

Dynamics of Stock exchange: An Empirical study on Semi Robust form of Market Efficiency of CNX NIFTY and Sectoral Indices of National Stock Exchange

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Abstract: This study has been undertaken an empirical study on semi-robust form of market efficiency of CNX NIFTY and Sectoral Indices of National Stock Exchange using two models pair wise granger causality test, ARCH and GARCH effect. To test the cause and effect relationship between the sectoral indices in NSE market. To verify the volatility of shares turnover of selected NSE sectors. For the very purpose daily time series data has been arranged from January 2012 to August 2018.

Key words: EMH, Semi robust, Nifty and Sectoral indices.

I. INTRODUCTION

The ideas of Market Potency Confer with the Market costs replicate all obtainable relevant info. If the market's area unit economical, than all info is already incorporates into cost, and then there are no thanks to beat the market as a result of there aren't any below or overvalued securities obtainable. Market potency was developed in 1970 by social scientist Eugene Fama whose theory of economic Market Hypothesis (EMH) expressed its out of the question for associate capitalist to outdo the market which market anomalies mustn't exist as a result of they will straight off be arbitrage away. The ideas of Market Potency Confer with the Market costs replicate all obtainable relevant info. If the market's area unit economical, than all info is already incorporates into cost, and then there are no thanks to beat the market as a result of there aren't any below or overvalued securities obtainable. Market potency was developed in 1970 by social scientist Eugene Fama whose theory of economic Market Hypothesis (EMH) expressed its out of the question for associate capitalist to outdo the market which market anomalies mustn't exist as a result of they will straight off be arbitrage away.

II. STATEMENT OF THE PROBLEM:

Market potency is employed to clarify the link between quantum of knowledge and its impact within the costs of securities and exchange literature. The integration of capital markets, new areas of research have emerged on particular interest is global investing, where portfolio managers are seeking opportunities for investing across countries for maximizing investment returns. Yet, without the means for diversifying risks these efforts would be futile.

Several challenges for fund managers include increased global competition, attractive emerging markets, huge cross border transfer of investable funds, mysterious primary and derivative products and knowledgeable investors to name a few. To face all these defiance and ensure the efficiency of markets, they need to increase active dynamic strategies. It is indispensable that the risk return characteristics of promising markets are ascertained.

Efficiency of market system enables minimization of risk through tactful use of derivatives, thus maximizing returns. Hence, appropriate use of derivative products will be instrumental in attaining market efficiency, which would diversify the risk in all possible ways. Thus the present study is made to analyses the market potency and dynamic relation between CNX Nifty and Sectoral Indices of National Stock Exchange. With the above niche, the researcher framed the following questions.

- What is the relationship among the chosen sectors of NSE Market in India?
- What are the prevailing fluctuations among the chosen sectors of NSE Market in India?
- Is there any co-integration among the designated sectors of NSE Market in India?
- Is there's any prevailing conditions of Semi robust market potency from the chosen sectors in NSE India?

III. OBJECTIVE OF THE STUDY:

1. To study the cause and effect relationship between selected sectors in NSE Market.
2. To verify the volatility of shares turnover of selected sectors in NSE Market.

IV. RESEARCH METHODOLOGY:

The study is an empirical research for which Semi Robust form of market potency of CNX Nifty and Sectoral Indices of National Stock Exchange of India are tested. The current study investigates the relationship, Co-Integration, cause and effect, relationship, semi-robust market potency and volatility among the NIFTY and Sectoral Indices of National Stock Exchange.

SELECTION OF SAMPLE:

To represent the Stock market in India National Stock Exchange is taken for the study and it is a major barometer in Indian Stock Market. It pictures 11 sectoral indices of National Stock Exchange as variables taken for the study. The selected Sectoral Indices for the study are CNX NIFTY, NSE Auto, NSE FMCG, NSE Bank, NSE Media, NSE FS, NSE IT, NSE Pharma, NSE PB, NSE Metal, NSE PSU and NSE Realty that have been taken for the study.

SOURCE OF DATA:

This is an empirical attempt made on the basis of CNX NIFTY and Sectoral Indices of National Stock Exchange in India. The data is secondary in nature for the study. Daily series data collected and 1654 number of observations has been found for the study and data have been collected from National Stock Exchange official websites, articles and journals.

PERIOD OF THE STUDY

The study is carried out with aggregate monthly time series data for the period of 6 years-eight months i.e. from January 2012 to August 2018 have been taken for the study period.

3.3 Theoretical framework

The National Stock Market of republic of Asian Nations restricted is that the leading securities market of India set in Mumbai. The NSE was established in 1992. NSE was the primary exchange within the country to produce a contemporary, totally automatic screen investors unfold across the length and breadth of the country. Vikaram Limaye is manager & chief officer (MD & CEO) of NSE.

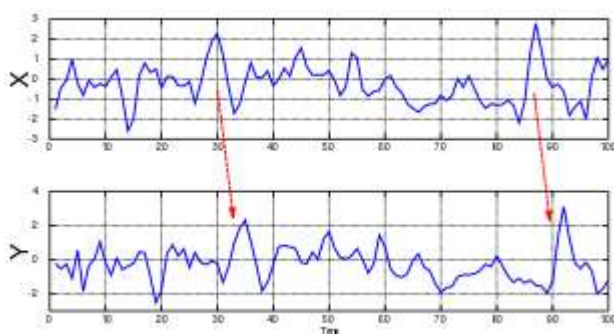
National Stock Market includes a total capitalization of quite US\$2.27 trillion, creating it world's 11th largest securities market as of April 2018 NSE's flagship index, the smashing fifty the fifty indicator is employed extensive by investors in Republic of India. And round the world as a measuring system of the capital of India markets. Smashing fifty indexes was launched in 1996 by NSE. But Vaidhiyanathan in the year 2016 that solely regarding four of the Republic of Indian economy value is really derived from the stock exchange in India.

Unlike countries just like the U.S wherever nearly seventieth of the value springs from larger firms and also the company sector, the company sector in Republic of India accounts for under 12-14% of the national value as of October 2016 of those solely seven, 800 firms are listed of that solely 4000 trade on the stock exchanges at mad cow disease and NSE thus the stocks mercantilism at the mad cow disease and NSE account for under around four of the Indian economy that derives most of its financial gain connected activity from the supposed unorganized sector and households.

3.4 Statistical tools and econometric models

PAIR WISE GRANGER CAUSALITY TEST

The Granger Causality test is a statistical hypothesis test for determining whether one time series is useful in forecasting another, first proposed in 1969. Ordinarily, regression reflected in "Mere" Correlation, but Granger Causality in economics could be tested for by measuring the ability to predict the future values of a time series using prior values of another time series.



When time series X Granger- Cause time series Y, the patterns in X are approximately repeated in Y after some time in lags (two examples are indicated with arrows). Thus, past values of X can be used for the prediction of future values of Y.

Granger Causality defined the relationship based on two principles they are the cause happens prior to its effect. The cause has unique information about the future value of its effect. From these assumptions about causality, Granger proposed to test the following hypothesis for identification of a casual effect on where it refers to probability is an arbitrary non –empty set, and respectively denote the information available as of time in the entire world and that is the modified world in which is excluded. If the significant level is <0.05 the null hypothesis is rejected and there is a cause and effect between the variables. Therefore in the case of types of causality, when it is Uni-directional causality then the probability value will be rejected and accepted. In case of bi-directional causality the probability value will be rejected. In the case of no Causality the probability value will be accepted.

PAIRWISE GRANGER CAUSALITY TEST FOR CNX NIFTY AND SECTORAL INDICES

H_0 : There is no cause and effect of relationship between CNX NIFTY and Sectoral Indices

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Table-4.16**Pairwise Granger Causality Test Results for CNX Nifty and Sectoral Indices of National Stock Exchange from 2012 to 2018**

Variables	Pairwise Hypothesis	OBS	F-STAT	Probability	Decision	Types of causality
NSE Auto	NSE Auto does not Granger Cause NSE CNX	1652	0.483	0.6169	DNR H_0	Uni-directional causality
	NSE CNX does not Granger Cause NSE Auto		40.96	0.0000*	Reject H_0	
NSE Fmcg	NSE FMCG does not Granger Cause NSE CNX	1652	11.46	0.0000 *	Reject H_0	Uni-directional causality
	NSE CNX does not Granger Cause NSE FMCG		0.226	0.797	DNR H_0	
NSE Bank	NSE Bank does not Granger Cause NSE CNX	1652	42.68	0.0000*	Reject H_0	Uni-directional causality
	NSE CNX does not Granger Cause NSE Bank		1.384	0.250	DNR H_0	
NSE Media	NSE Media does not Granger Cause NSE CNX	1652	11.39	0.0000 *	Reject H_0	Bi-directional Causality
	NSE CNX does not Granger Cause NSE Media		4.676	0.0094*	Reject H_0	
NSE FS	NSE FS does not Granger Cause NSE CNX	1652	0.230	0.7941	DNR H_0	No Causality
	NSE CNX does not Granger Cause NSE FS		0.439	0.6442	DNR H_0	
NSE IT	NSE IT does not Granger Cause NSE CNX	1652	0.533	0.5865	DNR H_0	No Causality
	NSE CNX does not Granger Cause NSE IT		1.026	0.2994	DNR H_0	
NSE Pharma	NSE Pharma does not Granger Cause NSE CNX	1652	0.576	0.5618	DNR H_0	No Causality
	NSE CNX does not Granger Cause NSE Pharma		0.452	0.6361	DNR H_0	
NSE PB	NSE PB does not Granger Cause NSE CNX	1652	1.852	0.1572	DNR H_0	No Causality
	NSE CNX does not Granger Cause NSE PB		0.910	0.4026	DNR H_0	

Source: Compiled and calculated

*significant @ 5%level

DNR- Do Not Reject, PB- Private Bank, FS- Financial Services.

Interpretation:

The result of Granger causality test indicates that there exists a relationship between CNX NIFTY and Sectoral Indices, however it is observed from the table that the p value for Financial services, Information technology, pharmaceutical and public banks is greater than 5 percent (>0.05) significant level. Hence the null hypotheses are accepted indicating that no causality exists between CNX NIFTY and Sectoral Indices. Therefore, the null hypothesis is rejected for these variables because the significant level is less than 5 percent (<0.05) indicating that Auto, FMCG, Bank, Media, Metal, Realty are having Uni-directional relationship. Therefore the causality exists between CNX NIFTY and Sectoral Indices.

To verify the volatility of shares listed among the sectors selected in NSE market

VOLATILITY IN ARCH AND GARCH EFFECT

H₀: There is no Arch effect in CNX Nifty and Sectoral Indices of shares listed in National Stock Market.

Volatility suggests that applied mathematics measures of the dispersion of rates for a given charge per unit or currency. It are often either measured by mistreatment the quality deviation or variance between returns from that very same charge per unit the upper volatility will take riskier than international market.

➤ **Test for Heteroscedasticity (ARCH & GARCH)**

One of the most important issues before applying the GARCH methodology is to first examine the residuals for the evidence of heteroscedasticity. To test heteroscedasticity in residual of the series, Lagrange multiplier test for autoregressive conditional heteroscedasticity (ARCH) is used. It is sensible to compute the Engle (1982) test for arch effect to ensure that there is no arch effect.

➤ **GARCH:**

Since 1982, ARCH model has become a growth with all kinds of variations on the original model. One that has become popular is the Generalized Autoregressive Heteroscedasticity Model originally proposed by Bollerslev GRACH model t is known as the conditional variance. A one-period estimate for the variance calculated based in any past period information thought relevant. By using GARCH model it is possible to interpret the current fitted variance. The primary restriction of GARCH models is enforced a symmetric response of volatility to positive and negative shocks.

Table-4.28
Heteroscedasticity Test: ARCH for the Period 2012 to 2018
(₹ in Crores)

VARIABLES	ARCH EFFECT			
	F-Statistics	Prob.F	Obs*R-Squared	Prob. Chi-square
NSE AUTO	28921.9	0.0000	1564.62	0.0000
NSE FMCG	51446.9	0.0000	1602.54	0.0000
NSE BANK	39459.4	0.0000	1587.53	0.0000
NSE MEDIA	24280.7	0.0000	1548.63	0.0000
NSE FS	47504.4	0.0000	1598.41	0.0000
NSE IT	10141.3	0.0000	1627.48	0.0000
NSE PHARMA	23400.3	0.0000	1642.40	0.0000
NSE PB	35790.7	0.0000	1581.02	0.0000
NSE METAL	29775.6	0.0000	1644.87	0.0000
NSE PSU	21978.7	0.0000	1641.66	0.0000
NSE REALTY	15085.3	0.0000	1636.08	0.0000

Source: Compiled & Calculated

*significant @ 5% level

ARCH effect of share turnover of CNX NIFTY & Sectoral indices that are listed in National Stock Exchange is exhibited in the above table 4.28. The results display that the p value of F-Statistics is less than 0.05. Thus the null hypothesis (H₀) that there is no ARCH effect in shares turnover CNX NIFTY & Sectoral Indices that are listed in NSE is rejected at 5% level of significance.

4.8 VOLATILITY CHANGES IN GARCH EFFECT MODEL

H₀: There is no GARCH effect between CNX NIFTY & Sectoral Indices.

Table-4.29
Shares Turnover of CNX Nifty and NSE Auto Result with GARCH Model

Dependent Variable: CNX Nifty				
Method: ML-ARCH(Marquardt)-Student's t distribution				
GARCH= C(3)+C(4)*RESID(-1)^2 + C(5)*GARCH(-1)				
Variable	Coefficient	Std. Error	Z-Statistics	Prob.
C	3.372481	3.980006	476.8937	0.0000
Variance Equation				
C	1.770005	3.980006	4.454300	0.0000
RESID(-1)^2	0.878966	0.119380	7.362725	0.0000
GARCH(-1)	0.280981	0.042379	6.630245	0.0000

Source: Compiled & calculated

*Significant at 5% level

The above table 4.29 reveals the volatility changes in GARCH effect. It describes about the fluctuations of shares turnover between CNX Nifty and NSE AUTO. In this analysis, if the value " $\alpha + \beta$ " is nearer to '1', it means that there is high volatility. If the value is lesser than '1', it will show lower volatility. From this table, shares turnover of CNX Nifty and NSE Auto ($0.878966+0.280981=1.159947$) is nearer to 1. So, there is a high volatility in NSE Auto. The GARCH p value is less than 0.05 percent significant level that implies the last month volatility of CNX NIFTY and NSE AUTO influences the current month volatility rates. Hence it rejects null hypotheses

H₀: There is no GARCH effect between CNX NIFTY & NSE FMCG

Table-4.30

Shares Turnover of CNX Nifty and NSE FMCG results with GARCH effect

Dependent Variable: CNX Nifty				
Method: ML-ARCH(Marquardt)-Student's t distribution				
GARCH= C(3)+C(4)*RESID(-1)^2 + C(5)*GARCH(-1)				
Variable	Coefficient	Std. Error	Z-Statistics	Prob.
C	-0.125978	0.021092	-5.972648	0.0000
Variance Equation				
C	6.620005	0.179760	6.577561	0.0000
RESID(-1)^2	1.182379	0.17960	4.985241	0.0000
GARCH(-1)	0.038838	0.049821	0.779556	0.4357

Source: compiled & calculated

significance at 5%level

The above table 4.30 reveals the volatility changes in GARCH effect. It describes about the fluctuations of shares turnover between CNX Nifty and NSE FMCG. In this analysis, if the value " $\alpha + \beta$ " is nearer to '1', it means that there is high volatility. If the value is lesser than '1', it will show lower volatility. From this table, shares turnover of CNX Nifty and NSE FMCG ($1.182379+0.038838=1.221217$) is nearer to 1. So, there is a high volatility in NSE FMCG. The GARCH p value is greater than 0.05 percent significant level that implies the last month volatility of CNX NIFTY and NSE AUTO influences the current month volatility rates. Hence it accepts null hypotheses

H₀: There is no GARCH effect between CNX NIFTY & NSE BANK

Table-4.31

Shares Turnover of CNX Nifty and NSE BANK results with GARCH effect

Dependent Variable: CNX Nifty				
Method: ML-ARCH(Marquardt)-Student's t distribution				
GARCH= C(3)+C(4)*RESID(-1)^2 + C(5)*GARCH(-1)				
Variable	Coefficient	Std. Error	Z-Statistics	Prob.
C	1.535275	0.008301	184.9617	0.0000
Variance Equation				
C	2.50005	4.980006	5.032000	0.0000
RESID(-1)^2	1.097754	0.172878	6.349891	0.0000
GARCH(-1)	0.095409	0.067636	1.410628	0.1584

Source: compiled & calculated

significance at 5%level

The above table 4.31 reveals the volatility changes in GARCH effect. It describes about the fluctuations of shares turnover between CNX Nifty and NSE BANK. In this analysis, if the value " $\alpha + \beta$ " is nearer to '1', it means that there is high volatility. If the value is lesser than '1', it will show lower volatility. From this table, shares turnover of CNX Nifty and NSE BANK ($1.097754+0.095409=1.193163$) is nearer to 1. So, there is a high volatility in NSE BANK. The GARCH p value is greater than 0.05 percent significant level that implies the last month volatility of CNX NIFTY and NSE BANK influences the current month volatility rates. Hence it accepts null hypotheses.

H₀: There is no GARCH effect between CNX NIFTY & NSE MEDIA

Table-4.32

Shares Turnover of CNX Nifty and NSE MEDIA results with GARCH effect

Dependent Variable: CNX Nifty				
Method: ML-ARCH(Marquardt)-Student's t distribution				
GARCH= C(3)+C(4)*RESID(-1)^2 + C(5)*GARCH(-1)				
Variable	Coefficient	Std. Error	Z-Statistics	Prob.

C	3.479190	0.011746	296.2105	0.0000
Variance Equation				
C	6.290005	1.470005	4.028520	0.0000
RESID(-1)^2	1.115199	0.179455	6.214374	0.0000
GARCH(-1)	0.095938	0.070131	1.367992	0.1713

Source: compiled & calculated

significance at 5%level

The above table 4.32 reveals the volatility changes in GARCH effect. It describes about the fluctuations of shares turnover between CNX Nifty and NSE MEDIA. In this analysis, if the value “ $\alpha + \beta$ ” is nearer to ‘1’, it means that there is high volatility. If the value is lesser than ‘1’, it will show lower volatility. From this table, shares turnover of CNX Nifty and NSE MEDIA (1.115199+0.095938=1.211137) is nearer to 1. So, there is a high volatility in NSE MEDIA. The GARCH p value is greater than 0.05 percent significant level that implies the last month volatility of CNX NIFTY and NSE MEDIA influences the current month volatility rates. Hence it accepts null hypotheses.

H₀: There is no GARCH effect between CNX NIFTY & NSE FS

Table-4.33

Shares Turnover of CNX Nifty and NSE FS results with GARCH effect

Dependent Variable: CNX Nifty				
Method: ML-ARCH(Marquardt)-Student's t distribution				
GARCH= C(3)+C(4)*RESID(-1)^2 + C(5)*GARCH(-1)				
Variable	Coefficient	Std. Error	Z-Statistics	Prob.
C	3.093803	0.006536	473.3479	0.0000
Variance Equation				
C	1.290005	1.670006	7.726036	0.0000
RESID(-1)^2	1.267985	0.167995	7.547760	0.0000
GARCH(-1)	-0.021797	0.004445	-4.892250	0.1713

Source: compiled & calculated

significance at 5%level

The above table 4.33 reveals the volatility changes in GARCH effect. It describes about the fluctuations of shares turnover between CNX Nifty and NSE FS. In this analysis, if the value “ $\alpha + \beta$ ” is nearer to ‘1’, it means that there is high volatility. If the value is lesser than ‘1’, it will show lower volatility. From this table, shares turnover of CNX Nifty and NSE FS (1.267985+ (-0.021797) =1.246188) is nearer to 1. So, there is a high volatility in NSE FS. The GARCH p value is greater than 0.05 percent significant level that implies the last month volatility of CNX NIFTY and NSE FS influences the current month volatility rates. Hence it accepts null hypotheses

H₀: There is no GARCH effect between CNX NIFTY & NSE IT

Table-4.34

Shares Turnover of CNX Nifty and NSE IT results with GARCH effect

Dependent Variable: CNX Nifty				
Method: ML-ARCH(Marquardt)-Student's t distribution				
GARCH= C(3)+C(4)*RESID(-1)^2 + C(5)*GARCH(-1)				
Variable	Coefficient	Std. Error	Z-Statistics	Prob.
C	1.867971	0.027891	66.97295	0.0000
Variance Equation				
C	9.740005	2.180005	4.476177	0.0000
RESID(-1)^2	1.258508	0.214137	5.877106	0.0000
GARCH(-1)	-0.000723	0.032563	-0.022192	0.9823

Source: compiled & calculated

significance at 5%level

The above table 4.34 reveals the volatility changes in GARCH effect. It describes about the fluctuations of shares turnover between CNX Nifty and NSE IT. In this analysis, if the value “ $\alpha + \beta$ ” is nearer to ‘1’, it means that there is high volatility. If the value is lesser than ‘1’, it will show lower volatility. From this table, shares turnover of CNX Nifty and NSE IT (1.258508+ (-0.000723)=1.257785) is nearer to 1. So, there is a high volatility in NSE IT. The GARCH p value is greater than 0.05 percent significant level that implies the last month volatility of CNX NIFTY and NSE IT influences the current month volatility rates. Hence it accepts the null hypotheses.

H₀: There is no GARCH effect between CNX NIFTY & NSE PB

Table-4.35

Shares Turnover of CNX Nifty and NSE PB results with GARCH effect

Dependent Variable: CNX Nifty				
Method: ML-ARCH(Marquardt)-Student's t distribution				
GARCH= C(3)+C(4)*RESID(-1)^2 + C(5)*GARCH(-1)				
Variable	Coefficient	Std. Error	Z-Statistics	Prob.
C	3.405400	0.005695	597.9184	0.0000
Variance Equation				
C	1.500005	2.410006	6.256032	0.0000
RESID(-1)^2	1.248733	0.182800	6.831154	0.0000
GARCH(-1)	-0.025280	0.047875	-0.528027	0.5975

Source: compiled & calculated

significance at 5%level

The above table 4.35 reveals the volatility changes in GARCH effect. It describes about the fluctuations of shares turnover between CNX Nifty and NSE PB. In this analysis, if the value " $\alpha + \beta$ " is nearer to '1', it means that there is high volatility. If the value is lesser than '1', it will show lower volatility. From this table, shares turnover of CNX Nifty and NSE PB ($1.248733 + 0.025280 = 1.223453$) is nearer to 1. So, there is a high volatility in NSE PB. The GARCH p value is greater than 0.05 percent significant level that implies the last month volatility of CNX NIFTY and NSE PB influences the current month volatility rates. Hence it accepts the null hypotheses.

H₀: There is no GARCH effect between CNX NIFTY & NSE PSU

Table-4.36

Shares Turnover of CNX Nifty and NSE PSU results with GARCH Effect

Dependent Variable: CNX Nifty				
Method: ML-ARCH(Marquardt)-Student's t distribution				
GARCH= C(3)+C(4)*RESID(-1)^2 + C(5)*GARCH(-1)				
Variable	Coefficient	Std. Error	Z-Statistics	Prob.
C	7.885840	0.058293	135.2794	0.0000
Variance Equation				
C	7.690005	3.440005	2.236943	0.0000
RESID(-1)^2	1.257134	0.331063	3.797264	0.0000
GARCH(-1)	-0.000831	0.006088	-0.136557	0.9823

Source: compiled & calculated

significance at 5%level

The above table 4.36 reveals the volatility changes in GARCH effect. It describes about the fluctuations of shares turnover between CNX Nifty and NSE PSU. In this analysis, if the value " $\alpha + \beta$ " is nearer to '1', it means that there is high volatility. If the value is lesser than '1', it will show lower volatility. From this table, shares turnover of CNX Nifty and NSE PSU ($1.257134 + (-0.000831) = 1.256303$) is nearer to 1. So, there is a high volatility in NSE PSU. The GARCH p value is greater than 0.05 percent significant level that implies the last month volatility of CNX NIFTY and NSE PSU influences the current month volatility rates. Hence it accepts the null hypotheses

H₀: There is no GARCH effect between CNX NIFTY & NSE PHARMA

Table-4.37

Shares Turnover of CNX Nifty and NSE Pharma results with GARCH effect

Dependent Variable: CNX Nifty				
Method: ML-ARCH(Marquardt)-Student's t distribution				
GARCH= C(3)+C(4)*RESID(-1)^2 + C(5)*GARCH(-1)				
Variable	Coefficient	Std. Error	Z-Statistics	Prob.
C	4.418904	1.401927	3.152020	0.0016
Variance Equation				
C	3774.840	6109.936	0.617820	0.5367
RESID(-1)^2	-0.000807	0.001615	-0.500112	0.6170
GARCH(-1)	-0.120231	1.813780	-0.066287	0.9471

Source: compiled & calculated

significance at 5%level

The above table 4.37 reveals the volatility changes in GARCH effect. It describes about the fluctuations of shares turnover between CNX Nifty and NSE Pharma. In this analysis, if the value " $\alpha + \beta$ " is nearer to '1', it means that there is high volatility. If the value is lesser than '1', it will show lower volatility. From this table, shares turnover of CNX Nifty and NSE Pharma ($-0.000807 + (-0.120231) = -0.121037$) is nearer to 1. So, there is a high volatility in NSE Pharma. The GARCH p value is greater than 0.05 percent significant level that implies the last month volatility of CNX NIFTY and NSE Pharma influences the current month volatility rates. Hence it accepts the null hypothesis.

H₀: There is no GARCH effect between CNX NIFTY & NSE METAL

Table-4.38

Shares Turnover of CNX Nifty and NSE Metal results with GARCH effect

Dependent Variable: CNX Nifty				
Method: ML-ARCH(Marquardt)-Student's t distribution				
GARCH= C(3)+C(4)*RESID(-1)^2 + C(5)*GARCH(-1)				
Variable	Coefficient	Std. Error	Z-Statistics	Prob.
C	5.878702	1.371223	4.287197	0.0000
Variance Equation				
C	4369.964	5117.939	0.853852	0.3932
RESID(-1)^2	-0.000553	0.001398	-0.395534	0.6924
GARCH(-1)	-0.370320	1.604464	-0.230806	0.0817

Source: compiled & calculated

significance at 5%level

The above table 4.38 reveals the volatility changes in GARCH effect. It describes about the fluctuations of shares turnover between CNX Nifty and NSE Metal. In this analysis, if the value " $\alpha + \beta$ " is nearer to '1', it means that there is high volatility. If the value is lesser than '1', it will show lower volatility. From this table, shares turnover of CNX Nifty and NSE Metal (-0.000553+ (-0.370320) =-0.370873) is nearer to 1. So, there is a high volatility in NSE Metal. The GARCH p value is greater than 0.05 percent significant level that implies the last month volatility of CNX NIFTY and NSE Metal influences the current month volatility rates. Hence it accepts the null hypotheses

H₀: There is no GARCH effect between CNX NIFTY & NSE REALTY

Table-4.39

Shares Turnover of CNX Nifty and NSE Realty results with GARCH effect

Dependent Variable: CNX Nifty				
Method: ML-ARCH(Marquardt)-Student's t distribution				
GARCH= C(3)+C(4)*RESID(-1)^2 + C(5)*GARCH(-1)				
Variable	Coefficient	Std. Error	Z-Statistics	Prob.
C	6.136394	1.468805	4.177813	0.0000
Variance Equation				
C	4787.132	7822.511	0.611969	0.5406
RESID(-1)^2	-0.000690	0.008665	-0.079605	0.9366
GARCH(-1)	-0.230949	0.201478	-0.114627	0.9087

Source: compiled & calculated

significance at 5%level

The above table 4.39 reveals the volatility changes in GARCH effect. It describes about the fluctuations of shares turnover between CNX Nifty and NSE Realty. In this analysis, if the value " $\alpha + \beta$ " is nearer to '1', it means that there is high volatility. If the value is lesser than '1', it will show lower volatility. From this table, shares turnover of CNX Nifty and NSE Realty (-0.000690 + (-0.230949) = -0.231639) is nearer to 1. So, there is a high volatility in NSE Realty. The GARCH p value is greater than 0.05 percent significant level that implies the last month volatility of CNX NIFTY and NSE Realty influences the current month volatility rates. Hence it accepts the null hypotheses.

CONCLUSION

The present study provides an empirical analysis on testing stock market potency between CNX NIFTY and Sectoral Indices of National Stock Exchange for the period of six years eight months from January 2012- August 2018 taking daily observations. The Indian domestic investors construct their portfolios which include the indices are co-integrated with each other. At the same time they have directional relationship with CNX NIFTY. The results determines the leading sectors which include NSE AUTO, NSE FMCG, NSE BANK, NSE MEDIA, NSE IT, NSE FS, NSE PB, NSE PSU, NSE PHARMA, NSE METAL, NSE REALTY. All the sectoral indices with CNX NIFTY the stock market potency are tested. It showed that the Indian Stock Market is not potency in Semi-Strong Form. NSE Sectoral Indices helps the investors to identify the leading sectors like Finance, FMCG, Media, Metal, Pharma and Realty which have semi-robust market potency. It will help the investors to earn more abnormal profits in the long run and put an effort in favour of a shift to dynamic business environment where one can manage risk and earn even above normal profits at least at present time. Hence it provides an opportunity to the traders for predicting the future prices, shares and stock turnover for earning more profits on these sectors. From this the investors and portfolio managers can decide their trading strategy based on the sectoral indices to change their dynamic business environment.