13 Effects of Monetary Policy Announcements on Stock Market Volatility

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Abstract

This research investigates the influence of monetary policy pronouncements on stock market volatility in India, with an emphasis on the Nifty 50 index for the period between 2018 and 2024. The role of monetary policy, implemented by the Reserve Bank of India (RBI), in regulating macroeconomic stability, liquidity and market expectations, cannot be overlooked. The stock market is a forward-looking mechanism, so the changes in monetary policy announced by the Reserve Bank of India (RBI), particularly the interest rate decisions of the RBI, will be expected to produce instant responses through changes in stock prices and market volatility. This study will attempt to assess the short-run effect of RBI monetary policy decisions on stock market volatility in India for the period 2018-2024. During this period, a wide range of conditions will be analysed, including the pre-COVID era, COVID uncertainty, and the post-pandemic expansionary and restrictive periods. The event study approach is used in this study to examine the effect of the policy announcements on stock market volatility. Data on daily closing prices of the Nifty 50 index will be utilized to compute logarithmic returns over an 11-day event window from -5 to +5 days relative to the date of monetary policy decision announcement. The approach will also include descriptive statistics and comparisons of the volatility of the period with respect to the announcement days. The analysis hypothesizes that the announcement of monetary policies greatly affects the stock market volatility in the short run; specifically, contractionary policies may trigger more adverse reactions from the market due to increased liquidity costs.

Keywords: Monetary Policy, RBI, Nifty 50, Event Study, India.

Introduction

Literature Review

The purpose of this chapter is to review and critically analyze the existing literature related to monetary policy and stock market volatility. This chapter aims to examine previous studies, identify key findings, and highlight research gaps in order to provide a strong theoretical and empirical foundation for the present study

- To examine the existing literature on the impact of monetary policy on stock market returns and volatility;
- To review empirical research conducted in both developed and emerging economies, with special reference to India;
- To identify research gaps and justify the need for the present study.

Theoretical Foundations: Efficient Market Hypothesis and Rational Expectations Theory

A crucial theoretical framework is required for the study of the behavior of monetary policy announcement and its effects on stock market volatility. There are number of factors which affect stock market which are not only economic fundamentals but expectations, information flow and market sentiment. The foremost among theories which explain how the markets handle and process the information are the Efficient Market Hypothesis and the Rational Expectations Theory. These theories provide a theoretical background to study how monetary policy announcement of the RBI affects the market sentiment, and therefore, volatility of the Nifty 50.

- **Efficient Market Hypothesis (EMH)**

The Efficient Market Hypothesis (EMH) developed by economist Eugene Fama is a prominent theory among the finance world. The theory suggests that the financial markets are informationally efficient and hence at any point of time all information available has been fully incorporated into the asset prices, i.e. It would not be possible for the investors to consistently achieve extraordinary gains at any level, by trading on the information that is already public. This theory states that current prices are inclusive of all information - private and public. This form is not practical in many real situations.

- **Implications of EMH for Monetary Policy Announcements**

EMH suggests that there are certain predictions concerning the stock market's response to the monetary policy announcement. The assumptions include:

  - The response of the stock market to policy announcements is instantaneous
  - The price adjustments are unbiased, incorporating the true economic impact of the policy announcement. Volatility of the market should increase for a while, then stabilize.

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- Despite these ideal conditions, empirical studies indicate the existence of price overreactions and underreactions.

- **Rational Expectations Theory**

Another important framework used for analysis of market behavior is the rational expectations theory put forward by Muth (1961) and further elaborated by Lucas (1972), which is based on the proposition that agents of the economy, be it investors, firms or consumers, form expectations about future outcomes based on all available information that includes past and current policy signals. This theory suggests that these agents use their information effectively to form rational expectations.

- **Application to Monetary policy and Stock Market**

According to Rational Expectations theory, monetary policy announcements would impact the stock market according to their perceived effect. This would be based on how a policy announcement deviates or conform from what markets expect to be announced. If a monetary policy announcement is completely anticipated by the market, it would result in no substantial reaction on the stock prices. It would also affect Volatility similarly; and so would an unexpected monetary policy announcement be expected to create volatility in the market. This would then also explain the variations on how markets behave in response to monetary policy changes due to the differences in the way a policy announcement would be viewed as relative to expectations by the investors, as is Rational Expectations and Volatility

Volatility in financial markets can be considered as a reflection of the way in which expectations are formed and modified. Any new information that is introduced affects the expectations of investors and leads to a revision of asset prices. When there is a higher level of uncertainty or disagreement among investors, there is more volatility.

- **Relevance to the Present Study**

The merging of EMH and Rational Expectations theory is important for this research as the question of the impact of RBI monetary policy announcements on Nifty 50 volatility has the following components where this combination becomes significant:

- Why is there increased volatility on the announcement date?

Both theories imply that any new information released, either by increasing the efficiency with which markets adjust, or through providing surprises to them, can result in an increase in volatility over a temporary period.

- Why does some announcement have a more significant impact than others?

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Rational expectations emphasizes the impact of surprises and hence any change in monetary policy that is not anticipated will likely have a larger impact on markets compared to that which was anticipated by the participants.

- Why does the response of the market differ from time to time?

The level of uncertainty about how information would impact the markets will also be dependent on various factors such as economic conditions, investor confidence and the ease with which information can be transmitted, thus influencing the expectation formation and market reaction accordingly.

- Why is pre-announcement behavior important?

If markets fully incorporate anticipated policy decisions, the effect should already be visible before the actual announcement date due to forward-looking behavior on part of market participants.

Empirical studies (Global)

- **Evidence on US, ECB & BoE**

Many researchers globally have studied the impact of monetary policy announcement on stock market volatility, particularly in developed markets. Central banks like Federal Reserve in USA, European Central Bank in Euro zone and Bank of England in United Kingdom are highly influential on the world financial markets and their monetary policy announcements have large influence on asset prices. This section would briefly review some major empirical studies on this theme. The following studies discuss how stock market volatility reacts to monetary policy announcements in each of these regions.

- **Empirical Evidence from United States: Federal Reserve**

Studies on Federal Reserve and stock market announcement in USA are among the most exhaustive in global finance research. Due to the huge size of USA market and strong impact of Fed on the entire world market, research done in this context has considerable weight.

- **Early Empirical Studies**

One of the very early but important contributions is by Bernanke and Kuttner (2005). Their study analyzed the reaction of the stock market to unexpected shifts in Fed policy announced through the target of federal funds rate. They found that an announcement of a federal funds rate target change significantly moves stock prices. The results indicates that monetary policy surprises have a substantial impact on stock returns, especially for rate cut announcements. This suggests the expectation mechanism is working and a deviation of surprise rate from expected rate drives the change in stock prices. Also, it found that the stock market reaction is not necessarily a response to current and future discount rates but is more of a reaction to policy surprise. Further research conducted by Cook and Hahn (1989) investigated the

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response of interest rates to monetary policy announcements. Though focused primarily on bond markets their results suggest a significant impact of policy announcements on market interest rates. An impact on bond prices certainly carries an implication on stock prices as bond price fluctuations influence investment returns directly as well as indirectly through discount rates.

- **Volatility Effects of Monetary Policy Announcements**

Subsequent papers moved toward examining volatility rather than mere price changes. For example, studies like Bomfim (2003) and Grkaynak et al. (2005) have presented evidence that monetary policy announcements trigger an increase in financial market volatility, particularly over FOMC announcement days, when markets react to perceived changes in economic conditions and information.

In particular, Bomfim (2003) observed increases in volatility following both anticipated and unanticipated announcements of policy changes, suggesting that the announcement itself, along with the element of surprise, triggers the rise in volatility.

- **Role of Forward Guidance and Communication**

In recent years, central banks like the Fed have actively used forward guidance to manage market expectations. This has further spurred the development of research examining the impact of central bank communication. In this regard, for instance, Campbell et al. (2012) identified "Delphic" and "Odyssean" guidance and illustrated how each one had an impact on financial markets, proving that language matters as much as action does.

With the increasing reliance of central banks on forward guidance, market responses to guidance have come to be understood as almost equally significant as the action itself. This has, by implication, made the monetary transmission mechanism, which researchers had long been trying to trace, more complicated than before.

- **Impact During Crisis Periods**

The 2008 Financial Crisis and the COVID-19 outbreak are two different circumstances that can help to analyze and comprehend how unorthodox monetary tools have been used in their respective financial markets. In both cases, the Federal Reserve has used unorthodox monetary tools such as quantitative easing and near-zero interest rates. Studies have shown that while it was not always consistent, monetary policy actions during these periods often reduced volatility as well as had other impacts by acting to restore order and calm expectations within financial markets, although volatility sometimes increased due to initial uncertainty over these unorthodox measures.

- **Empirical Evidence from the Eurozone: European Central Bank**

The European Central Bank faces an additional challenge as monetary policy must account for 27 different national economic circumstances. Thus, research in this

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context goes further into an analysis of central banking as it applies in a large and heterogeneous economy.

- **Market Reactions to ECB Announcements**

Empirical evidence also shows that ECB announcement days trigger significant market reactions. Studies such as Ehrmann and Fratzscher (2004) found that communication, as well as policy actions by the ECB impact asset prices and volatility. Moreover, as Bredin et al. (2009) and Altavilla et al. (2019) have demonstrated, the announcement of policy actions by the ECB are statistically significant in causing both price level changes and volatility increases. They also suggest that ECB announcements are particularly impactful during times of uncertainty, like during the sovereign debt crisis.

- **Volatility Dynamics**

It appears that there is similar evidence regarding stock market volatility and ECB announcement days. Again, the evidence suggests that stock market volatility rises on days that the ECB makes policy announcements and actions. Similar to findings in other advanced economies, central bank policy actions are indeed a source of uncertainty. However, studies also suggest that volatility responses differ in the Eurozone based on country, integration level, and the reliability of the ECB. Further, as it was observed during the sovereign debt crisis, announcement days during times of stress can have an exaggerated impact.

- **Unconventional Monetary Policy**

In addition, the ECB adopted unconventional policies during the crises; its main strategies included rate reductions, quantitative easing, and negative interest rates, which have been empirically tested. The literature proves the varied impact of such policies on volatility; however, it also confirms that such strategies contribute significantly to stabilization of markets through liquidity injection and confidence creation, even though these strategies sometimes lead to volatility because of their unprecedented nature.

- **Empirical Evidence from the United Kingdom: Bank of England**

The United Kingdom also serves as an excellent case study as its central bank, the Bank of England, is relatively well-established, it has an inflation target, and has developed a clear communication strategy over the years.

- **Impact of Policy Announcements**

Similar to in the US and Eurozone, empirical studies of the Bank of England's policy actions have shown that its announcement days tend to lead to both immediate and statistically significant price movements. Clare and Courtenay's 2001 research of the Bank of England, along with subsequent literature, indicates that actual interest rate changes indeed have a market-moving impact on all major assets

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including stock markets such as the FTSE 100. This is again shown by increased volatility surrounding announcement dates.

- **Role of Expectations**

Evidence also suggests that a large portion of the market response is tied to expectations. As in other advanced economies, anticipation of central bank action causes a muted market reaction as the stock market is pricing in the impending information. These further stresses the importance of central bank credibility.

- **Crisis and Post-Crisis Periods**

As mentioned before, both the crisis and post-crisis periods are informative and suggest that unconventional policies are largely a means to restore order and confidence during times of stress, thus likely reducing volatility overall once markets adjust, rather than contributing to it in the long run.

India: Studies focusing on the RBI Announcements

- **RBI Announcements and Stock Market Impact**

In addition to studies in developed countries, the impact of monetary policy announcements in India has been widely researched, though the quantity is far less compared to studies in the developed markets. India has specific characteristics such as the evolving degree of market efficiency, variety of sophistication levels in investors, and sensitivity to both global and domestic macroeconomic factors. In such a case, RBI monetary policy announcements will form a critical information set that influences investor confidence and the behavior of financial markets. The following are key studies that analyzed how RBI announcements impact stock market returns and volatility (especially against the backdrop of major indices such as the Nifty 50).

- **Early Empirical Research in India**

Initial studies of monetary policy transmission in India focus on the relationship between interest rate changes and stock market returns. These studies generally find that changes in policy rates, specifically in repo rates, influence stock markets significantly. For example, during the early part of 2000s, several research papers pointed out that easy monetary policy in the form of lowering of interest rates impacts the stock market positively in the form of increase in stock prices. This is because the borrowing costs will come down, thus influencing business expansion.

However, most of these earlier studies are based on aggregate data and do not explicitly examine the short-term volatility nor the effect in terms of response on announcement dates. As India's financial markets matured and the quality of available data improved, researchers adopted a more dynamic research approach (like the event studies) to estimate the market response to monetary policy announcement immediately.

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- **Evidence of the Event Study Framework in India**

In the Indian case, a vast literature on event studies has been carried out, focusing on short time windows around monetary policy announcements to estimate unusual returns and volatility.

Several researchers have confirmed that monetary policy announcements in India have had a significant impact on the behavior of the stock markets in India. There is a visible increase in stock market volatility following an announcement and this stems from new information entering the markets, and the ensuing price revisions of assets. The extent of the announcement surprise and the timing of the announcement, plus other contextual economic parameters, dictate the size of the market volatility.

In such cases, unexpected policy actions by the central bank have been proven to have a far greater impact compared to the ones which have been widely anticipated by investors. Such evidence corroborates rational expectations theory, stating that it is surprise element in policy which has an impact on the economy. This forces investors to update their estimates about future interest rates, the expected future rate of inflation and the potential future path of economic activity which subsequently fuels market volatility.

- **Asymmetry in Market Behavior**

A notable fact in the case of India has also been the presence of asymmetries in the response of the markets to different types of monetary policy actions. Several studies in India have established the fact that contractionary policy actions like hikes in interest rates have a more negative and substantial impact on stock markets than positive impacts from easing of policy through reduction in interest rates.

Such asymmetries can be explained on the grounds of psychological factors. Investors' behavior can be influenced by their sentiments which are more sensitive to bad news. So, an unexpected announcement might lead to strong sell-offs by investors on grounds of their perception of risks being amplified. Lowering of rates on the other hand might only serve to put a temporary floor to the losses in case the reason for lowering is perceived to be the lack of business confidence.

- **Effect During Crisis**

The COVID-19 era assumes significance in the context of examining the influence of RBI’s policy announcements on stock market volatility. In this era, RBI adopted accommodative policies through interest rate cuts and liquidity measures to reduce the effects of the crisis on the economy. Research indicates that the stock market showed considerable volatility in response to policy announcements, particularly in the early days of the crisis. Market volatility reduced as policy effects started materializing and market sentiments improved. This implies that although

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policy announcements may initially induce volatility, they eventually become stabilizing factors in the medium term due to their liquidity and confidence-building effects.

- **Existing Research Gaps in the Indian Scenario**

In the existing literature on the relationship between monetary policy and stock market volatility in India, several research gaps remain to be filled. First, the research is largely dominated by pre- pandemic data; therefore recent studies are needed to include the post- pandemic scenario, which witnessed significant changes in policy and market conditions. Second, most studies only examine returns and limited focus is given on volatility. Third, there are few studies that compare pre- and post-announcement behavior (the objective of the current research).

Research Gaps

The empirical evidence concerning monetary policy announcements and stock market behavior are quite large but several critical gaps exist concerning emerging markets, in particular India. It can be argued that the evidence from developed countries can also be extrapolated to emerging markets but because of structural and institutional differences and diverse investor behavior in different markets this will be a flawed argument.

The most important gap in the literature concerns developing and emerging markets. Studies, that try to relate stock market reaction and monetary policy announcement, mostly concentrate on developed markets such as the USA, the Eurozone and the UK. These markets are characterized by a higher degree of market efficiency, transparency, and maturity. On the other hand, in emerging markets like India we have quite different circumstances, such as greater susceptibility to external shocks, different levels of information asymmetry and diverse participants in the stock markets. As a consequence the transmission of monetary policy announcement is not the same in emerging as it is in developed countries, however there are relatively fewer systematic analyses done in this topic on the specific case of India which brings us to the gap concerning the specific geographic region and nation.

There is another major gap with regards to the volatility modeling in the Indian market. Most studies on India primarily focus on stock returns and not on the stock volatility. The existing studies only check the direction of the movement and do not assess the extent of variability of that movement. Volatility measures the level of risk associated with stock markets which reflects the state of investor confidence and the intensity of reactions to monetary policy announcements. Some studies have explored stock return volatility but have often used inappropriate estimation techniques or the tests employed are not exhaustive. Volatility studies of Indian stock market have primarily focus on forecasting volatility. Therefore there is a lack of focused analyses of the announcement effect on volatility which need to be properly examined.

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Finally, not many of studies are providing the detail description for pre and post announcement periods behaviors. Event study is capable of estimating short-term market reactions after announcements, but few studies provide information about volatility behavior before announcement (pre-announcement volatility) to determine if monetary policy announcement's implications are anticipated by market participants, and to assess how volatility's dynamics after announcements. The analysis of how the pre and post announcement volatilities respond to an announcement helps understand fully the shock itself and the way it spreads through financial markets.

Conclusion

From the above discussion, it can be said that the impact of monetary policy on stock market volatility should be considered by understanding the role played by information, liquidity, and uncertainty. According to the information theory, investors act based on their forecasts using information about new monetary policy. Liquidity theory shows how changes in financing affect markets, while uncertainty theory demonstrates the role played by investor anticipation and the information dissemination from the central bank. Both theories combined give a complete explanation of how RBI monetary policy announcements affect stock market volatility in India, especially for Nifty 50.

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