Stock Market Reaction to Merger Announcements in Indian Public Sector Banking: An Event Study Approach

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Purpose: The study aims to analyze the stock market reaction to the merger and acquisitions announcement in the Indian Banking Sector.

Design/Methodology: The Event-Study methodology was used in order to check the short-term reaction of the investors over a 21-day event window. The market model was used for calculation of expected return with the benchmark index as Nifty50. Statistical tests, including the Shapiro-Wilk test and t-tests (two-tailed), were applied to analyze whether the resultant Abnormal Return was significant.

Findings: The findings indicate that no bank has a significant abnormal return on Day 0. However, on Day +1, 4 banks have showcased abnormal returns. Indian Bank continued to show a reaction on Day +2, and Union Bank again on Day +6. However, Bank of Baroda did not show any market reaction. It suggests that investors either expected the news or quickly adjusted to it.

Originality/Value: The study contributes to the growing literature on M&A by offering empirical insights into investor behavior and sentiment, and the semi-strong form of EMH in the Indian context.

Keywords: *Abnormal Returns, Event Study, Market Efficiency, Mergers and Acquisitions, Public Sector Banks, Stock Market Reaction.*

INTRODUCTION

A bank is broadly a financial institution that offers a platform to stakeholders to deposit and withdraw money. It also provides other financial services including investment of deposits from the public, loans, credit card facilities, etc. (Banking Regulation Act, 1949). The history of banking in India goes back to the 18th century, with the establishment of the General Bank and the Bank of Hindustan in 1786. A significant turning point in the modern history of Indian banking was marked by the Narasimhan Committee Report, AUG 1991, which indicated the need for financial sector and banking sector reforms which

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recommended measures to liberalize and modernize the country's financial system, aiming to enhance efficiency, transparency, and competitiveness in banking services.

PHASES IN THE INDIAN BANKING SECTOR:

- Phase I- 1786-1969: Beginning of Banking System in India and establishment of banks.
- Phase II- 1969-1991: Focus was on nationalization, regulation, and expansion in the sector.
- Phase III- 1991 onwards: Banking sector entered a new era with financial and structural adjustments.

In the post-liberalization period, both the Public Sector and Private Sector Banks were engaged in strategic mergers and acquisitions. According to the Institute of Chartered Accountants of India (ICAI), under Statement of Accounting Standards (AS-14) - Accounting for Amalgamations, the terms "mergers" and "amalgamations" are used interchangeably in Indian laws.

M&A announcements often affect the stock prices of organizations. Investors see these announcements as important signals about the prospects. For the acquirer, stock market reactions can be different. Some show positive returns because investors expect benefits like synergy or growth opportunities. Others might have little or no change, or even negative returns, due to worries about the costs or challenges of merging. Overall, the way stock prices move after an M&A announcement reflects how investors feel about the deal.

THEORETICAL FRAMEWORK: EFFICIENT MARKET HYPOTHESIS AND RANDOM WALK THEORY

The *Efficient Market Hypothesis* (EMH) was first formally proposed by Eugene F. Fama in 1970. The theory suggest financial markets are "informationally efficient." It meant that prices of securities fully reflect all available information at any given time (Fama, E. F., 1970). According to this hypothesis, the market price adjusts to all publicly available information, and consistently achieving abnormal returns is not possible. Fama explains market efficiency into three forms: weak, semi-strong, and strong. The semi-strong form is the most relevant while using event studies. It focuses on publicly available information, which is immediately reflected in the securities' prices.

Closely related to EMH is the *Random Walk Theory* which suggests stock prices movement in a completely unpredictable manner, and that past movements or trends cannot be used to forecast future prices. According to this theory, price changes are random and follow a "walk," meaning today's price is independent of yesterday's and reflects all currently available information.

RESEARCH METHODOLOGY

A. Sample Selection: 5 Public Sector Banks (Punjab National Bank, Indian Bank, Canara Bank, Union Bank, and Bank of Baroda) were selected for the study.

Table - 1
Dates of Merger Announcements in Indian Public Sector Banks

Acquirer Bank	Merged Bank	Announcement Date
Punjab National Bank	Oriental Bank of Commerce and United Bank	August 30, 2019
Indian Bank	Allahabad Bank	August 30, 2019
Canara Bank	Syndicate Bank	August 30, 2019
Union Bank	Andhra Bank and Corporation Bank	August 30, 2019
Bank of Baroda	Vijaya Bank and Dena Bank	January 2, 2019

Source: The announcement dates are from multiple news articles

B. Research Objective: To study the stock market reaction towards mergers & acquisitions announcements of Public Sector Banks in India.

C. Conceptual Framework:

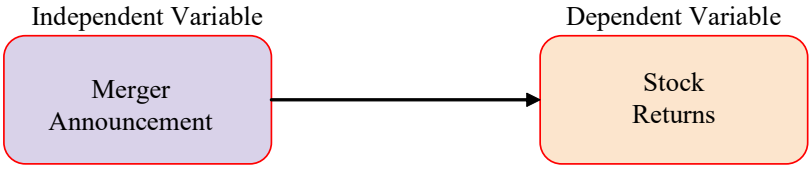

Fig. 1: Conceptual Framework

D. Research Hypothesis: Null Hypothesis, H€ : There is no significant abnormal return after the merger announcement date of individual banks.

E. Event-Study Methodology: To check whether the investors react to the bank merger announcement, the event-study methodology has been used. The reason for using the same is to measure if there are abnormal returns (AR) in the market as outcome of announcement of a merger.

Event Window: [-10, +10] trading days around the announcement date. The announcement day is represented by Day 0.

-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Estimation Window: [-150, -11] = 140 trading days before the event

window.

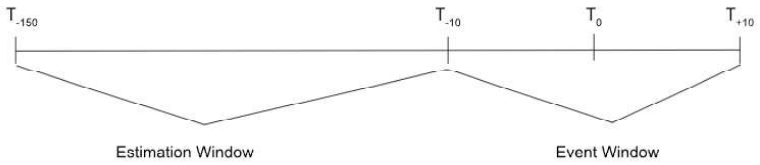

Fig. 2: Event and Estimation Windows

Daily Return:

$$= \ln\left(\frac{P_t}{P_{t-1}}\right)$$

The market model was used to calculate the expected return:

$$ER_i = \alpha_i + \beta_i R_m + \epsilon_i$$

Abnormal Return (AR):

$$AR_i = R_i - ER_i$$

DATA ANALYSIS

Normality Test on AR using Shapiro-Wilk Test: to assess the normality of abnormal returns within the 21-day event window.

Table - 2

Tests of Normality for ARs in Event Window			
	Shapiro-Wilk		
Bank Name	**Statistic**	**df**	**Sig.**
Punjab National Bank	0.960	21	0.514**
Indian Bank	0.930	21	0.136**
Canara Bank	0.933	21	0.159**
Union Bank	0.949	21	0.321**
Bank of Baroda	0.978	21	0.891**

Source: *Self-computed using IBM SPSS*

** Tested against the significance level of 5%

The significance values for were found to be greater than 0.05 for all sample, indicating normal distribution of abnormal returns across all sampled banks within the event window.

A one-sample t-test (two-tailed) was applied to all sample to analyze whether the mean abnormal return after the announcement differs significantly from zero on each day. The test was to determine whether the merger

announcements had a statistically significant impact on shareholder return. A corresponding p-value was also calculated for each day.

T-stat for AR:

$$t = \frac{AR_t}{SE(\epsilon)}$$

Where SE(å) is the standard error of the residuals from the estimation window.

RESULTS AND DISCUSSIONS

On the announcement day (Day 0), none of the banks displayed statistically significant abnormal returns, suggesting that the market did not respond immediately. A reaction appeared on Day +1, as Punjab National Bank, Union Bank, Canara Bank, and Indian Bank all showed significant abnormal returns at the 5% level. For Indian Bank, the response persisted through Day +2, indicating a slightly prolonged adjustment by the market. Additionally, Union Bank registered another significant reaction on Day +6, possibly reflecting further market reassessment or new information. Bank of Baroda, however, did not show any significant abnormal return throughout the observed period, implying a limited response from investors.

The result supports the Efficient Market Hypothesis (EMH), particularly its semi-strong form. It suggests that stock prices incorporate all publicly available information, leaving no room for abnormal profits in the long run. Additionally, the findings are in line with the Random Walk Theory, which suggests that stock prices move unpredictably and follow a random pattern.

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Table - 3

T-stat and P-value on AR

Day	AR _ PnB	T-Stat	P Value	AR _Indian Bank	T-Stat	P Value	AR _Canara Bank	T-Stat	P Value	AR _Union Bank	T-Stat	P Value	AR _ BoB	T-Stat	P Value
0	-0.014	-0.633	0.528	0.034	1.438	0.153	-0.0119	-0.6055	0.5458	-0.0233	-0.9633	0.3371	-0.0281	-0.9456	0.3460
1	-0.048	-2.240	**0.027****	-0.086	-3.580	**0.000****	-0.0719	-3.6585	**0.0004****	-0.0514	-2.1267	**0.0352****	0.0069	0.2313	0.8174
2	0.002	0.090	0.928	-0.061	-2.552	**0.012****	-0.0283	-1.4423	0.1515	-0.0029	-0.1194	0.9051	0.0165	0.5556	0.5794
3	0.021	0.985	0.326	-0.002	-0.068	0.946	-0.0061	-0.3091	0.7577	0.0171	0.7058	0.4815	0.0130	0.4361	0.6635
4	-0.013	-0.607	0.545	-0.027	-1.144	0.255	-0.0151	-0.7663	0.4448	-0.0059	-0.2425	0.8088	0.0126	0.4244	0.6720
5	0.013	0.603	0.547	0.001	0.048	0.962	0.0234	1.1926	0.2351	0.0151	0.6238	0.5338	-0.0103	-0.3451	0.7305
6	0.032	1.508	0.134	0.006	0.259	0.796	0.0295	1.5033	0.1350	0.0574	2.3722	**0.0191****	0.0027	0.0907	0.9278
7	0.006	0.299	0.766	0.005	0.227	0.821	0.0065	0.3333	0.7394	0.0023	0.0952	0.9243	-0.0190	-0.6389	0.5240
8	-0.009	-0.417	0.677	-0.021	-0.869	0.386	-0.0160	-0.8120	0.4182	-0.0122	-0.5028	0.6159	0.0003	0.0087	0.9931
9	0.008	0.383	0.702	0.008	0.326	0.745	0.0120	0.6115	0.5419	0.0125	0.5163	0.6065	0.0021	0.0706	0.9438
10	0.001	0.063	0.949	0.005	0.213	0.832	-0.0105	-0.5349	0.5936	-0.0137	-0.5676	0.5712	-0.0023	-0.0778	0.9381

Source: Self-Computed using MS Excel

** Tested against the significance level of 5%

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