

Project Dissertation Report on

“Empirical Analysis of Portfolio Return and Price Earning Ratio Relationship”

Submitted by:

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CERTIFICATE

This is to Certify that Mr. Tushar Sahu, bona fide student of Delhi School of Management. Delhi Technological University has successfully completed the major research project work for the partial fulfillment of the requirement of Master in Business Administration program for the academic year 2018-19.

The project work is titled as “Empirical Analysis of Portfolio Return and Price Earning Ratio Relationship”.

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DECLARATION

I hereby declare that the project report entitled " "Empirical Analysis of Portfolio Return and Price Earning Ratio Relationship" submitted at Delhi School of Management, Delhi Technological University, in partial fulfillment of the requirements for the award of the degree of Master of Business Administration, is a record of original dissertation work done by me, under the guidance and supervision of Mr. Mohit Beniwal, Assistant Professor – Delhi School of Management.

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EXECUTIVE SUMMARY

Investors are widely interested in the future behavior of stock market. The efficient market hypothesis which stresses on the random walk behavior of the stock market is yet to be acclaimed in the age of information technology and globalization. This proposition is based on the fact that a group of researchers believe in efficient market hypothesis; on the other hand, others discard it. An efficient capital market is one which reflects the fully available information and makes it impossible to earn abnormal returns due to inefficiencies. The believers in efficient market hypothesis treat price-earning (P/E) ratio as reflector of the future investment performance of securities. A group of investors make their investment strategy after looking at the price-earning Ratios of stocks. Stocks with high P/E ratios are put into portfolio on the expectations that this performance will also persist in future.

The study aims to measure the performance of the portfolios, which are based on the P/E ratios. It is the ratio of current price of stock to latest twelve months earnings. It signifies the price paid by the buyer of a stock for each rupee of annual earnings. The study will be carried to know the relative performance of P/E portfolios under different conditions which would helps the investors.

The study involves the analysis of monthly data of price earning of the composite portfolio BSE 100 companies. The data covers the period January 2010 to December 2017. It has been

collected from Prowess which is a data base maintained by Centre For Monitoring Indian Economy Pvt. Ltd. All the hundred stocks are going to be arranging in ascending order on the basis of median P/E ratio. Subsequently, ten portfolios comprising ten stocks have to construct. A portfolio, which occupies first rank, comprises ten stocks with least median P/E ratios. Portfolio placed on the second comprises next ten stocks with second least median P/E ratios and so on. Portfolio at the tenth place comprises ten stocks with highest median P/E ratios. To depict the characteristic of the P/Es of portfolio involve the estimation of beta and alpha analysis, and hypothesis test. To signify the variation in P/E ratio deviation and R square, correlation is estimated. A low correlation exhibits uniformity or small variation in the distribution of P/E ratio.

So to solve the problems of investors that they make correct portfolios this type of study is required. So they can make correct decision in forming their portfolio to minimize their risk.

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1. INTRODUCTION

The P/E ratio makes an attempt to throw light on the valuations of the market. It is a popular measure amongst investors as this ratio is easy to use and gives some very interesting insights into valuing a stock, or an industry.

Though on the face of it, China and India are two countries with high P/Es, these are justified by their GDP growth rates and industrial production. Most emerging markets have high P/Es because of the growth rate attributed to these countries. FE takes a Closer Look at this ratio and its interpretation.

A company's share price divided by its earning per share gives us the P/E ratio. The earnings per share (EPS) is basically considered on the basis of net profit for the last four quarters. This is popularly known as the trailing P/E. When the EPS is based on the expected earnings for the next few quarters, then what one gets is known as the forward P/E.

There is also a third variation that takes the in-between path, where the EPS for the last two quarters and forward earnings for the next two quarters are taken into account.

The P/E of a company tells us how much investors are willing to pay, based on the earnings of the company. For this reason, the P/E ratio is also known as the P/E multiple of the stock. For example, a P/E ratio of 25 suggests that investors are willing to pay Rs 25 for every Re 1 of earnings that the company generates.

Investors look at the P/E ratio as future market expectations of a company's growth prospects in terms of profitability. If the P/E of a company is on the higher side when compared to its

industry averages, it means the market is expecting some positive events from the company as far as earnings are concerned. Take, for example, the retail sector in India. It's a fairly new industry and many companies are showing accumulated losses in their balance-sheets. Yet, the industry has a P/E ratio of 40. This shows that investors are confident of the prospects for this industry.

But a P/E is always like a double-edged sword. On the one hand, it is a great tool for comparisons. On the other hand, it can have completely opposite implications. For example, sceptics feel that a P/E multiple of 40 for the retail industry is certainly not justifiable because these companies are yet to perform and have a long way to go when we look at their balance-sheets. A P/E of 40, when compared to the P/E of the Sensex, appears very high and can be considered over-valued. In fact, this ratio is very high when we compare it with the software industry, which has a phenomenal growth rate and has a P/E of 30. For a lot of investors, this is a signal to probably get out of this sector.

What are the other parameters that need to be considered when looking at the P/E ratio?

To make sense of the P/E ratio, we need to look at growth rates and industry performance. When it comes to growth rates, probably the most fundamental question that is asked in the market is how fast a particular sector has been growing in the past, and are these growth rates sustainable? If they are not sustainable and yet the industry has a very high P/E, then one needs to evaluate their investment risks. Because a P/E ratio is synonymous with the future growth of the company, most analysts feel that it should be calculated by considering the forward earnings, rather than those based on the past. On the other hand, P/Es should ideally be compared with companies belonging to the same industry, as broad factors affecting these

companies do not change. For example, comparing a software company with a commodity business will not make sense, as industry dynamics are different.

Can the P/E ratio be considered the one important tool to make your investment decisions?

Experts have always advised investors not to take investment decisions based only on P/E ratios. Stock prices are affected by multiple factors. One must consider the P/E as an important ratio. But there are always more things to an investment than its P/E multiple and forward earnings, in many cases, could be wrong. Investors are widely interested in predicting the future behavior of stock market. The efficient market hypothesis which stresses on the random walk behavior of the stock market is yet to be acclaimed in the age of information technology and globalization. This proposition is based on the fact that a group of researchers believe in efficient market hypothesis; on the other hand, others discard it. An efficient capital market is one which reflects the fully available information and makes it impossible to earn abnormal returns due to inefficiencies. The believers in efficient market hypothesis treat price-earning (P/E) ratio as reflector of the future investment performance of securities. A group of investors make their investment strategy after looking at the price-earning behavior of stocks. Stocks with high P/E ratios are put into portfolio on the expectations that this performance will also persist in future. So to solve the problems of investors that they make correct portfolios this type of study is required.

What is the PE Ratio?

The P/E ratio is calculated by dividing the current stock price by its earnings per share. For example if Kraft foods shares was trading for 30 dollars and its earnings per share were 2 then Kraft food's P/E ratio is 15.

The earnings per share is calculated by dividing the company's net income with its number of share.

What is the PE ratio useful for?

The P/E ratio is the most widely used ratio in financial analysis, some claim that it's effective while others agree that it has a limited use, I don't agree with both parties simply because sometimes the P/E ratio can be very important and at other times it might not be of a big value.

First of all what does it mean to you as an investor to buy a company that has P/E ratio of 15? It means that you are paying 15 times the yearly earnings of the company when buying it at this price. It also means that you will get all your money back through dividends if you hold the company for 15 years.

Does this mean that lower PE ratio is better?

So does this mean that lower P/E ratio is better? After all if the P/E is 5 instead of 10 then you are going to get your money back through dividends in 5 years instead of 10.

The answer to this question is, not always. Yes a lower P/E may mean that you will get more returns through dividends (provided that the company distributes it instead of retaining) but this also may mean that investors are dumping the shares at low prices because of certain problems that are affecting the company's stock.

For example, when Pfizer was facing a major problem because of the awaited expiration of the patent of its major product Lipitor, investors kept selling Pfizer's shares at low prices until its P/E ratio became very low.

As you might have already guessed if the share's price went lower then this can affect the P/E ratio by driving it lower and so make it appear as if it's a good opportunity to buy this stock while it's a trap.

So is high P/E ratio bad?

Apple had a P/E of forty a few months ago, does this mean that apple is a bad company? No, it only means that investors are paying more for Apple's shares because they expect the company to deliver good profits. The more the Apple shares increased as a result of investors buying it the more its P/E ratio went up since the earnings per share are constant.

All growth stocks or stocks that are expected to grow fast in the coming quarters have high P/E ratios because of the high prices investors buy them with.

A low P/E ratio may indicate the company's stock is undervalued provided that the company isn't facing any major troubles. On the other hand, a high PE may indicate that the company is either overvalued or that investors are expecting the company to grow rapidly.

Warren buffet, the richest man in the world who made his money out of stocks, recommends that you buy stocks that have a P/E value lower than 15 and avoid companies with higher ratios; I have the same opinion and advise the same.

1.1 Primary Objective of the research

The main objectives for doing this study is to:-

- ❖ Measure the performance of the Stock, which are based on the P/E ratios.
- ❖ Relationship between stock and Return.
- ❖ Whether there is positive correlation between P/E ratio and return.
- ❖ Is the Predicting on basis of P/E ratio is true.

The basic need for doing this study is that the study aims to measure the performance of the portfolios, which are based on the P/E ratios. It is the ratio of current price of stock to latest twelve months earnings. It signifies the price paid by the buyer of a stock for each rupee of annual earnings. The study will be carried to know the relative performance of P/E portfolios under different conditions which would help the investors.

1.2 Background of Indian Stock Markets

The Indian capital market is now integrated with global market as a result of economic reforms initiated since 1991. The number of stock exchange increased to 23 by year 2007 in comparison to 19 stock exchanges in the year 1990 and market capitalization was Rs. 5333.77.78 crores at end of December 2007 as compared to Rs. 3652793.91 crores at the end of year 2006 which was mere 70521 crores in year 1990.

The period from year 2003 to year 2007 has been the period of rapid growth of stock prices and economic boom. During this period valuations have increased manifolds. Indian stock market is considered as one of the most expensive market in world when price to earnings ratios are taken into account. Bombay Stock Exchange is the oldest stock exchange in Asia with a rich heritage, now spanning three centuries in its 133 years of existence. What is now popularly known as BSE was established as "The Native Share & Stock Brokers' Association" in 1875.

BSE is the first stock exchange in the country which obtained permanent recognition (in 1956) from the Government of India under the Securities Contracts (Regulation) Act 1956. BSE's pivotal and pre-eminent role in the development of the Indian capital market is widely recognized. It migrated from the open outcry system to an online screen-based order driven trading system in 1995. Earlier an Association Of Persons (AOP), BSE is now a corporatized and demutualized entity incorporated under the provisions of the Companies Act, 1956, pursuant to the BSE (Corporatization and Demutualization) Scheme, 2005 notified by the Securities and Exchange Board of India (SEBI). With demutualization, BSE has two of world's best exchanges, Deutsche Börse and Singapore Exchange, as its strategic partners.

Over the past 133 years, BSE has facilitated the growth of the Indian corporate sector by providing it with an efficient access to resources. There is perhaps no major corporate in India which has not sourced BSE's services in raising resources from the capital market.

Today, BSE is the world's number 1 exchange in terms of the number of listed companies and the world's 5th in transaction numbers. The market capitalization as on December 31, 2007 stood at USD 1.79 trillion . An investor can choose from more than 4,700 listed companies, which for easy reference, are classified into A, B, S, T and Z groups.

The BSE Index, SENSEX, is India's first stock market index that enjoys an iconic stature , and is tracked worldwide. It is an index of 30 stocks representing 12 major sectors. The SENSEX is constructed on a 'free-float' methodology, and is sensitive to market sentiments and market realities. Apart from the SENSEX, BSE offers 21 indices, including 12 sectoral indices. BSE has entered into an index cooperation agreement with Deutsche Börse. This agreement has made SENSEX and other BSE indices available to investors in Europe and America. Moreover, Barclays Global Investors (BGI), the global leader in ETFs through its iShares® brand, has created the 'iShares® BSE SENSEX India Tracker' which tracks the SENSEX. The ETF enables investors in Hong Kong to take an exposure to the Indian equity market.

BSE has tied up with U.S. Futures Exchange (USFE) for U.S. dollar-denominated futures trading of SENSEX in the U.S. The tie-up enables eligible U.S. investors to directly participate in India's equity markets for the first time, without requiring American Depository Receipt (ADR) authorization. The first Exchange Traded Fund (ETF) on SENSEX, called "SPICE" is listed on BSE. It brings to the investors a trading tool that can be easily used for the purposes of

investment, trading, hedging and arbitrage. SPICe allows small investors to take a long-term view of the market.

BSE provides an efficient and transparent market for trading in equity, debt instruments and derivatives. It has a nation-wide reach with a presence in more than 450 cities and towns of India. BSE has always been at par with the international standards. The systems and processes are designed to safeguard market integrity and enhance transparency in operations. BSE is the first exchange in India and the second in the world to obtain an ISO 9001:2000 certification. It is also the first exchange in the country and second in the world to receive Information Security Management System Standard BS 7799-2-2002 certification for its BSE On-line Trading System (BOLT).

BSE continues to innovate. In recent times, it has become the first national level stock exchange to launch its website in Gujarati and Hindi to reach out to a larger number of investors. It has successfully launched a reporting platform for corporate bonds in India christened the ICDM or Indian Corporate Debt Market and a unique ticker-cum-screen aptly named 'BSE Broadcast' which enables information dissemination to the common man on the street.

In 2006, BSE launched the Directors Database and ICERS (Indian Corporate Electronic Reporting System) to facilitate information flow and increase transparency in the Indian capital market. While the Directors Database provides a single-point access to information on the boards of directors of listed companies, the ICERS facilitates the corporates in sharing with BSE their corporate announcements.

2. Literature Review

The price earnings ratio is the single most popular tool for equity valuation, the inherent simplicity in understanding its significance has made it particularly popular among ordinary investors. The investment analysts also give P/E ratio its due importance before making investment decisions and for timing the entry into or exit from a stock

Basu (1977) showed how the price earning ratio that is computed from reported accounting earnings can be used to select the stock that have good price appreciation potential. His analysis showed that stocks with low P/E ratios earned risk-adjusted rate of return that beat the returns earned by a naïve buy and hold strategy

The P/E ratios of Japanese firms are known to be higher than those of other countries. Bierman (1991) points out that P/Es of Japanese companies are considerably overstated because of widespread reciprocal ownership in Japan, in his opinion, when large amounts of common stocks are held by corporations, and when dividend payouts are low, as is common in Japan. P/Es can be inflated. Another study by Ikeda M (1992) , however claims that such upward bias of P/E ratio is not only because of crossholdings alone. Instead, the P/E adjustment should take into account different levels of scale earning and payout ratios that are interconnected by different degrees of reciprocal ownership.

Some researchers have shown that P/E ratio is a combination of future and growth rate. Leibowitz and Kogelman (1992) establish that the P/E ratio of a firm with no franchise value gives the base P/E which is simply the reciprocal of the market capitalization rate. By contrast

the P/E of a firm with substantial franchisee opportunities will command a premium to the base P/E. Once the franchisee is fully consumed, firm earnings, dividends and price will grow at a single (generally lower) rate, determined by the market rate and the firm's retention policy. The authors later (1994) have shown that the current growth rate of a firm which although greater than market average, yet not in excess to its expected franchisee opportunities, on the other hand, high earnings derived from franchisee opportunities are already reflected in the firm's P/E multiple and hence draw down the franchisee which in turn pulls down the p/e value, hence firms which constantly extend their franchisee opportunities beyond those already embedded in the firm's valuation will be able to maintain higher p/e ratio.

Evans (1993) finds that the usual stock market rule of 20—which says the P/E ratio plus the inflation rate should equal 20—no longer holds true. He suggests that the rule might have lost its validity and many are trading at much higher P/E ratios, but there still exist some fundamental relationship between the yield on stocks and bonds

Another valuation indicator for analysts is the ratio of market value to book value since under theoretically ideal conditions the market value of the firm should reflect its book value. The ratio is important if it is believed that the company book value per share has some relationship with the stock's economic worth for example if the company is liquidated and its assets sold for the book value the book value will provide the floor on the stock's price. But this is so not in reality because liquidation value of assets is generally much lower than their book values. Lower the ratios the chances are that it is undervalued. Companies with the market to book ratio less than one are serious candidates for under valuation and represent good possible buys.

Some have suggested that stocks with low P/E ratio should outperform high P/B stocks just as stocks with low P/E ratios outperform stocks with high P/E ratios.

Wilcox (1984) showed that the P/B-ROE model appears to be a better valuation model than the P/E model. A study by Rosenberg et al (1985) examined this aspect and found that with low P/B ratio experienced significantly higher risk adjusted returns than average cost

These studies were conducted for European, us, and Japanese markets. A recent study by Aggarwal et al (1996) carried out on Singapore market data investigated the usefulness of the P/B ratio as a valuation model. They concluded that the identified fundamentals variables which are supposed to determine the value of the firm also explain a significant portion of the variability in the price to book value ratio. Therefore the latter can be used as a proxy for the former.

A study on the Indian stock market by R Vaidyanathan and Chava (1997) examined the hypothesis that the investment in low P/B stock on an average will give higher returns than high P/B stock. The study use 70 active scrips over a period of 6 years and found that the returns are not significant different for different P/B stocks.

What drives up a price of a share? Any investor worth his or her salt will quote ratios like EPS-earning per share or the PE-the price earning ratio-and possibly they will be right. After all, earnings are the bottom line and how much profit a company earns, is what separates the

winners from the losers. It all comes down to earnings. More than any other figure in a financial report, earnings -- and the prospect of higher earnings in the future -- determines whether investors will continue to bid up share prices. Earnings are the bottom line that show how much money a company can use to reinvest in business growth or to pay dividends to shareholders.

Earnings are usually summed up as **earnings per share** -- the company's net earnings divided by the number of common-stock shares outstanding. Earnings per share, or EPS, offers a handy way to compare past earnings to spot upward or downward trends. Some investor's measure stocks almost entirely by how much profit grow from quarter to quarter and year to year. EPS, however, only gives a starting point to evaluate stocks. It does not take into account the stock's current price

3. Research Methodology

3.1 Hypothesis

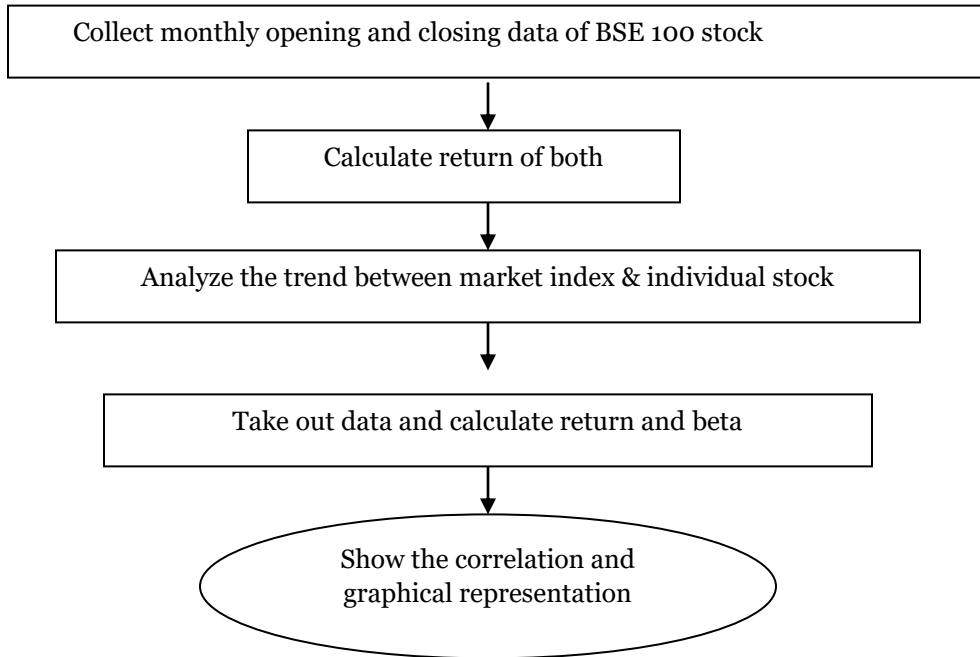
1) **H₀** - there is a significant relation between P/E ratio and stock return-

H₁ - there is no correlation between P/E ratio and stock return

2) **H₀** - there is correlation between P/E ratio and portfolio return

H₁ – there is no correlation between P/E ratio and portfolio return

3.2 Research Methodology



- ❖ The study involves the analysis of monthly data of price earning of the composite portfolio BSE 100 companies.
- ❖ The data covers the period January 2010 to December 2017. It has been collected from Prowess which is a data base maintained by Centre For Monitoring Indian Economy Pvt. Ltd.
- ❖ All the hundred stocks are going to be arranging in ascending order on the basis of median P/E ratio.
- ❖ Ten portfolios comprising ten stocks have to construct.

❖ A portfolio, which occupies first rank, comprises ten stocks with least median P/E ratios. Portfolio placed on the second comprises next ten stocks with second least median P/E ratios and so on. Portfolio at the tenth place comprises ten stocks with highest median P/E ratios.

❖ To depict the characteristic of the P/Es of portfolio involve the estimation of standard deviation method, beta and alpha analysis, and hypothesis test.

❖ To signify the variation in P/E ratio deviation and R square, correlation is estimated.

❖ A low correlation exhibits uniformity or small variation in the distribution of P/E ratio.

The research is based on secondary data wherein BSE 100 companies have been examined. It does not include any questionnaire or other kind of primary data. It is based on limited time period ranging from January 2010 to December 2017, and in some cases full observations of all stocks for the study period are not available so a proper adjustment has been made to neutralize the effect of non-availability. In this we will see to it that all the correlation which is found out between return & P/E ratios that are true.

In the below table we are showing the return of the stock, P/E ratio, R square, Alpha, Beta, T-alpha, T-beta.

❖ Return – return of an particular stock

❖ P/E Ratio – Price per share / Annual earning per share

- ❖ R square - R^2 is simply the square of a correlation coefficient.
- ❖ Alpha - a measurement of risk-adjusted performance
- ❖ Beta - that describes how sensitive the expected return of a stock

Beta (β) is the measure of a fund's or stock's risk in relation to the market. It can be estimated by using regression on the daily security return to the return of the benchmark portfolio. It is calculated as:

$$\beta_i = \frac{n \sum \chi R - \sum \chi \sum R}{n \sum \chi^2 - (\sum \chi)^2} \dots\dots\dots (3)$$

Alpha (α) is a constant intercept indicating a minimum level of return that is expected from security, if market remains flat (neither going up nor coming down). A positive alpha is the extra return awarded to the investor for taking a risk, instead of accepting the market return. ALPHA is calculated in this way:

$$\alpha = \bar{R} - \beta \bar{\chi} \dots\dots\dots (4)$$

Where:

\bar{R} is mean return of security,

\bar{r} is mean return of benchmark portfolio.

R² is a statistical measure that represents the percentage of a fund or security's movements that can be explained by movements in a benchmark index. It explains the risk adjusted returns of security.

To analyze the data obtained from prowess software, various statistical tools has been used like mean, variance, regression, t-test.

3.3 Risk Analysis

TABLE-1 RISK RETURN AND P/E RATIO OF INDIVIDUAL STOCKS

| COMPANY | P/E ratio | R Square | Alpha | Beta | Return | T-Alpha | T-Beta | Return |
|---------------------------------|-----------|----------|-------|-------|--------|---------|--------|--------|
| Vedanta Ltd. | -7.31 | 0.24 | 3.65 | 1.33* | 6.31 | 1.83 | 5.35 | 12.54 |
| Nayara Energy | -6.41 | 0.02 | 4.03 | 0.74 | 5.52 | 0.86 | 1.21 | 3.28 |
| Indian Oil Corpn. Ltd. | -4.38 | 0.28 | 0.47 | 0.84* | 2.15 | 0.43 | 6 | 12.42 |
| J S W Steel Ltd. | -0.73 | 0 | 25.51 | -0.6 | 24.31 | 1.23 | - | 0.76 |
| Steel Authority Of India Ltd. | 4.14 | 0.34 | 2.7 | 1.35* | 5.4 | 1.71 | 6.85 | 15.41 |
| Bank OfIndia | 6.26 | 0.32 | 2.37 | 1.00* | 4.36 | 1.94 | 6.55 | 15.05 |
| Bank OfBaroda | 6.53 | 0.3 | 1.37 | 0.98* | 3.33 | 1.11 | 6.37 | 13.86 |
| I D B I Bank Ltd. | 6.71 | 0.25 | 1.02 | 1.17* | 3.36 | 0.6 | 5.54 | 11.69 |
| Hindustan Petroleum Corpn. Ltd. | 6.81 | 0.18 | 0.45 | 0.79* | 2.02 | 0.32 | 4.5 | 9.32 |
| Jindal Steel & Power Ltd. | 6.85 | 0.24 | 3.79 | 1.32* | 6.43 | 1.94 | 5.4 | 12.73 |
| Union Bank OfIndia | 6.88 | 0.25 | 1.62 | 0.97* | 3.56 | 1.01 | 4.55 | 10.11 |
| Punjab National Bank | 6.99 | 0.13 | 2.34 | 0.97* | 4.27 | 1.23 | 3.75 | 8.73 |

| | | | | | | | | |
|---------------------------------|------|------|-------|-------|------|-------|------|-------|
| India Cements Ltd. | 7.44 | 0.34 | 0.59 | 1.32* | 3.23 | 0.39 | 6.95 | 14.28 |
| G A I L (India) Ltd. | 7.79 | 0.45 | 1.3 | 0.95* | 3.19 | 1.47 | 8.69 | 18.86 |
| Bharat Petroleum Corpn. Ltd. | 8.48 | 0.2 | -0.01 | 0.8* | 1.58 | -0.01 | 4.88 | 9.76 |

| COMPANY | P/E ratio | R Square | Alpha | Beta | Return | T-Alpha | T-Beta | Return |
|--------------------------------|------------------|-----------------|--------------|-------------|---------------|----------------|---------------|---------------|
| Oil & Natural Gas Corpn. Ltd. | 8.63 | 0.23 | 1.28 | 0.77* | 2.83 | 1.09 | 5.27 | 11.62 |
| State Bank Of India | 8.66 | 0.46 | 1.38 | 0.88* | 3.15 | 1.76 | 8.98 | 19.72 |
| Tata Steel Ltd. | 9.14 | 0.35 | 1.14 | 0.98* | 3.1 | 1.03 | 7.07 | 15.17 |
| Hindalco Industries Ltd. | 9.24 | 0.23 | -0.9 | 0.84* | 0.78 | -0.7 | 5.2 | 9.71 |
| Punj Lloyd Ltd. | 9.62 | 0.29 | -5.66 | 2.05* | -1.56 | -1.13 | 2.95 | 4.77 |
| National Aluminium Co. Ltd. | 9.79 | 0.23 | 1.46 | 0.81* | 3.08 | 1.2 | 5.32 | 11.84 |
| Tata Chemicals Ltd. | 9.84 | 0.3 | 1.37 | 0.74* | 2.85 | 1.45 | 6.24 | 13.94 |
| A C C Ltd. | 10.75 | 0.34 | 0.98 | 0.91* | 2.8 | 0.94 | 6.99 | 14.91 |
| Mahanagar Telephone Nigam Ltd. | 11.07 | 0.31 | -1.16 | 0.91* | 0.67 | -1.03 | 6.51 | 11.99 |
| Tata Communications Ltd. | 11.87 | 0.35 | -1.51 | 1.32* | 1.12 | -1 | 7 | 13 |
| Ashok Leyland Ltd. | 11.87 | 0.14 | 0.15 | 0.83* | 1.81 | 0.09 | 3.86 | 7.81 |
| Tata Power Co. Ltd. | 11.9 | 0.5 | 1.81 | 1.31* | 4.43 | 1.67 | 9.69 | 21.05 |
| Tata Motors Ltd. | 12.63 | 0.47 | 0.39 | 1.08* | 2.55 | 0.41 | 8.99 | 18.38 |
| N M D C Ltd. | 12.73 | 0.08 | 8 | 1.63* | 11.25 | 1.7 | 2.66 | 7.02 |

| COMPANY | P/E ratio | R Square | Alpha | Beta | Return | T-Alpha | T-Beta | Return |
|-------------------------------|-----------|----------|-------|-------|--------|---------|--------|--------|
| Grasim Industries Ltd. | 13.06 | 0.31 | 1.65 | 0.81* | 3.28 | 1.63 | 6.42 | 14.47 |
| Axis Bank Ltd. | 13.37 | 0.27 | 2.97 | 0.94* | 4.86 | 2.29 | 5.82 | 13.93 |
| Reliance Industries Ltd. | 14.15 | 0.33 | 1.57 | 0.63* | 2.82 | 2.12 | 8.8 | 19.73 |
| Hero MotorCorp | 14.27 | 0.18 | -0.32 | 0.68* | 1.03 | -0.27 | 4.46 | 8.66 |
| Mahindra & Mahindra Ltd. | 16.1 | 0.26 | 0.02 | 0.98* | 1.98 | 0.01 | 5.74 | 11.48 |
| N T P C Ltd. | 16.92 | 0.55 | 0.26 | 0.91* | 2.07 | 0.26 | 6.57 | 13.4 |
| Ambuja Cements Ltd. | 17.05 | 0.19 | -0.23 | 0.74* | 1.24 | -0.18 | 4.62 | 9.06 |
| Bharat Heavy Electricals Ltd. | 17.49 | 0.32 | 2.11 | 0.94* | 4 | 1.86 | 6.64 | 15.14 |
| Adani Enterprises Ltd. | 17.66 | 0.05 | 3.17 | 0.86 | 4.88 | 1 | 2.16 | 5.31 |
| Century Textiles &Inds. Ltd. | 17.78 | 0.3 | 2.72 | 1.22* | 5.16 | 1.77 | 6.38 | 14.53 |
| Reliance Capital Ltd. | 18.84 | 0.36 | 2.23 | 1.5* | 5.23 | 1.33 | 7.72 | 16.76 |
| Power Finance Corpn. Ltd. | 18.93 | 0.47 | 0.52 | 1.64* | 3.81 | 0.11 | 2.67 | 5.45 |
| Maruti Suzuki India Ltd. | 19.13 | 0.41 | 0.02 | 1.06* | 2.14 | 0.02 | 5.98 | 11.98 |

| COMPANY | P/E ratio | R Square | Alpha | Beta | Return | T-Alpha | T-Beta | Return |
|---|------------------|-----------------|--------------|-------------|---------------|----------------|---------------|---------------|
| Reliance Infrastructure Ltd. | 19.33 | 0.28 | 1.73 | 0.97* | 3.67 | 1.34 | 5.97 | 13.29 |
| Housing Development Finance Corpn. Ltd. | 19.42 | 0.23 | 1.76 | 0.63* | 3.02 | 1.86 | 5.29 | 12.44 |
| Crompton Greaves Ltd. | 20.19 | 0.22 | 2.53 | 1.04* | 4.61 | 1.55 | 5.09 | 11.73 |
| I T C Ltd. | 20.35 | 0.08 | 0.01 | 0.48* | 0.96 | 0.01 | 2.89 | 5.78 |
| Asian Paints Ltd. | 20.59 | 0.04 | 0.89 | 0.2 | 1.28 | 1.12 | 1.96 | 5.04 |
| Housing Development & Infrastructure Ltd. | 21.64 | 0.04 | 11.62 | 0.35 | 12.32 | 1.15 | 0.35 | 1.85 |
| Aditya Birla Nuvo Ltd. | 22 | 0.14 | 3.02 | 0.63* | 4.28 | 2.37 | 3.96 | 10.29 |
| Tata Global Beverages | 22.09 | 0.39 | -0.31 | 0.96* | 1.61 | -0.31 | 7.74 | 15.16 |
| Bharat Forge Ltd. | 23.47 | 0.11 | 0.96 | 0.72* | 2.4 | 0.58 | 3.45 | 7.48 |
| Larsen & Toubro Ltd. | 23.72 | 0.4 | 1.48 | 1.92* | 5.32 | 1.22 | 7.86 | 16.95 |
| UPL Ltd. | 23.76 | 0 | 18.44 | -0.59 | 17.27 | 1.32 | -0.34 | 0.65 |
| I C I C I Bank Ltd. | 24.35 | 0.25 | 1.61 | 0.89* | 3.39 | 1.26 | 5.6 | 12.46 |
| Sun Pharmaceutical Inds. Ltd. | 24.59 | 0.27 | -0.57 | 1.01* | 1.45 | -0.42 | 5.9 | 11.38 |
| Infrastructure Development Finance Co. Ltd. | 25.09 | 0.46 | 0.2 | 1.36* | 2.92 | 0.09 | 4.7 | 9.49 |

| COMPANY | P/E ratio | R Square | Alpha | Beta | Return | T-Alpha | T-Beta | Return |
|----------------------------------|-----------|----------|-------|-------|--------|---------|--------|--------|
| Sterlite Industries (India) Ltd. | 25.41 | 0.22 | 0.09 | 1.61* | 3.3 | 0.03 | 5.04 | 10.11 |
| Divi'S Laboratories Ltd. | 26.21 | 0.29 | 0.58 | 1.68* | 3.93 | 0.21 | 4.75 | 9.72 |
| Aban Offshore Ltd. | 26.43 | 0.08 | 6.75 | 0.78* | 8.3 | 3.1 | 2.85 | 8.8 |
| Siemens Ltd. | 27.24 | 0.23 | 1.65 | 0.96* | 3.58 | 1.12 | 5.24 | 11.59 |
| H D F C Bank Ltd. | 27.8 | 0.26 | 1.53 | 0.51* | 2.55 | 2.14 | 5.66 | 13.46 |
| Cipla Ltd. | 27.84 | 0.19 | -1.42 | 0.83* | 0.23 | -1.02 | 4.73 | 8.44 |
| Reliance Natural Resources Ltd. | 28.02 | 0.35 | 3.27 | 2.32* | 7.92 | 0.61 | 3.17 | 6.95 |
| Nestle India Ltd. | 29.05 | 0.02 | 1.46 | 0.14 | 1.74 | 1.73 | 1.35 | 4.42 |
| Unitech Ltd. | 29.21 | 0.09 | 6.5 | 1.07* | 8.65 | 2.32 | 3.06 | 8.43 |
| A B B Ltd. | 30.25 | 0.31 | 1.51 | 1* | 3.5 | 1.21 | 6.4 | 14.01 |
| Hindustan Unilever Ltd. | 30.52 | 0.23 | -1.92 | 0.78* | -0.36 | -1.6 | 5.2 | 8.8 |
| Tata Consultancy Services Ltd. | 31.48 | 0.18 | -1.81 | 0.74* | -0.34 | -1 | 2.87 | 4.74 |

| COMPANY | P/E ratio | R Square | Alpha | Beta | Return | T-Alpha | T-Beta | Return |
|---------------------------------|-----------|----------|-------|-------|--------|---------|--------|--------|
| Dr. Reddy'S Laboratories Ltd. | 31.84 | 0.07 | -0.57 | 0.37* | 0.17 | -0.49 | 2.54 | 4.58 |
| Glenmark Pharmaceuticals Ltd. | 33.8 | 0.13 | 1.47 | 0.89* | 3.25 | 0.77 | 3.67 | 8.1 |
| United Spirits Ltd. | 35.94 | 0.23 | 2.99 | 1.3* | 5.59 | 1.46 | 4.61 | 10.68 |
| H C L Technologies Ltd. | 36.19 | 0.29 | -2.38 | 1.07* | -0.24 | -1.73 | 6.21 | 10.7 |
| Indian Hotels Co. Ltd. | 37.37 | 0.18 | 0.08 | 0.77* | 1.61 | 0.06 | 4.47 | 9 |
| Welspun Corp Ltd. | 37.8 | 0.29 | 3.26 | 1.65* | 6.57 | 1.55 | 5.94 | 13.42 |
| Suzlon Energy Ltd. | 39.33 | 0.51 | -1.61 | 1.58* | 1.55 | -0.69 | 5 | 9.31 |
| Bharti Airtel Ltd. | 40.8 | 0.26 | 2.81 | 0.81* | 4.44 | 2.31 | 4.89 | 12.08 |
| Power Grid Corpn. Of India Ltd. | 42.26 | 1 | -1.25 | -0.21 | -1.66 | 0 | 0 | 0 |
| Kotak Mahindra Bank Ltd. | 46.26 | 0.15 | 2.06 | 0.88* | 3.81 | 1.2 | 4.07 | 9.33 |
| Infosys Technologies Ltd. | 47.84 | 0.22 | -1.57 | 0.88* | 0.19 | -1.15 | 5.15 | 9.15 |
| D L F Ltd. | 57.48 | 0.97 | 0.6 | 1.69* | 3.97 | 0.37 | 10.41 | 21.18 |

| COMPANY | P/E ratio | R Square | Alpha | Beta | Return | T-Alpha | T-Beta | Return |
|------------------------------------|-----------|----------|-------|-------|--------|---------|--------|--------|
| Wipro Ltd. | 62.02 | 0.39 | -2.7 | 1.48* | 0.26 | -1.75 | 7.67 | 13.59 |
| Indiabulls Financial Services Ltd. | 67.7 | 0.12 | 7.65 | 1.35 | 10.34 | 1.79 | 2.22 | 6.23 |
| Zee Entertainment Enterprises Ltd. | 103.21 | 0.34 | -2.14 | 1.21* | 0.28 | -1.54 | 6.94 | 12.34 |
| M M T C Ltd. | 183 | 0.21 | -13.9 | 5.63* | -2.67 | -1 | 2.75 | 4.5 |
| G M R Infrastructure Ltd. | 233.69 | 0.11 | 14.02 | -1.61 | 10.8 | 1.63 | -1.32 | -1.01 |
| Adani Ports & SEZ Limited | 234.24 | 0.11 | 14.02 | -1.61 | 10.8 | 1.63 | -1.32 | -1.01 |
| Indiabulls Real Estate Ltd. | 415.7 | 0.18 | 4.22 | 1.25 | 6.72 | 0.5 | 1.24 | 2.99 |

NOTE

* IN THE BOX OF BETA IS INDIATING 5% LEVEL OF SIGNIFICANCE (MORE THAN 2.33)

TABLE-2 PORTFOLIO RISK, RETURN AND P/E RATIO

| PORTFOLIO | P/E ratio | R Square | Alpha | Beta | Return | T-Alpha | T-Beta | Return |
|------------------|------------------|-----------------|--------------|--------------|---------------|----------------|---------------|---------------|
| PORT-1 | 1.29 | 0.21 | 4.62 | 0.84* | 6.31 | 1.05 | 4.68 | 1.11 |
| PORT-2 | 8.01 | 0.29 | 1.25 | 0.98* | 3.21 | 0.06 | 6.07 | 0.92 |
| PORT-3 | 11.21 | 0.3 | 0.58 | 1.16* | 2.9 | 0.43 | 6.02 | 12.47 |
| PORT-4 | 15.45 | 0.27 | 1.32 | 0.90* | 3.12 | 0.96 | 5.67 | 12.3 |
| PORT-5 | 19.62 | 0.24 | 2.4 | 0.91* | 4.22 | 1.03 | 4.43 | 9.88 |
| PORT-6 | 24.07 | 0.25 | 2.55 | 1.02* | 4.59 | 0.64 | 4.87 | 10.37 |
| PORT-7 | 28.33 | 0.2 | 2.08 | 1.01* | 4.1 | 1.05 | 4.13 | 9.31 |
| PORT-8 | 35.51 | 0.24 | 0.23 | 0.99* | 2.22 | 0.06 | 4.54 | 9.14 |
| PORT-9 | 61.01 | 0.37 | 1.25 | 0.97* | 3.18 | 0.06 | 4.38 | 8.82 |
| PORT-10 | 301.56 | 0.28 | 1.59 | 1.76* | 4.26 | 0.45 | 2.87 | 6.2 |

NOTE-

* IN THE BOX OF BETA IS INDIACTING 5% LEVEL OF SIGNIFICANCE (MORE THAN 2.33)

3.4 Correlation

Interpretation of Results

In the above table we can see that how there is negative relation between the p/e ratio and the return of portfolios in portfolio 1 the p/e ratio is 1.29 and the return is 6.31 on the other hand we can see in portfolio 2 we can see that p/e ratio is 8.01 and the return is 3.21, in the portfolio 3 we can see that p/e ratio is 11.21 and the return is 2.9 in this way the things are moving and we can see in portfolio 10 the p/e ratio is 301.56 and the return is 4.26 only this shows that how the negative relation is there the stocks are not giving the return in relationship to the p/e ratio of the portfolios so the things are not according to the basic investor.

Some More Results

CORRELATION

The correlation between the individual stocks is this shows that if the P/E ratios of stocks increases the return of those stocks are not increases proportionately means if the investors shifted from the low P/E ratios stocks to high P/E ratio stocks his return will not increases that much.

CORRELATION – 0.48

The correlation between the portfolios is this shows that if the P/E ratio of portfolios is increases the return of these portfolios is not increases proportionately.

CORRELATION – 0.58

The correlation between the portfolios is this shows that if the P/E ratio of portfolios is increases the return of these portfolios is not increases proportionately.

Table-3

Correlation of return and p/e ratio

| Correlation between individual stock return and P/E ratio | Correlation between portfolio return and P/E ratio |
|---|--|
| 0.484 | 0.585 |

Table-4

Co-Efficient of Determination

| Co-Efficient of Determination(Individual) (r) ² | Co-Efficient of Determination(Group) (r) ² |
|---|--|
| 0.23 | 0.34 |

This shows the dependency ratio of P/E and return on individual and on portfolio remains very less or we can say that it is null, this shows that the relationship between P/E ratio and stock or portfolio return is almost null

3.5 Testing of Hypothesis

- 1) H_0 - there is a significant relation between P/E ratio and stock return
 H_1 - there is no correlation between P/E ratio and stock return

| Company Name | T-Beta | Level of significance |
|-----------------------------|--------|-----------------------|
| Tata tea | 7.74 | -2.33-2.33 |
| Larsen & turbo | 7.86 | -2.33-2.33 |
| Aban offshore | 2.85 | -2.33-2.33 |
| Tata consultanc services | 2.87 | -2.33-2.33 |
| HCL | 6.21 | -2.33-2.33 |

Interpretation:

By some above examples of company we can easily say that H_0 is rejected and H_1 is accepted. Out of 100 companies 93 companies are comes under H_1 .

- 2) H_0 - there is correlation between P/E ratio and portfolio return
 H_1 – there is no correlation between P/E ratio and portfolio return

| portfolio | T-Beta | Level of significance |
|-----------|----------|-----------------------|
| 1 | 4.683111 | -2.33-2.33 |
| 2 | 6.0734 | -2.33-2.33 |
| 3 | 6.0734 | -2.33-2.33 |
| 4 | 6.0206 | -2.33-2.33 |
| 5 | 5.6664 | -2.33-2.33 |
| 6 | 4.4292 | -2.33-2.33 |
| 7 | 4.8666 | -2.33-2.33 |
| 8 | 4.1344 | -2.33-2.33 |
| 9 | 4.5387 | -2.33-2.33 |
| 10 | 4.3845 | -2.33-2.33 |

Interpretation:

By seeing the above table we can easily say that H_0 is rejected and H_1 is accepted as all portfolios are coming under H_1 .

3.5 Findings

1. There is significant relationship in between risk and return. This is positive and linear relationship in between these two. That means if risk increases the return also increase and vice-versa also true, so who have the capability of taking risk, can get max. Return.
2. P/E ratio doesn't show the expected return for next financial year and that is approximately not doing match with actual return.
3. After getting the relationship between Returns it is clear that ACC was the only stock which perfectly matches with nifty trend and other stocks on sensex comparatively weak follower.
4. High beta does not mean high return because ONGC shows 1.17 i.e. highest beta and its return just 2.32% in last 5 year, on the other hand BHARTI gives 33.29% return with 0.82 beta. This study shows that unsystematic risk also plays a vital role in return.
5. P/E prediction for some stocks doesn't matches with the actual return because of the limitation of P/E. This model also takes some assumptions like Investors have homogenous expectations (beliefs) about earning of the share. This is, everyone have the same information at the same time, which leads to high selling or buying in the market.

4. Discussion, Conclusion and Limitations

Conclusion

The study examines the relationship between performances of portfolios corresponding to their P/E ratio. The result of the study work are relevant from the policy making point of view as a large number of investors make their investment decisions and forecast the future performance of their stock by considering the P/E ratio.

- ❖ The finding of the present study question the validation of investment decisions based on P/E ratios.
- ❖ The test of P/E ratios under all phases in Indian economy brings out that portfolio expected returns has increases as one moves from low P/E ratio stocks or portfolio to high P/E ratio portfolio,
- ❖ However the rise in return is not consistent means sometimes the return declines as P/E ratio increases and sometimes it rises. The correlation between P/E ratio and returns are very low.
- ❖ The finding failed to establish any relationship between P/E ratio and portfolio performance.

Learnings

1. This project is a great learning part for me because I did this kind of project first time which give me an opportunity to understand the concept of stock analysis in a better and practical way.
2. How sensex return can be predicted in highly volatile market, how market works, and how the market return can be determine, how risk factor leads to return – the answer of these questions I got from this project.
3. I learned about various areas where a manager should excel to be successful and have an edge over others.
4. How to manage a portfolio in terms of systematic and unsystematic risk, which is quite understandable point for me through out this project.
5. How practical and useful the various theoretical concepts are in the practical scenario? Thorough understandings of these basics certainly help me in understanding stock movement.

Limitations

- Finding the data was tiring some as the daily data was not easily available.
- The project involves a lot of calculation so estimation error is bound to occur.
- p/e can give more accurate results by applying this on various portfolios and that can give better understanding of this model, but in project it wasn't possible because information, time and many more other constraints.
- P/E ratio is based on reported earnings “accounting profits” which are not a good value indicator.
- The research would have been analyzed better if knowledge of more tools that were available.

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Analytical Tools

1. PROWESS
2. SPSS