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INDIAN STOCK MARKET PERFORMANCE, VOLATILITY AND RISK DURING UNION BUDGET

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Abstract : *Every year events like the announcement of monetary policy, inflation rates, index of industrial production figures, purchasing managers index, union budget, corps rate earnings and occurrence of festivals of Diwali and Christmas are repeated. Whilst, these events have a significant impact on the Indian Stock Market. The Union Budget is an important economic event in India. Causal empiricism reveals that stock market activity tends to be greatly influenced by the economic events such as budget. This paper analyses the impact of Union Budgets on Indian stock prices as represented by the NSE Nifty.*

This study aims to find meaningful pieces of information through interpreting the stock samples available to find out the impact of the occurrences of events of the announcement of Union Budget on the Volatility, Risk & Returns of the Indian Stock market to help in covering the problem statement and significant.

Keywords*: Stock markets, Securities, Instruments, Volatility, Investors, NIFTY.*

1. INTRODUCTION:

Indian equity had more of rough seas due to the uncertainties stocking from the general election, a surcharge of taxes on the super-rich its partial rollback, a global trade war, a slowing economy, the long-term impact of demonetisation and many more such factors. Despite the above major hurdles, CNX Nifty returned 7% till 23rd of May when the BJP returned back to the power, the returns continued till early July when the Financial Budget was presented by the Finance Minister. NIFTY 50 started its decline on the announcement of increased taxes on the super-rich, including foreign portfolio investors and buyback tax spooked investors; due to which the 2019 Gains were erased until a rollback was declared leading to pump in of money from foreign portfolio investors.

Volatility is one of the most basic measures of statistics to measure the variance in returns of a portfolio of instruments or a single instrument. Risk is greatly influenced by liquidity of investment and holding period of the invested instruments, therefore they are considered as crucial factors influencing risk assessment and management. This study helps the retail & Institutional investors to look forward to reduce their exposure to the stock market during such events to save from wealth erosion & to hedge their risk and add on more stocks to their positions that they seem suitable as the market recovers to normalcy.

2. REVIEW OF LITERATURE :

Naka et al. (1999) analyzed the relationship between the BSE Index and five macroeconomic variables represented by Index of Industrial Production (IIP), the consumer price index, money supply, interest rate and inflation. The results indicate that IIP is the largest positive determinant of Indian stock prices, while inflation is the largest negative determinant. Pethe and Ajit (2000) dealt with the inter relationship between stock indices (i.e Sensex and Nifty) and important macro-economic variables such as exchange rate of rupee vis-à-vis the dollar, Prime Lending Rate (PLR), narrow money supply, broad money supply and IIP. The results indicated that the change of the state of economy is affected by stock indices, both Sensex and Nifty, respectively, but stock indices do not affect IIP.

Thomas and Shah (2002) in their paper explored the interplay between the Union budget and stock market. The empirical evidences is based on the 26 Union budget announcements. The results of the study indicated that stock market appear to be efficient at information processing about the Union Budget.

Bhattacharya and Mukherjee (2002) tested the causal relationship between the BSE Sensex and five macro-economic variables using the monthly data for the period 1992-93 to 2000-01, applying the techniques of Unit Root

tests, Co-integration and long-run Granger Causality Test. The study found that there is no causal linkage between the stock prices and money supply, national income and interest rate while the IIP leads the stocks to rise and there exists a two-way causation between stock prices and rate of inflation.

Vani et al. (2003) attempted to analyse the relationship between the real economic variables and stock market in the Indian context. They considered the monthly data of several economic variables such as IIP, fiscal deficit, interest rate, money supply, inflation, exchange rate and investments in Indian market between 1994 and 2003, and tried to reveal the relative influence of these variables on the BSE Sensex. Their study applied the modern nonlinear techniques such as Value at Risk (VAR) and Artificial Neural Network and compared the results. The findings showed that IIP, inflation rate, money supply interest rate and exchange rate have considerable influence on stock market movements.

Mohanty (2004) examined the response of stock prices quoted on the BSE to policy pronouncements which affect the profitability of a particular industry or a group of firms. The results show that the stocks generally react to public news quite quickly, but the first adjustment is not always the correct one. There is also a mild evidence of presence of leading lag. However, these aberrations are not significant enough to be exploited to reach at a profitable trading strategy. Kaur (2004) found in her study that most volatile month was February. She had attributed this volatility in this month to the budget announcements.

Dritsaki (2005) empirically tested the existence of a long run relationship between Greek Stock Market Index (GEN) and industrial production, inflation and interest rates. He applied the Granger causality tests for analyzing the causal relationship among these variables. The study found that there is a bilateral causal relationship between GEN and inflation rate: unidirectional causal relationship between GEN and the interest rates; unidirectional causal relationship between IIP and inflation rate and similarly between IIP and the interest rate. Dimensional Securities (2005) observed that sensex has significantly given negative returns during the post-budget period after a pre-budget rally. The same has been reported in seven occasions in the last 15 years. The study covered all budgets presented during the period 1990 to 2004.

3. OBJECTIVES OF THE STUDY :

- To examine the impact of various Union Budgets from 2019 to 2022 on the Indian stock market returns and volatility.
- To test the efficiency of Indian stock market in processing information related to Union Budget.

4. RESEARCH METHODOLOGY :

Data and Scope of the Study

The present study is based on the secondary data. Information used in this study has been taken from various sources. While the budget dates and the name of their respective presenters have been gathered form finance ministry website, the daily stock prices have been collected from the website of National Stock Exchange (NSE). The closing values of NSE Nifty of each day have been used for this study. The study considers only the trading days and leaves out holidays or other days when the market remains closed.

MARKET VOLATILITY & RISK FACTORS

Practically volatility is calculated for all financial instruments, theoretically in statistics volatility is the variation of random variable from its sample mean. To put it in simple terms, volatility of returns of financial instruments like Stocks is the dispersion of returns of the respective financial instruments for which it is measured over a period say one day, one hour, one minute etc. In security market it allows the buyer or seller of the financial instruments know how much the price of such financial instruments can swing above or below the mean price of an instrument. This information is very useful to have an idea of how much movement can be expected to enter, exit or set stop loss prices for the investments or trade.

Market Volatility is also measured by a volatility index called VIX it is similar to a the way CNX Nifty or Sensex function with the difference that VIX measures volatility and CNX Nifty or Sensex measure stock prices. VIX was created in the United States of America by the Chicago Board Options Exchange to measure the volatility over a 30day period in the United States stock market derived from realtime put and call option prices of S&P 500, for the Indian stock market we have INDIA VIX as a measure of market volatility in India. VIX can also be calculated for individual securities.

It is calculated by assessing the behaviour and outcomes of the financial instrument in the past. As mentioned above it is calculated using standard deviation ( ). Standard deviation (SD) provides the information about how far is each observation from the mean of the sample for a given period.

Theoretically, there are a variety of strategies, theories and measures of risk to analyse and manage it like Standard deviation, Value at Risk (VAR), Beta (β) and the Capital Asset Pricing Model (CAPM). These allow the Investors, banks, financial ad- visors, companies, stockbrokers etc to hedge by utilising a multitude of strategies like diversification into different securities, creating counter derivative positions etcetera.

SAMPLING TECHNIQUE UTILISED

The Indian Stock market indices like BANK NIFTY, CNX-IT, CNX METAL etcetera fairly represent their respective sectoral sentiment and indices like CNX Nifty and Sen- sex fairly represent the general market sentiment which includes the various industry sectors and trading significantly revolves around the stocks which comprise the indices.

Therefore, the sample population in this study consists of the two most prominent indices namely CNX Nifty and Sensex, to represent the general market sentiment. As it would not be feasible financially and practically to collect the vast amount of samples spanning the decade required for the study. Therefore, primary data is not utilised for this study. The Secondary data is utilised as it will make insignificant difference in the objective or scope of this study if the sample population was primary data or secondary data.

TOOLS USED TO COLLECT THE SAMPLE

The daily stock price samples on CNX Nifty and Sensex have been collected using a variety of sources and methods and further cross-matched for accuracy of the required samples. Both manually and through Software for both the indices CNX Nifty and Sensex as these are the indices considered for the study.

The samples extracted was the daily close prices of CNX Nifty and Sensex for a duration of ten years and the dates chosen in a manner such that complete weeks of trading sessions were included. Further, the samples of all the equities comprising the Indices were extracted by repeating the same above-mentioned set ups of crosschecking, parsing, manual crosschecking.

The individual equity samples were further segregated according to their respective indices. Further, which the daily prices of the Indices was calculated and re cross- matched to confirm the accuracy of the available indices samples which was utilised further in the study. This essential step was done to reconfirm that the index samples utilised in this study were as near to the primary data for the Indices and the resultant data file was in comma-separated value format.

ECONOMETRIC METHODOLOGY

RETURNS

The daily Index prices of CNX Nifty and Sensex have been converted to daily re- turns. This study utilises the logarithmic difference of the daily Index prices of two suc- cessive periods to calculate the rate of return namely the performance of the market rep- resented by the index prices. The logarithmic difference is a superior alternative to the straightforward method as it gives results that are more accurate. It is symmetric between the up movements and down movements, which are expressed in terms of percentage to ease comparisons.

VOLATILITY

There are several ways available to calculate volatility including methods like beta coefficients, models of option pricing and standard deviations of returns. We take up the inter-temporal pattern of variance of daily logarithmic returns of the samples of CNX Nifty and Sensex as derived above for their respective event-based periods. We will utilise the most common tool to calculate volatility that is variance (σ 2).

In this study, we will consider thirty day moving variance for visual inspection and in case of Union Budget and COVID - 19 black swan event, ten day rolling standard deviation will be used.

RISK

This study calculates the moving daily risk of CNX Nifty and Sensex by utilising moving standard deviation. To calculate moving standard deviation variance is applied. Since variance is derived by taking the square root of standard deviation, the standard deviation is calculated by taking the square root of the variance, therefore, the above- mentioned equation to calculate simple moving variance is utilised for calculating risk. In our study, we will consider 10 day moving standard deviation.

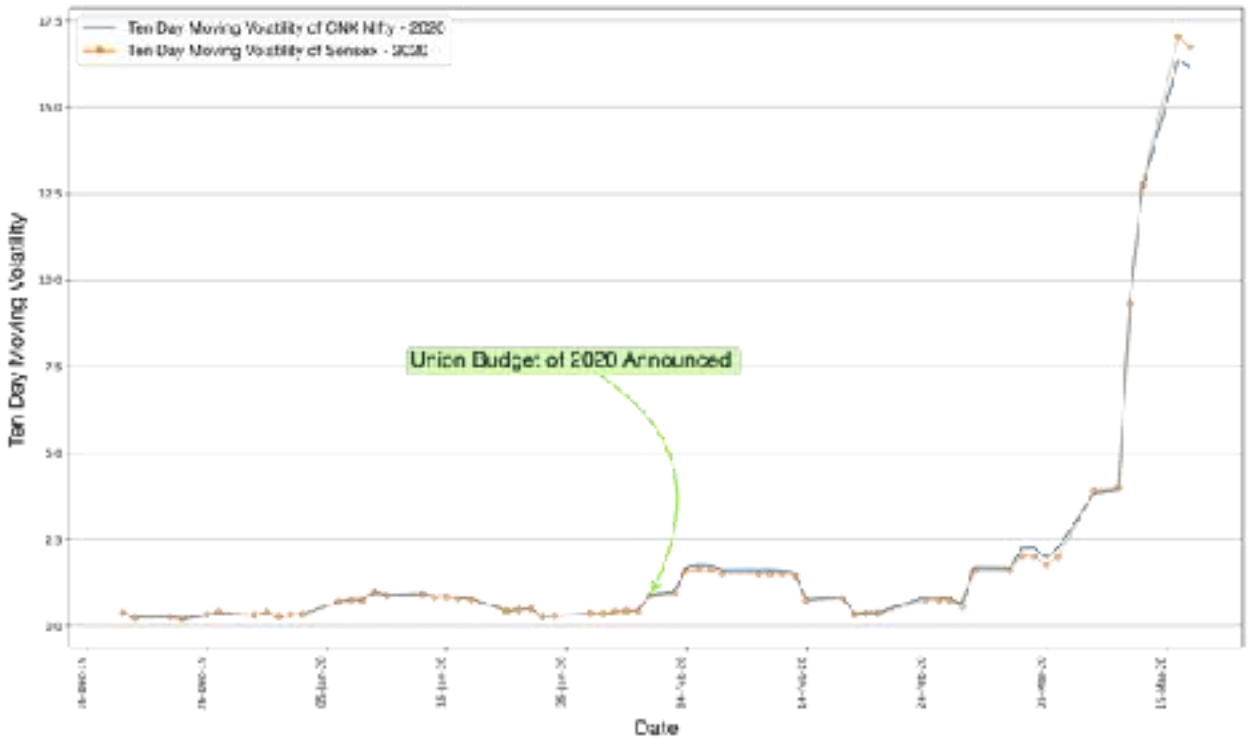
UNION BUDGET EVENT ANALYSIS & INTERPRETATION

In the Indian stock market Union Budget event is known to impact stock market let us inspect the significance and extent of the effect Union Budget on the Indian Stock Market.

ROLLING VOLATILITY

YEAR 2020

Ten Day Moving Volatility of CNX Nifty & Sensex for Union Budget — 2020

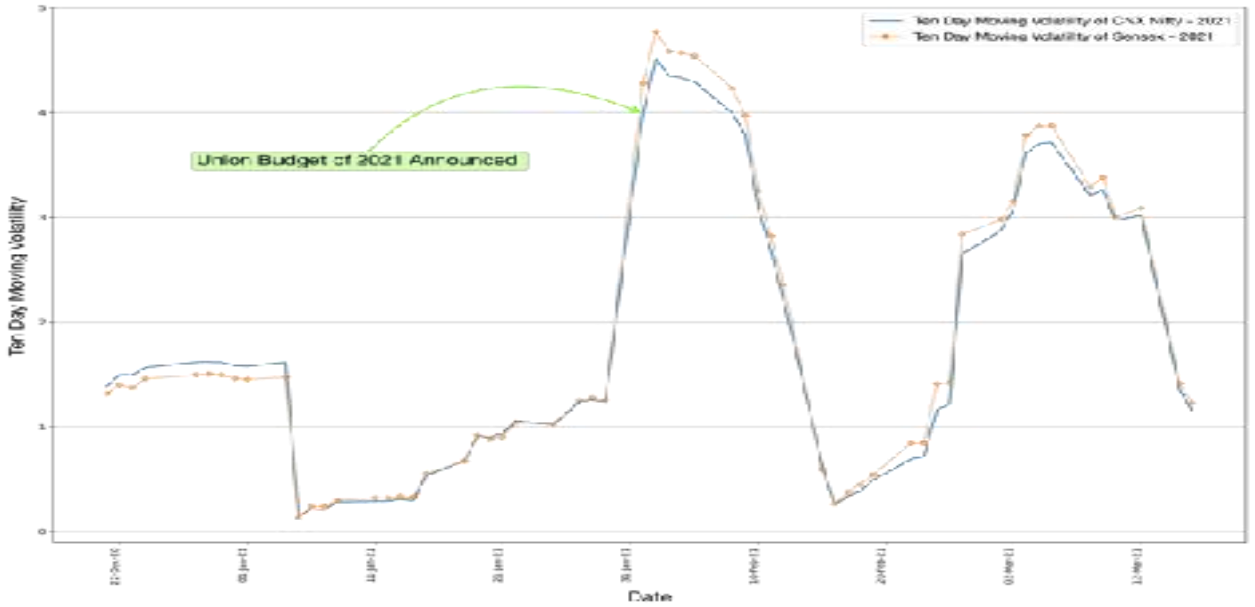


Interpretation & analysis

From the above chart, a clear volatility spike starting from 3rd January can be ob- served leading to Union Budget of 1st February, 2020 in both CNX Nifty Index and Sen- sex Index, which starts sessions prior to the anticipated Union budget announcement which indicates a panic sentiment and indecision among the market participants. This spike subsides with time till 18th Febuary, depending on the prevailing market sentiment after the announcement of Union Budget 2020. This phenomenon is less observable in the year 2020 as the peak is over shadowed by the volatility spike starting from 18th Febuary due to the effect of the black event of COVID - 19, but still present in the 2020 union budget announcement period under study.

YEAR 2021

Ten Day Moving Volatility of CNX Nifty & Sensex for Union Budget — 2021



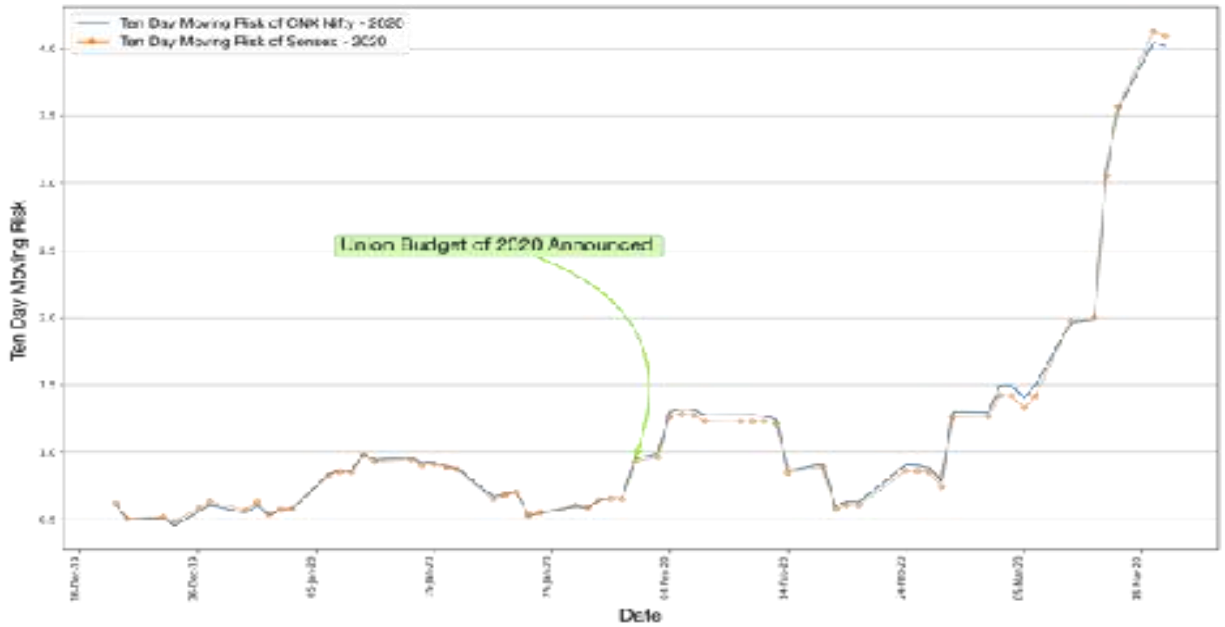
Interpretation & analysis

From the above chart, a clear volatility spike starting from 5th January can be ob- served leading to Union Budget of 1st February, 2021 in both CNX Nifty Index and Sen- sex Index, which starts sessions prior to the anticipated Union budget announcement which indicates a panic sentiment and indecision among the market participants. This spike subsides with time till 16th Febuary,, depending on the prevailing market sentimentafter the announcement of Union Budget 2021.

ROLLING RISK - CNX Nifty & Sensex

YEAR 2020

Ten Day Moving Risk of CNX Nifty & Sensex for Union Budget — 2020

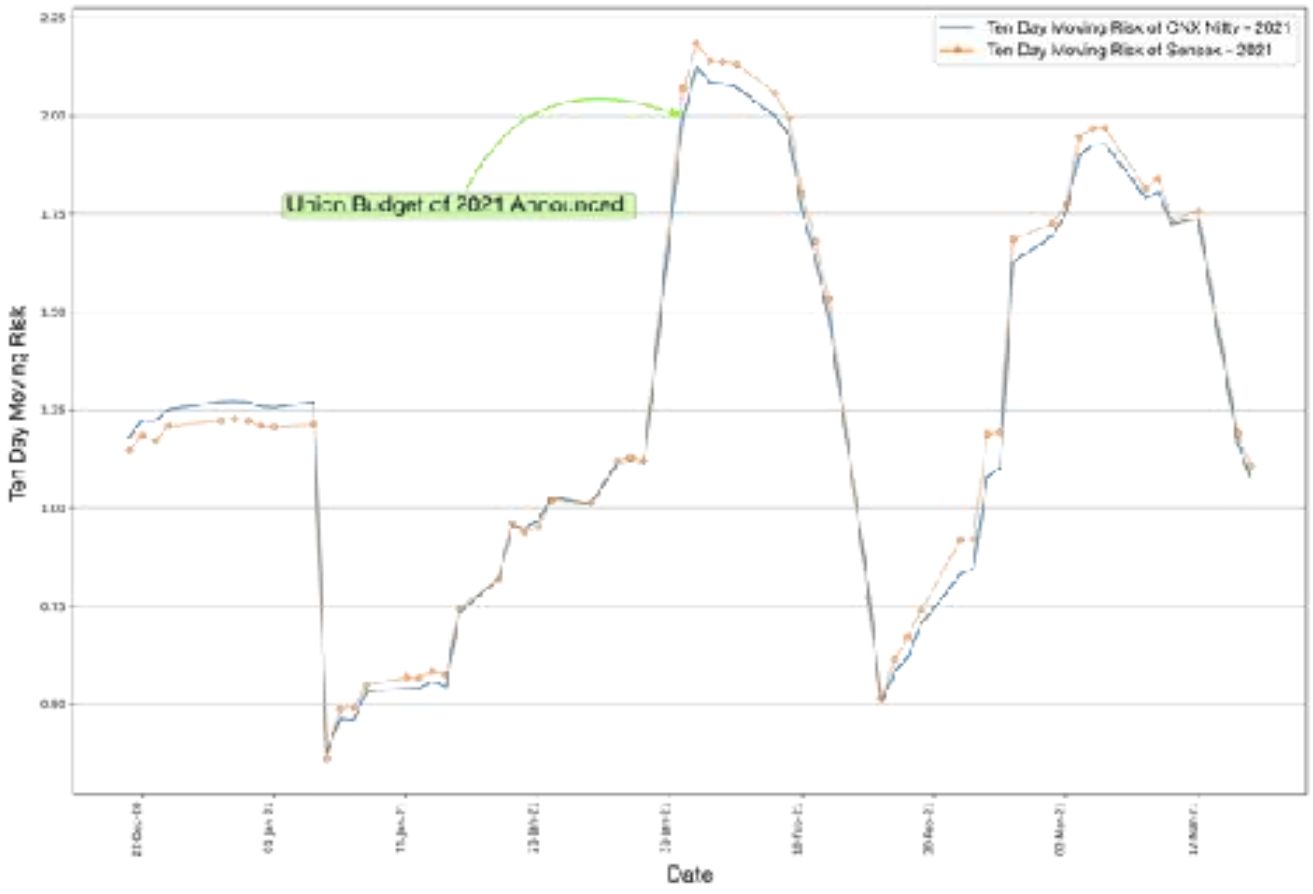


Interpretation & analysis

From the above chart, a clear spike in risk starting from 1st January can be observedleading to Union Budget of 1st February, 2020 in both CNX Nifty Index and Sensex Index, which starts sessions prior to the anticipated Union budget announcement which indicates a panic sentiment and indecision among the market participants. This spike in risk subsides with time, depending on the prevailing market sentiment after the announcement of Union Budget 2020. This phenomenon is less observable in the year 2020 as the peak is over shadowed by the spike in risk starting from 18th Febuary due tothe effect of the black event of COVID - 19, but still present in the 2020 union budget announcement period under study.

YEAR 2021

Ten Day Moving Risk of CNX Nifty & Sensex for Union Budget — 2021



Interpretation & analysis

From the above chart, a clear spike in risk starting from 5th January can be observed leading to Union Budget of 1st February, 2021 in both CNX Nifty Index and Sen- sex Index, which starts sessions prior to the anticipated Union budget announcement which indicates a panic sentiment and indecision among the market participants. This spike in risk subsides with time till 16th Febuary, depending on the prevailing market sentiment after the announcement of Union Budget 2021

5. CONCLUSION :

Certain events have a significant impact on the Indian stock market. The event of announcement of union budget across the twelve budget announcement events taken into consideration for the study exhibits very significant effect on the Indian stock market; Confirmed by a similar effect owing to this event on both the indices that is the CNX Nifty

index and the Sensex index.

The event of the announcement Union Budget causes a significant increase in the volatility of the Indian stock market weeks before the announcement Union Budget and may continue after the announcement of the Union Budget, therefore, making it riskier than usual due to the increase in the extent of fluctuations of daily market returns arising from the uncertainty of not knowing what the yet to be announced Union Budget holds for specific sectors of the economy and the economy as a whole. This uncertainty instills the sentiment of panic and fear among the market participants that causes a selloff in the market by the market participants.

This increase in volatility, risk and fluctuation of returns may be different com- pared to other years due to the erratic nature of the stock markets and the changes the Union Budget brings to the Indian Economy and this increase in volatility, risk and fluctuation of returns may subside after the announcement of the Union Budget subject to the prevailing market sentiment and conditions.

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