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IJIEMR Transactions, online available on 6th Oct 2021. Link
:http://www.ijiemr.org/downloads.php?vol=Volume-10&issue=ISSUE-10

DOI: 10.48047/IJIEMR/V10/I10/01

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Volume 10, Issue 10, Pages: 1-9

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A Study on Effect of Price Volatility on Liquidity of stocks with special reference to Indian Stock Markets

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Abstract: Stock markets are highly volatile and Indian stock market is not an exception. Volatility is an inevitable parameter with altering bull and bear phrases. In bull market share prices will raise due to active buying whereas in bearish market the share prices decline due to over selling of stocks. It can be observed that this volatility is due to liquidity nature of stocks. In this study an attempt is made to establish the relationship between stock volatility and liquidity using econometrics time series data for two major stock indices BSE Sensex and Nifty Fifty including four major indices from the year 2016-2020. The outcome of this study is going to be significant as investors can predict stock price movements based on liquidity of the stock as the issues of return and volatility have become increasingly important now a days.

Key words: Indian Stock Markets, Implied Volatility, Liquidity, Return, Volatility.

Introduction

Stock prices will change every day in the market. Buyers and sellers cause prices to change asthey decide how valuable each stock is. Basically, share prices change because of supply anddemand and also the information prevailing in the market. If more people want to buy a stock than sell it - the price moves up. Conversely, if morepeople want to sell a stock, there would be more supply (sellers) than demand (buyers) - the pricewould start to fall. Volatility in the stock return is an integral part of stock market with thealternating bull and bear phases. In the bullish market, the share prices soar high and in the bearishmarket share prices fall down and these ups and downs determine the return and volatility of thestock

market. Volatility is a symptom of a highly liquid stock market. Pricing of securities dependson volatility of each asset. An increase in stock market volatility brings a large stock price changeof advances or declines. Investors interpret a raise in stock market volatility as an increase in therisk of equity investment and consequently they shift their fundsto lessrisky assets. It has an impacton business investment spending and economic growth through a number of channels. Changes inlocal or global economic and political environment influence the share price movements and showthe state of stock market to the general public. The issues of return and volatility have becomeincreasingly important in recent times to the Indian investors, regulators, brokers, policy makers,dealers and researchers with the increase in the FIIs investment. Hence in this paper an attempt hasbeen made to analyse the impact of stock price volatility on liquidity.

"Volatility is an essential part of the stock market because it checks the nerve of the market andStock Market volatility is unavoidable. It can be seen that volatility has its long-term impact in themarket so an investor is required to take all possible measures to design his portfolio. A very fewstudies have explored the impact of news and shocks on the stock markets efficiency in India(volatility and liquidity)".

The main focus of the study is to analyze the impact of shocks and news on market volatility andit also tries to extract the relationship between volatility & liquidity through causes and how themarket microstructure has an impact on both volatility & liquidity.

Review of Literature

Jieun Lee, KeeH.Chung (2017-18) The Liquidity & stock returns of any stock market alwaysaffected by market volatility, so this paper mainly addresses to extract the effect of marketvolatilityon liquidity & stock returns of the Korean stock market. The study shows that unexpectedincreasesin market volatility accompany decreases in both stock returns and liquidity and the effectof volatility shock on stock returns is greater for stocks with more domestic or foreign institutionaltrading. Individual investors mitigate the negative effect of volatility shock on stock returns and itwas found that volatility shock exerts a greater impact on stock returns when stock liquidity decreasesmore in response to an increase in market volatility.

Barbara Bedowska Sojka and Agata Club Kliber (2018) The paper studied those dependenciesbetween liquidity and volatility in the causality framework. It focuses on the stocks listed on theWarsaw Stock Exchange as the example of the emerging market featured by significantly highertrading costs and higher volatility and the study also conducts the series of causality tests betweenliquidity and volatility. The major outcomes from the study are that in the majority of the casesvolatility is a Granger cause to liquidity, and in some cases, liquidity is also Granger cause tovolatility and also the results show that the causality patterns differ from one test to another for aparticular period of time.

Nathan Gold, Qiming Wang, Melanie Cao and Huaxiong Huan (2017) The paper studies liquidityand volatility commonality in the Canadian stock market. They mainly showed that five variousliquidity measures display strong evidence of commonality at both market-wide and industryspecific levels and the study also investigated the causal relationship between liquidity andvolatility. The dynamics of the Canadian market with respect to liquidity and volatility aremultifaceted. Liquidity changes are common across the market, and even more so within specificindustries. The study demonstrated that market and industry specific liquidity factors have apredominant effect on the liquidity of individual assets. Hence, market- and industry-wide shocksin liquidity will have pronounced effects of the liquidity of individualassets.

Kee H. Chunga and ChairatChuwonganantb (2017) The studymainly explores the relationshipbetween market volatility, stock returns and main role of liquidity providers and theireffectiveness. By viewing the paper, it shows that market volatility affects stock returns bothdirectly and indirectly through its impact on liquidity provision and the negative relation betweenmarket volatility and stock returns arises not only from greater risk premiums but also greaterilliquidity premiums that are associated with higher market volatility. The major findings are thata stock's return is more sensitive to unexpected changes in market volatility when its liquiditydisappears more in response to volatility shocks, which indicates that liquidity providers play animportant role in determining the effect of market volatility on stock returns.

Asli Bayara, and Zeynep O'nderb (2015) This paper examines the role of Liquidity and pricevolatility of cross-listed French stocks. There has been an increase in the cross-listing of stocks ondifferent stock exchanges in the world. So, the study mainly examines the impact of cross-listingon the quality of a domestic market is examined by analyzing the changes in the volatility andliquidityof French stocks after their cross-listing on the German electronic market, the Xetra. Aftercross-listing, the liquidity declines and the volatility ofstock prices increases for most of the stocks. Some findings indicate that the trading scheme and the characteristics of the stock should beconsidered in examining the cross-listing effects and also the results suggest that it will take sometime for European stock markets to fully integrate.

Research Design

3.1 Statement of the Problem: Volatility and liquidity of stocks are the most important features of the financial markets. Bothvolatility and liquidity are unobservable and approximated with parametric estimates ornonparametric measures. They affect risk management, assets pricing and portfolio construction.

Last five years in India has witnessed macro shocks and news events (political events) that mightact as potential shocks for the efficiency of stock market. A very few studies have explored theimpact of news and shocks on the stock markets efficiency in India (volatility and liquidity) duringlast 5 years.

Hence this study mainly addresses the following questions:

- Does Indian stock market exhibit efficient behavior for news/shocks? (Persistence ofvolatility, asymmetry)
- Is there Bi-directional causality between volatility and liquidity in Indian stockmarket?
- Is there a difference in the volatility and liquidity of NSE and BSE markets giventheirmarket microstructure?

3.2 Scope of the Study: The study covers the one of the most traded and highly liquid stock markets of the world i.e., NSE.The NSE and BSE indices covered in the study i.e. Nifty 50, NSE 100, NSE 500 and BSE SENSEX,BSE 100 and BSE 500 covers approx. 90% of market liquidity. The equity trading in India onthese stock exchanges has the highest value and volume traded.

3.3 Objectives of the Study:

- To study the impact of shocks and news on market volatility.
- To study the relation between volatility and liquidity (Causality).
- To ascertain whether market microstructure has an impact on volatility and liquidity.

3.4 Statement of Hypothesis:

H_{0a}: There is no impact of volatility on market liquidity

H_{1a}: There is an impact of volatility on market liquidity

H_{0b}: There is no impact of shocks and news on market volatility

H_{1b}: There is a significant impact of shocks and news on market volatility

H_{0c}: Market microstructure has no impact on market volatility and liquidity

H_{1c}: Market microstructure has an impact on market volatility and liquidity

H_{0d}: There is no causality between market volatility and liquidity

H_{1d}: There is a bi-directional causality between market volatility and liquidity

3.5 Limitations of the Study:

- The study is limited to only a period of five years from January 2016 to December 2020.
- The scope of the study is restricted to measuring the impact of volatility on the liquidity only of theselected indices listed on BSE and NSE.
- The study is based on the historical data collected from secondary sources only.
- The investigation is constrained to the accessibility of the information.

Research Methodology

The present study is analytical in nature as it involves a set of assumptions and also computations.

Sampling Design: For the present study 6 indices, 3 from National Stock Exchange (NSE) and 3 indices from Bombay Stock Exchange (BSE) has been taken and analyzed. The indices are BSE SENSEX, BSE100, BSE500, Nifty50, NSE100, NSE500.

Sources of Data: For the present study the secondary data was collected from yahoo finance.

Duration of the study: The study was conducted from January 2016 to December 2020.

Data analysis tool:EViews isthe software been used.

Data analysis tools and techniques: The major data analysis tests used in the present study are:

- Econometric analysis of time series – ADF test for Stationarity, Heteroskedasticity, Autocorrelation and Normality test
- GARCH (p, q) model for conditional volatility and news effect
- VECM model for causality

Findings

From the above study it was found that the volatility shocks and news are highly consistent in BSE100, but in BSE SENSEX & BSE500 the volatility shocks & news have low level consistent range and the conditional volatility is persistent in all the indices. BSE SENSEX is highly volatile than the BSE100 and BSE500. It also found that the recent news & shocks have more impact on BSE100 than BSE SENSEX & BSE500 and the old news is also having an influence in all indices.With respect to volatility effect the shocks & news are consistent in Nifty50, NSE100 &NSE500 and the conditional volatility is also persistent in these indices. Nifty50 is littlehigh volatile than the NSE100 & NSE500. The recent news and shocks have little moreimpact on NSE500 than the Nifty50 & NSE100 and the past news and shocks have anaverage level influence in all these indices.

Volatility has a significant impact on liquidity in Nifty50, NSE100, NSE500 but thevolatility has no significant impact on liquidity in BSE SENSEX, BSE100 & BSE500,because these BSE markets have a significant market microstructure difference than theNSE markets.

With respect to causality, it results that there is no causality between volatility and liquidityin both BSE (BSE SENSEX, BSE100, BSE500) markets and NSE (Nifty50, NSE100,NSE500) markets.

Conclusion

“Stock Market is the mitigation of risk through the spreading of investments across multiple entities, which is achieved by the pooling of a number of small investments into a large bucket. Stock Market is the most suitable investment for the common man as it offers an opportunity to invest in a diversified, professionally managed portfolio at a

relatively low cost". Hence, the study mainly focused on the stock price volatility impact on the market liquidity of Indian stock markets. As the Volatility and liquidity of stocks are the most important features of the financial markets. They are closely tied together and share common characteristics. Therefore, Volatility refers to a process governing stock price variability, while liquidity is usually defined as an ability to buy and sell stocks with little impact on prices and at a low cost. Both volatility and liquidity are unobservable and approximated with parametric estimates or nonparametric measures. They affect risk management, assets pricing and portfolio construction. So, through this study it is concluded by stating that an intense volatility fluctuating over time and the volatility shocks and news whether they can be present or past, they always have a significant impact on both BSE markets and NSE markets. The volatility has a significant impact on liquidity with respect to NSE markets but in BSE it is not. Before investing in any security market, it is important for an investor to review a significant volatility impact on liquidity and causality relationship with respect to each other and how the markets respond to high volatility and low volatilility.

Recommendations

Each and every investor would always prefer for higher returns and reduced risk on the amount hehas invested. With the different offering attractive returns on investments, proper attention mustbe taken before making the decision regarding the same. An investor with an adequateunderstanding about the market understandings about the market volatility impact on liquidity,causality relationship, shocks & news and economic situations and conditions with respect tomarket microstructures between the markets.

Before investing in a security market, it is always better to have an attention towards the volatilityrisk and market shocks & news. It meansif the market is more volatile, the higher the chances ofgetting high rates of return with more risk.

This study can be useful for analysing significant impact of volatility on liquidity overtime and italso shows how the market microstructures differ between the markets, it has been done only withrespect to Indian stock markets, future studies can also be done by considering foreign stockmarkets.

Way forward:

This study has been done only on BSE SENSEX, BSE100, BSE500 and Nifty50, NSE100,NSE500, future studies may also be done by including other indices.

The study also suggests that there is no particular causality relationship between volatility andliquidity in both BSE markets & NSE markets. Hence, investors are need to know that volatilitydoesn't cause liquidity and liquidity doesn't cause volatility.

The study can also be done at international level by taking top security markets of some advancedcountries and it also appreciate that future studies can be compare with the Indian security market.BSE markets have a significant market microstructure than NSE markets hence, if an investor wishto invest in these BSE markets, they may get stable returns

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