Abstract
This paper discusses some of the factors that determine the Equity risk premium expectations of the investors in the Indian Capital Markets and to see the impact of these factors on the ERP. This is crucial for any investor to invest in the capital market and realize its premium expectations in the capital market as compared to the debt market. This is also crucial at the firms end also, as it determines the cost of capital for the firm which further evaluates all the valuations of the firm.

Keywords
Equity Risk Premium, Beta of the company, EPS, D/P ratio, Debt Equity Ratio, Current ratio, Return on Assets, Net Profit Margin.

I. Introduction

A. Equity Risk Premium
Equity Risk Premium (ERP) is the difference between the returns expected on the equity market and the interest rate on treasury bills’. It is viewed as the compensation of the risk for investing in the equity markets which are riskier as compared to the assets which are less risky. This is the equity premium (return) demanded by the investors to invest in the capital markets.

The ERP has various applications and the determination of this ERP has its importance in the valuation of the companies, capital budgeting and even the economic policy making as it determines the discount rate at which a finance manager discounted the various cash flows. So, the higher the ERP expectations of the investors, higher will be the expectations of the discount rate and thereby lowering the company valuations, and thereby affecting the capital budgeting and economic policy decisions for the corporate as well for the investors. Several papers have been discussed for determining the equity risk premium expectations for the developed market mainly as for US, but a very few studies have been done for the emerging and relatively newer capital markets like India. So, this paper attempts to determine the factors affecting the equity risk premium in India. The most widely used method for determining ERP is the historical method, which is based on the fundamental hypothesis that excess returns earned in the past serve as a reasonable parameter for excess returns that can be expected in the future. While the historical method may work reasonably well for developed markets like the US with a fairly long history, the same approach is likely to yield dissatisfactory results for emerging markets like India, with relatively short and volatile equity market histories. There are various methods available for determining the ERP expectations of the investors. Some of the models are as follows:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Model</th>
<th>Expected Returns</th>
<th>Equity Risk Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CAPM</td>
<td>$\text{Expected Returns} = \text{Riskfree Rate} + \beta_{\text{Asset}} (\text{Equity Risk Premium})$</td>
<td>Risk Premium for investing in the market portfolio which includes all risky assets, relative to riskless rates.</td>
</tr>
<tr>
<td>2</td>
<td>Arbitrage Pricing Model (APM)</td>
<td>$\text{Expected Returns} = \text{Riskfree Rate} + \sum \beta_{\text{Asset}} (\text{Equity Risk Premium})$</td>
<td>Risk Premium for individual unspecified market risk factors.</td>
</tr>
<tr>
<td>3</td>
<td>Multifactor Model</td>
<td>$\text{Expected Returns} = \text{Riskfree Rate} + \sum \beta_{\text{Asset}} (\text{Equity Risk Premium})$</td>
<td>Risk Premium for individual specified market risk factors.</td>
</tr>
<tr>
<td>4</td>
<td>Proxy Models</td>
<td>$\text{Expected Returns} = a + b (\text{proxy 1}) + c (\text{Proxy 2})$, where proxies are firm characteristics such as market capitalization, price to book ratio etc.</td>
<td>No explicit Risk Premium computation, but coefficients on proxies reflect risk preferences.</td>
</tr>
</tbody>
</table>

B. ERP Parameters

1. The market
The selection of the market as an index for calculating the market return is a key input for determining the ERP expectations, so the index chosen must be the representative of the whole market. As discussed above, the ERP is the integral part of the CAPM model, which states that the company’s cost of equity is equal to the aggregate of the risk-free rate and the ERP multiplied by the said company’s systematic risk (beta). Therefore, for application in the CAPM, there has to be consistency between the beta and the ERP, i.e. the beta should be measured against the same index, based on which the ERP has been determined. The betas are the measure of systematic risk in the security, which relates the risk in the security with respect to the risk in the market. The betas are calculated by taking the BSE Sensex as an index, therefore the BSE Sensex will be taken as the index here for determining the equity risk premium.
2. The Risk-Free Rate

The risk-free rate can be defined as the return on a security or portfolio of securities that has no default risk and is completely uncorrelated with returns on anything else in the economy. While no security may be 100% risk-free, practically there are three alternatives for determining the risk-free rate: treasury bills, 10-year treasury bonds, 30-year treasury bonds. The rate on 10-year treasury bonds is generally considered the superior choice, considering better duration matching compared to short-term treasury bills, and smaller beta and lower liquidity premium compared to longer term (30-year) bonds.

II. Review of Literature

Farnandez et al (2009), argued that the equity premium puzzle might be explained by the fact that many market participants (equity investors, investment banks, analysts, companies) did not use standard theory (such as consumer asset pricing model) for determining their required equity premium, but rather they used historical data and advice from textbook & finance professors. Consequently, ex-ante equity premium had been high, market prices had been consistently undervalued and ex post risk premium had been also high.

Dimsonet al (2006) admitted that the consensus could not be made on the expectations on the expectations for the equity premium today, but investors expected an ERP of around 3-3.5% on geometric mean basis, substantially lower than the historical Equity Premium.

Graham (2005) provided direct measure of 10 year market returns based on multiyear survey of Chief Financial Officers. They did this by making 20 observations of each 10 year horizon. He stated that the determinants of long term risk premiums were not influenced by past stock returns. However, there as a positive correlation between real interest rates and the long run premiums.

Ibbotson and Chen (2003) examined the historical real geometric long run market and long risk free return using their building block methodology. Those blocks include:

- Inflation
- Real Risk Free Rate
- Real Capital gains
- Growth of real earnings per share
- Growth of real dividends
- Growth in payout ratio (dividend/ earning)
- Growth in book value
- Growth in ROE
- Growth in price/earnings ratio
- Growth in real GDP/ population
- Growth in equities excess of GDP/ Population
- Reinvestment

Their calculations showed that a forecast real geometric long run return of 9.4% was a reasonable exploration, yielding a long horizon arithmetic ERP of 6 % and short horizon ERP of 7.5%.

Arnott & BernStein (2002) began by arguing that in 1926 investors were not expecting the realized and historical compensation that they later received from the stocks. They only used the dividend growth model to predict a future expected return for investors. By holding valuations constant using the dividend yield and real growth of dividends, they calculated the equity return that an investor might have expected. They used TIPS (Treasury Inflation Protected Securities) yield of 3.7 % for the real risk free rate return, which yields a geometric intermediate equity risk premium of 2.4%. They considered this a normal equity risk premium estimate. They also opined that the current ERP is zero i.e. they expected that stock and bonds to return to same amounts.

Fama & French (2002) used both dividend growth model and earnings growth model to investigate three periods of historical returns: 1872 to 2000, 1872 to 1900, and 1951 to 2000. Their ultimate aim was to find the equity risk premium. They cited that by assuming the dividend price ratio and earnings-price ratio followed a mean reversion process, the result followed that the dividend growth model or earning growth model produce approximations of the equity return. They provided 3.83 % as the equity risk premium return using dividend growth model and 4.78 % using earnings growth model.

Constantinides (2002) began with a premise that the unconditional equity risk premium can be estimated from the historical average using the assumption that ERP followed a stationary path. He used the historical return and adjusted downward by the growth in price earnings ratio to calculate ERP. He removed the growth in price earning ratio assuming no change in valuations. After his research he applied to behavioral finance to offer explanations for such high ERP estimates.

Mehra (2002) pointed that before dismiss the premium, there was not only need to understand the observed phenomenon, but also why the future is likely to be different. Over the long horizon the equity premium is likely to be similar to what it has been in the past.

Campbell and Shiller (2001) began with the assumption of mean reversion of dividend/price and price/earnings ratios. For that they calculated the regressions of the dividend-price ratio and the price smoothened earnings ratio to predict future stock prices out ten years. After this they concluded that valuation ratios indicated a bear market in near future and predicted the negative real stock returns. They cautioned that valuation ratios have changed so much from their normal level, they might not be completely revert to the historical mean, but this experiment did not change their pessimism about next decade of stock market returns.

Claus & Thomas (2001) provided equity premium estimates using the financial analysts’ forecasts. He used abnormal earning model with data from 1985 to 1998 instead of using more common dividend growth model and discounted each cash flow separately instead of using perpetuity. After conducting this research they concluded that the findings of ERP are not in line with the historical values.

James Claus and Jacob Thomas (1999) Justified the equity premium estimate of about 8%. Such a high estimate along with the various other indicators such as price to book ratio and price to earnings ratios were also internally contradictory and inconsistent with the intuition and past experience, because of concerns relating to survivor bias and time-variation in the equity premium. In addition to these results, Historical evidence from other periods and other markets as well as surveys of investor beliefs suggested that the equity premium is much lower.

While projectividends to grow at earnings growth rates forecasted by analysts provided equity premium estimates as high as 8%, those growth forecasts exhibited substantial optimism bias and need to be adjusted downward. Overall, they believed that the commonly accepted equity premium estimates were just not supported by an analysis that compares current market prices with reasonable expectations of future flows for the markets and years that they examine.

Mehra and Prescott (1985) Published the work on Equity Risk Premium Puzzle. The study showed that the historical realized ERP for the stock market 1889-1978 appeared to be at odds with and, relative to Treasury bills, far in excess of asset pricing.
theory values based on investors with reasonable risk aversion parameters.

**III. The Factors Effecting the ERP Expectations**

There are various factors that affect the equity risk premium expectations of the investors in the Indian capital markets which are determined by the literature review like the psychological factors which are the behavioral aspects of the individuals, and various other financial fundamental factors which can determine the ERP. So, in this paper, there is an attempt to study the various factors like beta of the company, Earning per Share, Dividend Payout Ratio, Debt Equity Ratio, Current Ratio, Return on Assets, and the Net Profit Margin (%) and to check its effect on the equity risk premium expectations of the investors. So, these factors are described as follows:

**A. Beta of the Company**

Beta is defined as the financial elasticity or correlated relative volatility, and can be referred to as a measure of the sensitivity of the asset’s returns to market returns, its non-diversifiable risk, its systematic risk, or market risk. On an individual asset level, measuring beta can give clues to volatility and liquidity of the stock in the in the marketplace and is measured by

\[
\beta = \frac{\text{Covariance (security returns, market returns)}}{\text{Variance (market returns)}}
\]

So, the beta of the securities is calculated by regressing the daily stock returns with the market returns and market chosen here is the BSE Sensex, as this is the most representative market index.

**B. Earning Per Share**

Earnings Per Share (EPS) is the rupee value of earnings per each outstanding share of a company’s common stock which determines the net earning available to an equity shareholder and is calculated by:

\[
\text{EPS} = \frac{\text{Net Profit} - \text{Preferred Dividends}}{\text{Weighted Average Common shares}}
\]

**C. Dividend Payout Ratio**

D/P ratio is the fraction of the profits of the firm which the firm distributes to its shareholders as dividends and the rest will be retained by the firm for the future growth prospects. The dividend payout ratio may determine the ERP as some investors think that the firm distributing dividends or having a higher dividend payout have the prosperous prospects in future and may have demand less premium for these stocks. It is calculated by:

\[
\text{Dividend Payout Ratio} = \frac{\text{Dividends declared during the year}}{\text{Net Income for the same period}}
\]

**D. Debt Equity Ratio**

The debt equity ratio determines the component of the borrowed capital and the owned capital in the total capital structure of the firm. The more the borrowed capital in the firm, the higher is its D/E ratio. The investor perceives the firm with the higher borrowed capital as the risky one and may have the higher premium expectations for that. This is calculated by:

**E. Current Ratio**

The current ratio measures whether or not a firm has enough resources to pay its debts over the next 12 months. The current ratio is an indication of a firm’s market liquidity and ability to meet creditor’s demands. If current liabilities exceed current assets then the company may have problems meeting its short-term obligations. If the current ratio is too high, then the company may not be efficiently using its current assets or its short-term financing facilities. This may also indicate problems in working capital management. So, this ratio may also determine the effectiveness of the firm financing policy and thereby the premium expectations. It is expressed as:

\[
\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}
\]

**F. Return on Assets**

The Return on Assets (ROA) percentage shows how profitable a company’s assets are in generating revenue. This ratio determines what the company can do with what it has, i.e. how many rupees of earnings they derive from each rupee of assets they control. The higher the return on assets means the firm is able to earn more through its existing assets. This ratio also determines the profitability of the organization and the optimum utilization of the resources, indicating the performance of the organization and thereby may impact the premium expectations. It is expressed as:

\[
\text{Return on Assets} = \frac{\text{Net Income}}{\text{Average Total Assets}}
\]

**G. Net Profit Margin**

It is a measure of the profitability of the firm. It determines the net profit of the firm as a percentage of the revenue. Profit margin is an indicator of a company’s pricing strategies and how well it controls costs. It is expressed as:

\[
\text{Profit Margin} = \frac{\text{Net Profit}}{\text{Average Total Assets}}
\]

**IV. Research Methodology**

The research is based on the secondary data for which the 60 companies are chosen of the Bombay Stock Exchange, 20 each of the large cap, mid cap and the small cap market capitalization to have the complete representation of the population. The analysis will be done over the period of ten years that is from March 2004 to March 2013. The all said factors are calculated for the all 60 companies for each year, which are taken as the independent variables and are regressed with the Equity Risk Premium as the dependent variable for the above said period. The linear regression is applied for each year individually and for the complete period also taking into consideration the whole 60 companies.

**A. Calculation of the ERP**

To calculate the equity risk premium of the various securities, first the daily prices of all the securities have taken from the BSE, and by averaging the same, the annual security price is calculated, and from which the annual returns of the security are calculated by applying the formula:

\[
R = \frac{\text{P}_t - \text{P}_0}{\text{P}_t-1} * 100
\]

\[
\text{Debt Equity Ratio} = \frac{\text{Total Borrowed Capital (Debt)}}{\text{Owned Capital (Equity)}}
\]
Where \( P_i \) is the current year price and \( P_{i-1} \) is the previous year price.

The risk free rate of return that is the average return of the 10 year government bond is subtracted from this return as this is considered to be the risk free rate to come out with the figure of the equity risk premium.

**B. Calculation of the Beta:**

Beta of the stocks is calculated by regressing the daily stock returns with the market that is Sensex of the same time period.

**C. Calculation of the Other Ratios:**

All other ratios are calculated by taking the financial statements of the companies of the mentioned period.

<table>
<thead>
<tr>
<th>V. Results:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following results appear by applying the regression analysis with ERP as the dependent variable and all other as the independent variables on the year by year basis and the whole 10 year data set. The regression is applied by the Enter method, in which all the independent variables are forced to enter simultaneously and then check the significance of each factor on the dependent variable. The following are the regression coefficients of the various variables making the regression line for the each year individually seeing that the the variables with the * shows that they are significant at 5% level of significance and ** shows that they are significant at 1% level of significance.</td>
</tr>
</tbody>
</table>

**Table 1: Results Showing the ERP Expectations of Each Year Individually**

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>59.17</td>
<td>57.48</td>
<td>107.56</td>
<td>-35.60</td>
<td>-51.83</td>
<td>-13.18</td>
<td>80.33**</td>
<td>47.36*</td>
<td>17.65</td>
<td>37.31</td>
</tr>
<tr>
<td>Net Profit Margin(%)</td>
<td>0.19</td>
<td>-0.19**</td>
<td>-3.44</td>
<td>-0.56</td>
<td>-0.25</td>
<td>-0.09</td>
<td>-0.47</td>
<td>0.25</td>
<td>0.01</td>
<td>0.20</td>
</tr>
<tr>
<td>Return on Assets</td>
<td>0.00</td>
<td>-0.07</td>
<td>-0.24</td>
<td>-0.06</td>
<td>0.04</td>
<td>-0.03</td>
<td>-0.17**</td>
<td>-0.14*</td>
<td>-0.06*</td>
<td>-0.05</td>
</tr>
<tr>
<td>Current Ratio</td>
<td>-32.78*</td>
<td>-16.48</td>
<td>-14.93</td>
<td>7.59</td>
<td>-7.84</td>
<td>-0.55</td>
<td>-4.06</td>
<td>-5.13</td>
<td>-3.01</td>
<td>-5.93</td>
</tr>
<tr>
<td>Debt Equity Ratio</td>
<td>30.72*</td>
<td>26.83*</td>
<td>52.49**</td>
<td>6.19</td>
<td>-1.16</td>
<td>0.00</td>
<td>-2.57</td>
<td>7.55</td>
<td>0.17</td>
<td>-2.43</td>
</tr>
<tr>
<td>Dividend Payout</td>
<td>-0.11</td>
<td>-0.25</td>
<td>1.02*</td>
<td>0.32</td>
<td>-0.54</td>
<td>-0.02</td>
<td>-0.09</td>
<td>-0.39</td>
<td>-0.01</td>
<td>-0.09</td>
</tr>
<tr>
<td>Earning Per Share</td>
<td>-0.11</td>
<td>0.21</td>
<td>0.65</td>
<td>0.43</td>
<td>0.12</td>
<td>0.30*</td>
<td>1.09**</td>
<td>0.72*</td>
<td>0.34*</td>
<td>0.23</td>
</tr>
</tbody>
</table>

**Table 2: Model Fit**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>R Square Change</td>
</tr>
<tr>
<td>1</td>
<td>.292(a)</td>
<td>.085</td>
<td>.074</td>
<td>57.298485273824500</td>
<td>.085</td>
</tr>
</tbody>
</table>

1. Predictors: (Constant), Earning Per Share (Rs), Dividend Payout Ratio Net Profit, beta, Net Profit Margin(%), Current Ratio, Debt Equity Ratio, Return on Assets
2. Dependent Variable: return premium %

The Table 2 proves that the regression model best fits the data with the R square value of 0.085 indicating that the 8.5% of the variations in the ERP are explained by these factors.

**Table 3: Regression Results of the 10 Years Combined**

<table>
<thead>
<tr>
<th>Model</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(Constant) 29.272 9.325</td>
<td>3.139</td>
<td>.002</td>
</tr>
<tr>
<td></td>
<td>Net Profit Margin(%) -1.96 .060 -1.31</td>
<td>-3.260</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Return on Assets -.104 .026 -.258</td>
<td>-3.952</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Current Ratio -7.459 2.992 -.103</td>
<td>-2.493</td>
<td>.013</td>
</tr>
<tr>
<td></td>
<td>Debt Equity Ratio -.013 1.981 .000</td>
<td>-.007</td>
<td>.995</td>
</tr>
<tr>
<td></td>
<td>Dividend Payout Ratio -.021 .019 -.043</td>
<td>-1.090</td>
<td>.276</td>
</tr>
<tr>
<td></td>
<td>beta 24.119 7.384 .133</td>
<td>3.267</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Earning Per Share (Rs) .492 .110 .292</td>
<td>4.449</td>
<td>.000</td>
</tr>
</tbody>
</table>

Dependent Variable: return premium %

The Table 3 proves that the factors Net profit margin, Return on Assets, current ratio, beta and earning per share play a significant role at even 1% level of significance in predicting the ERP expectations.
A. The Residual Statistics

![Histogram](image1)

![Normal P-P Plot of Regression Standardized Residual](image2)

The residual statistics shows that the residuals of the regression model is normally distributed and hence shows the model fit.

VI. Conclusion

The above results shows that by analyzing the data of the 10 years that is from March 2004 to the March 2013 the factors like the net profit margin, return on assets, current ratio, beta and the earning per share plays a significant role in determining the equity risk premium for the investors in the Indian capital markets. The regression line is formed from the regression coefficients of the individual parameters as follows which helps the investors in predicting the future equity risk premium expectations.

\[
\text{ERP} = 29.27 + (\text{-.196}) \text{net profit margin} + (\text{-1.04}) \text{ROA} + (\text{-7.459}) \text{current ratio} + (\text{-0.013}) D/E + (\text{-0.021}) D/P + 24.119 \beta + 0.492 \text{EPS}
\]

With this regression line, the investors can predict the ERP and sees the effect of each variable on the equity risk premium expectations. So, this study shows the effect of the variables on the ERP expectations of the investors.

References

[18] Company financial statements.

Nipun Aggarwal got his B.Tech (Hons) degree in ECE from Kurukshetra University, Kurukshetra in the year 2007, the MBA in Finance from IBS, Dehradun University, Uttarakhand in 2009, cleared UGCNET in Management in the year 2012 and registered for the Ph.D. in estimating the equity risk premium expectations of the investors in the Indian capital market from Punjabi University, Patiala since 2011. He was in the teaching as Assistant Professor with Business Management Department since 2009. Presently he was working as a faculty in Amity Global Business School, Chandigarh. His research interests include the security and portfolio management, corporate finance, international finance and the quantitative and statistical techniques.