

A STUDY ON P/E RATIOS OF SECTORAL INDICES OF NSE

Dr. R. SUSHAMA, ASSOCIATE PROFESSOR

Department of Business Management, St.Pious X (MBA) College for Women, Hyderabad, India

ABSTRACT: *'The Economic Times' had quite a bold heading 'P/E not best tool to value a stock. Which ratio to apply to which sector?' The author of the article had discussed the problem of using P/E ratio for investment decisions as P/E ignores assets and liabilities which usually have a significant impact on valuation. P/E ratio cannot be outrightly rejected as a tool of valuation but it can be used only to a certain extent. Valuation of a stock is usually analyzed through different multiples such as price-to-earnings ratio (P/E ratio), earnings per share (EPS), price to book value(P/BV), price to sales(P/S), EV/EBITDA (enterprise value/earnings before interest, tax, depreciation and amortization), etc. in a certain order. Amongst all these ratios P/E ratio is the most commonly and the most useful tool as it helps narrow down the universe of possible investible choices. The lower the ratio, the more attractive the stock is, as long as the stock has the growth potential. A high P/E ratio might mean that a company's stock is over-valued, or else investors are expecting high growth rates in the future. In some cases, the P/E ratios may have been corrected substantially too. Thus relying on this ratio alone may not lead to right decisions in such scenarios. Depending on broader factors, such as market sentiment and sectoral preferences, they keep changing with time. The P/E ratio is indeed a useful starting point. But it is not the end of an analysis of a company. Unfortunately, there is no single tool for all industries and stocks. One ratio cannot be applied blindly to value stocks across sectors. As with so many things in financial markets, it is difficult to apply P/E as a thumb rule. The present descriptive study is a modest attempt that has described the different sectoral indices in terms of their respective P/E ratios.*

Key words: PE ratio, Sectoral Indices

1. Introduction

In news article authored by D.K. Agarwal featured in 'The Economic Times' had quite a bold heading 'P/E not best tool to value a stock. Which ratio to apply to which sector?' He had discussed the problem of using P/E ratio for investment decisions as P/E ignores assets and liabilities which usually have a significant impact on valuation. P/E ratio cannot be outrightly rejected as a tool of valuation but it can be used only to a certain extent. But what exactly does P/E ratio mean: The price-to-earnings ratio measures the current share price relative to its earnings per share (EPS). This meaning, thereby, that the P/E ratio shows how much the market is willing to pay for each rupee earned by the company. Valuation of a stock is usually analyzed through different multiples such as price-to-earnings ratio (P/E ratio), earnings per share (EPS), price to book value (P/BV), price to sales (P/S), EV/EBITDA (enterprise value/earnings before interest, tax, depreciation and amortization), etc. in a certain order. Amongst all these ratios P/E ratio is the most commonly and the most useful tool as it helps narrow down the universe of possible investible choices. Actually, the P/E ratio is used to determine relative value of a company's share in an apple-to-apple comparison i.e. within the same industry. The lower the ratio, the more attractive the stock is, as long as the stock has the growth potential. A high P/E ratio might mean that a company's stock is over-valued, or else investors are expecting high growth rates in the future. During the time of Covid-19 when there was disruption in businesses and when earnings of many companies had come down sharply, but it was observed that their P/E ratios remained high. This was because the market was looking forward and was pricing in future earnings. In some cases, the P/E ratios may have been corrected substantially too. Thus relying on this ratio alone may not lead to right

decisions in such scenarios. The reason behind this is that if one using purely trailing P/E , the denominator reflecting earnings growth of training 12 months may no longer reflect the earnings reality amid the ongoing economic shocks. Thus, the P/E will seem optically low, as share prices have corrected sharply relative to the trailing earnings profile. Stock valuations re not static, but dynamic. Depending on broader factors, such as market sentiment and sectoral preferences, they keep changing with time. The P/E ratio is indeed a useful starting point. But it is not the end of an analysis of a company. Unfortunately, there is no single tool for all industries and stocks. One ratio cannot be applied blindly to value stocks across sectors. As with so many things in financial markets, it is difficult to apply P/E as a thumb rule. Given below is the extract of the valuation of different sectors as given by IIFL. As it can be seen, the range of value varies from one industry to another.

Table 1: Sectoral P/E ratios (2022-23)

Sector	P/E Ratio
Agro Chemicals	52.43
Air Transport Services	8.01
Alcoholic Beverages	43.83
Auto Ancillaries	54.81
Automobile	34.92
Banks	16.86
Bearings	37.05
Cables	23.29
Capital goods-electrical	63.41
Capital goods-Non electrical	48.22
Castings, Forgings	41.01
Cement	47.69
Cement products	34.27
Ceramic products	31.39
Chemicals	45.82
Computer education	83.83
Construction	30.95
Consumer Durables	79.52

Source: Based on the extracts from BSE and NSE Sector valuation at IndiaInfoline
<https://www.indiainfoline.com/market/sector-valuation>

2. Literature review Ashvin Kumar et.al.(2014) in their work on the topic, "Relationship between P/E ratio and stock return with reference to BSE 100 " had made use of Treynor's ratio and Sharpe ratio to measure the stock performance. They have studied the stock performance of all the BSE 100 companies and tried measuring the performance of different portfolios. It is evident from their analysis that investing in low P/E stocks creates sound possibility to generate better returns. They have shown that performance of least P/E stocks is much better in comparison to higher P/E stocks. They have further suggested that investors should invest in those companies which have low P/E ratio because it gives investor the possibility to generate better returns.

Manas Mayur(2015) in his paper titled, “**Relationship between price-earnings ratios and stock value in an emerging market**” had made an attempt to determine whether price-earnings ratio indicates future prices in Indian capital market. The study had compared the efficient market hypothesis vis-à-vis possibility of prediction offered by P/E ratio. He had included data for the years 2004-2014 and had thoroughly examined P/E ratio, index value and monthly yield for these ten years. One of the major finding of his study was that very high or very low P/E ratios will revert to the historical average. Prices cannot drift away indefinitely from earnings. Whenever stock price rises very rapidly without a corresponding earning increase, the concern regarding the correction also grows.

Hemendra Gupta(2016) in his paper titled, “**A study on evaluating P/E and its relationship with the return for Nifty**” has explored 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 study also attempts to explore whether there is any difference in expected return if investment is made at different PE levels of Nifty. The study has been conducted for the period of April 1999 to April 2015 and the study observed that average P/E has been 18.59 during this study period. One of the important finding of his study was that Nifty provides opportunity for investor to earn supernormal returns and concluded that PE of Nifty definitely is an indicator which need to be looked upon for investment.

Mohammed Reza Ghaeli (2017) in his work titled, “**Price-to-earnings ratio:A state-of-art review**” has presented a comprehensive review of use of P/E ratio for measuring firms characteristics. His survey has revealed that several studies in the past that attempted to establish relationship between P/E ratio and stock performance, estimation of transaction data, insider transaction, future growth, firm size, interest ratio, book-to-market equity etc. He has emphasized on the merit of simple ratio on predicting market value, detecting bull/bear session and even predicting fraud in earnings announcement. His study has covered a wide scope of studies performed on different stock exchanges.

Joshy Jacob et.al.(2022) in their working paper titled, “**Cyclically Adjusted PE ratio(CAPE) and stock market characteristics in India**”, have attempted to estimate the cyclically adjusted PE ratio for equity indices in the Indian market. They found out that a higher CAPE is associated with lower future returns for holding periods varying from one year to ten years, indicating the negative association between expected returns and CAPE. They found out average level of CAPE ratio in India is significantly lower than that observed for the US market. The average value of CAPE based on the Sensex is 23.8 for the period from March 1998 to February 2022; the corresponding figure for US market is about 27.5. They have observed for most markets, CAPE is a contrarian predictor of future returns.

Based on the thorough literature search(both National and International),it was found out that there are no much studies on sectorial performance and its P/E ratios .Based on this research gap, the following objective is set for the present study. There is an attempt to study sectorial indices of NSE for the year 2022-23.

3. Objective of the Study

1. To study the P/E ratios of all the sectorial indices of NSE.
2. To examine the difference in the P/E ratios of all the sectoral indices.

4. Hypothesis of the study

H₀₁: There is no significant difference in the P/E ratios of all the sectorial indices.

5. Scope of the study

The daily P/E ratios of the all the sectorial indices has been studied for the year 2022-23. The sectorial indices that have been included in the study are as follows:

1. Nifty Auto Index
2. Nifty Bank Index
3. Nifty Financial services Index
4. Nifty FMCG Index
5. Nifty Healthcare Index
6. Nifty IT Index
7. Nifty Media Index
8. Nifty Metal Index
9. Nifty Pharma Index
10. Nifty Consumer Durables Index
11. Nifty Realty Index
12. Nifty Oil & Gas Index

6. Research Methodology

Sources of data:

The P/E ratios of all the above mentioned sectoral indices are collected from the rich archives of NSE India.

The P/E ratios comparison, sectoral P/E ratios is taken from different online articles of business newspapers. Research papers, relevant theory, newspaper articles related to the present study are also collected.

Methodology:

In the present study the daily P/E ratios of all the sectoral indices have been taken for the period ranging from April 1 2022-March 31 2023. The descriptive statistics of all the indices is been calculated. The high value, low value, average, standard deviation of all the sectoral indices are compiled.

To test the hypothesis set for the study, ANNOVA is used to determine whether there is a significant difference in different sectoral indices chosen in the present study.

7. Findings and Discussions

Detailed descriptive analysis of all the sectoral indices was done.

Table 2: Descriptive analysis of Nifty Auto P/E ratios (April 1st 2022 to March 31st 2023)

Mean	48.17534137
Standard Error	0.857612604
Median	47.11
Mode	38.33
Standard Deviation	13.53289862
Sample Variance	183.1393451
Kurtosis	0.462590248
Skewness	0.974367035
Range	52.45
Minimum	29.77
Maximum	82.22
Sum	11995.66
Count	249

Source: Based on the results generated by using MS-Excel, to the secondary data.

<https://www.niftyindices.com/reports/historical-data>

The descriptive analysis of Nifty Auto together with the daily P/E ratio reveals that there was a steady decrease in the P/E ratios. Nifty Auto is observed to be positively skewed with a skewness value of 0.974. Nifty Auto was observed to be varying more, the range being [29.77.82.22].

Table 3: Descriptive analysis of Nifty Bank P/E ratios(April 1st 2022 to March 31st 2023)

Mean	17.63185
Standard Error	0.080242
Median	17.7
Mode	18.07
Standard Deviation	1.266204
Sample Variance	1.603272
Kurtosis	1.308674
Skewness	0.577355
Range	6.63
Minimum	15.15
Maximum	21.78
Sum	4390.33
Count	249

Source: Based on the results generated by using MS-Excel, to the secondary data.

<https://www.niftyindices.com/reports/historical-data>

The P/E ratio of Nifty Bank seems to be moving in a small range. The skewness value is slightly greater than 0.5 reveals that the P/E ratio is distributed normally in the year 2022-23.

Table 4: Descriptive analysis of Nifty Financial Services P/E ratios(April 1st 2022 to March 31st 2023)

Mean	18.69365
Standard Error	0.071932
Median	18.83
Mode	19.1
Standard Deviation	1.135076
Sample Variance	1.288397
Kurtosis	0.828942
Skewness	0.375914
Range	6.19
Minimum	16.4
Maximum	22.59
Sum	4654.72
Count	249

Source: Based on the results generated by using MS-Excel, to the secondary data.

<https://www.niftyindices.com/reports/historical-data>

The P/E ratio of financial services behaved in the same way as that of Nifty Bank. As the skewness value is lying in the range of [-0.5,0.5], the values are normally distributed for the year April 1st 2022 to March 31st 2023.

Table 5: Descriptive analysis of Nifty FMCG P/E ratios(April 1st 2022 to March 31st 2023)

Mean	40.46406
Standard Error	0.095099
Median	40.58
Mode	41.57
Standard Deviation	1.500642
Sample Variance	2.251925
Kurtosis	-0.6717
Skewness	-0.36026
Range	6.66
Minimum	36.57
Maximum	43.23
Sum	10075.55
Count	249

Source: Based on the results generated by using MS-Excel, to the secondary data.

<https://www.niftyindices.com/reports/historical-data>

The descriptive analysis of P/E ratio of Nifty FMCG reveals that the values are reasonable normally distributed within a small range of [36.57,43.23]. It can also be confirmed with the skewness value that falls in the range [-0.5,0.5].

Table 5: Descriptive analysis of Nifty Healthcare P/E ratios(April 1st 2022 to March 31st 2023)

Mean	36.20092
Standard Error	0.149807
Median	36.25
Mode	38.56
Standard Deviation	2.363922
Sample Variance	5.588127
Kurtosis	-0.83352
Skewness	-0.12953
Range	10.12
Minimum	30.63
Maximum	40.75
Sum	9014.03
Count	249

Source: Based on the results generated by using MS-Excel, to the secondary data.

<https://www.niftyindices.com/reports/historical-data>

The descriptive analysis of P/E ratio of Nifty Healthcare reveals that the values are reasonable normally distributed within a small range of [30.63,40.75]. It can also be confirmed with the skewness value that falls in the range [-0.5,0.5].

Table 6: Descriptive analysis of Nifty IT P/E ratios(April 1st 2022 to March 31st 2023)

Mean	26.73558
Standard Error	0.133976
Median	26.32
Mode	26.41
Standard Deviation	2.11411
Sample Variance	4.469462
Kurtosis	7.167385
Skewness	2.452354
Range	12.05
Minimum	23.94
Maximum	35.99
Sum	6657.16
Count	249

Source: Based on the results generated by using MS-Excel, to the secondary data.

<https://www.niftyindices.com/reports/historical-data>

The descriptive analysis of P/E ratio of Nifty IT reveals that it is highly skewed as the value of skewness is 2.45. The range in which Nifty IT is varying is also high.

Table 7: Descriptive analysis of Nifty Media P/E ratios(April 1st 2022 to March 31st 2023)

Mean	523.6533
Standard Error	41.30268
Median	272.02
Mode	#N/A
Standard Deviation	367.1062
Sample Variance	134767
Kurtosis	-1.79729
Skewness	0.279668
Range	901.72
Minimum	113.2
Maximum	1014.92
Sum	41368.61
Count	79

Source: Based on the results generated by using MS-Excel, to the secondary data.

<https://www.niftyindices.com/reports/historical-data>

The data regarding P/E ratios is not available for most part of the year. Though the range of values is quite high but it is interesting to note that the values are normally distributed as the skewness value is 0.27.

Table 8: Descriptive analysis of Nifty Metal P/E ratios(April 1st 2022 to March 31st 2023)

Mean	8.119438
Standard Error	0.151374
Median	7.06
Mode	4.93
Standard Deviation	2.388649
Sample Variance	5.705644
Kurtosis	-1.32036
Skewness	0.357496
Range	7.87
Minimum	4.75
Maximum	12.62
Sum	2021.74
Count	249

Source: Based on the results generated by using MS-Excel, to the secondary data.

<https://www.niftyindices.com/reports/historical-data>

The descriptive analysis of P/E ratio of Nifty Metal reveals that the values are reasonable normally distributed within a small range of [4.75,12.62]. It can also be confirmed with the skewness value that falls in the range [-0.5,0.5].

Table 9: Descriptive analysis of Nifty Pharma P/E ratios(April 1st 2022 to March 31st 2023)

Mean	34.55193
Standard Error	0.16314
Median	33.63
Mode	33.5
Standard Deviation	2.574313
Sample Variance	6.627086
Kurtosis	-1.51142
Skewness	-0.01688
Range	8.19
Minimum	30.47
Maximum	38.66
Sum	8603.43
Count	249

Source: Based on the results generated by using MS-Excel, to the secondary data.

<https://www.niftyindices.com/reports/historical-data>

The descriptive analysis of P/E ratio of Nifty Pharma reveals that the values are reasonable normally distributed within a small range of [30.47,38.66]. It can also be confirmed with the skewness value that falls in the range [-0.5,0.5].

Table 10: Descriptive analysis of Nifty Consumer Durables P/E ratios(April 1st 2022 to March 31st 2023)

Mean	58.59735
Standard Error	0.163896
Median	57.95
Mode	57.39
Standard Deviation	2.586238
Sample Variance	6.688625
Kurtosis	0.184394
Skewness	0.835828
Range	12.35
Minimum	53.18
Maximum	65.53
Sum	14590.74
Count	249

Source: Based on the results generated by using MS-Excel, to the secondary data.

<https://www.niftyindices.com/reports/historical-data>

The descriptive analysis of P/E ratio of Nifty Consumer Durables reveals that the P/E ratios are not uniformly distributed but are slightly positively skewed as it is obvious from the skewness value of 0.83. The range of values is quite low and the range of values is [53.18,65.53].

Table 11: Descriptive analysis of Nifty Realty P/E ratios (April 1st 2022 to March 31st 2023)

Mean	45.2522
Standard Error	0.45548
Median	42.44
Mode	41.15
Standard Deviation	7.18735
Sample Variance	51.6581
Kurtosis	-0.8531
Skewness	0.66973
Range	26.84
Minimum	34.73
Maximum	61.57
Sum	11267.8
Count	249

Source: Based on the results generated by using MS-Excel, to the secondary data.

<https://www.niftyindices.com/reports/historical-data>

The P/E ratios of Nifty Realty are not uniformly distributed as the skewness value is slightly greater than 0.5. The range of the P/E ratios is high [34.73,61.57].

Table 12: Descriptive analysis of Nifty Oil & Gas P/E ratios(April 1st 2022 to March 31st 2023)

Mean	11.7969
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Standard Error	0.16736
Median	11.23
Mode	8.73
Standard Deviation	2.64096
Sample Variance	6.97469
Kurtosis	-1.6438
Skewness	0.14852
Range	7.35
Minimum	8.32
Maximum	15.67
Sum	2937.43
Count	249

Source: Based on the results generated by using MS-Excel, to the secondary data.

<https://www.niftyindices.com/reports/historical-data>

The descriptive analysis of P/E ratio of Nifty Oil & Gas reveals that the P/E ratios are uniformly distributed as it is revealed from the skewness value of 0.14 that falls in permitted range of [-0.5,0.5]..The range of values is quite low and the range of values is [8.32,15.67].

Table 13: Single Factor ANOVA to test difference in PE Ratios of Sectoral Indices (April 1st 2022 to March 31st 2023)

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	19254621.8	11	1750420	464.23	0	1.79205
Within Groups	10580272.1	2806	3770.59			
Total	29834893.8	2817				

Source: Based on the results generated by using MS-Excel, to the secondary data.

<https://primeinvestor.in/nifty-pe-ratio/>

The hypothesis which is framed and is tested is as follows:

Hypothesis

Null Hypothesis: There is no significant difference in the P/E ratios of all the sectoral indices.

Alternate Hypothesis: There is no significant difference in the P/E ratios of all the sectoral indices.

Calculated value of F is 464.23 for degrees of freedom 11. The calculated value of F is greater than the F critical value (1.79205), hence null hypothesis is rejected. The alternate hypothesis is accepted. Hence it is concluded that at 5% level of significance there is a significant difference in the P/E ratios of all the sectoral indices for the study period ranging from April 1st 2022–March 31st 2023.

8. Conclusion

In the words of Meir Statman, “People in standard finance are rational. People in behavioral finance are normal”.

The stock market index in general and PE ratio in particular is a barometer of nation’s economic health as market prices reflect expectations about the economy’s performance and PE ratio reflects the market

participants optimism and above all both Index and PE ratio measures the overall market sentiments, the investor's behavior, and their expectations through a set of stocks that are representative of the market. The present study reveals that the PE ratio of all the different sectors are different. P/E ratios of different sectoral indices are significantly different.

The market participants have reacted differently to different sectors, their valuations and a sense of optimism towards different sectors also vary significantly. The mean P/E ratio is least for the sectors like Metals and Oil & Gas and highest for the sectors like Media and Consumer durables. Banks & Financial Services sectors are moderately valued.

The present descriptive study is a modest attempt that has described the different sectoral indices in terms of their respective P/E ratios.

9. Limitations and scope for further study

The present study is limited only to Sectoral Indices of NSE and does not include other thematic indices. The reasons for the difference in P/E ratios of different sectors can be further explored.

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