



RISK AND RETURN ANALYSIS OF SELECTED REAL ESTATE STOCKS IN INDIA

DR. S. KRISHNAPRABHA¹, KARTHIGAAMURTHY.M²

¹Associate Professor, Department of Management Studies,

Sri Ramakrishna Engineering College, Coimbatore, Tamil Nadu, India

²II MBA, Department of Management Studies.

Sri Ramakrishna Engineering College, Coimbatore, Tamil Nadu, India

ABSTRACT

Risk and return analysis are very important for every investor before making an investment decision. As every investor wants to avoid the risk and maximize return, with the help of risk and return analysis, there is a probability to achieve maximum return. This paper studies about risk and return analysis of real estate stocks in India. The main objective of the study is to give investors a basic idea of investing funds into the share market, for analysis purposes of the study Secondary data was collected. To analyze risk and return analysis of the real estate stock few statistical tools were used like returns, standard deviation, beta, alpha, correlation, moving average, oscillators ROC, RSI.

INTRODUCTION

The study analyzes the performance of the real estate industry in India. The Indian realty sector is one in every of the foremost well-known sectors within the world and therefore the second largest employer after agriculture and experts say the world is poised to grow by about 20 percent over the following decade. It consists of 4 sub-sectors - retail, housing, hospitality, and commerce. The expansion of this sector is well complemented by the expansion within the organized sector environment and also the requirement for office space also as urban and suburban housing. The development industry ranks third among the 14 major sectors in terms of direct, indirect and induced effects altogether sectors of the economy. India's realty sector is growing at rate of 20% each year and this sector has been contributing approximately 6-7% to India's GDP but it isn't capable to balance the supply demand continuum. Demand for housing has been growing steadily since the last decade. In spite of government efforts through various programs, it's not been ready to meet the growing needs. Taking advantage of the case, independent actors snatched the control of the important estate industry almost without fear about consumer demand. Since the last decade of the year the world has been experiencing declining temperatures because of a spread of factors including industrial challenges, government is consistently changing regulatory and economic downturns. In this paper we analyze and measure the performance of the real estate industry in India by analysing the financial position of top realty firms. Considering the massive fluctuation in real estate industry, this paper will analyze the performance of real estate stock market.

REVIEW OF LITRATURE

Amit Kumar Sinha, Abhishek Soni, Madhavi Prajapati (2020)¹ published a international paper on an “**Overview On The Indian real estate Sector**” a theoretical study on critical appraisal of present trend and pattern of various factors of the real-estate sectors. During this paper they outlined the important constraint issue and details. But also present some corrective steps which might benefit the world and take it to its glorious part where it had been increasing in flying colours. After studying the varied articles, reports and papers of experts in realty sector they found then since last 5 years realty sector is in much stressed condition. Due to lack of effective regulating and monitoring body there's lack of trust within the field of realty sector.

CHENG Qinga, LIU Xinyuanb, SUN Yic, GUO Kun (2016)² conducted the study “**The Performance Analysis of Real Estate Listed Firms Based on the Sliding Time Window**” According to this research, this influence varies in the business cycle different. Based on a sample of companies listed for buildings that make up 2004-2014, this paper vigorously examines the different impact of capital and operational performance on a robust performance in the 3-year sling time window analysis and regression. Research has found that there is a Scale of Economies Effect. In the aftermath of the economic crisis, daily gains, which represent working capacity, have a significant impact on performance. While money laundering is affecting performance despite all the time it has come out and the financial framework that accompanies The Pecking Order Theory. This conclusion shows that firms that have been listed in real estate gradually return to normalcy.

Aravind. M (2015)³ in his paper “**The Financial soundness of Real Estate Industry in India: Investigation**” said that the real estate sector in the global economy was blamed for the outbreak of the 2008 recession. The global economic downturn is also affecting India. It is logically interesting to examine the financial performance of the realty industry in India during the economic downturn. To obtain more accurate results, more research was conducted over the past decade, and the study period was divided into stages of recession, recession and post-recession. The result shows that the Indian Real estate sector has not been significantly affected by the global economic downturn and shows steady performance throughout the study period.

Manoj (2014)⁴ examines the value and significance of the “**Real Estate Investment Trust and Real Estate Fund**”. He extends investment in REFs or REIT scans offering the highest returns in India in contrast to similar investments in developed countries. Similarly, if the REFs are well developed or REITs can be very supportive of the growth of the residential sector in India by attracting significant investment in this sector.

REFERENCES

1. Dr. P. Subramanyam Dr. Nalla Bala Kalyan (2018) conducted a study on “Risk & Return Analysis of Selected Securities in India” Vol.5 (Iss.4): April 2018 ISSN: 2454-1907
2. Kapil CHOUDHARY, Sakshi CHOUDHARY (2010) conducted a study on “Testing Capital Asset Pricing Model: Empirical Evidences from Indian Equity Market” 2010, 3,(6),127-138.
3. P.Karthika, Dr. P. Karthikeya (2010) conducted a study on “Comparative Analysis of Risk and Return with reference to Selected stocks of BSE Sensex index, India” ISSN: 2010-457X

RESEARCH METHODOLOGY

The empirical work is specializing in the performance of realty sector in India for the period of 5 years. Period for five years from 2016-2020 has taken for the purpose of the study. The accurate detailed study will provides a better understanding on the particular performance of realty companies additionally because the realty sector in India during past 5 years; and can also have a reasonable look on 5 years activities of realty sector how it's effect adversely hits the performance of realty companies in India. Although organized in addition as unorganized sector in realty industry will form a part of the entire population of study; the financial soundness of bodies in unorganized sector is difficult to measure as this sector is widely spread and difficulty in obtaining relevant financial data. So this study is just limited with top listed companies those that are operating in Indian realty sector. The sample consists of 20 top listed companies were selected to analyses the performance of realty industry as they accounts major portion of

market share within the organized sector. The financial data spread across from 2016- 20 are considered for the study purpose. Table 1 express the list of companies selected for the study.

SI.NO	COMPANY NAME
1	DLF
2	Godrej Prop
3	NBCC (India)
4	Oberoi Realty
5	Phoenix Mills
6	Prestige Estate
7	Dilip Buildcon
8	Brigade Ent
9	Sobha
10	Sunteck Realty
11	Indiabulls Real
12	Mahindra Life
13	Ahluwalia
14	Puravankara
15	Welspun Enter
16	JMC Projects
17	Ashiana Housing
18	Omaxe
19	DB Realty
20	Ajmera Realty

Table 1: Top 20 Real estate Companies

DATA COLLECTION

SECONDARY DATA

Data used in this study are secondary data, resources are collected from BSE. The data on monthly market prices of leading realty sector listed in BSE have been collected. Historical share price data collected from www.yahoofinance.com

DATA ANALYSIS

The collected data is used to analyse to prepare the final report. The tools and techniques used in the analysis are

- return
- standard deviation
- beta
- alpha
- correlation
- moving average
- oscillators ROC, RSI

PERIOD OF STUDY

The period of study covers from 2016-2020 has taken for the purpose of the study.

CALCULATION

The study is based on comparing stocks of top 20 real estate industry with the BSE index. However, with the objective and scope of the study in mind Monthly closing prices of the selected scripts are to be collected from NSE India. In order to avoid bias, at least five years monthly data is decided to be necessary. The reference period is from March, 2016 to April 2020. Statistical Tools used for Calculation was Return, Beta, Standard deviation, Variance, ROC, RSI.

RETURNS-A **return**, also known as a **financial return**, in its simplest terms, is the money made or lost on an investment over some period of time. Returns are calculated as expected return less actual return.

$$r_t = \left(\frac{P_t}{P_{t-1}} \right)$$

Standard deviation -in statistics, the standard deviation is a measure of the amount of variation or dispersion of a set of values. A low standard deviation indicates that the values tend to be close to the mean of the set, while a high standard deviation indicates that the values are spread out over a wide range.

$$\text{Standard Deviation} = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n - 1}}$$

where:

x_i = Value of the i^{th} point in the data set

\bar{x} = The mean value of the data set

n = The number of data points in the data set

Variance - The variance is a parameter that describes, in part, either the actual probability distribution of an observed population of numbers or sample of numbers has been draw.

$$\text{variance } \sigma^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n - 1}$$

where:

x_i = i^{th} data point

\bar{x} = Mean of all data points

n = Number of data points

BETA- Beta is a numeric value that measures the fluctuations of a stock to changes in the overall stock market.

Description: **Beta** measures the responsiveness of a stock's price to changes in the overall stock market.

Systematic risk is measured in terms of Beta, which represents fluctuations in the NAV of the fund vis-à-vis market. Beta is calculated by relating the returns on a Stock price with the returns in the market, Market will have beta 1.0 stock price is said to be volatile, more volatile or less volatile. If beta is greater than 1 the stock is said to be riskier than market. If beta is less than 1, the indication is that stock is less risky in comparison to market. If beta is zero then the risk is the same as that of the market. Negative beta is rare.

$$\beta = \frac{\text{COVARIANCE}}{\text{VARIANCE}}$$

Beta = +1.0 One percent change in the market index returns causes exactly one percent change in the stock return. It indicates the stock moves with the market.

Beta = +0.5 One percent changes in market index return causes 0.5 percent change in the stock return. The stock is less volatile compared to the market.

Beta = +2.0 One percent changes in market index return causes 2 percent change in the stock return. The stock is more volatile. When there is a decline 10 percent in the market return the stock with a beta of 2 would give a negative return of 20 percent. The stock with more than 1 beta value is considered to be risky

CORRELATION-Correlation is a statistical term describing the degree to which two variables move in coordination with one-another. If the two variables move in the same direction, then those variables are said to have a positive **correlation**. If they move in opposite directions, then they have a negative **correlation**. If correlation is zero then there is no relationship between two variables.

$$r = \frac{\sum(X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum(X - \bar{X})^2} \sqrt{\sum(Y - \bar{Y})^2}}$$

Where,

r = Correlation Coefficient

\bar{X} = Average of observations of variable X

\bar{Y} = Average of observations of variable Y

ALPHA

Alpha, also known as excess return or abnormal rate of return is one of the most widely used measures of the risk adjusted performance. The number shows how much better or worse a fund performed relative to a benchmark.

Alpha refers to excess returns earned on an investment above the benchmark return & it represents the performance of a portfolio relative to a benchmark, it is often considered to represent the value that a portfolio manager adds to or subtracts from a fund's return.

MOVING AVERAGE- A **moving average** is a calculation used to analyze data points by creating a series of **averages** of different subsets of the full data set. In finance, a **moving average** (MA) is a stock indicator that is commonly used. It is used to find out performance of the share market.

REALTY MARKET OSCILLATORS - ROC and RSI

The Rate-of-Change (**ROC**) indicator, which is also referred to as simply Momentum, is a pure momentum **oscillator**. The plot forms an **oscillator** that fluctuates above and below the zero line as the Rate-of-Change moves from positive to negative.

The rate of change (ROC) is the speed at which a variable changes over a specific period of time. ROC is often used when speaking about momentum and it can generally be expressed as a ratio between a changes in one variable relative to a corresponding change in another; graphically, the rate of change is represented by the slope of a line.

$$\text{ROC} = \left(\frac{\text{Previous value}}{\text{Current value}} - 1 \right) * 100$$

The Relative Strength Index (RSI), developed by J. Welles Wilder, is a momentum oscillator that measures the speed and change of price movements. The RSI oscillates between zero and 100. The broad rule states, if the RSI crosses 70 it creates a sell signal since the script is overbought and it leads to a fall in the future stock prices. If the RSI falls below 30, it creates a buy signal since; the script is oversold which leads to an upward trend in the future stock prices.

$$\text{RSI} = 100 - \left(\frac{100}{1 + \text{RS}} \right)$$

RS = Average Gain/Average Loss

Average gain = Total of Gains for the determined time period / Time period

Average Loss = Total of Losses for the determined time period / Time period

OBJECTIVE OF THE STUDY

- To study the Risk and return analyses of Top 20 real estate companies.
- To analyse variance of returns in real estate stocks.
- To analyze price movements of real estate sector in India.
- To analyze over bought and over sold situation of real estate stocks.
- To analyze the correlation between real estate stock and market.

ANALYSIS AND INTERPRETATION

TABLE 1: Returns of top 20 realty sector in stock exchange

S No	Name of the company	Standard Deviation	Variance
1	DLF	0.2588	0.0670
2	Godrej Prop	0.0913	0.0083
3	NBCC (India)	0.1091	0.012
4	Oberoi Realty	0.3272	0.1071
5	Phoenix Mills	0.0750	0.0056
6	Prestige Estate	0.0983	0.0097

7	Dilip Buildcon	0.1386	0.0192
8	Brigade Ent	0.1050	0.0110
9	Sobha	0.1246	0.016
10	Sunteck Realty	0.1173	0.0138
11	Indiabulls Real	0.1627	0.0265
12	Mahindra Life	0.0969	0.0094
13	Ahluwalia	0.0961	0.0092
14	Puravankara	0.1195	0.0142
15	Welspun Enter	0.1071	0.0115
16	JMC Projects	0.1204	0.0145
17	Ashiana Housing	0.1074	0.0115
18	Omaxe	0.0753	0.0057
19	DB Realty	0.161	0.0261
20	Ajmera Realty	0.1137	0.012919

Interpretation:

From above table it is explained that the standard deviation and variance value of the top 20 realty company based on its returns. The Standard deviation of real estate industry has ranged between 0.2588 (DLF) and 0.1137 (Ajmera Realty). A high standard deviation of DLF indicates that the data points are spread out in large range values. Likewise, Variance of the real estate industry ranged between 0.0670 (DLF) and 0.019 (Ajmera Realty).

TABLE 2: Beta of top 20 Realty companies in stock exchange

S No	Name of the company	Beta
1	DLF	0.6
2	Godrej Prop	-0.22
3	NBCC (India)	0.5
4	Oberoi Realty	0.65
5	Phoenix Mills	0.02
6	Prestige Estate	1.11
7	Dilip Buildcon	1
8	Brigade Ent	-0.24
9	Sobha	0.30
10	Sunteck Realty	0.47
11	Indiabulls Real	1
12	Mahindra Life	0.9
13	Ahluwalia	2.3
14	Puravankara	1.85
15	Welspun Enter	1.07
16	JMC Projects	0.78
17	Ashiana Housing	1.7
18	Omaxe	-0.37
19	DB Realty	1.9
20	Ajmera Realty	1.7

Interpretation:

Above Table shows the beta value of top 20 realty based on its benchmark. The highest beta value is Ahluwalia with 2.3 and lowest beta value is Phoenix Mills with 0.02. This beta measured to compare and predict returns. It shows volatility relative to a benchmark. There are certain negative betas like -0.22 (Godrej Prop), -0.24 (Brigade Ent), -0.37 (Omaxe) which shows that stock return moves in the opposite direction to the market return.

TABLE NO 3: Correlation of top 20 realty companies in stock exchange

S No	Name of the company	Correlation
1	DLF	0.17
2	Godrej Prop	0.6
3	NBCC (India)	0.8
4	Oberoi Realty	0.9
5	Phoenix Mills	0.7
6	Prestige Estate	0.8
7	Dilip Buildcon	0.6
8	Brigade Ent	0.5
9	Sobha	0.9
10	Sunteck Realty	0.16
11	Indiabulls Real	0.5
12	Mahindra Life	0.8
13	Ahluwalia	0.7
14	Puravankara	0.2
15	Welspun Enter	0.9
16	JMC Projects	0.7
17	Ashiana Housing	0.6
18	Omaxe	0.8
19	DB Realty	0.05
20	Ajmera Realty	0.14

Interpretation:

Above table provides that the relationship between the return on market is 50-50 of selected top 20 company in India based on its benchmark. All companies are positively correlated. It shows that realty companies are affected if any changes had in the BSE sensenx.

TABLE NO 4: Alpha of top 20 realty companies in stock exchange

S No	Name of the company	Alpha
1	DLF	0.01
2	Godrej Prop	0.02
3	NBCC (India)	0.65
4	Oberoi Realty	0.8
5	Phoenix Mills	0.02
6	Prestige Estate	1.11
7	Dilip Buildcon	1
8	Brigade Ent	0.24
9	Sobha	0.43
10	Sunteck Realty	0.47
11	Indiabulls Real	1
12	Mahindra Life	0.8
13	Ahluwalia	0.49
14	Puravankara	0.89
15	Welspun Enter	1.07
16	JMC Projects	0.78
17	Ashiana Housing	0.57
18	Omaxe	0.68
19	DB Realty	1.8
20	Ajmera Realty	0.58

Interpretation:

From above table we can refer that 1.8(DB realty) has the highest value and 0.01 (DLF)has the lowest value. Highest value of DB realty indicates that yield excess returns of fund over its corresponding index value. Whereas DLF does not yield much compared to the other stocks.

TABLE NO 5: MOVING AVERAGE OF REALTY SECTOR (BSE)

DATE	Moving average
01-Mar-21	48298.30
01-Feb-21	47712.36
01-Jan-21	46062.27
01-Dec-20	43838.37
01-Nov-20	40610.57
01-Oct-20	38770.10
01-Sep-20	38101.04
01-Aug-20	37050.33
01-Jul-20	35146.16
01-Jun-20	33418.57
01-May-20	33019.17
01-Apr-20	31870.07
01-Mar-20	33827.80
01-Feb-20	36163.09
01-Jan-20	40091.51
01-Dec-19	40702.09
01-Nov-19	40016.71
01-Oct-19	38709.72
01-Sep-19	37927.08
01-Aug-19	38169.52
01-Jul-19	38963.32
01-Jun-19	39380.13
01-May-19	39139.55
01-Apr-19	37857.30
01-Mar-19	36932.35
01-Feb-19	36064.15
01-Jan-19	36173.11
01-Dec-18	35568.23
01-Nov-18	35621.16
01-Oct-18	36438.09
01-Sep-18	37492.93
01-Aug-18	37191.34
01-Jul-18	36029.77
01-Jun-18	34483.81
01-May-18	34104.36
01-Apr-18	34372.58
01-Mar-18	34735.30
01-Feb-18	34390.40
01-Jan-18	33473.10
01-Dec-17	32535.40
01-Nov-17	32062.45
01-Oct-17	31829.72
01-Sep-17	31722.35
01-Aug-17	31527.45
01-Jul-17	30661.94
01-Jun-17	30228.23
01-May-17	29427.41
01-Apr-17	28673.26
01-Mar-17	27683.91

01-Feb-17	26987.08
01-Jan-17	27082.26
01-Dec-16	27486.76
01-Nov-16	28086.55
01-Oct-16	28123.33
01-Sep-16	27724.00
01-Aug-16	27239.85
01-Jul-16	26424.77
01-Jun-16	25849.28

Interpretation:

From the above table and below chart it is understood that the performance of the realty sector has been gradually increasing from the year 2016 and there is fall down in the year of 2019 and recovering from the down fall. From the below chart it is clearly shown that fall in the year of 2019 and has been increasing gradually.

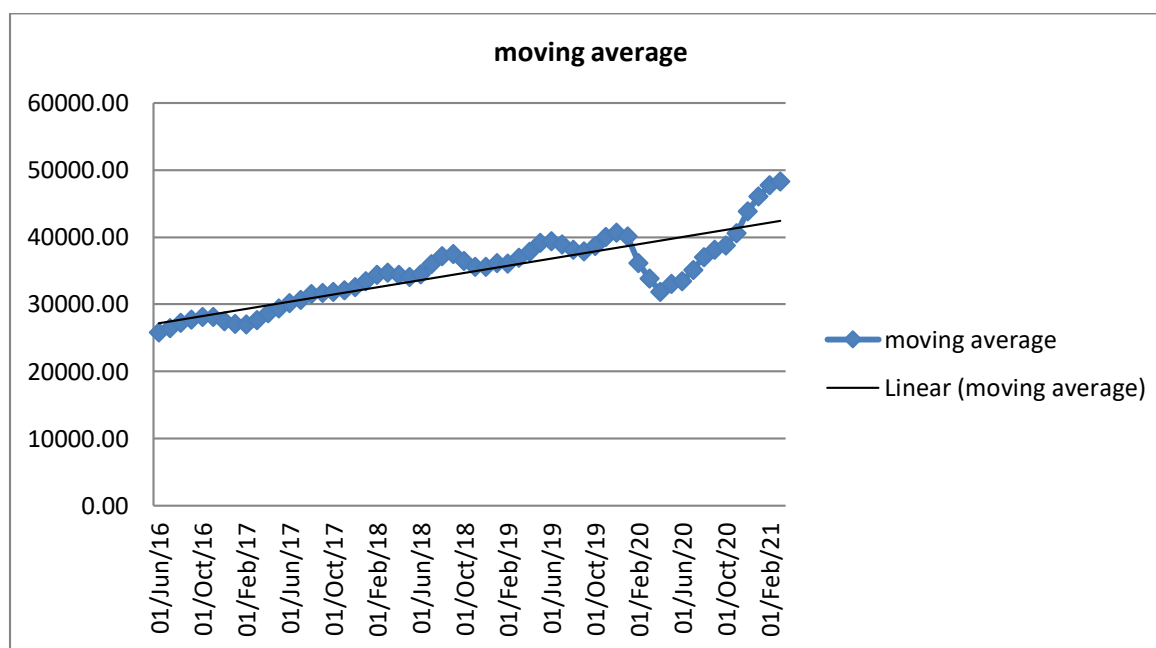


Chart no 1: showing the results of moving average

TABLE NO 6: ROC AND RSI OF REAL ESTATE INDUSTRY

DATE	market ajusted cls	ROC	RSI
01-Mar-21	49509.15		
01-Feb-21	49099.99		
01-Jan-21	46285.77		
01-Dec-20	47751.33		
01-Nov-20	44149.72		
01-Oct-20	39614.07		
01-Sep-20	38067.93		
01-Aug-20	38628.29	38627.29	
01-Jul-20	37606.89	37605.89	
01-Jun-20	34915.80	34914.8	
01-May-20	32915.80	32914.8	
01-Apr-20	32424.10	32423.1	
01-Mar-20	33717.62	33716.62	
01-Feb-20	29468.49	29467.49	84.1
01-Jan-20	38297.29	38296.29	59.7
01-Dec-19	40723.49	40722.49	26.9
01-Nov-19	41253.74	41252.74	0.0
01-Oct-19	40129.05	40128.05	0.0
01-Sep-19	38667.33	38666.33	0.0
01-Aug-19	37332.79	37331.79	30.4
01-Jul-19	37781.12	37780.12	61.1
01-Jun-19	39394.64	39393.64	25.1
01-May-19	39714.20	39713.2	0.0
01-Apr-19	39031.55	39030.55	0.0
01-Mar-19	38672.91	38671.91	0.0
01-Feb-19	35867.44	35866.44	31.2
01-Jan-19	36256.69	36255.69	0.0
01-Dec-18	36068.33	36067.33	18.1
01-Nov-18	36194.30	36193.3	0.0
01-Oct-18	34442.05	34441.05	72.0
01-Sep-18	36227.14	36226.14	79.8
01-Aug-18	38645.07	38644.07	0.0
01-Jul-18	37606.58	37605.58	0.0

01-Jun-18	35322.38	35321.38	0.0
01-May-18	35160.36	35159.36	0.0
01-Apr-18	32968.68	32967.68	59.7
01-Mar-18	34184.04	34183.04	69.8
01-Feb-18	35965.02	35964.02	0.0
01-Jan-18	34056.83	34055.83	0.0
01-Dec-17	33149.35	33148.35	7.9
01-Nov-17	33213.13	33212.13	0.0
01-Oct-17	31243.72	31242.72	35.8
01-Sep-17	31730.49	31729.49	51.2
01-Aug-17	32514.94	32513.94	0.0
01-Jul-17	30921.61	30920.61	20.7
01-Jun-17	31145.80	31144.8	0.0
01-May-17	29918.40	29917.4	0.0
01-Apr-17	29620.50	29619.5	0.0
01-Mar-17	28743.32	28742.32	0.0
01-Feb-17	27655.96	27654.96	0.0
01-Jan-17	26652.46	26651.46	0.0
01-Dec-16	26652.81	26651.81	66.8
01-Nov-16	27941.51	27940.51	0.0
01-Oct-16	27865.96	27864.96	50.2
01-Sep-16	28452.17	28451.17	0.0
01-Aug-16	28051.86	28050.86	0.0
01-Jul-16	26667.96	26666.96	36.9
01-Jun-16	26999.72	26998.72	0.0
01-May-16	25606.62	25605.62	0.0
01-Apr-16	24941.51	24940.51	84.1

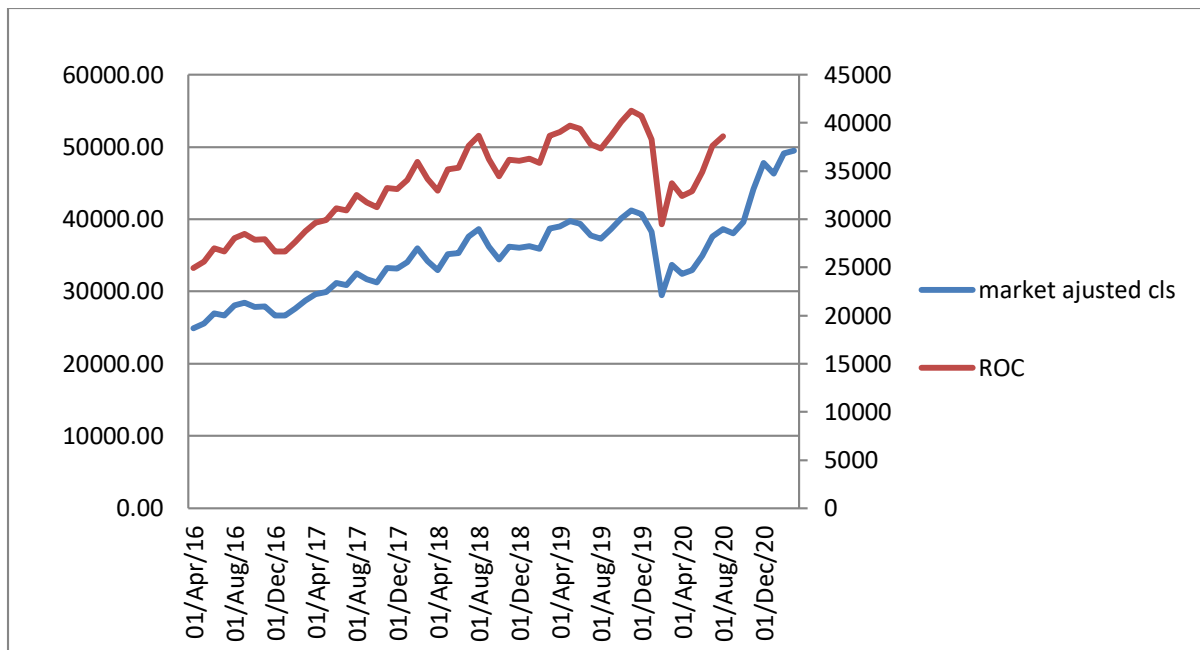


Chart 2: ROC chart

INTERPRETATION:

From the above chart and table we can refer that when price of the share increases ROC also increase when it declines it becomes negative. From the chart we can infer that a mild change in the stock market tends to increase the ROC rate. When ROC is negative it is preferred time buy, when it is high it is right time to sell.

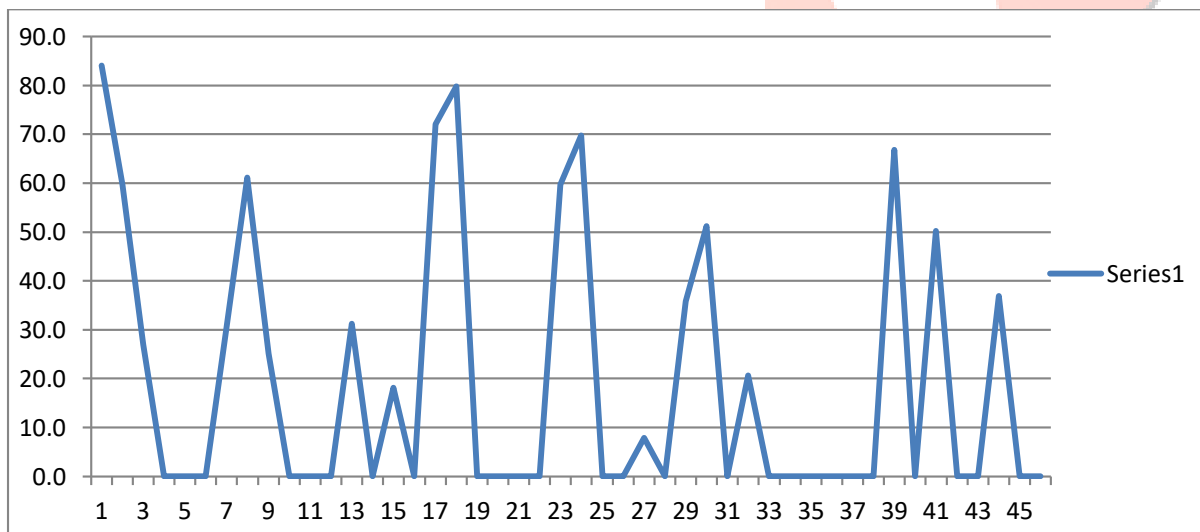


Chart 3: RSI chart

INTERPRETATION:

From above table and chart it can be understood that relative strength index oscillates from 0 to 100 according to the market trend. Traditionally the RSI is considered overbought when above 70 and oversold when below 30. Signals can be generated by looking for divergences and failure swings. RSI can also be used to identify the general trend.

CONCLUSION

This study has helped to view the performance of real estate industry in India and helped to understand the real estate industry in the Indian economy. Although many people assume a direct relationship exists between the stock market and real estate values, statistics indicate little direct or causal relationship, with the help of top 20 companies in India based on their share market performance. There is very little publicly available private real estate data in

India, leading to significant inefficiencies in the market. Real estate stocks are partially governed by the forces in the capital markets. Globally, real estate stocks are also known to be partially affected by the demand for property in the underlying property markets. However, there are no standard measures for such demand. We posit that real estate related online searches could act as a proxy for the demand for space and thus may be related to future movements in real estate stock prices.

So it is concluded that performance Indian real estate sector is growing and also the Securities and Exchange Board of India (SEBI) has given its approval for the Real Estate Investment Trust (REIT) platform, which will allow all kind of investors to invest in the Indian real estate market. It would create an opportunity worth Rs. 1.25 trillion (US\$ 19.65 billion) in the Indian market in the coming years.

