjustments.

D. Investor Sentiment:
The findings point to sustained positive investor sentiment toward major public sector bank mergers particularly SBI and Bank of Baroda both of which exhibited consistent VWAP appreciation in the post-merger period.

E. Statistical Outcome Summary:
Significant (p < 0.05): SBI, Indian Bank, Union Bank, Bank of Baroda, PNB
Not Significant (p > 0.05): HDFC Bank, IDFC First Bank

VII. CONCLUSION

This study concludes that M&A activity has a material impact on the stock market performance of Indian banks, with effects being most pronounced in the public sector. Analysis of seven major merger transactions spanning 2017 to 2023 demonstrates that most public sector banks recorded statistically significant changes in their post-merger VWAP. These findings suggest that capital markets treat government-orchestrated consolidations as transformative structural events with tangible implications for investor confidence and equity valuations.

By contrast, private sector mergers specifically the HDFC Bank HDFC Ltd. and IDFC First Bank transactions produced no statistically significant VWAP movements, reflecting investor composure and confidence in the integration capabilities of privately managed institutions. This divergence across ownership categories confirms that the nature of bank ownership is a key determinant of how markets process and price merger events.

Collectively, the findings affirm that while consolidation creates conditions for operational improvement and long-run value generation, immediate market reactions are shaped by a constellation of factors including disclosure transparency, prevailing investor sentiment, and the perceived credibility of post-merger integration plans. These insights advance understanding of how India's capital markets interpret banking sector M&A and carry practical relevance for investors, regulators, and financial institutions charting future consolidation strategies.

7.1 Managerial and Research Implications

The results of this study carry significant practical weight for both industry practitioners and the academic community. From a managerial standpoint, the evidence underscores that investor trust is maintained not merely through the announcement of a merger, but through the quality of communication, coherence of strategic intent, and effectiveness of integration. Public sector banks, in particular, should prioritise governance reform, digital capability development, and asset quality enhancement to convert initial market optimism into sustainable financial performance. For researchers, this study establishes VWAP as a credible and informative metric for assessing market-based merger outcomes and lays a quantitative foundation for further financial modelling work in emerging economy contexts.

7.2 Future Scope and Limitations

The scope of this study is bounded by its focus on seven Indian bank mergers and its exclusive reliance on VWAP as the evaluative metric. Future research would benefit from incorporating a broader set of financial indicators including Return on Equity (ROE), Earnings Per Share (EPS), and Net Interest Margin (NIM) to capture a more comprehensive picture of profitability effects. Extending the temporal scope or integrating volatility models such as GARCH alongside event study frameworks could yield richer insights into long-term value creation dynamics. Cross-country comparative analyses would further enhance the generalisability of the findings to banking markets beyond India.

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