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Review on return and volatility of the stock market concerning foreign institutional investors

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Abstract
While investing in stock market, the Investors take risks so that maximum returns can be earned. The key concept in financial asset pricing is the tradeoff between risk and return. The volatility of asset return measures the risk related with financial assets (Mamtha & Srinivisan. 2016). The main concern for any investors in general and for the policy makers in particular is the matter of volatility of stock market as it creates scared situation in the market. The Major part of investment in the Indian stock market came through FII mode. The goal of this analytical study is to perform a content analysis of the literature on stock market volatility covering the years 1990–2020, or a span of 30 years. This study of analytical behavior's primary goal is to obtain understanding of the several topics related to stock market volatility. The analysis finds that research conducted over the last 30 years has a major impact on stock returns globally and that these effects are beneficial.

Additionally, it is observed that earlier research on the return and volatility of the stock market has evaluated a generalized autoregressive conditional heteroskedastic (GARCH) family based model. The report also reveals a notable shift in research endeavors during the last three decades.

Keywords: Stock returns, volatility, GARCH family model, investor, inflation

Introduction

The relationship between flow of institutional investment and security returns has been of perennial interests to investors and policymakers alike. It is also seen that the flow of institutional investments has been highly correlated with the market returns (Thiripalraju & Acharya, 2011) [50].

In 1992, India allowed Foreign Portfolio Investment (FPI) in its domestic stock markets to open up its economy. Since then, FPI has emerged as a major source of private capital inflow in this country. Developed countries achieve a better international diversification of their portfolios with the help of Capital flows which also provides support for various pension funds and retirement accounts into the 21th century (Calvo, Leiderman, Reinhart, 1996) [13]. India has evolved as one of the leading investment destinations of the world and in financial liberalization processes emerging markets were involved since the mid 80s. Due to which , the participation of foreign institutional investors (FIIs) has increased into the Indian debt and equity market (Lakshmi & Thenmozi, 2018) [39]. The current decade has witnessed a remarkable turnaround in investor's attitudes towards foreign stocks (Clark & Berko, 1997) [17]. The relationship between foreign flows and emerging equity market returns has been a major concern in the international finance (Ulku, 2015) [54], as international investors are liked to have a large impact on host emerging markets. It is easy to understand with the help of this study that the volatility and stock market returns with the evidence from survey of literatures made available.

We can understand Volatility of market returns as 'the variability of asset prices which is induced by changing investors' expectations due to flow of information to the market'. Macroeconomic issues like variation in inflation rates, change in interest rates, growth rates variability, government policies and, sector or company specific such as foreign investments, investment trends, mutual funds, periodical reports, dividend declarations, mergers and acquisitions, etc have may be good or bad news (Mamtha & Srinivisan. 2016) [41].

An unattractive characteristic of volatility that always has negative implications for decisions pertaining to the effective distribution of resources and, therefore investment.

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Investors averse to holding stock due to increased uncertainty as an effect of volatility. In turn of his investors demand higher risk premium so as to ensure against increased uncertainty. Higher cost of capital and consequently lower physical investment implies a greater risk premium (Rastogi and Husain, 2015) [47]. The main concern for any investors in general and for the policy makers in particular is the matter of volatility of stock market as it creates scared situation in the market. The Major part of investment in the Indian stock market came through FII mode. When we talk about the FIIs flows either inflows or outflows, it all depends upon the return and sentiment of the market. The FII inflow of investment always increase the stock market indices and their outflows from the market keep the market indices down and these major fluctuations in the stock market of a host country, causes volatility (Joo & Mir, 2014) [31].

Since the past few decades, many academic researchers have keen interest in the volatility of stock market. The doors of emerging capital markets for foreign investors have been opened by stock market liberalization. The pursuit of high returns on investments results in encouragement of the foreign portfolio investments and DIIs to invest in emerging stock market (Chhimwal & Bapat 2020) [15].

Methodology
The term volatility is to be understood by this study and the evidence of reviewed literatures with its characteristics. It brings out regular updated records and proofs in the stock market trends so we adopted this method. The reasons for volatility are captured of different stock markets of various countries which are easy through scanning series of research papers. The present study provides the insight of cause and effect of volatility of stock prices in the market by taking these obvious relations.

Review of Different Studies
In this paper, a large Number of research papers and articles were studied but at last few were well thought out to gather the quality developed earlier.

Table 1: Different literature studies based on GARCH models

Authors	Time period	Variables	Stock Market	Econometric Models	Study Results
Lamoureux & Lastrapes (1990) [40]	1980-1983	Daily Return and Volume	Chicago Board Option Exchange (20 traded stocks)	ARCH, GARCH	Significantly relation between volume and stock return and volatility.
Bekaert & Harvey (1997) [8]	Jan 1976-Dec 1992	Equity Market Returns	20 Countries	GARCH	Volatility decreases in many countries after liberalization where in Pakistan; conditional volatility has been much greater after liberalization.
Santis & Imrohoroglu (1997) [20]	Dec 1988-May 1996	Returns	Greece, Turkey, India Korea, Malaysia, Philippines, Taiwan, China, Thailand, Argentina, Brazil, Chile, Colombia, Mexico, Venezuela	GARCH	In predicting future volatility current information is relevant. Volatility varying evidence of time which exhibits clustering, high persistence and predictability. No evidence of relation between the expected returns and the country specific volatility and No relation between the liberalization and market volatility.
Wang & Shen (1999) [55]	Jan 1987-Nov 1995	QFII Flows, Exchange rate, Stock return	Taiwan stock market	OLS, GRANGER, GARCH	FII increases the volatility of Exchange rate.
Kim & Singal (2000) [26]	Jan 1976-Sep 1996	Stock Return , Inflation , Exchange rates	18 countries	PARAMETIC TEST, NON PARAMETRIC TEST AND BINOMIAL TEST,ARCH, GARCH	When market opens to foreign participation results in decreasing volatility, which further shows a significant decrease in the volatility of inflation. Aggregate test show that there i nominal exchange rates has significant decrease in volatility& real exchange rates after market openings.
Koutmos & Saidi (2001) [36]	Jan 1990-Sep 1996	Returns	Hong Kong Index, Manila composite Index, Singapore All share Index, Taiwan Weighted Index, Bangkok SET Index, Kaula Lumpur composite Index,	TGARCH	During market declines there is a positive feedback trading and positive feedback during market advances has been evidence.
Jo (2002) [30]	Jan 1995-Dec 2001	Market Index, Volatility	KOSPI	GARCH	Foreign equity investment is affected by market volatility and domestic investor's transactions were not significantly affected.
Batra (2004) [6]	1979-2012	Sensex and Return, IFCG return	Sensex IFCG	GARCH	high volatility persistence for both daily and monthly data is revealed in India by stock return data
Bose &	Jan 1999-	Net FII inflows and	Sensex	MULTIVARIATE	Policy Interventions had any significant

Coondoo (2004) [12]	Jan 2004	BSE Returns		GARCH	effect on average level of FII flows. Liberalization policies have a significant expansionary effect on net inflows.
Rai and Bhunumurthy (2004) [45]	Jan 1994-Nov 2002	FI Inflows, Market Returns, Interest rates, Ex-ante risk, Inflation	BSE SENSEX, S&P N 500	ADF, ARMA, TARCH	Investors react more vigorously to bad news than to good news. The main driving force in India is Equity return for FII; In domestic stock market, Ex-ante risks, adversely affects the inflow of FII to India and is highly insignificant.
Badhani (2006) [4]	Jan 2000-Dec 2005	Net Investment	Indian stock Market	ADF, ANOVA, GARCH	Trading activities (sales and purchases) of FIIs are found to be sluggish on Tuesday and seems to be distributed identically across the days of week.
Karmakar (2006) [32]	May 1961-June 2005	Returns, Share prices	S&P CNX NIFTY, Economic Times Index	GARCH, TARCH	For the pre- 1990 period, the volatility reduces slightly due to bad news, but for the post-1990 period, the volatility substantially increases due to bad news
Ngugen & Bellalah (2008) [33]	Jan 1985-Jan 2003	Trading volume, Mcap, Political Stability Index Turnover, GDP, Imports & Exports, Interest Rates, Exchange Rates , Inflation Rates	S&P's IFCG & MSCI World Index (7 Markets)	BIVARIATE GARCH-M MODEL	.Increase in Trade/GDP ratio and Turnover ratio significantly emphasize the stock market volatility; MCAP/GDP ratio diminishes stock market volatility.
Bohl, Brzeszczynski & Wilfling (2009) [11]	Nov 1994-Dec 2003	Stock returns	Polish stock Market-WIG20 and S7P 5000	MARKOV SWITCHING GARCH	After the entrance of pension funds investors in stock market, Financial crisis are responsible in stock returns for relative lower volatility
Mubarik & Javid (2009) [42]	July 1998-Oct 2008	Individual stock return ,Market Return, Trading volume	KSE 100	VAR, ARCH, GRANGER, GARCH-M	There is a firm relationship of volume with the future returns and also have significant interaction between trading volume and return volatility
Olowe (2009) [43]	Jan 2004-March 2009	Market return	Nigerian stock market	ADF, PP, OLS, EGARCH	Banking reforms and Insurance reform have negative impact on volatility where as stock market crash and global financial crisis are having positive impact on volatility.
Tripathy (2010) [51]	Jan 2005-Jan 2010	Trading volume and Stock returns	SENSEX	ADF, KPSS, ARCH , GARCH	Volatility of stock has an impact of recent news. An increase in stock return volatility is associated with trading volume. Positive correlation between trading volume and predictable volatility of stock returns.
Garg & Bodla (2011) [23]	Jan 1986-Dec 2007	Return, US Return, Risk , Exchange rate, growth rate, interest rate,	BSE(Sensex)	ADF/PP, ACF/PACF, GARCH	A positive and significant impact on Volatility is created by recent past information of the return of the stock market.
Behera (2012) [7]	April 1993-March 2010	Stock Market returns & FII Investments	BSE Sensex and NSE Nifty	ADF, OLS, ARCH, GARCH	FII investment increases the stock market volatility in India.
Choi, Jaing, Kang and Yoon (2012) [16]	Jan 2000-Dec 2010	Stock Index Returns and Trading Volume	Korean stock market (Kospi)	ADF, PP, GJR-GARCH AN D EGARCH	Bad news has no effect on conditional volatility than good news that is market exhibits asymmetry.
Darwish (2012) [19]	Oct 2000-Aug 2010	Trading Volume and Returns	Palestine stock Exchange	GARNGER, ADF, PP, GARCH, SERIAL CORRELATION	Past information of trading volume is useful.
Lakshmi (2012) [37]	Jan 2003-Dec 2010	FII Flows and Nifty spot index returns	NSE-S&P CNX Nifty spot index	DS, ARCH , GARCH, EGARCH	Indian markets are impacted more by negative shocks. Negative return shocks cause higher volatility in Nifty.
Lakshmi & Alagappan (2012) [38]	Jan 2003-Dec 2009	Nifty Returns & FII Trading	Nifty	LJUNG BOX Q, ARCH, GARCH	In predicting future volatility, current information is relevant at very long horizons, strong relationship between contemporaneous FII trading volume and conditional volatility of NIFTY returns.
Rajput, Chopra	Jan 1992-	Returns and FII equity	Nifty	GRANGER, BLOCK	In FIIs Past innovations significantly

& Rajput (2012) [46]	March 2011	Investment		EXOGENITY WALD TEST, ADF, ARCH, GARCH, EGARCH,	influence stock market volatility and vice versa.
Singhania & Anchalia (2013) [48]	Jan 2005-Dec 2011	Stock market returns	Hang sheng, Nikkei 225, Shanghai SE Composite, Nifty	ADF, PP,EGARCH	Subprime crisis has had a positive impact on stock return volatility in N225, and has no impact on volatility of stock returns in HNg while the Euro debt Crisis had a negative impact on volatility in SSE and Nifty only and no effect in HNG and N225.
Tripathy & Garg (2013) [52]	Jan 1999-May 2010	Stock Market returns	IBOVESPA, RTSI, SSE, Sensex, FTSE/JSE and IPC	ADF, PP, ARCH,GARCH,GARCH-M, EGARCH & TGATCH	Recent news and past news have a significant impact in all emerging stock markets volatility. Volatility shocks are persistent in all country's stock market.
Alkhazali (2014) [2]	Jan 2000-March 2014	Returns and Trading Volume	Amman stock Exchange	ADF, ENGLE-GRANGER	The Relationship between the trading volume and the stock price index is significant.
Bajaj (2014) [5]	April 2000- Nov 2013	Returns and Trading Volume	S&P CNX NIFTY	GRANGER, VDC, IRF, GARCH, EGARCH, VAR	The relationship between stock return and trading volume is absent in 4t, 6th and 7th sub sample, the impact of new and old information has significant impact over current return volatility in all sub samples.
Joo & Mir (2014) [31]	Jan 1999-Dec 2013	FII flows and NIFTY/Sensex returns	Sensex and Nifty	ADF, GARCH	Volatility has statistically significant influence of FII investment and past period on volatility of Nifty and Sensex.
Sripriya & Shamugam (2014) [49]	April 2003-Mar 2013	FII sales & Purchase, Market returns	BSE 100, Sensex, BSE 500, Nifty, CNX 100M CNX 500	ADF, GARCH	Past and recent affects affected the Sensex and Nifty both whereas other indices are only affected by past volatility.
Arora & Kumar (2015) [3]	Jan 2012-Nov 2014	FII & Market returns	Nifty	ADF, GARCH	In Indian stock Market Returns there is no changes. Volatility is significantly reduces after opening up of market to foreign investors.
Garg & Mitra (2015) [24]	Jan 2003-June 2014	FII and CNX Nifty Index returns, Volatility and Trading Volume	CNX NIFTY 50	ADF, PP, GARCH	Herding is motivated by Return and the stock market volatility has a negative relationship with herding.
Rastogi and Husain (2015) [47]	Jan 1986-Dec 2014	Trading volume and Market capitalization, Exchange rate, IIP, Interest rate, Risk and Return of S&P 500, Treasury Bills Rate	BSE (Sensex)	STRUCTURED REG TECHNIQUE-ARCH/GARCH	FIIs have significant negative impact on stock market volatility. Regulations by SEBI on stock market during the liberalization period have led to reduction on the volatility in post FIIs arrival period.
Dhingra, Gandhi and Bulsara (2016) [21]	January 2004- Sep 2012	FII Flow, Return	Nifty	ADF, PP, ARMA-TARCH , GARCH;	FIIs affect volatility of Nifty returns.
Bhattacharyya, Khan, Kundu & Saha (2017) [9]	2000-2014	FPI inflows and Index	India and Indonesia, Philippines and Thailand	ARCH-GARCH	Volatility spillover has been significant for India and Indonesia while it has not found in the Philippines and Thailand.
Caporale, Ali, Spagnolo & Spagnolo (2017) [14]	Jan 1993-Nov 2015	Net Portfolio Flows and Exchange rate	US, Pakistan, South Korea, Taiwan India, Indonesia, The Philippines, and Thailand.	OLS, ARCH, GARCH	volatility of US dollar exchange rate is decreased due to inflows of bond from Asian countries towards the US, vis-à-vis the currencies of the Asian countries except for Taiwan
Hiremath & Kattuman (2017) [27]	Jan 1999-April 2014	FII Flows and Nifty returns	S& P CNX Nifty	ADF, KPSS, GARCH OR IGARCH & FIGARCH	Bi directional causality between long memory volatility in FII and return.
Kler (2017) [34]	Jan 2001-Dec 2016	FII flows, Index returns	Nifty, Sensex	ADF, GARCH	The significant influence of FIIs Investment on volatility in returns of NIFTY and SENSEX used as biggest pointer to the Indian stock market.
Wang & Wang (2017) [56]	Jan 2006-December 2015	Fund position and Market returns	CSI 300 Index	GRANGER, VAR-IRF, GARCH	Institutional investors exacerbate market volatility. Fund active position adjustment has a positive effect on volatility of stock market. That is, increase in the stock market will increase the volatility.
Aljarayesh,	2006-2016	Stock market return	ASE Market (Amman	OLS, GARCH	Relation between trading volume and the

Malahim, Al-Abdallah (2018) [1]		and Trading volume	stock exchange)		stock return volatility is statistical, and past volatility is able to explicate the current volatility.
Lakshmi & Thenmozhi (2018) [39]	Jan 2000-Dec 2015	FII flows, Index returns	Nifty	GARCH	Interdependence in volatility is persistent that exists between purchase/ sale transactions of FIIs and NIFTY returns with FII activity that leads to volatility.
Tule, Dogo & Uzonwanne (2018) [53]	2007-2016	USD Exchange Rate, All share Index return	All share Index, Foreign Exchange market	VARMA-AGARCH	Transmission of shocks from stock market is Uni -directional to the foreign exchange market without break points.
Dan (2019) [8]	2003-2018	Market return	BSE and NSE- IT	ARCH, GARCH	Higher value of return from IT index of NSE than that of BSE. The direction sofa movement of the volatility of two indexes is same.
Gahlot (2019) [22]	April 2011-March 2018	FII & DII Flows, Market returns, MSCI ACWI returns	Nifty, Nifty 50, Sensex, BSE 100	ADF, GRANGER, ARCH-LM, GARCH, TGARCH	Insignificant effect of current news on current market volatility, presence of heteroskedasticity, presence of the asymmetric effect of news means market is more sensitive towards the negative shocks as compared to positive shocks in returns.
Ikizlerli (2019) [29]	Jan 2000-Sep 2017	Flows and Return	Korean stock exchange(KOSPI)	ARCH, GARCH	On conditional volatility, bad news seems to have more impact than the good news. Strong asymmetric effects in volatility persistence are found.
Onishchenko & Ulku (2019) [44]	Jan 2004-June 2015	Mcap, Trading Value, net trading flows, stock market return, MSCI US index return	KOSPI-200, Non-KOSPI 200	VAR, GJR- GARCH	Future returns still negative are predicted by foreigners net trading, indicating there is little improvement with respect to their informational disadvantages.
Bhowmik & Wang (2020) [10]	2008-2019	Returns	Economy	GARCH	An important and emerging field of Research is stock return and volatility.
Chhimwal & Bapat (2020) [15]	Mar 2009-Mar 2018	FII and DII flows & Market Returns	S&P CNX NIFTY	ADF, ARMA, GARCH	A positive impact on market volatility is unexpected flow of FPIs.
Kotishwar (2020) [35]	2000-2019	FPI and Nifty return	Nifty	ADF, VEC, OLS, ARCH	The equity market volatility is influenced by FIIs flows significantly; the return price of Nifty is influenced by FPI that is having positive volatility

{Note-Notes: QFII (Qualified Foreign Institutional investors), BSE SENSEX (Bombay Stock Exchange Sensitive Index), Nifty (National Stock Exchange Fifty), KOSPI (Korean Composite Stock Price Indexes), IFCG (International Financial Corporation Global index), MSCI (Morgan Stanley Capital International), KSE100(Karachi Stock Exchange), ARCH (Autoregressive conditional Heteroskedasticity), GARCH (Generalized ARCH), OLS (Ordinary least squares), TGARCH (Threshold GARCH), ADF (Augmented Dickey-Fuller), ARMA (Autoregressive Moving Average model), VAR (Vector Autoregression), PP (Phillips-Perron), EGARCH (Exponential GARCH), KPSS (Kwiatkowski-Phillips-Schmidt-Shin), ACF (Auto Correlation Function), PACF (Partial Autocorrelation Function), DS (Descriptive Statistics), IGARCH (Integrated GARCH), FIGARCH (Fractionally Integrated GARCH), IRF (Impulse Response Function), VARMA-AGARCH (Vector Autoregressive Moving Asymmetric GARCH), GJR GARCH (Glosten, Jagannathan and Runkle GARCH) and VEC (Vector Error Correction model) are discussed}

Based on the various research papers and articles, the s GARCH family model has been used so that unconditional volatility can be forecasted in the stock market.

Conclusion
The study helps us to provide a conceptual framework of volatility of stock market with the evidence of various research papers and articles. It is always found that if there were more fluctuations in the stock prices during short time periods, it has high volatility and if the fluctuations in the stock prices were slow then it has low volatility. This paper suggests that the stock market investors encourage the variability of stock market prices by interpreting the flows of information. This paper provides a more detailed literature on various studies related to the stock market volatility. The study is limited only to the available literature on stock market volatility, but the study related to other areas related to volatility like its impact, volatility feedback; measurement of volatility can be studied further.

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