

Portfolio Evaluation of Common Stocks in Relation to P/E Ratio

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Portfolio evaluation is carried out to assess the risk & return of the different portfolios. An investor should put portfolio performance in context relative to investment goals, risk tolerance, and the investment climate for the assets invested. This is a guideline on how investors can measure their investment successes.

Investors and stock analysts have long used price-earnings ratios, usually called P/E ratios, to help determine if individual stocks are reasonably priced. More recently, some economists have argued that the average price-earnings ratio for a stock market index such as the S&P 500 can help predict long-term changes in that index. According to this view, a low P/E ratio tends to be followed by rapid growth in stock prices in the subsequent decade and a high P/E ratio by slow growth in stock prices.

The purpose of this paper is to determine empirically whether the investment of common stocks is related to their P/E ratio. This study explains how the P/E ratio is measured and shows that it is currently high relative to its historical average. The study found that investor could not rely on P/E ratio, while selecting a portfolio.

PORTFOLIO PERFORMANCE

The Portfolio Performance enables the ongoing monitoring and periodic valuation of a portfolio of investments. The template allows the entering of investment transactions during a reporting period to calculate performance. Furthermore, incremental investment transactions undertaken during a period are fully accounted for in the period's performance calculations.

P/E Ratio- Many Interpretations

A low P/E ratio does not necessarily mean that a company is undervalued. Rather, it could mean that the market believes the company is headed for

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trouble in the near future. Stocks that go down usually do so for a reason. It may be that a company has warned that earnings will come in lower than expected. Some points to remember for P/E ratio:

- The P/E ratio is the current stock price of a company divided by its earnings per share (EPS).
- Historically, the average P/E ratio in the market has been around 15-25.
- Theoretically, a stock's P/E tells us how much investors are willing to pay per dollar of earnings.
- A better interpretation of the P/E ratio is to see it as a reflection of the market's optimism concerning a firm's growth prospects.
- The P/E ratio is a much better indicator of a stock's value than the market price alone.
- In general, it's difficult to say whether a particular P/E is high or low without taking into account growth rates and the industry.
- P/E ratios are generally lower during times of high inflation.

REVIEW OF LITERATURE

Basu (1977) showed that stocks with low price/earnings (P/E) ratios earned significantly higher returns than stocks with high P/E ratios. Moreover, his investigation indicated that these differences in returns were not due to differences in beta. If beta is the only risk factor associated with returns, then the P/E ratio should not lead to statistically significant findings. Alejandro Murguía (1984) provided financial planners become increasingly responsible for managing client investment holdings, portfolio management has undertaken an integral role within the planner's workplace. The purpose of this paper was to present planners with one of those scientific tools, the Fama/French three-factor model, which can be personalized and effectively used for analyzing and structuring portfolios, as well as evaluating mutual fund performance on a greater level of sophistication than offered, by many packaged analytical tools. As planners, they have been exposed to the many truisms with regard to portfolio management.

Lander (1997) the key variable used to predict stock market performance in this section was the spread between the earnings yield and the level of interest rates. The earnings yield was simply the inverse of the P/E ratio, and represents average earnings per dollar invested in stocks. Expressing the relationship between stock prices and earnings in this way makes the measure

comparable to an interest rate, which represents interest income per dollar invested in bonds. Rea and Reid (1997) studied that the cost of investing in the stock market for individual investors has declined substantially in recent years. For example, one study calculates that the average annual charge for stock funds declined. This decline was mainly due to two factors: the decreased importance of front-loaded funds and the increased popularity of low-cost index funds.

Campbell-Shiller (1998) predicted similar results by using standard valuation ratios. Dividend yields, for example, significantly explained average subsequent returns over longer time horizons yet were poor predictors of subsequent average returns in the short term. In addition, they found that the predictive ability of P/E ratios is better than that of dividend yields.

Campbell and Shiller (2000) each observation was marked by a number, which stands for the year the P/E ratio was calculated. The P/E ratio is measured along the horizontal axis and subsequent growth in stock prices along the vertical axis. Campbell and Shiller calculated the statistical correlation over the period between the P/E ratio and subsequent growth in stock prices and earnings. They found that the P/E ratio was negatively correlated with subsequent stock price growth but uncorrelated with subsequent earnings growth. They also found that the negative correlation between the P/E ratio and subsequent stock price growth was statistically significant, in the sense that the probability that this correlation was due some percent.

Rolph and Shen (2000) To explore the implications of the spread for the short-term market outlook, while close in spirit to Lander and others, this study used somewhat different measures of the earnings yield and the level of interest rate. For the earnings yield, Rolph and Shen used realized earnings over the past year rather than an average of realized earnings and forecast. The low spread in June 2000 was due entirely to the low earnings yield rather than to unusually high interest rates. To see if such a low spread has signaled poor stock market performance in the past, Rolph and Shen compared stock price growth in months when the spread was below the tenth percentile threshold in the previous month to stock price growth in other months. The contrasting behavior of stock prices in these two types of months can be seen from the S&P 500 index for the same period.

OBJECTIVES OF THE STUDY

- To measure the performance of the portfolio based on their P/E ratio.
- To study the relationship between portfolios' expected return and portfolio market risk.

- To measure the performance of the portfolios on the basis of Sharpe's Performance Index, Treynor's Performance Index, Jensen's Performance Index
- To open new vistas for further research.

RESEARCH METHODOLOGY

Scope of the study: The study was conducted on two years data from 1st Jan 2005 to 31st Dec 2007. The data considered for this study are the daily closing values of the S&P CNX NIFTY, which is a 50-stock market-capitalization weighted index of the National Stock Exchange of India, the nation's leading exchange in terms of volume and turnover. The index is considered rather than any particular stock since it is a market surrogate, and gives better support for the results. Further, the PE ratio of different companies was also collected from the newspapers during the start of the study for designing the portfolio on its basis.

TOOLS FOR DATA ANALYSIS

- Correlation was used to find out the relationship between portfolio expected return and portfolio market risk.
- Portfolios were ranked with the help of following tools-

a) *Sharpe's Performance Index*

$$S_t = (R_p - R_f) / \sigma_p$$

b) *Treynor's Performance Index*

$$T_n = (R_p - R_f) / \hat{\alpha}_p$$

c) *Jensen's Performance Index*

$$J_s = \hat{\alpha}_p / \hat{\alpha}_p$$

RESULTS & DISCUSSION

Beta is the slope of the characteristic regression line. Beta describes the relationship between the stock's return & the index returns. The intercept of the characteristic regression line is alpha i.e. the distance between the intersection & the horizontal axis. It indicates that the stock return is independent of the market return. A positive value of alpha is a healthy sign. According to the portfolio theory, in a well-diversified portfolio, the average value of alpha of all stocks turns out to be zero.

CORRELATION

The correlation co-efficient measures the nature & the extent of relationship between the stock market index return & the stock return in a particular period.

The square of the correlation co-efficient is the co-efficient of determination. It gives the percentage of variation in the stock's return explained by the variation in the market's return.

The data was available only for 42 companies. First of all the portfolio was designed on the basis of PE ratio. The company with the highest PE ratio was taken first and then all the companies were arranged in the descending order. Hence six portfolios were designed containing seven companies each. Portfolio (1) contains all the companies with high PE ratio and portfolio (2) contains with the minimum.

PORTFOLIO-1 (P1)

In this portfolio, beta indicates the one percent change in market index return causes 0.2 percent change in the stock return. The stock is less volatile compared to the market. A positive value of alpha (0.135) is a healthy sign. In this Portfolio alpha values would yield profitable. In analysis of correlation the interpretation is that 36 percent of variations in stock's return are explained by the variations in the NSE index return.

PORTFOLIO-2 (P2)

In this portfolio negative beta value (-0.037) indicates that the stock return moves in the opposite direction to the market return. A stock with a negative beta of (-1) would provide a return of 10 percent, if the market return declines by 10 percent & vice versa. A positive value of alpha (0.578) is a healthy sign. In this Portfolio alpha values would be more profitable. In analysis of correlation, the interpretation is that 42 percent of variations in stock's return are explained by the variations in the NSE index return.

PORTFOLIO-3 (P3)

In this portfolio, beta indicates the one percent change in market index return causes 0.104 percent change in the stock return. The stock is less volatile compared to the market. A positive value of alpha (0.582) is a healthy sign. In this Portfolio alpha values would be more profitable in comparison to portfolio-2. In this analysis of correlation, the interpretation is that 45 percent of variations in stock's return are explained by the variations in the NSE index return.

PORTFOLIO-4 (P4)

In this portfolio, beta indicates the one percent change in market index return causes 0.101 percent change in the stock return. The stock is less volatile compared to the market. A positive value of alpha (0.673) is a healthy sign. In this Portfolio alpha values would be more profitable than the above portfolios. In this analysis of correlation, the interpretation is that 39 percent of variations in stock's return are explained by the variations in the NSE index return.

PORTFOLIO-5 (P5)

In this portfolio, beta indicates the one percent change in market index return causes 0.006 percent change in the stock return. The stock is less volatile compared to the market. A positive value of alpha (0.753) is a healthy sign. In this Portfolio alpha values would be highest profitable than the other portfolio. In this analysis of correlation, the interpretation is that 33 percent of variations in stock's return are explained by the variations in the NSE index return.

PORTFOLIO-6 (P6)

In this portfolio, beta indicates the one percent change in market index return causes 0.167 percent change in the stock return. The stock is less volatile compared to the market. A positive value of alpha (0.304) is a healthy sign. In this Portfolio alpha values would yield profitable but less than the above portfolio. In this analysis of correlation, the interpretation is that 32 percent of variations in stock's return are explained by the variations in the NSE index return.

ANALYSIS

The Beta value measures the degree to which the market as a whole affects the particular stock. The co-efficient of determination r^2 (square of r) measures the strength of the relationship between market return & the security return. The volatility measures the risk associated with investment. Budget is anticipated to be investor friendly & a rise in the market index is anticipated in the future.

If we consider the return, portfolio-5 & portfolio-4 have high returns. But risk factor in portfolio-4 is high. In the case of portfolio-5, its relationship with the market is not as much strong as other portfolios.

TABLE-1

Portfolio	Returns	Alpha	Beta	r*r
P1	28.7521	0.134846	0.20043	0.364037453
P2	57.3776	0.5779516	-0.0371	0.428213419
P3	68.2536	0.5822966	0.10471	0.455886286
P4	77.4402	0.6732504	0.101	0.398295116
P5	78.7837	0.7530313	0.00637	0.331419139
P6	43.9818	0.3046023	0.16743	0.323701855

SHARPE'S PERFORMANCE INDEX

Sharp index is a measure of risk premium related to the total risk. The highest portfolio value is taken as the cut-off point. For this purpose, excess return to beta ratio given has to be calculated for each stock & rank them from highest to lowest. Here, the cut-off rate is 45.55476614. Hence, the larger the S_t , better the fund has performed. Thus, portfolio 1 is best fund because its performance index is greater than other portfolios. Even though the portfolio 5 had a higher annual return of 78.78 and high PE ratio but its performance index is quite low. The reason is that the portfolio 5 managers took such a great risk to earn the higher returns & its risk adjusted return was not the most desirable. Sharpe index can be used to rank the desirability of funds or portfolios, but not the individual assets. The individual asset contains its diversifiable risk.

TREYNOR'S PERFORMANCE INDEX

Treynor index measures the fund's performance in relation to the market performance. Treynor's risk premium of the portfolio is the difference between the average return & the risk less rate of return. The risk premium depends on the systematic risk assumed in a portfolio. The portfolio 5 is more desirable than the other portfolios because it earned more risk premium per unit of systematic risk i.e. T_n of $P5 > P2 > P3 > P4 > P1 > P6$

i.e. (1478.5783 > 1410.5255 > 1299.7449 > 1245.8285 > 1230.0615 > 1072.7401).

JENSEN'S PERFORMANCE INDEX

Jensen index compares the actual or realized return of the portfolio with calculated or predicted return. Better performance of the fund depends

on the predictive ability of the managerial personnel of the fund. Among the risk adjusted performance of the six portfolios, P5 is the best, P4 is the second, P3 is the third, P6 is the fourth, P1 is the fifth & the last is P2 i.e. $(118.1357877 > 6.665562864 > 5.560813114 > 1.819297051 > 0.672788455 > 15.56023536)$. For ranking purpose, Jensen measure should be properly adjusted. Each asset's alpha value should be divided by its beta co-efficient.

TABLE-2

Portfolio	P/E	Sharpe's	Treynor's	Jensen's
1	8.057143	45.55476614 (1)	230.0615 (5)	0.672788455 (5)
2	12.92857	9.810902447 (6)	1410.5255 (2)	15.56023536 (6)
3	15.84286	26.9327554 (3)	1299.7449 (3)	5.560813114 (3)
4	19.62857	25.59408429 (4)	1245.8285 (4)	6.665562864 (2)
5	25.78571	25.59408429 (5)	1478.5783 (1)	118.1357877 (1)
6	40.32857	30.71759537 (2)	1072.7401 (6)	1.819297051 (4)

IMPLICATIONS OF THE STUDY:

The models used in the study will be helpful for ranking all the portfolios.

- The Sharpe's index will help the portfolio manager to measure total risk by standard deviation which helps to measure portfolios total risk & variability in return in relation to risk premium.
- The Treynor's index will help the portfolio manager to measure the relationship between a given market return & the fund's return. The fund's performance is measured in relation to the market performance. The ideal fund's return rises at a faster rate than the general market performance when the market is moving upwards & its rate of declines slowly than the market return, in the decline.
- Jensen's index will be helpful as a measure of absolute performance because a definite standard is set & against that, performance is measured. The standard is based on the manager's predictive ability. Successful prediction of security would enable the manager to earn higher returns than the ordinary investor expects to earn in a given level of risk.

Conclusion: Portfolio performance is more complicated than simply looking at “how much I started with and what do I have now.” One should put portfolio performance in context relative to investment goals, risk tolerance, and the investment climate for the assets invested. This is a guideline on how investors can measure their investment successes. As per the results indicated in our study, all the three models used rated the portfolios differently. The majority of rankings as per the Treynor’s and Jensen’s are similar as compared to Sharpe’s. So we can conclude with this that the investor cannot rely on P/E ratio while choosing the portfolio, there are some other measures also to select the appropriate one. To fully understand investment portfolio performance, investors need to work closely with their advisors to establish investment goals and risk tolerance levels, look at returns on an absolute and relative basis and consider the investment climate for the specific asset class. In addition to performance, take the entire working relationship with your investment advisor into account, when looking for a successful investment program.

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