A study on performance of the common stocks under alternative investment strategies

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Introduction

The stock market helps in the growth of the industry and commerce of the country that eventually affects the economy of the country to a great extent. The government, industry and the central banks of the country keep a close watch on the happenings of the stock market. A stock market is a market for the trading of stocks and shares in companies and derivatives of company stocks at an agreed price. These include securities listed on a stock exchange as well as those traded privately. A stock market is sometimes also known as an equity market. It is usually done through the means of direct financing through the use of security and investment. The investment market can further be sub divided into the primary and secondary market. The stock market is the primary source for any company to raise funds for business expansions.

The investor would like to know which stock to invest, how much to invest at any moment and when to buy or sell the securities. This depends on investment analysis, valuation of securities, portfolio construction and portfolio evaluation and revision. Portfolio evaluating refers to the evaluation of the performance of the portfolio. It is essentially the process of comparing the return earned on a portfolio with the return earned on one or more other portfolio or on a benchmark portfolio. Portfolio evaluation essentially comprises of two functions, performance measurement and performance evaluation. Performance measurement is an accounting function which measures the return earned on a portfolio during the holding period or investment period. Performance evaluation, on the other hand, address such issues as whether the performance was superior or inferior, whether the performance was due to skill or luck etc. In finance, an investment strategy is a set of rules, behaviors or procedures, designed to guide an investor's selection of an investment portfolio. Usually the strategy will be designed around the investor's risk-return tradeoffs. Some investors will prefer to maximize expected returns by investing in risky assets, others will prefer to minimize risk, but most will select a strategy somewhere in between. The investment strategies based on historical information regarding financial statement has no value in predicting its future price; it's very difficult to detect securities that incorrectly priced. The security analyst believes the investment strategies based on accounting numbers of financial statements, such market capitalization, price earnings ratio and earnings per share are indicators of the future investment performance of a security.

Literature Review

Basu (1977) conducted a study on “Investment performance of common stocks in relation to their price earnings ratio”, stated that price earnings ratio are indicators of future investment performance of the security. He also stated that low price earnings ratio outperform high price earnings ratio and determined the relationship between the performance of the stocks and their price earnings ratio. He took 14 year period data for his analysis and concluded that low P/E ratio did earn superior returns on a risk adjusted basis. As a result, publically available P/E ratios seem to possess information content and may warranty an investor’s attention at a time of portfolio formation and revision.

KapilChoudhary (2005) conducted a study on “Performance of common stocks under alternative investment strategies”, stated that the efficient market hypothesis denies the possibility of earning abnormal returns, the fundamental analysts assert that investment strategies based on the accounting numbers may be indicators of future investment performance. Earlier studies indicate that alternatively investment strategies were able to generate excess abnormal return. The present study examines the relationship between investment performance of equity securities and alternative investment strategies based on their market capitalization, P/E ratio and earnings per share. During the period from January 1997 to December 2005, the low market capitalization, P/E ratio, and earnings per share portfolios on average earned higher absolute rate of return than the high market capitalization, P/E ratio, and earnings per share portfolios respectively. In terms of Sharpe's reward to variability ratio, Treynor's reward to volatility ratio and Jensen's differential return performance measures low market capitalization, P/E ratio and earnings per share investment strategies beat the high market capitalization, P/E ratio and earnings per share investment strategies respectively. Among the three investment strategies the low market capitalization investment strategy was found superior to both low P/E ratio and low earning per share investment strategies in terms of absolute and risk adjusted rate of return.
Research Methodology

The type of research used in this project is descriptive in nature. The sampling method used for the study is stratified sampling. The data for the research work is secondary data and was collected for a period of 6 years from 2005 to 2011. Secondary data have been collected from the Bombay Stock Exchange (BSE) website (www.bseindia.com) and Kotak Securities database. The stratified sampling technique is used to select the following 10 Industrial sectors namely Automobiles, Banking, Pharmaceuticals, Information Technology, Telecommunication, Steel, Cements, Fast Moving Consumer Goods, Health care and Paints.

Measure of investment performance

Return analysis

Stock Return analysis

Stock returns are the returns that the investors generate out of the stock market. This return could be in the form of profit through trading or in the form of dividends given by the company to its shareholders from time-to-time. It can be presented as:

\[ R = \frac{( \text{Closing Price} - \text{Opening Price})}{\text{Opening Price}} \times 100 \]

Portfolio Return analysis

The Portfolio returns is computed as the weighted average of the expected returns on the stocks which comprise the portfolio. The weights reflect the proportion of the portfolio invested in the stocks. This can be expressed as follows:

\[ R_p = \sum W_i R_i \]

where \( W_i \) = Expected return on the portfolio, \( R_i \) = Proportion of the stock invested in the portfolio, \( R_p \) = Expected return on stock 1, For a portfolio consisting of five stocks, the above equation can be expressed as:


Risk analysis

Individual risk analysis

Risk is measured by standard deviation of possible returns.

\[ \sigma^2 = \frac{1}{n} (R - E[R])^2 \]

Where \( \sigma^2 \) = Variance, \( R \) = Returns on stock, \( E[R] \) = Expected Returns on stock.

Portfolio Risk analysis

The standard deviation of a portfolio reflects not only the standard deviation of the stocks that make up the portfolio but also how the returns on the stocks which comprise the portfolio vary together. For a portfolio consisting of five stocks, the above equation can be expressed as:

\[ \sigma^2 = W_1^2 \sigma_1^2 + W_2^2 \sigma_2^2 + W_3^2 \sigma_3^2 + W_4^2 \sigma_4^2 + W_5^2 \sigma_5^2 \]

\[ = 2W1W2r12 + 2W1W3r13 + 2W1W4r14 + 2W1W5r15 + 2W2W3r23 + 2W2W4r24 + 2W2W5r25 + 2W3W4r34 + 2W3W5r35 + 2W4W5r45 \]

The Correlation Coefficient between stock returns can be calculated using the following equation:

\[ r_{12} = \text{Covar} (R_1, R_2)/\text{SD}(R_1) \text{ SD}(R_2) \]

Where \( r_{12} \) = the correlation coefficient between the returns on stocks 1 and 2, \( \text{Covar} (R_1, R_2) \) = Covariance between the returns on stocks 1 and 2, \( \text{SD}(R_1) \) = Standard deviation on stock 1, and \( \text{SD}(R_2) \) = Standard deviation on stock 2.

Beta coefficient

Stock beta is a calculation or measurement of volatility or risk of a stock trading on the stock market. It is the fluctuation in stock prices and the market in general. Some stocks have greater risk than others, and thus carry higher Stock Betas.

\[ \text{Beta (individual stocks)} = \text{Covar} (\text{Stock Return}, \text{Market return})/\text{Var} (\text{Market return}) \]

For a portfolio consisting of five stocks, the above equation can be expressed as

\[ \text{Beta (Portfolio stocks)} = W_1 \beta_1 + W_2 \beta_2 + W_3 \beta_3 + W_4 \beta_4 + W_5 \beta_5 \]

Where,

\( W \) = Proportion of the stock, \( \beta \) = Beta of the stock

Evaluation of the portfolio

Sharpe Measure

The Sharpe ratio is a measure of the mean return per unit of risk in an investment asset or a trading strategy. The Sharpe ratio states whether a portfolio’s returns are due to smart investment decisions or a result of excess risk. The greater a portfolio’s Sharpe ratio, the better its risk-adjusted performance. The measure of a portfolio can be done by the following formula:

\[ SI = \frac{(R - R_f)}{\sigma_f} \]

Where, \( S \) = Sharpe’s Index, \( R \) = Average return on portfolio, \( R_f \) = Risk free return, \( \sigma_f \) = Standard deviation of the portfolio return.

T treynor’s Measure

The Treynor ratio is a measurement of the returns earned in excess of that which could have been earned on an investment that has no diversifiable risk (e.g., Treasury Bills or a completely diversified portfolio), per each unit of market risk assumed. The higher the treynor ratio, the better the performance of the portfolio under analysis. The equation can be presented as follow:

\[ TI = (R_f - R_f)/\beta_m \]

Where,

\( T \) = Treynor’s measure of performance, \( R_f \) = Return on the portfolio, \( R_f \) = Risk free rate of return, \( \beta_m \) = Beta of the portfolio.

Jenkin’s Measure

Jensen attempts to construct a measure of absolute performance on a risk adjusted basis. It measures the portfolio manager’s predictive ability to achieve higher return than expected for the accepted riskiness.

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measure of the performance of portfolio can be calculated by applying the following formula:

\[ JI = r_p - [r_f + \beta_p (r_m - r_f)] \]

Where, JI = Jensen measure for portfolio, \( r_p \) = Return on portfolio, \( r_m \) = Return on market index, \( r_f \) = Risk free rate of return, \( \beta_p \) = Beta of the portfolio.

**Results and Discussions**

**Investment performance in relation to Market Capitalization**

Table (1) shows the scores of the performance evaluation measures and selected summary statistics for the portfolios constructed on the basis of market capitalization. According to this strategy high market capitalization portfolio is performing better as it gives high returns (0.0857) with low risk (3.6719) when compared to low market capitalization portfolio. According to the volatility measure high market capitalization portfolio is less volatile (0.7492) when compared to low market capitalization portfolio. According to the Sharpe, Treynor and Jensen measure high market capitalization portfolio is performing better when compared to low market capitalization portfolio.

**Table 1 Portfolio performance on the basis of Market Capitalization strategy**

**Investment performance in relation to Earnings per Share**

<table>
<thead>
<tr>
<th>PERFORMANCE MEASURES</th>
<th>HIGH MARKET CAPITALIZATION PORTFOLIO</th>
<th>LOW MARKET CAPITALIZATION PORTFOLIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Rate of Return</td>
<td>0.0857</td>
<td>0.0521</td>
</tr>
<tr>
<td>Risk</td>
<td>3.6719</td>
<td>5.4052</td>
</tr>
<tr>
<td>Systematic Risk</td>
<td>0.7492</td>
<td>0.7706</td>
</tr>
<tr>
<td>Sharpe’s Reward to Variability Measure</td>
<td>0.0097</td>
<td>0.0003</td>
</tr>
<tr>
<td>Treynor’s Reward to Volatility Measure</td>
<td>0.0477</td>
<td>0.0027</td>
</tr>
<tr>
<td>Jensen’s Differential Return</td>
<td>0.0737</td>
<td>0.0411</td>
</tr>
</tbody>
</table>

Table (2) shows the scores of the performance evaluation measures and selected summary statistics for the portfolios constructed on the basis of earnings per share. According to the earnings per share investment strategy, high earnings per share portfolio is outperforming the low earnings per share portfolio. High earnings per share portfolio gives high returns with low risk when compared to low earnings per share portfolio. According to volatility high earnings per share is less volatile. Based on the Sharpe, Treynor and Jensen measure high earnings per share portfolio is performing better when compared to low earnings per share portfolio.

<table>
<thead>
<tr>
<th>PERFORMANCE MEASURES</th>
<th>HIGH EARNINGS PER SHARE PORTFOLIO</th>
<th>LOW EARNINGS PER SHARE PORTFOLIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Rate of Return</td>
<td>1.1417</td>
<td>0.1218</td>
</tr>
<tr>
<td>Risk</td>
<td>4.2419</td>
<td>11.2982</td>
</tr>
<tr>
<td>Systematic Risk</td>
<td>0.3281</td>
<td>0.4307</td>
</tr>
<tr>
<td>Sharpe’s Reward to Variability Measure</td>
<td>0.2573</td>
<td>0.0063</td>
</tr>
<tr>
<td>Treynor’s Reward to Volatility Measure</td>
<td>3.3264</td>
<td>0.1667</td>
</tr>
<tr>
<td>Jensen’s Differential Return</td>
<td>1.1083</td>
<td>0.0936</td>
</tr>
</tbody>
</table>

**Investment performance in relation to Price Earnings Ratio**

Table (3) shows the scores of the performance evaluation measures and selected summary statistics for the portfolios constructed on the basis of price ratio. According to the Price Earnings Ratio investment strategy, low price earnings ratio portfolio is outperforming the high price earnings ratio portfolio. Low price earnings ratio gives high returns with high risk when compared to low price earnings ratio portfolio. According to volatility low earnings per share is less volatile. Based on the Sharpe, Treynor and Jensen measure low price earnings ratio portfolio is performing better when compared to high price earnings ratio portfolio.

<table>
<thead>
<tr>
<th>PERFORMANCE MEASURES</th>
<th>HIGH PRICE EARNINGS RATIO PORTFOLIO</th>
<th>LOW PRICE EARNINGS RATIO PORTFOLIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Rate of Return</td>
<td>0.1656</td>
<td>0.8597</td>
</tr>
<tr>
<td>Risk</td>
<td>17.6882</td>
<td>4.5893</td>
</tr>
<tr>
<td>Systematic Risk</td>
<td>1.5808</td>
<td>1.0128</td>
</tr>
<tr>
<td>Sharpe’s Reward to Variability Measure</td>
<td>0.0065</td>
<td>0.1764</td>
</tr>
<tr>
<td>Treynor’s Reward to Volatility Measure</td>
<td>0.1990</td>
<td>0.7995</td>
</tr>
<tr>
<td>Jensen’s Differential Return</td>
<td>0.1450</td>
<td>0.8610</td>
</tr>
</tbody>
</table>

Furthermore, the low earnings per share outperforms the low P/E investment and low earnings per share investment strategies. The study also observes that as the benchmark composition broadened, the sample average of differential returns declined and the benchmark criteria have no effect on performance ranking of portfolios in terms of differential return as evidenced by the significant perfect positive association among the three measurements.

**Conclusion:**

This study determines the relationship between the investment performance of equity securities and alternative
investment strategies based on the market capitalization, earnings per share and price earnings ratio. It can be concluded that investors can consider the price earnings ratio, earnings per share and market capitalization before they make an investment in securities and they should also consider the growth, long term contributing factors along with risk and return factors for selecting and investing in various avenues. Before making an investment in stocks the investors should consult the stock market analyst and the analyst can adopt various investment strategies for constructing the portfolio based on the requirements of the investors. The analyst can create awareness among the investors and provide them suggestions regarding the investment strategies, outperforming stocks and portfolios on a periodic basis with which the investors can gain a better understanding.

BIBLIOGRAPHY