DECEMBER VOLATILITY OF INDIAN STOCK MARKET WITH THE SPECIAL REFERENCE OF BOMBAY STOCK EXCHANGE

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Abstract

Average of return in the all the months are not same. Indian stock exchanges are highly volatile with the international stock exchanges. December is a significant month as compared to the other months. The December effect of the stock market is a proved one globally. This month giving abnormal return to the investors due to so many reasons. It gives forecast ability to the investor to get the best time prediction. This return is higher than the average return. Here by analyzing the last 5 years the significant effect of December volatility in the return of BSE-SENSEX by ARCH-GARCH model. And profound that a significant December effect of volatility in Indian stock return.

Index Terms—December volatility, BSE –SENSEX, ARCH-GARCH

I. INTRODUCTION

According to Fama(1970)'s efficient market hypothesis, assets are priced efficiently in the market and they have fully reflected all the relevant information in the market. it implies that future pricing of assets is in a random walk hypothesis. This normative statement comes under the fire with the discovery of a series of persistent anomalies to defy rationality of the investors. The average returns of the market in all the months are not same. There are so many reasons to exhibit the anomalies in return. If there is any dominance of seasonal pattern can be optimizing, the investors can make high profit and forecasting about the future. Day of week effect, week of month effect, the month of year effect, festival effects, Daylight effect, Halloween effect, and other anomalies are contradicted to the theory of Efficient Market Hypothesis. Several calendar trends are shown in the stock market. It has been documented over years.

Over this century, the economics and finance literature from both the stock market players and]academic fields well document monthly seasonality of returns on various stocks. Anomalous seasonality relies on the assumption that a certain pattern of stock markets, formed on the basis of the past stock price, can be used to predict the future stock price By the time series of data over the period of 01- March -2011 to 01- November -2016 using GARCH model. Analysing effect of December volatility in this stock market to its clients. This paper focuses on the month-of-the-

year effect.The aim of this study is to test for the December month-of-the-year effect in Bombay Stock Exchange

II.   LITERATURE REVIEW

The previous studies about the seasonal anomalies are the December effect or Santa close effect is in a strong level on 1991 but disappointing later. Highest return achieving in the March and April as proceeding to the year ending of Chinese calendar generally in February by analysing the return of the South Korea , Malaysia, Philippines, Taiwan and Thailand have a significant seasonality in 3 out 5 above mentioned market(Gita Pesand-2000   In 2002, a study regards Winder blues-A sad stock market Cycle by Kamastra et al studied using by numerous stock market data and controlling that well-known markets are seasonal and others are environmental. They found higher latitude market showing more pronounced seasonal affective disorder in the southern hemisphere.

In almost every country the sell in May and go away is a common strategy. This pattern documented by Does Wilk (2005). The less daylight –Greater return is the model of evidence resulted by Kamastra et al in 2003.Even in the efficient market, the seasonality makes the variation of the return. Seasonal normalities and timing of the transaction are related. Zhang et al(2013) in his study of 'Are monthly seasonal real?- a three-century perspective' analyzing the 300 years daily return of the UK stock market, November to April are consistently higher than the summer return. Sell in the month of May strategy beating the more than 80% of the market. The December effect is shown after 1830.

The first direct trade related evidence of seasonal assets allocation, evidence from mutual fund flows by Kmastra et al(2015) founded that existing a strong correlation of mutual fund net flow and the onset of recovery from seasonal depression and the investors risk aversion habits is varying from season to seasons. The study about Seasonal size and value anomalies resulting Index return are slightly higher in winter season than the summer season. This study was done by Jacobsen Visaltanachoti and Mannus analyzing the anomalies of the return of the Halloween effect and December effect of US Market. Halloween and December effect is a market wide phenomena they suggesting that the Santa close effect is making an important role even if small sized firms

By analyzing the seasonality of the Sensex monthly return of I.M Pandey (2015)results confirming the existence of seasonality in the stock return in India and January effect. Another study about the calendar effect in Chinese stock market by Leo Gao and Gehrald Kling using individual stock return normality in Shanghai and Shenzen. The December effect or Santa close effect is in a strong level on 1991 but disappointing later

Here with the help of stock market volatility, analyzing of Bombay stock exchanges as taken as the index of the proxy of market return to check whether the seasonality of December in the return in its volatilities among months.

III.   DATA AND METHODOLOGY

This study uses daily stock returns of the largest stock exchange in India, Bombay stock data taken from the Bloomberg database and statistical tools are used by E-Views. Study is checking

stationary by Unit Route test and then volatility by GARCH AR(1). The unconditional variance of returns is $E[\sigma^2] = \alpha0/(1 - \alpha1 - \beta1)$, we can write the GARCH(1,1) equation

$$\sigma^2 t = \alpha0 + \alpha1 a^2 t{-}1 + \beta1\sigma^2 t{-}1$$
$$= (1 - \alpha1 - \beta1)E[\sigma^2] + \alpha1 a^2 t{-}1 + \beta1\sigma^2 t{-}1 .$$

We cans see that next period's conditional variance is a weighted combination of the unconditional variance of returns, $E[\sigma^2]$,return's last period's squared residuals, $a^2 t{-}1$, and last period's conditional variance, $\sigma^2 t{-}1$, with weights $(1 - \alpha1 - \beta1)$, $\alpha1$, $\beta1$ which sum to one. This often useful not only to predict next period's variance of returns, but also to make an l-step ahead prophesy, Again starting from the GARCH(1,1) equation for $\sigma^2 t$, we can 6 derive our forecast

For next period's variance, $\hat\sigma^2 t{+}1$

Analysis of stationarity by unit route test
(Table number 1)

	ADF TEST		PP test	
	1st difference		1st difference	
	t-Statistic	Prob.*	t-Statistic	Prob.*
SENSEX	-33.98438	0.0000	-33.98438	0.0000

(*significance at 5 %.)

Table 1 analyzing of The stationary of stock market return's index, The absolute value of T.stats. of first differences are -33.98438 in Augmented Dickey-Fuller (ADF) test and -33.98438 in Philips-Perron (PP)and Is very higher than the all critical values in its 1st differences, which is significance at 05% in its both tests such are Augmented Dickey Fuller (ADF) Test And Philips-Perron (PP) Tests If the p' value of the test statistics below 0.05, we will reject the null hypothesis, that the variables contain unit root behaviour at 10% level of significance. So we can predict that all stock indices are no stationary or it's following a random walk.

RETURN OF STOCK MARKET;
Time Varying Volatility (figure number 1)
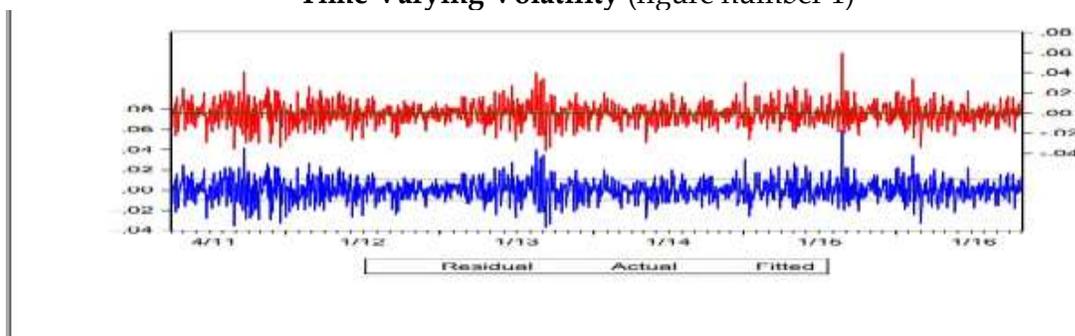
Analyzing the average volatility of the markets Here (figure number 1) Presenting returns of the BSE exchange, it seems 'periods of low volatility tend to be followed by the periods of low volatility in its residuals for a prolonged period. Likewise, periods of high volatility tend to be followed by periods of high volatility for a prolonged period in its residuals. it's clearly saying that these market have a time-varying conditional volatility

GARCH graphs of stock exchange (figure 2)
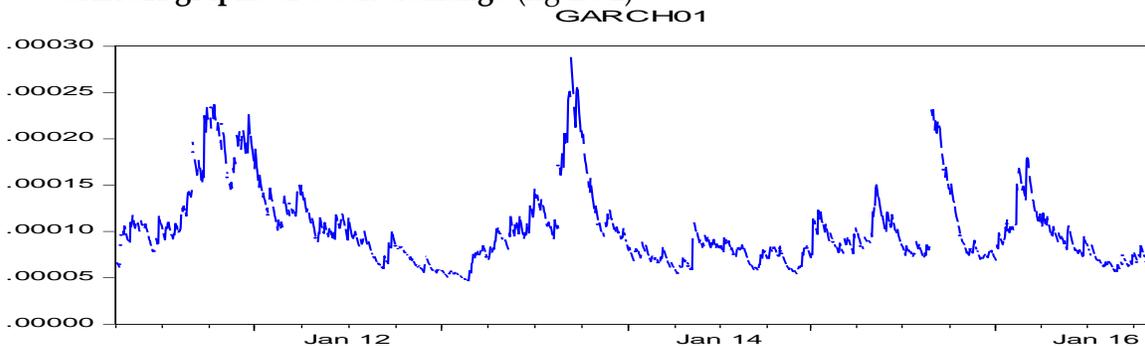
Figure 2 showing that the volatility in the period of December and the nearest period of December. average return graph in the 5 years is shown in below. We can see that the December effect still persists since it is significantly different from zero in the mean equation. Also, we can confirm the effect of the December anomaly on its future volatility by its significant presence in the variance equation. And, the GARCH results how that the leverage effect is not significantly different from zero. There is no trace of asymmetric stock behavior in the stock exchange

Analyzing the December volatility of the stock exchange

S&P BSE SENSEX- INDIA

YEAR	AVERAGE DEC VOLATILITY	OTHER MONTH AVG VOLATILITY	DIFFERENCE
2011	0.00018103	0.00013567	0.00004536
2012	0.00005813	0.00009732	-0.00003919
2013	0.00011570	0.00011164	0.00000406
2014	0.00008338	0.00007650	0.00000688
2015	0.00007575	0.00006236	0.00001339
2016		0.00009236	

(Table number 2)

Graph of December effect in volatility in last five years;
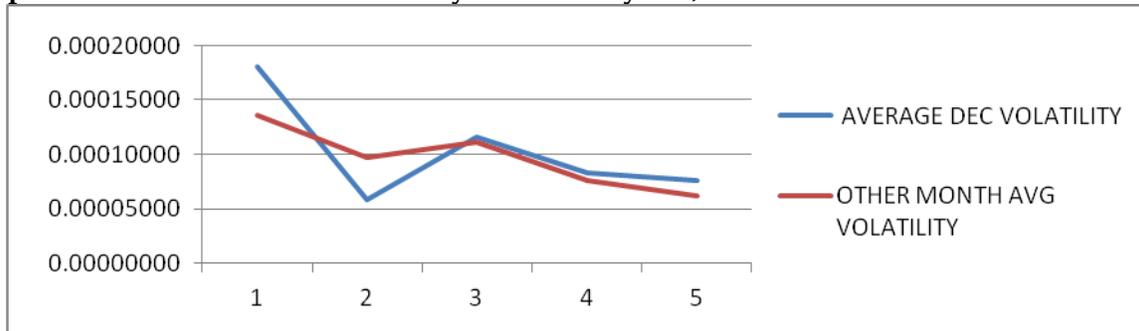
(Figure 3)

Table number 3 and figure number 4 showing the Bse Sensex volatility, comparing average other month volatility to the average of December volatility of Indian stock market. it showed the average volatility of the December is higher than the last five years average except 2012.Average volatility in the other months than December is generally above .0001. after 2013, the market volatility slightly decreasing but the December volatility is above the average market volatility. In the year of 2012, US economy shows a fiscal cliff in December. The SENSEX hit a high of 19,612.18 on 11th December 2012 and a low of 19,149.03 on 18th December 2012. It might be affected the performance of India too. On the year Indian stock market volatility become felt down to the 0.0007 in 2012 December. But after that, a significant increase happened in successive years. The December effect of the stock market is significantly true about the Indian stock market. There are so many residuals other than the December effect affecting stock market return. Even though the stock market December volatility is not much declining much more in 2012.

IV.   CONCLUSION

Here analyzing the month of year effect of December to the Indian market with the ARCH/GARCH 1,1 model. Through the empirical analysis, we found that the December effect is significant in the all stock market. There are lots of reason to become December will make higher volatility in the year. Christmas and lots of celebrations are in the world are in the second half of the year. Another point to mention here is that all jobs bonus to employees in the months of November or December depend upon the company.. it makes that consumers have extra cash in hand during this period. Due to high cash in hand and the festive season, consumer selling shoots up in a significant way. Thus, the entire economy is showing a surplus by December the markets look interesting again, and investors are bullish about the next period returns, making the stock market the right place to invest in during December. And another possible reason might be the optimism of people to the recent times in the stock market. The information leakages about the company's or the government strategies or budget might be happening at these times. On the basis of the empirical evidence presented here, we reject the weak-form market efficiency in these stock markets. The results seen in the ARCH and GARCH

model estimates clearly indicate the presence of seasonality of the volatility in the return series all stock market returns series, and confirm the absence of asymmetries in the stock market.

REFERENCES

[1] Engle, R. F., and V. K. Ng (1993), "Measuring and Testing the Impact of News on Volatility." Journal of Finance 48, 1022-1082.

[2] Fama, E. F. (1970), "Efficient Capital Markets: A review of Theory and Empirical Work." Journal of Finance 25, 383-417.

[3] Haugen, R., and J. Lakonishok (1988), "The Incredible January effect: The Stock Market's Unsolved Mystery." Dow Jones-Irwin, Homewood, Illinois. Ignatius, R. (1998), "The Bombay Stock Exchange: Seasonality's and Investment Opportunities." Managerial Finance 24, 52-61.

[4] Kulkarni, S. N. (1978), "Share Price Behaviour in India: A spectral Analysis of Random Walk Hypothesis." Sankhya 40, 135-162.

[5] Nelson, D. B. (1991), "Conditional Heteroskedasticity in Asset Returns: A New Approach." Econometrica 59, 347-370.

[6] Pandey, A. (2002), "Efficiency of the Indian Stock Market." NSE Research Initiative Paper. Raj, M., and D. Kumari (2006), "Day-of-the-Week and Other Market Anomalies in the Indian stock market." International Journal of Emerging Markets 1, 235-246.

[7] Schwert, G. W. (2002), "Anomalies and Market Efficiency." Handbook of the Economics of Finance, 937-972. Sharma, J. L., and R. E. Kennedy (1977), "

[8] A Comparative Analysis of Stock Price Behaviour on the Bombay, London and New York Stock Exchanges." Journal of Financial and Quantitative Analysis 12,391-413

[9] Pandey, A. (2002), "Efficiency of the Indian Stock Market." NSE Research Initiative Paper.