

A STUDY ON THE ANALYSIS OF VOLATILITY IN STOCK MARKET BASED ON SELECTED SECTOR INDICES DURING THE UNION BUDGET PERIOD

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Abstract: *This study investigates the analysis of stock market volatility during the Union Budget period, focusing on selected sector indices. The Union Budget, released annually by the government, outlines fiscal policies and spending priorities for the upcoming fiscal year. The study aims to understand the impact of the budget on stock market volatility by analyzing historical data from previous budget periods and comparing it to non-budget periods. Additionally, the study examines how specific sector indices, representing industries such as banking, finance, and infrastructure, are influenced by stock market volatility during the budget time. The findings of this research will provide insights into the relationship between governmental policies, stock market performance, and sector-specific impacts, benefiting investors, traders, policymakers, and scholars interested in understanding the dynamics of the stock market during the Union Budget period.*

Key words: volatility, stock market, Union Budget, sector indices, analysis, impact, sectoral performance, nifty 50, nifty auto, nifty energy, nifty media, nifty pharma.

Introduction

This investigation aims to analyze the impact of the annual Union Budget on the Indian stock market and specific sectors like infrastructure, banking, and finance. By studying historical stock market data during budget periods and comparing it with non-budget periods, we will assess the effect on stock market volatility. The research aims to provide insights into how governmental policies influence the stock market's performance and certain industries. Investors, traders, regulators, and policymakers can benefit from this study to make informed judgments, adjust portfolios, and understand the dynamics of the Indian stock market.

The study will focus on sectoral indexes that track the performance of various sectors in India, such as banking, automotive, or IT industries. By examining the volatility of these indexes during the Union Budget period, we aim to understand how the government's budgetary plans impact specific industries and the overall stock market. The findings will be valuable for investors, decision-makers, and scholars interested in comprehending the relationship between fiscal policies, stock market behavior, and sectoral performance in India. This study aims to analyze the volatility in the stock market during the Union Budget period,

focusing on selected sector indices. Volatility in the stock market during the budget period is of significant interest as it reflects the market's reaction to policy changes and economic announcements. By examining sector indices, we can gain insights into how different sectors are affected by budget-related events.

Literature Review

Dhanya Jagadeesh (2022) "Stock Market Volatility and Its Impact on the Manufacturing Sector in the Indian Economy", The findings of the study may be of interest to investors, policymakers, and researchers who are interested in understanding the impact of stock market volatility on the Indian economy and the manufacturing sector in particular. Uday Kumar K (2021) "A Study on Stock Market Volatility of Indian Mnc's", The findings of the study may be of interest to investors, policymakers, and researchers who are interested in understanding the dynamics of the Indian stock market with a specific focus on MNCs. Kgotso Morema, Lumengo Bonga-Bongathe (2020) "The impact of oil and gold price fluctuations on the South African equity market: Volatility spillovers and financial policy implications", The study is likely to examine how changes in oil and gold prices affect the volatility of the South African equity market and investigate whether there are any spillover effects between the markets. Roni Bhowmik and Shouyang Wang (2020) "Stock Market Volatility and Return Analysis: A Systematic Literature Review", The study will likely explore previous research on how stock market volatility affects the returns earned by investors. G.Sankararaman, S.Suresh, TC. Thomas, Vishnupriya (2019) "A Study on Volatility in Stock Market (NSE) based on Select Sectoral Indices during Union Budget Period of India.", The study will likely analyze the volatility of different sectoral indices during the Union Budget period and examine the factors that contribute to the volatility in these sectors. Dr. Alpa Thaker, Dr. M.H. Maisuria, Dr. Prashant T. Jariwala (2019) "Impact of Union Budget on Indian Stock Market with Reference to Bse Sensex & Nse Nifty", The study focuses on an important topic, that is, the impact of Union Budget on BSE's Sensex and NSE's Nifty Index. Sartaj Hussain, Prof. K. V. Bhanu Murthy, Dr. Amit Kumar Singh (2019) "Stock Market Volatility: A Review of the Empirical Literature", The study will likely provide a comprehensive overview of the empirical literature on stock market volatility, including the factors that contribute to volatility, the measurement and modeling of volatility, and the impact of volatility on the broader economy and financial system. Sheikh Mohammad Idrees, M. Afshar Alam, And Parul Agarwalthe (2019) "A Prediction Approach for Stock Market Volatility Based on Time Series Data", The approach is likely to be based

on statistical methods and machine learning algorithms to analyze historical patterns of stock market behavior and make predictions about future fluctuations in the market. Asma Arif1, Mujahid Hussain (2018) “Economic, Political and Institutional Determinants of Budget Deficits Volatility: A Panel Data Analysis”, The study focuses on institutions and governance variables such as corruption, political instability, military involvement in politics, and conflicts. Rajashekar, D.Sudarsana Murthy, T.Narayana Reddy (2018) “Stock Market Volatility – A Study Of Indian Stock Exchange”, The study may also provide insights into how market participants respond to volatility in the Indian stock market, such as through changes in trading strategies or risk management practices. Adam Atkins, Mahesan Niranjana, Enrico Gerding (2018) “Financial news predicts stock market volatility better than close price”, The study suggests that information extracted from news sources can be more effective in predicting the direction of underlying asset volatility movement than the direction of price movement. Adedoyin Isola Lawala, Russell Olukayode Somoyeb, Abiola Ayoopo Babajidec, Tony Ikechukwu Nwanjia (2018) “The effect of fiscal and monetary policies interaction on stock market performance: Evidence from Nigeria”, This study explores the impact of the interactions between fiscal and monetary policies on the Nigerian stock market (ASI) and the effect of the volatility of these interactions on the market. M. Mallikarjuna, R. Prabhakara Rao (2017) “Volatility Behaviour in selected Sectoral Indices of Indian Stock Markets”, This study examines the behavior of stock market volatility in the Indian stock market by analyzing the daily data of selected sectoral indices using the GARCH framework.

Objectives of the Study

1. To understand the performance of stock during budget period.
2. To know the growth level of stock after volatility.
3. To study the impact on market performance by the sectors during the budget period.

Hypothesis

H0A (Nifty Auto): There is no significant impact of Nifty Auto index on Nifty 50 during UnionBudget 2023.

H1A (Nifty Auto): There is a significant impact of Nifty Auto index on Nifty 50 during UnionBudget 2023.

H0M (Nifty Media): There is no significant impact of Nifty Media index on Nifty 50 during Union Budget 2023.

H1M (Nifty Media): There is a significant impact of Nifty Media index on Nifty 50

during Union Budget 2023.

H0E (Nifty Energy): There is no significant impact of Nifty Energy index on Nifty 50 during Union Budget 2023.

H1E (Nifty Energy): There is a significant impact of Nifty Energy index on Nifty 50 during Union Budget 2023.

H0P (Nifty Pharma): There is no significant impact of Nifty Pharma index on Nifty 50 during Union Budget 2023.

H1P (Nifty Pharma): There is a significant impact of Nifty Pharma index on Nifty 50 during Union Budget 2023.

Type of Research: Secondary Data

Sample size: 4 sectorial index and Nifty Index for past 5 years

Source of data: NSE, BSE and Investing.com

Period of Study: 2018-2023

Data Analysis

Regression Analysis and T-test for sectorial Indices from the year 2019-2023

Year	Index and sectorial Indices	Regression		T-test
		R- square	Intercept	P-value
2018-19	Nifty Auto	0.155072227	0.526343093	1.6078E-22
	Nifty Energy	0.701469933	0.576624456	2.57865E-15
	Nifty Media	0.003133217	-0.183121157	9.66687E-17
	Nifty Pharma	0.213526627	-0.313336877	4.17054E-11
2019-20	Nifty Auto	0.753508269	0.733612059	4.69433E-10
	Nifty Energy	0.153616001	0.198606272	1.107E-13
	Nifty Media	0.100946905	0.890675438	2.2428E-07
	Nifty Pharma	0.089098709	0.311110443	0.00018805
2020-21	Nifty Auto	0.62100526	0.73562729	1.3356E-08
	Nifty Energy	0.43456297	0.86165158	4.4848E-19
	Nifty Media	0.72944677	6.16503793	0.87932759
	Nifty Pharma	0.69638366	1.0446509	0.00171808
2021-22	Nifty Auto	0.63977495	0.86419917	0.00685186
	Nifty Energy	0.43166267	0.30754467	3.1534E-20
	Nifty Media	0.11297369	1.8224736	0.00189929
	Nifty Pharma	0.3033797	0.68974815	0.00507115
	Nifty Auto	0.11363061	0.4950618	0.10700295
	Nifty Energy	0.73246438	0.34148763	7.7356E-27

2022-23	Nifty Media	0.85447114	2.86238963	4.3901E-30
	Nifty Pharma	0.5649537	1.40139234	3.8981E-23

Interpretation:

The above table shows the regression analysis and t-tests conducted on different sectorial indices of the Nifty 50 for the years 2018-2019, 2019-2020, 2020-2021, 2021-2022, and 2022-2023.

1. For the year 2018-2019:

- Nifty Auto: The R-square value of 0.155 indicates that 15.5% of the variation in Nifty Auto can be explained by the independent variable(s) used in the regression. The intercept is 0.5263, and the p-value is very low (1.6078E-22), suggesting a statistically significant relationship.
- Nifty Energy: The R-square value of 0.701 indicates that 70.1% of the variation in Nifty Energy can be explained by the independent variable(s). The intercept is 0.5766, and the p-value is extremely low (2.57865E-15), indicating a strong statistical significance.
- Nifty Media: The R-square value is very low (0.0031), indicating that only 0.31% of the variation in Nifty Media can be explained by the independent variable(s). The intercept is -0.1831, and the p-value is very low (9.66687E-17).
- Nifty Pharma: The R-square value is 0.2135, suggesting that 21.4% of the variation in Nifty Pharma can be explained by the independent variable(s). The intercept is -0.3133, and the p-value is low (4.17054E-11).

2. For the year 2019-2020:

- Nifty Auto: The R-square value is 0.7535, indicating that 75.4% of the variation in Nifty Auto can be explained by the independent variable(s). The intercept is 0.7336, and the p-value is very low (4.69433E-10).
- Nifty Energy: The R-square value is 0.1536, suggesting that 15.4% of the variation in Nifty Energy can be explained by the independent variable(s). The intercept is 0.1986, and the p-value is very low (1.107E-13).
- Nifty Media: The R-square value is 0.1009, indicating that 10.1% of the variation in Nifty Media can be explained by the independent variable(s). The intercept is 0.8907, and the p-value is very low (2.2428E-07).
- Nifty Pharma: The R-square value is 0.0891, suggesting that 8.9% of the variation in Nifty Pharma can be explained by the independent variable(s). The intercept is 0.3111, and the p-value is low (0.00018805).

3. For the year 2020-2021:

- Nifty Auto: The R-square value is 0.621, indicating that 62.1% of the variation in Nifty Auto can be explained by the independent variable(s). The intercept is 0.7356, and the p-value is very low (1.3356E-08).
- Nifty Energy: The R-square value is 0.4346, suggesting that 43.5% of the variation in Nifty Energy can be explained by the independent variable(s). The intercept is 0.8617, and the p-value is very low (4.4848E-19).
- Nifty Media: The regression analysis for Nifty Media yields an R-square value of 0.729, implying that 72.9% of the variation in Nifty Media can be explained by the independent variable(s). The intercept is 6.165, but the p-value is quite high at 0.8793, suggesting that the regression coefficient may not be statistically significant.
- Nifty Pharma: The R-square value for Nifty Pharma is 0.696, indicating that 69.6% of the variation in Nifty Pharma can be explained by the independent variable(s). The intercept is 1.045, and the p-value is 0.0017, suggesting statistical significance.

4. For the year 2021-2022:

- Nifty Auto: The R-square value is 0.6398, indicating that approximately 64% of the variation in Nifty Auto can be explained by the independent variable(s). The intercept is 0.8642, and the p-value is low (0.0069), suggesting a statistically significant relationship.
- Nifty Energy: The R-square value is 0.4317, suggesting that 43.2% of the variation in Nifty Energy can be explained by the independent variable(s). The intercept is 0.3075, and the p-value is extremely low (3.1534E-20), indicating a strong statistical significance.
- Nifty Media: The R-square value is 0.1130, indicating that only 11.3% of the variation in Nifty Media can be explained by the independent variable(s). The intercept is 1.8225, and the p-value is very low (0.0019).
- Nifty Pharma: The R-square value is 0.3034, suggesting that 30.3% of the variation in Nifty Pharma can be explained by the independent variable(s). The intercept is 0.6897, and the p-value is low (0.0051).

5. For the year 2022-2023:

- Nifty Auto: The R-square value is 0.1136, indicating that approximately 11.4% of the variation in Nifty Auto can be explained by the independent variable(s). The intercept is 0.4951, and the p-value is not statistically significant (0.1070).
- Nifty Energy: The R-square value is 0.7325, suggesting that 73.2% of the variation in Nifty Energy can be explained by the independent variable(s). The intercept is 0.3415, and the

p-value is extremely low (7.7356E-27), indicating a strong statistical significance.

- Nifty Media: The R-square value is 0.8545, indicating that approximately 85.5% of the variation in Nifty Media can be explained by the independent variable(s). The intercept is 2.8624, and the p-value is extremely low (4.3901E-30).
- Nifty Pharma: The R-square value is 0.5650, suggesting that 56.5% of the variation in Nifty Pharma can be explained by the independent variable(s). The intercept is 1.4014, and the p-value is extremely low (3.8981E-23).

Findings, Conclusions and Suggestions

Findings

1. Effect of Union Budget on Nifty Auto sector:
 - a. In 2019, Nifty Auto explains 15.50% of the variation in Nifty 50, indicating a relatively low impact.
 - b. In 2020, Nifty Auto has a stronger impact on Nifty 50, explaining 75.35% of the variation.
 - c. In 2021, Nifty Auto explains 62.10% of the variation in Nifty 50, indicating a slight decrease in impact compared to 2020.
 - d. In 2022, Nifty Auto explains 63.97% of the variation in Nifty 50, similar to the previous year.
 - e. In 2023, Nifty Auto explains 11.36% of the variation in Nifty 50, indicating a decrease in impact compared to previous years.
2. Effect of Union Budget on Nifty Energy sector:
 - a. In 2019, Nifty Energy had a significant impact on Nifty 50, explaining 70.14% of the variation.
 - b. In 2020, the impact of Nifty Energy on Nifty 50 was relatively lower, explaining 15.36% of the variation.
 - c. In 2021, Nifty Energy had a significant impact on Nifty 50, although lower than in 2019, explaining 43.45% of the variation.
 - d. In 2022, the impact of Nifty Energy on Nifty 50 remained at a similar level as in 2021, explaining 43.16% of the variation.
 - e. In 2023, Nifty Energy had a relatively higher impact on Nifty 50, explaining 73.24% of the variation.
3. Effect of Union Budget on Nifty Media sector:
 - a. In 2019, Nifty Media explains 0.313% of the variation in Nifty 50, indicating a minimal impact. The remaining 99.68% is influenced by other independent variables.

- b. In 2020, Nifty Media explains 10.09% of the variation in Nifty 50, indicating a relatively stronger impact compared to 2019.
 - c. In 2021, Nifty Media explains 72.94% of the variation in Nifty 50, indicating a significant impact. The remaining 27.06% is influenced by other independent variables.
 - d. In 2022, Nifty Media explains 11.29% of the variation in Nifty 50, indicating a relatively lower impact compared to the previous year.
 - e. In 2023, Nifty Media explains 85.44% of the variation in Nifty 50, indicating a substantial impact. The remaining 14.46% is influenced by other independent variables.
4. Effect of Union Budget on Nifty Pharma sector:
- a. In 2019, Nifty Pharma explains 21.35% of the variation in Nifty 50, indicating a moderate impact. The remaining 78.65% is influenced by other independent variables.
 - b. In 2020, Nifty Pharma explains 8.90% of the variation in Nifty 50, indicating a relatively lower impact compared to the previous year.
 - c. In 2021, Nifty Pharma explains 69.63% of the variation in Nifty 50, indicating a significant impact.
 - d. In 2022, Nifty Pharma explains 30.33% of the variation in Nifty 50, indicating a moderate impact. The remaining 69.67% is influenced by other factors.
 - e. In 2023, Nifty Pharma explains 56.49% of the variation in Nifty 50, indicating a substantial impact. The remaining 43.51% is influenced by other independent variables.

These findings suggest that the impact of Nifty Pharma on Nifty 50 varied across the years, with some years experiencing a stronger influence than others. Other independent variables not included in the model contributed to the remaining variation in Nifty 50

Suggestions

- Assess the impact of each sector: This analysis includes examining the percentage of variation explained by each sector and determining the expected change in Nifty 50 for every unit change in the sector index.
- Monitor changing dynamics: The impact of sector indices on Nifty 50 can vary from year to year. It is crucial to observe these changing dynamics and identify patterns or trends. Staying updated on sector-specific developments and market trends enables investors to make well-informed decisions based on the prevailing conditions.
- Diversify across sectors: By spreading investments across multiple sectors, investors can mitigate risks associated with fluctuations in specific sectors. Furthermore, diversification offers exposure to potential growth opportunities in sectors that may outperform others

during specific periods.

- Stay informed about budget-related developments: Budget announcements and policy changes can significantly impact sector indices. It is essential to stay informed about budget-related developments.
- Seek professional advice: Seeking advice from financial advisors or investment professionals can provide valuable insights. Professionals can offer personalized guidance based on an investor's specific goals, risk tolerance, and the evolving dynamics of sector indices.

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