



ISSN 2278 – 0211 (Online)

## A Study on Evaluating P/E and its Relationship with the Return for NIFTY

**Dr. Hemendra Gupta**

Assistant Professor, Jaipuria Institute of Management, Lucknow, India

### **Abstract:**

*Retail Investors have always been in doldrums in deciding about the timing of entry and exit in market. These investors at large are driven by emotions in investing and are swayed by sentiments prevailing in market and thus at times entering into market when valuations are on higher side which is a time of euphoria and exiting the market when valuations are low and there is feeling of despondency. To understand this dilemma PE metric is one such valuation ratio. The paper explores the PE of NIFTY as an opportunity to invest and to identify and predict the expected return which can be earned based upon historical data. The paper also explores whether there is any difference in expected return if investment is made at different PE level of NIFTY.*

**Keywords:** PE ratio, NIFTY, Market Capitalization

### **1. Introduction**

For retail investor it has always been a cause of concern timing their investments in equity market in terms of entry and exit from the market and deciding about valuation of market. On what basis one can decide the valuation of Stock market (NIFTY) and whether the current level is too high, high or fairly reasonable. One of the common bases for valuation is P/E ratio.

The Nifty 50 is the flagship index on the National Stock Exchange of India Ltd. (NSE). The Index tracks the behavior of a portfolio of blue chip companies, the largest and most liquid Indian securities. It includes 50 of the approximately 1600 companies listed on the NSE, captures approximately 65% of its float adjusted market capitalization and is a true reflection of the Indian stock market. The Nifty 50 is a diversified index, accurately reflecting the overall market. The reward-to-risk ratio of Nifty 50 is higher than other leading indices, offering similar returns but at lesser risk.

PE ratio is one of the most widely used tools for stock selection. It is calculated by dividing the current market price of the stock by its earning per share (EPS). It shows the sum of money you are ready to pay for each rupee worth of the earnings of the company.

In short, PE of a stock = Market price of share/ Earnings per share. If the market price of a company on a given day is Rs 500 and its EPS is Rs 100 the PE ratio of that stock would be 5. While EPS of a company remains the same for a period or quarter (period of three months) or a year, the market price of stock changes everyday and hence the P/E ratio also changes.

Nifty P/E ratio is calculated by dividing the sum of market capitalization by the sum of earnings of all companies which constitute the S&P CNX Nifty. The ratio is a measure of how expensive the overall markets are at any given point of time. This ratio is based on two variable – (a) price of the stock; and (b) earnings. Whenever price moves faster in relation to earnings, the PE number will go up.

The objective of the study was to examine the existence of P/E ratio anomaly in NIFTY and to investigate a potential low price-earnings (P/E) investment strategy as a means of making good returns.

### **2. Review of Literature**

The Review of literature in the concerned research area is of great importance in carrying out further research work. Robert A. Weigand and Robert Irons talks about that High-P/E periods are preceded by accelerating equity returns and declines in both nominal interest rates and stock market volatility. Following these periods, stock returns are marginally higher when earnings growth is strong and interest rates continue falling. In particular, high-P/E periods triggered by temporary earnings declines are followed by low positive stock returns, but returns are negative for at least a decade when earnings grow rapidly and the market P/E climbs above 20. Following both types of high-P/E events, however, real stock returns are appreciably lower than average for the subsequent decade.

Basu's (1977-1985) has done an empirical study and finds that companies with low P/E ratios on average earn higher absolute and risk-adjusted rates of return than higher P/E portfolios. He examines the common stock of more than 1300 industrial firms, listed on the New York Stock Exchange (NYSE) for the period between 1957 and 1971. Stocks in report were ranked by E/P ratios (also referred as earnings yield) and then dividing into quintiles.

Damodaran (2006) mentions that other things held constant, higher growth firms should have higher PE ratios than lower growth firms. Other things held same, higher risk firms will have lower PE ratios than lower risk firms and other things held equal, firms with lower reinvestment needs will have higher PE ratios than firms with higher reinvestment rates. However, he also mentions that other things remaining constant are difficult to hold equal since high growth firms tend to have risk and high reinvestment rates

Keith P. Anderson (2005) the p/e ratio is used widely to measure the expected performance of companies. However, the P/E of a stock is partly determined by outside influences such as the year in which it is measured, the size of company, and the sector in which company operates. He divided companies into five groups by keeping P/E as a base. He found that average return for 7 years were 12.71% per annum (131% total) for the companies with a P/E less than 10. At the same time, it was 7.97% for those stocks with P/E over 20. He concluded that the purchaser of common stocks may logically seek the greater productivity represented by stocks with low rather than high price earnings ratios

Defining the P/E ratio as the market price per share divided by earnings per share, Chisholm (2009) focuses on the P/E ratio and is used to rate which shares in a given sector are dear and cheap to each other. It is possible to compare the P/E ratios of similar companies, which are in similar line of business and their performance is affected by the same kinds of factors. There is a problem in case of companies making business in different sectors. To value stocks, different accounting standards are often used, too. Many investors are prepared to pay a premium for high growth expectations in the form of a high P/E ratio. P/E ratios are affected by the general level of market interest rates as the changes in interest rates tend to have an effect on corporate earnings.

### 3. Research Methodology

Study has been conducted for the period from April 1999 to April 2015 and data for the same has been taken from NSE website and data of 3993 days has been analyzed. Return has been calculated for different period at various P/E level to estimate the model. One Way ANOVA Test has been used to find test whether return generated by NIFTY is independent of PE value. Regression Model has been run to build relationship of P/E and return for different period.

### 4. Findings of Study

For the period of Study which is for 3993 days NIFTY, average P/E has been 18.59 with the lowest P/E which was observed on Oct 2008 as 10.68 and the highest P/E was seen on Jan 2008 at 28.23 and also February 2000 at 28.47 the market has been in this range. As seen from the Table and Figure 1 on 42.6% trading days the PE was in the range of 18-22

P/E	No. of Days	Probability
10_12	55	1.4%
12_14	320	8.0%
14_16	636	15.9%
16_18	676	16.9%
18_20	845	21.2%
20_22	856	21.4%
22_24	403	10.1%
>24	202	5.1%

Table 1

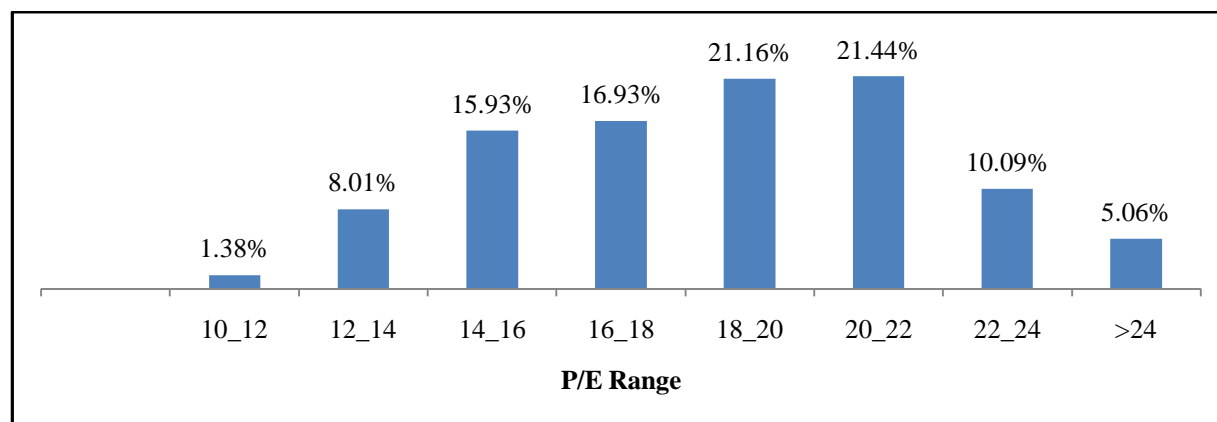


Figure 1: Probability Distribution of PE Ranges of NIFTY for Period 1999-2015

As observed from Table 1 there were 55 days which is 1.38% of time when the PE was in range of 10-12 and if on these days' investment is made then average return for one year has been 68.84% as seen in Table 2 whereas for a period of 10 years the average return has been 19.35%.

This is in contrast if investor invests when the PE > 24 even for a period of 10 years the average return has been 12.26%. It thus seems that return even for both short term and long term is getting impacted by the time when the investment was made

Testing hypothesis that Investment return is not impacted by P/E value at the time of investment in market it was observed by applying ANOVA that for investment horizon for one, two, three, five and ten years' hypothesis is rejected and conclusion is drawn investment return are dependent upon P/E of market and also as observed from the table however for investment period of seven years it was observed that average return is independent from PE of market

On further analyzing from table 3 it is observed that if investor gets an opportunity to invest in the PE range of 10-12 the probability of loss is zero for any investment period of more than one year and the minimum return to be earned is more than 35% for a year and 17.5% for ten-year period and this is an exception return

As 42.6% the probability has been that PE will be in range between 18-22 and if an investor invests in this period the probability of loss is zero if investment horizon is five years and more and if invests for 10 years then minimum return earned was 11.7%

There has been 5.1% chance that PE was more than 24 and if an investor has invested at these occasions probability of loss would have been zero for investment period of 7 years or more and for 10-year investment period the minimum return was 10.7%

P/E	One Year Return				Two Year return			
	Average	Variance	F	P-value	Average	Variance	F	P-value
10 --12	68.8%	0.042081	541.4384	0	44.6%	0.00129	832.0756	0
12--14	55.4%	0.064841						
14--16	34.5%	0.067243						
16--18	21.6%	0.028313						
18--20	10.3%	0.026869						
20--22	4.6%	0.051304						
22--24	-7.2%	0.036409						
>24	-30.5%	0.023534						
P/E	Three Year Return				Five Year Return			
	Average	Variance	F	P-value	Average	Variance	F	P-value
10 --12	40.6%	0.017312	743.6795	0	29.7%	0.008479	614.3963	0
12--14	33.5%	0.010421						
14--16	26.7%	0.00657						
16--18	16.0%	0.014039						
18--20	11.6%	0.008735						
20--22	5.9%	0.008718						
22--24	0.8%	0.003544						
>24	-5.1%	0.004727						
P/E	Seven Year Return				Ten Year Return			
	Average	Variance	F	P-value	Average	Variance	F	P-value
10 --12	25.3%	0.000635	144.2409	1.1E-175	19.35%	0.000111	396.326	0
12--14	20.4%	0.002162						
14--16	19.3%	0.002668						
16--18	16.1%	0.002888						
18--20	14.4%	0.003613						
20--22	12.4%	0.002504						
22--24	14.0%	0.002087						
>24	9.8%	0.001791						

Table 2

Period(Yrs.)	PE 10-12						Period(Yrs.)	PE 12-14					
	1	2	3	5	7	10		1	2	3	5	7	10
count	55	55	55	55	39	39	count	320	320	320	320	233	186
average	68.8%	44.6%	40.6%	29.7%	25.3%	19.3%	average	55.4%	40.6%	33.5%	24.6%	20.4%	17.9%
Max	100.1%	55.7%	58.4%	41.0%	27.3%	20.7%	Max	104.4%	58.1%	56.4%	43.7%	27.5%	20.6%
Min	39.3%	39.4%	20.5%	17.4%	19.9%	17.5%	Min	-1.5%	15.8%	10.8%	13.4%	12.8%	15.6%
<0%	0	0	0	0	0	0	<0%	4	0	0	0	0	0
0-10%	0	0	0	0	0	0	0-10%	17	0	0	0	0	0
10-20%	0	0	0	16	1	23	10-20%	5	1	37	86	116	177
>20%	55	55	55	39	38	16	>20%	294	319	283	234	117	9
Period(Yrs.)	PE 14-16						Period(Yrs.)	PE 16-18					
	1	2	3	5	7	10		1	2	3	5	7	10
count	636	623	623	623	600	486	count	676	541	419	355	306	195
average	34.5%	31.1%	28.2%	26.7%	19.3%	17.2%	average	21.6%	20.2%	16.0%	16.8%	16.1%	15.9%
Max	84.7%	57.6%	50.0%	45.0%	27.5%	19.9%	Max	57.6%	51.3%	45.7%	33.0%	26.1%	18.3%
Min	-12.2%	-9.3%	0.5%	11.8%	11.1%	13.5%	Min	-18.3%	13.2%	-5.0%	3.6%	7.6%	12.1%
<0%	125	35	0	0	0	0	<0%	93	71	54	0	0	0
0-10%	41	44	45	0	0	0	0-10%	77	23	67	81	43	0
10-20%	21	31	126	150	293	486	10-20%	136	116	141	166	152	195
>20%	449	513	452	473	307	0	>20%	370	331	157	108	111	0

Period(Yrs.)	PE 18-20						Period(Yrs.)	PE 20-22					
	1	2	3	5	7	10		1	2	3	5	7	10
count	822	717	589	468	382	216	count	695	695	695	553	409	209
average	10.3%	10.6%	11.6%	11.7%	14.4%	15.4%	average	4.6%	0.1%	5.9%	7.7%	12.4%	13.9%
Max	62.7%	42.5%	34.6%	30.4%	26.1%	18.1%	Max	61.5%	40.0%	32.3%	18.6%	24.5%	16.4%
Min	-35.6%	-	-	2.9%	6.0%	11.7%	Min	-50.0%	-	-	2.1%	5.7%	12.2%
		20.8%	11.0%					21.2%	13.6%				
<0%	183	150	68	0	0	0	<0%	325	300	130	0	0	0
0-10%	244	172	197	223	162	0	0-10%	116	291	404	367	200	0
10-20%	147	205	226	189	131	216	10-20%	121	40	103	186	185	209
>20%	248	190	98	56	89	0	>20%	133	64	58	0	24	0
Period(Yrs.)	PE 22-24						Period(Yrs.)	PE >24					
	1	2	3	5	7	10		1	2	3	5	7	10
count	336	336	336	213	116	83	count	201	201	201	148	148	78
average	-7.2%	-4.4%	0.8%	8.2%	14.0%	13.8%	average	-30.5%	-9.7%	-5.1%	2.7%	9.8%	12.3%
Max	26.1%	28.6%	25.9%	17.2%	22.1%	15.2%	Max	-11.3%	0.1%	5.6%	7.8%	16.5%	13.7%
Min	-51.3%	-	-	0.8%	6.8%	12.8%	Min	-56.8%	-	-	-1.0%	4.7%	10.7%
		19.6%	15.0%					19.0%	16.5%				
<0%	203	271	82	0	0	0	<0%	201	200	135	30	0	0
0-10%	54	64	243	134	33	0	0-10%	0	1	66	118	70	0
10-20%	54	0	10	79	73	83	10-20%	0	0	0	0	78	78
>20%	25	1	1	0	10	0	>20%	0	0	0	0	0	0

Table 3: Evaluation of Return of NIFTY at various P/E level

As expected as seen from table 4 the correlation between PE and expected return is negative irrespective of horizon of investment period and is less than -0.7 for investment period till five years

Regression model (Table 4) is framed to forecast the returns based upon the investment horizon in most of the cases the model is able to explain more than 50% variation (as shown by Rsquared values) on return on taking PE as independent variable to forecast return

$$\text{One Year Return} = 1.293 - 0.061PE + e$$

$$\text{Two Year Return} = 0.965 - 0.045PE + e$$

$$\text{Three Year Return} = 0.759 - 0.033PE + e$$

$$\text{Five Year Return} = 0.55 - 0.021PE + e$$

$$\text{Seven Year Return} = 0.324 - 0.099PE + e$$

$$\text{Ten Year Return} = 0.227 - 0.004PE + e$$

As seen by regression Models for alpha coefficient is decreasing as the time horizon is increasing thereby also indicating that as investment period is increased the expected return dependency on PE is decreasing however the earlier table of ANOVA has shown that the returns are dependent on PE value at the time of investment

In the study attempt has also been made to find an opportunity of investment when there is major fall in market and for the given period of the study there have been nine occasion (Table 5) which have been identified when the market has fallen from making a peak and biggest fall after attaining a certain peak (Figure 2) in NIFTY was in Sep 2001 when NIFTY fell by 38.6% and PE of NIFTY decline by 45.9% and making investment at this time yield a return of 13.6% for a year and return of 27.1% for three years

In terms of return Table 5 the best opportunity was observed in April 2003 when NIFTY shown a decline in 13.7% and investing at this time yielded a return of 93.5% for a year and 52.7% for three years. The findings of Table 5 show that the market gives an opportunity for making abnormal return for a period of one to three years

Regression Analysis of Return Vs PE						
Year	Correlation	Constant	Coefficient	R Squared	F value	Sign
1	-0.714	1.293	-0.061	0.51	4063.6	0.00
2	-0.793	0.965	-0.045	0.629	6200.2	0.00
3	-0.771	0.759	-0.033	0.594	4988.0	0.00
5	-0.762	0.55	-0.021	0.58	4011.7	0.00
7	-0.54	0.324	-0.009	0.291	986.5	0.00
10	-0.665	0.227	-0.004	0.442	1313.8	0.00

Table 4

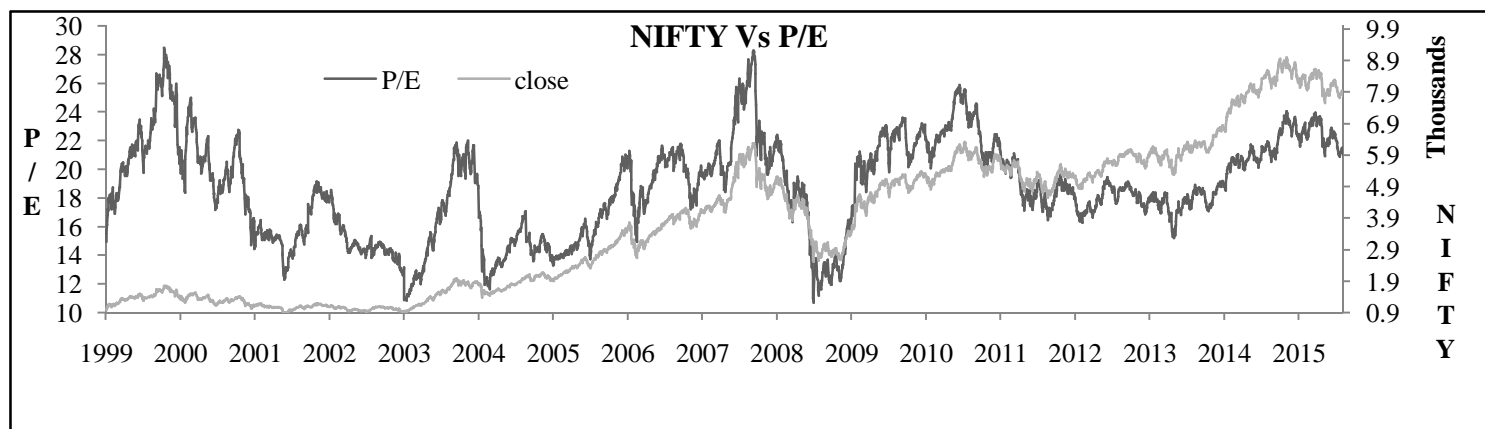


Figure 2

Return after Major Fall in NIFTY										
Peak			Bottom			Change		CAGR Return		
Date	NIFTY	P/E	Date	NIFTY	P/E	% Fall NIFTY	% Fall PE	One year	Two Years	Three Years
9-Feb-01	1391.2	22.73	21-Sep-01	854.1	12.3	-38.6%	-45.9%	13.6%	28.8%	27.1%
26-Feb-02	1189.4	19.14	28-Oct-02	922.7	14.03	-22.4%	-26.7%	60.6%	38.9%	37.4%
1-Jan-03	1100.15	14.92	11-Apr-03	949.8	12.97	-13.7%	-13.1%	93.5%	45.4%	52.7%
6-May-04	1832.8	17.04	17-May-04	1388.75	12.87	-24.2%	-24.5%	43.2%	52.9%	45.3%
10-May-06	3754.25	21.28	14-Jun-06	2632.8	14.92	-29.9%	-29.9%	57.5%	28.5%	18.9%
7-Jan-08	6287.5	28.25	19-Mar-08	4503	19.93	-28.4%	-29.5%	-28.8%	6.9%	8.9%
1-Oct-08	3950.75	16.98	24-Oct-08	2943.1	10.99	-25.5%	-35.3%	93.7%	53.3%	24.1%
3-Jan-11	6157.6	24.57	16-Dec-11	4544	16.46	-26.2%	-33.0%	25.9%	16.1%	21.2%
1-May-13	6187	18.38	27-Aug-13	5302	15.3	-14.3%	-16.8%	53.5%	21.4%	

Table 5

## 5. Conclusion

As per the findings it can be observed that market (NIFTY) has provides opportunity for investor to earn super normal returns and in future also these opportunities can be expected and the PE of NIFTY definitely is an indicator which need to be looked upon for investment.

However, it need to be observed that few things can distort P/E ratio as companies that have recently sold off a business can have an artificially inflated earnings and a lower P/E as a result. A firm may book a big one time gain from the sale of a division which can boost reported earnings, but based on operating earnings, the stock may not be cheap at all.

Besides that, reported earnings can sometimes be inflated (or depressed) by one-time accounting gains (or charges). As a result, the P/E ratio can be misleadingly high or low. For example, a company's earnings can be depressed due to a onetime charge for litigation or other extraordinary expense and this may in turn give the stock what appears to be a sky-high trailing P/E.

These distortions in earnings in company can further distort the PE of Nifty also and thus impacting valuation of market in giving its right picture. However, since we are taking the composite of 50 companies of NIFTY to large extent these distortions are discounted and the models can give a fair view of returns which can be expected from market

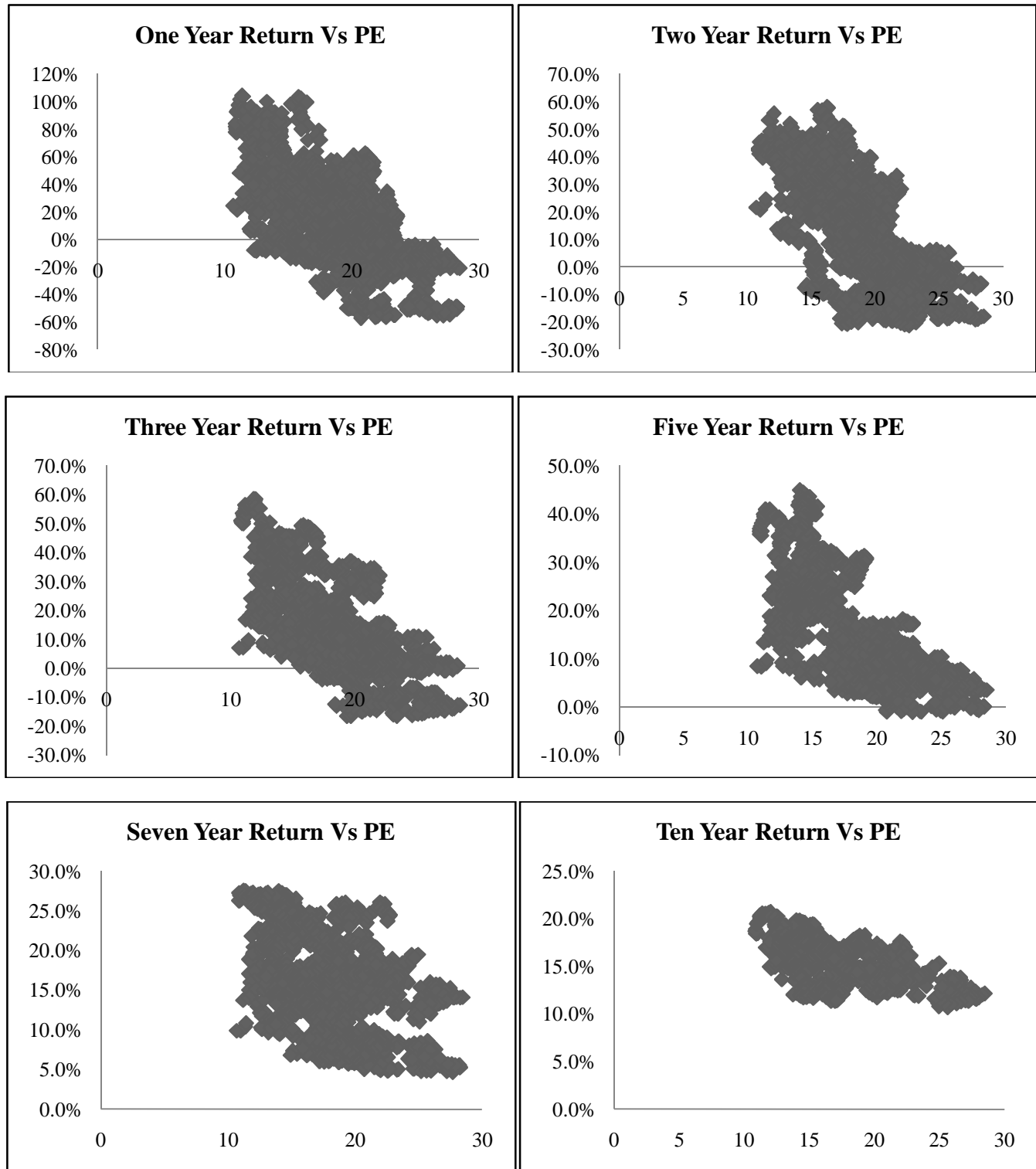


Figure 6: Return of NIFTY Vs PE for various Time periods

## 6. References

- i. Basu, S.1977. Investment Performance of Common Stocks in Relation to their Price-Earnings
- ii. Ratios: A Test of the Efficient Market Hypothesis. Journal of Finance 32: 663-682.
- iii. Chisolm, A.M. An Introduction to International Capital Markets. 2<sup>nd</sup> Issue. West Sussex: John Wiley & Sons, 2009. 428 p. ISBN 978-0-470-75898-4.
- iv. Damodaran A (2006) Damodaran on Valuation, Wiley Finance
- v. Gupta Hemendra, A Study on performance of Sensex and evaluation of investing lump sum or monthly regular investment in equity on risk and return for investor, International Journal of Development Research Vol. 5, Issue, 04, pp. 4323-4327, April, 2015
- vi. Harri Ramcharran (2002), An empirical analysis of the determinants of the P/E ratio in emerging markets.

- vii. Ilmanen, Antti, (2011) *Expected Returns: An Investor's Guide to Harvesting Market Rewards*.
- viii. Chichester, U.K.: John Wiley & Sons.
- ix. Keith P. Anderson (2005), *Decomposing the Price-Earnings Ratio*.
- x. Lambros Stefanis (2005), *Testing the Relation between Price-to- Earnings Ratio and Stock Returns in the Athens Stock Exchange*. |
- xi. Nicholson, S.F., (1968), "Price-Earnings Ratios in relation to Investment Results" *Financial Analysts Journal*: 105-09.
- xii. Penman, S. 1996. *The Articulation of Price-Earnings Ratios and Market-to-Book Ratios and the*
- xiii. *Evaluation of Growth*, *Journal of Accounting Research*34 (2): 235-259.
- xiv. Robert A. Weigand and Robert Irons, *The Journal of Portfolio Management* · January 2007, *The Market P/E Ratio, Earnings Trends, and Stock Return Forecasts*