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Semi Month Effect in Indian Banking Sector with Reference to NSE Bank Index

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Abstract

The paper explores the occurrence of the semi-month outcome in the banking market of India and to be more exact, the NSE BANK Index (Bank Nifty) during the time interval between January 2016 and December 2025. Semi-month effect refers to systematic changes in the returns of the stock that exist in the first half and second half of every month of the calendar. Data on the analysis is secondary based on the closing prices of the NSE BANK Index, being reported by the National Stock Exchange (NSE) on a daily basis. Monthly returns were established and then classified based on the first and second half of every month. Return behavior analysis used descriptive statistical methods and Wilcoxon Signed-Ranks Test that used due to the non-normality of the data as indicated by Shapiro-Wilk test.

The results illustrate that the mean of returns is slightly different in the two and half-month holding periods and the statistical results are obtained based on the Wilcoxon test which shows that there is no statistically significant difference. Thus, this research arrives at the conclusion that the semi-month effect on the NSE BANK Index during the period of the research does not significantly exist. The findings indicate that the Indian banking industry has the traits of weak-form market efficiency and investors are unable to make abnormal returns through semi-month patterns only.

Keywords - Semi-Month Effect, Calendar Anomalies, NSE BANK Index, Bank Nifty, Indian Banking Sector, Stock Returns, Market Efficiency, Wilcoxon Signed Ranks Test, Seasonality in Stock Market, Indian Stock Market

Introduction

The Efficient Market Hypothesis (EMH) argues that the financial markets reveal all available information in time and in a comprehensive manner making systematic strategies unable to produce abnormal returns. However, the large scale empirical studies have revealed the presence of calendar effects, which can be interpreted to mean that the returns of stocks have predictable outcomes based on time considerations. Such anomalies include the day-of-week effect, month-of-year effect, turn-of-month effect and the semi-month effect that has received little academic coverage (Bolar et al., 2017).

The semi-month effect is a statistically important difference in the stock returns in the first and second half of a calendar month. Researchers explain this anomaly by various aspects among which include institutional trading activities, periodic salaries payment, liquidity variations, and settlement systems (Periyasamy, 2016). Even though international evidence of semi-month seasonality is scanty, the new economies like India provide a good platform in investigating these anomalies considering the dynamic nature of market efficiency and the heterogenious nature of market participants.

Previous studies on the Indian context do not provide conclusive findings on calendar effects. Semi-month effects on returns and trading volume of aggregate market indices have been recorded in results of their analyses, such as the NIFTY (Periyasamy, 2016). Sector-specific studies, on the other hand, especially those that are concerned with banking indices, suggest that these effects might be weak or statistically negligible. The proxies of the banking sector, including the BSE Bankex, were empirically analyzed, and the results indicated that there is no major difference between returns realized in the first and second half of the month, which indicates improved informational efficiency in the sector of bank. (Bolar et al., 2017).

The banking sector is an significant segment of the Indian economy and is highly sensitive to macroeconomic factors such as interest rates, decisions by the monetary policy, regulatory reform, and credit cycles. The inferences of studies that investigate calendar effects in sectoral indices in India show that, although some seasonal effects are still observed in other sectors, the banking indices usually have weaker or unreliable anomalies (Singh and Das, 2020). This fact highlights the significance of NSE BANK Index (Bank Nifty) in measuring the relevance of semi-month seasonality in an industry that has high institutional interest in the sector and a regulatory control factor.

Therefore, the analysis of semi-month effect in consideration of the NSE BANK Index, provides sector specific data in terms of market efficiency in India. Not only does such an analysis contributes to the academic research on calendar effects in emerging markets, but such an analysis also provides useful information to investors and policymakers regarding the probability of returns in the Indian banking market.

Review of Literature

The calendar effects in the equity markets undermines the (EMH) and its weak-form states that the market is efficient. The semi-month effect, which tests systematic differences between the first and second half of a month, is among the anomalies that are reported in the academic literature and it is becoming more popular in emerging market settings, especially in India.

The previous empirical studies conducted on the calendar effects in the Indian equity market have largely dealt with the market indices. Its strong seasonal changes in Indian stock returns were found to be important pointers to the violation of the weak-form efficiency (Patel, 2011). Similarly, Singhal et al. (2012) also reported month-of-year effects in the NSE indices, although financial and banking indices showed fewer effects, which indicated that there was a greater level of informational efficiency in these markets.

Another important addition to semi monthly literature in India has been made by Sudarvel and Velmurugan who studied this anomaly in different sectoral indices. Their 2015 analysis of BSE IT Index findings showed statistically significant differences between the two halves of the month; thus, showing that there are predictable patterns of returns and both semi-month seasonality and sectoral inefficiency.

After this exploration, Sudarvel, Velmurugan and Kumuthadevi (2015) analyzed the BSE Health Care Index; and found out that there is a significant semi-monthly effect. Their discussion established that the returns in the first half of the month were greater than those in the second half which meant that investors could take advantage of the anomaly in order to make abnormal profits. These results support the assumption that sector specific indices in India could also have different levels of market inefficiency.

In a similar study, Sudarvel and Velmurugan (2016) evaluated the impact of semi-monthly and turn-of-the-month in the Indian market using the NSE Nifty Index. They did not however identify any stable semi-monthly effects at the broader market level which indicates that the observed anomalies are greater in the selected sectors as opposed to diversified indices.

Contrarily, investigations on banking and financial sector indices mostly show the lack or mitigation of semi-month effects. Bolar, et al. (2017) reviewed a few BSE sectoral indices, such as BSE Bankex, and established that there was no statistically significant semi-month effect, hence, pointing to market efficiency improvement in the banking sector. Similarly, Singh and Das (2020) examined calendar effects in banking and IT indices and found that January and turn-of-the-month effects only, but not the semi-month effects.

According to more recent studies, it can be noted that calendar anomalies in Indian equity markets gradually fade away, especially in the most regulated and institutionally dominated markets, such as banking. Malhotra, et al. (2021) explained this downtrend by the greater institutional involvement, technological progress, and more stringent regulatory control, all of which led to the increased market efficiency.

In general, the literature shows that the semi-month effect can be traced in a number of the Indian sectoral indices, such as the indices of the IT and healthcare sectors, but the evidence provided by banking indices is still weak and inconclusive. In addition, most of the available literature is based on BSE sectoral indices and little is based on NSE Bank Index (Bank Nifty). This is what creates a definite research gap and the reason why the proposed research is going to explore the semi-monthly effect on Indian banking industry, using the NSE Bank Index as the empirical outlay.

Research Gap

The available literature on calendar effect in India is mostly about the general market indices and some specific industries like information technology and healthcare but only very few research has been done on empirical evidence on the banking industry. Furthermore, a majority of the research that has been done on banking aspects is based on the BSE Bankex, and very few studies have explored the NSE BANK Index (Bank Nifty) yet it is more liquid and is more applicable in the market. There have been inconclusive semi-month effect findings in the previous studies, and most of the researches are based on older data, which might not capture current events in the market. Thus, it can be seen that there is a research gap in examining the semi-month effect in the Indian banking sector based on recent statistical data in the NSE BANK Index.

Statement of the Problem

Although the studies on calendar anomalies in Indian stock market have been done extensively, the prevalence of the semi-month effect is yet to be proved especially when the banking industry of India is encompassed. Although the existence of semi-month seasonality in large market indices and individual industries has been found in a number of studies, and in information technology and healthcare, empirical data regarding banking stocks remains peripheral and disjointed. Furthermore, the majority of the literature is based on BSE-based banking indices and little focus is given to NSE BANK Index (Bank Nifty) that is more actively traded and used by investors and other participants of the market as a benchmark.

Since the financial markets in India have become more efficient due to regulatory reforms, technological change and to a larger institutional activity, it is not clear whether the semi-month effect is still a phenomenon in the banking industry. This is an issue that requires a methodical study as to whether there are statistically significant differences in first-half and second-half monthly returns of the NSE BANK Index. The answer is essential in the determination of the current market efficiency in the banking sector in India and whether the investors can use any form of patterns of returns that are consistent to make investment decisions.

Objective

- To determine the presence of Semi month Effect in Indian Banking sector.

Methodology of the Research

Data

This research is analytical in nature. The secondary data is collected from NSE web portal (between January 2016 and December 2025).

Analysis of Framework

The data obtained have been studied using the application of Descriptive Statistics such as as Standard Deviation, Mean, Skewness, Variance, Kurtosis and Shapiro-Wilk test and paired ‘t’ test.

Significance of Study

Semi-month effect research on Indian banking industry with reference to the NSE BANK Index is of immediate importance due to various reasons. First, it contributes to the available literature on calendar effects by providing industry specific evidence based on the banking industry- a field that has traditionally received relatively scanty empirical investigation compared to large market indices and a wide range of economic sectors.

Second, the investigation focuses the analysis around the NSE BANK Index so that the practical relevance of the investigation is raised to a higher level. Bank Nifty is among the most highly traded index in India and serves as a central reference point to all investors, portfolio managers, as well as derivatives traders. Findings generated in this way can hence be used to evaluate the existence of predictable returns pattern in a highly liquid and institutionally dominated part of the market.

Third, the research would help in analyzing the weak-form efficiency of Indian banking sector between January, 2016 to December 2025, a period, which is identified with major regulatory reforms, technological innovations, and institutional proliferation. The decision in regard to the semi-month effect that persists over the period produces valuable findings on the efficiency of the Indian financial markets as they change over time.

Lastly, the study results can be valuable to investors, academicians, and policy makers because they will help them to increase their understanding of time-based returns in banking stocks providing the basis of informed decision-making on investments and subsequent studies on market anomalies.

Analysis and interpretation - NSE BANK Index

	Mean	Std. Deviation	Variance	Skewness	Kurtosis	Range
First Half	0.05799	0.43593	0.19	0.057	4.388	3.39647
Second Half	0.05212	0.41106	0.169	-1.004	4.817	3.19266

The average of the first half (0.057999) is marginally above the difference in the second half (0.05212) and a small difference in the average profitability. Its volatility based on the standard deviation is also slightly higher in the first half (0.43593) than in the second half (0.41106); the difference is however minimal.

The skewness analysis reveals that the returns of the first half are practically symmetrical with negative skewness (which is -1.004) of the second half, which can be compared to the tendency to have negative returns in the second half. In addition, the kurtosis values in each of the two halves are greater than 3, which is in line with leptokurtic distributions and extreme returns.

In turn, the descriptive statistics indicate only minor differences between the two time periods which do not give substantial evidence to a strong semi-monthly effect in the NSE BANK Index in the period of time under research.

Tests of Normality

	Shapiro-Wilk		
	Statistic	df	Sig.
First Half	.919	120	.000
Second Half	.942	120	.000

The p-value of the first half of the month and the second half of the month indicated by the Shapiro-Wilk test is 0.000, which is less than 0.05. Thus, the null hypothesis of normality is rejected.

Ranks				
		N	Mean Rank	Sum of Ranks
Second Half - First Half	Negative Ranks	63[a]	60.10	3786.00
	Positive Ranks	57[b]	60.95	3474.00
	Ties	0[c]		
	Total	120		

a. Second Half < First Half
b. Second Half > First Half
c. Second Half = First Half

Test Statistics[a]

	Second Half - First Half
Z	-.409[b]
Asymp. Sig. (2-tailed)	.683

a. Wilcoxon Signed Ranks Test
b. Based on positive ranks.

Wilcoxon Signed Ranks Test – Interpretation (In Brief)

The determination of the fact that there existed a statistically noteworthy difference between the first half monthly returns and the second half monthly returns of the NSE BANK Index was done using Wilcoxon signed rank test.

Negative rankings (63): The returns of the second half were less than those of the first half in 63 months.

Positive ranks (57): The second-half returns were greater than the first-half returns in 57 months.

The test statistic that was associated was Z = -0.409.

The asymptotic significance of the two tails was 0.683.

Since the p-value (0.683) was more than the standard value (0.05) it did not reach the level of statistical significance and the null hypothesis did not get rejected.

Consequently, first-half and second-half returns of NSE BANK Index did not reveal any meaningful difference, implying that no finding was made to support the fact that there was semi-month effect in the Indian banking sector during the period of study (January 2016 -December 2025).

Suggestions

Following the results of the research, the following recommendations can be given:

1. Since there is no statistically significant semi-month effect in the NSE BANK Index, it is recommended that investors do not make their strategies solely on the basis of the time effect when they want to gain abnormal returns in the banking industry.

2. The investors are advised to focus on the basic analysis, macroeconomic trends, and industry specific events instead of depending on the calendar-based trading techniques.

3. Portfolio managers should engage in effective risk-management procedures because the distribution of returns is non-normal and extreme values representing the existence of leptokurtic behavior are present.

4. The present study can be extended in the future by having a longer time horizon and comparing the NSE BANK Index with other sectoral indices and investigating other calendar effects such as the turn of the month effect or the day of the week effect.

5. There should also be comparative studies in the banking indices of NSE and BSE.

6. It is advisable to use complex statistical models, including GARCH or other volatility models in future studies to develop a better knowledge of the nature of returns in the banking industry.

In general, the investment policies regarding the banking industry should be based on thorough financial investigation instead of the seasonal trends since the current study does not support the occurrence of a semi-month effect.

Conclusion

The paper has investigated the presence of semi-monthly effect on the Indian banking market in the setting of the NSE BANK Index in the period between January 2016 and December 2025. The statistical method used (Wilcoxon Signed-Rank Test and Descriptive) was used to make the comparison of the returns in the first and second half of each month. The results revealed that difference in the mean returns of the two halves in the months was significant at a marginal difference. Even though the volatility had been slightly altered, the distribution properties altered, the Wilcoxon test discovered that the difference is not statistically important ($p>0.05$). Normality test also established that the distribution of returns was not normal; but this was not reflected in the strong semi-monthly seasonal pattern. The study, therefore, makes a conclusion that there was no substantive support of any semi-monthly effect in the NSE BANK Index over the study period. These results are in line with the nature of weak-form market efficiency in the Indian banking industry, which argues that investors are not able to generate systematic abnormal returns using semi-monthly patterns only.

Scope for Further Research

In this study, there are number of possible future directions of research.

Further research would be able to increase the temporal horizon or subdivide the sample into sub-periods, thus allowing one to investigate whether the semi-monthly effect is varying under different market conditions or economic regimes.

The comparative analysis between the NSE BANK Index and the sectoral index (such as IT, FMCG, and Pharmaceutical) can perhaps clarify the calendar anomalies across industries.

A comparative study of NSE BANK Index and BSE Bankex could also be done to isolate exchange-specific variations by scholars.

In addition, further studies can be conducted in future to explore other calendar effects such as the turn-of-the-month effects and the day-of-the-week effects in banking industry.

Using more sophisticated econometric models, e.g. ARCH or GARCH, may provide more subtle information on volatility dynamics.

Exploring the effect of institutional involvement, macroeconomic variables and announcement of monetary policy on semi-monthly returns would also advance the understanding of the market dynamics.

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